# **M** (ENGLISH) उपयाग MATHS plete E-Bo



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# 01. (Number System)

1. If the number x4461 is divisible by 11, then what is the value of x?

RRB Group-D - 17/11/2022 (Shift-I) (A) 2 (B) 4

· · /	• •
(C) 3	<b>(D)</b> 5

2. Which of the following number is divisible by 9?

RRB G	roup-D - 19/11/2022 (Shift-II)
<b>(A)</b> 56112	<b>(B)</b> 89445
<b>(C)</b> 49653	<b>(D)</b> 58556

**3.** Which of the following numbers is completely divisible by 4?

RRB Gro	up-D - 17/11/2022 (Shift-III)
(A) 6542176	<b>(B)</b> 7253566
(C) 5632654	<b>(D)</b> 4187290

**4.** Which of the following number is divisible by 6?

RRB	Group-D - 01/09/2022 (Shift-I)
(A) 12378	<b>(B)</b> 12363
<b>(C)</b> 12370	<b>(D)</b> 12388

**5.** For the number 987x54, select the missing digit 'x' in the given options. So that the number is completely divisible by 6.

	RRB Group-D - 18/11/2022 (Shift-I)
<b>(A)</b> 2	<b>(B)</b> 5
<b>(C)</b> 3	<b>(D)</b> 1

6. If the rational numbers  $\frac{4}{-9}, \frac{-7}{18}, \frac{5}{-6}, \frac{-2}{3}$  are placed in ascending order, which of these numbers will be placed first?

RRB Group-D - 02/11/2018 (Shift-II)

(A) $\frac{4}{-9}$	(B) $\frac{-7}{18}$
(C) $\frac{5}{-6}$	(D) $\frac{-2}{3}$

7. How many prime numbers are there in the first 200 odd natural numbers?

	RRB Group D 07/12/2018 (Shift-I)
<b>(A)</b> 45	<b>(B)</b> 49
<b>(C)</b> 50	<b>(D)</b> 46

 8. Which of the following pairs are co-prime? **RRB Group-D - 20/09/2022 (Shift-II)**  (A) 348, 296 (B) 114, 213 (C) 59, 97 (D) 3025, 4920
 9. Which of the following number is divisible? RRB Group-D - 20/09/2022 (Shift-I)

<b>(A)</b> 719	(B) 709
<b>(C)</b> 729	<b>(D)</b> 739

**10.** How many prime numbers are there in the first 100 natural numbers?

	RRB Group-D - 01/09/2022(Shift-III)
<b>(A)</b> 25	<b>(B)</b> 27
<b>(C)</b> 24	<b>(D)</b> 26

Which of the following fractions is added to 13/5, resulting in 1?
 RRB Group-D - 19/11/2022 (Shift-II)

		RRB Group-D - 19/11/20
(A) -	48	(B) $-\frac{7}{2}$
(,,)	30	(=) 5
(C) ·	_ 28	(D) - <sup>8</sup>
(-)	10	<b>(</b> <sup>-</sup> <b>)</b> 15

- 12. Find the value of  $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56}$ . **RRB Group-D - 19/11/2022 (Shift-II)** (A)  $\frac{11}{24}$  (B)  $\frac{3}{8}$ (C)  $\frac{7}{16}$  (D)  $\frac{13}{28}$
- **13.** The sum of two numbers is 9. The sum of their reciprocal is 1/2. One of these numbers is:

	RRB Group-D - 17/11/2022 (Shift-III)
<b>(A)</b> 2	<b>(B)</b> 4
(C) 5	<b>(D)</b> 6

 14. What should be added to 135642 to get largest 6-digit number? **RRB Group-D - 29/10/2018 (Shift-III)**  (A) 864350 (B) 863357 (C) 864357 (D) 864347

**15.** Find the largest four-digit number which is completely divisible by 49?

RRB (	Group-D - 18/11/2022 (Shift-II)
<b>(A)</b> 9992	<b>(B)</b> 9994
<b>(C)</b> 9998	<b>(D)</b> 9996

Find the smallest four-digit number divided by 47.
 RRB Group-D - 22/11/2022 (Shift-III)

RRB Group-D - 22/11/2022 (		
<b>(A)</b> 1200	<b>(B)</b> 1025	
<b>(C)</b> 1034	<b>(D)</b> 1360	

Find the value of the denominator of  $\frac{1}{(5+\sqrt{3})}$  in 17. a rational number.

RRB Group-D - 29/10/2018 (Shift-III)

(A) $\frac{(5-\sqrt{3})}{22}$	<b>(B)</b> $5 + \frac{\sqrt{3}}{22}$
(C) $5 - \frac{\sqrt{3}}{20}$	(D) $\frac{(5-\sqrt{3})}{20}$

18. Find the rational value of the denominator of  $1/(2 + \sqrt{3})$ :

RRB Group-D - 22/10/2018 (Shift-III) (A)  $2 + \sqrt{3}$ **(B)**  $2 - \sqrt{3}$ **(D)**  $4 + \sqrt{3}$ (C) 1

19. Find the rational value of the denominator of  $(5+2\sqrt{3})$ 

RRB Group-D - 25/10/2018 (Shift-II) (B)  $\frac{(5-2\sqrt{3})}{13}$ (D)  $5 + \frac{2\sqrt{3}}{13}$ (A)  $\frac{(5-2\sqrt{3})}{12}$ (C)  $5 - \frac{2\sqrt{3}}{13}$ 

- 20. Which of the following numbers is irrational? RRB Group-D - 08/10/2018 (Shift-II) **(B)** <sup>3</sup>√1000000 (A)  $\sqrt{1000000}$ **(C)** <sup>6</sup>√1000000 **(D)**  $\sqrt[4]{1000000}$
- 21. Which of the following numbers is irrational? RRB Group-D - 22/11/2022 (Shift-III) **(A)** <sup>4</sup>√4 **(B)** <sup>3</sup>√8 (C)  $\sqrt{16}$ **(D)** ∜1
- 22. Which of the following is a rational number? RRB Group-D - 25/11/2022 (Shift-I) (A)  $\sqrt[3]{2} - 2$ **(B)**  $\sqrt[3]{8} - 2$ (C)  $\sqrt[3]{4} + 4$ **(D)**  $\sqrt[3]{12} + 1$
- 23. Which of the following numbers is an irrational number?

RRB Group-D - 27/11/2022 (Shift-I) **(B)**  $\sqrt[10]{1024}$ **(A)** <sup>4</sup>√1024 **(D)** <sup>5</sup>√1024 (C)  $\sqrt{1024}$ 

24. Which of the following numbers is not a rational number?

> RRB Group-D - 28/11/2022 (Shift-I) **(A)** <sup>5</sup>√32 **(B)** <sup>3</sup>√64 **(C)** <sup>4</sup>√32 **(D)** <sup>3</sup>√27

Which of the following numbers is rational? 25. RRB Group-D - 11/10/2018 (Shift-III) **(A)** <sup>5</sup>√1551 **(B)** <sup>3</sup>√1331 **(D)** <sup>4</sup>√1441

(C)  $\sqrt{1221}$ 

The square root of which of the following 26. numbers is rational?

	RRB Group-D - 07/12/2018 (Shift-III)
<b>(A)</b> 576	<b>(B)</b> 512
<b>(C)</b> 480	<b>(D)</b> 544

27. The square root of which of the following numbers is rational?

RRB G	roup-D - 06/12/2018 (Shift-II)
<b>(A)</b> 46232	<b>(B)</b> 46233
<b>(C)</b> 14448	<b>(D)</b> 34225

28. The square root of which of the following numbers is irrational?

RRB	Group-D - 01/09/2022 (Shift-II)
<b>(A)</b> 5184	<b>(B)</b> 4465
(C) 3025	<b>(D)</b> 8836

- 29. Which square root is a rational number? RRB Group-D - 04/12/2018 (Shift-III) **(B)** 344 (A) 336 (D) 324 (C) 320
- 30. Which of the following number of square root will be irrational?

	RRB Group-D - 03/12/2018 (Shift-II)
(A) 6441	<b>(B)</b> 9604
(C) 7921	<b>(D)</b> 5776

31. Which of the following numbers is the square root of a rational number?

	RRB Group-D - 01/12/2018 (Shift-II)
<b>(A)</b> 144	<b>(B)</b> 136
(C) 128	<b>(D)</b> 120

- Express  $\frac{1}{2+\sqrt{3}}$  as a rational number. 32. RRB Group-D - 08/10/2018 (Shift-I) **(B)**  $(2 - \sqrt{3})/1$ (A)  $5 - 2\sqrt{3}/12$ (C)  $(5 - 2\sqrt{3})/13$ **(D)**  $5 + 2\sqrt{3}/13$
- 33. What is the smallest number to be added to 4042 so that it becomes a perfect square? RRB Group-D - 22/11/2022 (Shift-III) (A) 41 (B) 54
  - (C) 64 (D) 58
- Divide the number 137592 by the smallest 34. number so that there is no remainder and the quotient is a perfect cube. Find the cube root of the quotient.

	RRB Group-D - 01/09/2022 (Shift-II)
<b>(A)</b> 8	<b>(B)</b> 2
<b>(C)</b> 4	<b>(D)</b> 6

**35.** What is the minimum number in 7864 that it becomes a perfect square?

RRB Group-D - 11/12/2018 (Shift-III)

<b>(A)</b> 61	<b>(B)</b> 57
<b>(C)</b> 71	<b>(D)</b> 79

**36.** Multiplying a positive integer by 4050, the number becomes a perfect square. Find the square root of this number.

 RRB Group-D - 01/10/2018 (Shift-III)

 (A) 95
 (B) 80

 (C) 90
 (D) 85

**37.** Find the value of-

		_	
			_
	$30 \pm$	$30 \pm$	$30 \pm \sqrt{30} \pm \sqrt{-\alpha}$
	30 T	$30 \pm $	$30 + \sqrt{30} + $
٦	N	•	
N			

RRB Group-D - 24/10/2018 (Shift-I)

<b>(A)</b> 5	<b>(B)</b> √30
(C) 6	<b>(D)</b> 5.8

**38.** How many multiples of 729 are perfect squares?

	RRB Group-D - 01/10/2018 (Shift-I)
<b>A)</b> 5	<b>(B)</b> 4
<b>C)</b> 3	<b>(D)</b> 2

**39.** How many multiples of  $2^8 \times 3^2 \times 5^3 \times 7^5$  are even numbers?

	RRB Group-D - 06/12/2018 (Shift-II)
<b>(A)</b> 288	<b>(B)</b> 168
<b>(C)</b> 576	<b>(D)</b> 464

**40.** How many multiples of  $2^9 \times 3^5 \times 5^4 \times 7^6$  are odd numbers?

 RRB Group-D - 06/12/2018 (Shift-III)

 (A) 288
 (B) 144

 (C) 210
 (D) 140

- What is the last digit of 213<sup>6</sup>? **RRB Group-D - 01/09/2022 (Shift-II)**  (A) 6 (B) 3 (C) 7 (D) 9
- **42.** What should be multiplied by the smallest natural number 216 so that the number of factors of the product is odd?

 RRB Group-D - 11/12/2018 (Shift-I)

 (A) 4
 (B) 6

 (C) 12
 (D) 8

**43.** The sum of the digits of a two-digit number is 12. If the digits are interchanged, the number obtained is 18 more than the original number. What is the original number?

	RRB Group-D - 01/09/2022(Shift-III)
<b>(A)</b> 39	<b>(B)</b> 48
<b>(C)</b> 75	<b>(D)</b> 57

**44.** The sum of the digits of the two-digit number is 9 and 9 times this number is twice the number obtained by the reverse order of digits. Find the number.

	RRB Group-D - 05/11/2018 (Shift-III)
<b>A)</b> 19	<b>(B)</b> 18
<b>C)</b> 28	<b>(D)</b> 30

**45.** The sum of the digits of a two-digit number is 11. If we interchange its digits, then the new number remains less than 45 from the original. Find the original number.

	RRB Group-D - 15/10/2018 (Shift-III)
<b>(A)</b> 92	<b>(B)</b> 56
<b>(C)</b> 65	<b>(D)</b> 83

**46.** What is the sum of the face value and the place value of 6 in the number 206743?

RRB Group-D - 28/11/2018 (Shift-I)		
(A) 6749	<b>(B)</b> 12743	
<b>(C)</b> 6006	<b>(D)</b> 12	

**47.** What is the difference between the place values of two 3 in 935071360?

RRB Group-D - 23/10/2018 (Shift-I		
<b>(A)</b> 29999700	<b>(B)</b> 29999701	
(C) 2999600	<b>(D)</b> 29999400	

48. Calculate the sum of the face value and the place value of 7 in 3728456.
 RRB Group-D - 01/10/2018 (Shift-I)

<b>(A)</b> 700007	(B) 0	•	
<b>(C)</b> 7	<b>(D)</b> 700000		

How many numbers of three digits are divisible by 8?
 RRB Group-D - 12/11/2018 (Shift-III)

(A) 114 (B) 111 (C) 113 (D) 112

50. The square of a number is 3 more than twice the same number. What is that possible number?

RRB	Group-D - 15/10/2018 (Shift-
(A) 1 or 3	<b>(B)</b> 1 or -3
(C) -1 or -3	<b>(D)</b> -1 or 3

51. Proportional of  $\left(\frac{3}{10} + \frac{8}{15}\right)$  is: RRB Group-D - 02/11/2018 (Shift-I)

(A) $\frac{11}{10}$	<b>(B)</b> $\frac{11}{15}$
(C) $\frac{6}{5}$	(D) $\frac{3}{15}$

**52.** What will be its value when subtracting 64.37 from 1000.03 and adding the result obtained from it to the sum of 3.4 and 7.56?

RRB Grou	ip-D - 08/10/2018 (Shift-III
<b>(A)</b> 948.62	<b>(B)</b> 944.62
(C) 945.62	<b>(D)</b> 946.62

**53.** Seema got Rs.50 from her father out of which she bought toffee of Rs.15. Her mother gave him Rs.30 but her brother took Rs.42 from her. How much money did she have left?

RRB Group-D - 23/11/2022 (Shift-II) (A) 23 rs (B) 24 rs.

( <b>A</b> ) 2013.	( <b>D</b> ) 24 13.
(C) 20 rs.	(D) 25 rs.

- 54. 16, 32, 64, 128, .......... The 11th digit of this sequence will be \_\_\_\_\_: RRB Group-D - 15/11/2018 (Shift-I)
  (A) 16348 (B) 16384
  (C) 16834 (D) 13684
- 55. Find tenth term of arithmetical progression  $\sqrt{2}$ ,  $3\sqrt{2}$ ,  $5\sqrt{2}$ ,  $7\sqrt{2}$ ... **RRB Group-D - 16/10/2018 (Shift-II)** (A)  $11\sqrt{2}$  (B)  $10\sqrt{2}$

<b>A)</b> 1172	<b>(B)</b> 1072
<b>C)</b> 12	<b>(D)</b> 19√2

- 56. What will be the sum of the first 2007 terms of progression 1, 2, 3, 4, 1, 2, 3, 4?

   RRB Group-D 22/11/2022 (Shift-I)
   (A) 5016
   (B) 5107
   (C) 5020
   (D) 5013
- 57. The 20th term in series 17, 22, 27, 32 will be: RRB Group-D - 16/10/2018 (Shift-II) (A) 107 (B) 117 (C) 112 (D) 115
- **58.** What will be the 12th term of arithmetical progression 142, 148, 154?

RRB Group-D -	22/10/2018 (Shift-III)
<b>(A)</b> 210	<b>(B)</b> 200
(C) 208	<b>(D)</b> 300

59. Find the 5th term in the given geometric series.3, 6, 12, .....

 RRB Group-D - 03/12/2018 (Shift-II)

 (A) 48
 (B) 62

 (C) 57
 (D) 50

**60.** What will be the 23rd term in arithmetical progression 5, 11, 17, .....?

	RRB Group-D - 27/11/2018 (Shift-I)
<b>(A)</b> 137	<b>(B)</b> 140
(C) 135	<b>(D)</b> 139

- 61. Find geometrical mean of 7, 7<sup>2</sup>, 7<sup>3</sup>, ...... 7<sup>n</sup>. RRB Group-D - 02/11/2018 (Shift-II) (A)  $7^{\frac{n+1}{2}}$  (B)  $7^{\frac{n-1}{2}}$ (C)  $7^{\frac{7}{4}}$  (D)  $7^{\frac{4}{7}}$
- 62. The sum of the arithmetical progression 1 + 4 + 7 + .... + n is 782. What is the value of n? RRB Group-D 11/12/2018 (Shift-III) (A) 70 (B) 61 (C) 64 (D) 67
- **63.** What is the sum of the first 10 numbers in progression –3, –8, –13, –18 ...... **RRB Group–D – 04/10/2018 (Shift–I)**

<b>(A)</b> –260	<b>(B)</b> –250
(C) -245	<b>(D)</b> –255

64. What will be the 10th number in the series 12, 19, 26, 33.....?

	RRB Group-D - 25/10/2018 (Shift-II)
<b>A)</b> 89	<b>(B)</b> 75
<b>C)</b> 82	<b>(D)</b> 68

**65.** Shalini, Tanveer and Rashid shared a cake. Shalini had 1/6 part of it, Tanveer had 1/4 of it and Rashid had the rest. What was the fraction of Rashid's cake?

	RRB Group-D - 31/10/2018 (Shift-II)
(A) $\frac{5}{6}$	<b>(B)</b> $\frac{3}{5}$
(C) $\frac{13}{15}$	<b>(D)</b> $\frac{7}{12}$

- 66. Which of the following is not divisible by 8? **RRB RPF Constable -24/01/2019 (Shift-II)**  (A) 12676 (B) 11504 (C) 12832 (D) 12360
- **67.** 276x1 is divisible by 3. What is the sum of all possible values of x?

RRB RPF SI-12/01/2019 (Shift-I)
<b>(B)</b> 21
<b>(D)</b> 15

**68.** In a number system dividing 14528 by a number, Suresh gets the quotient 83 and the remaining 3. What is the denominator?

RRB RPF SI -06/01/2019 (Shift-III)

<b>(A)</b> 165	<b>(B)</b> 185
<b>(C)</b> 195	<b>(D)</b> 175

**69.** The product of four consecutive numbers is always divisible by which of the following numbers?

	RRB RPF SI -05/01/2019 (Shift-I)
<b>(A)</b> 10	<b>(B)</b> 22
(C) 24	<b>(D)</b> 48

- 70.
   Which of the following numbers is prime? RRB RPF Constable -17/01/2019 (Shift-III) (A) 263 (B) 243 (C) 253 (D) 273
- 71. What will be the product of the smallest prime number and any whole number (except 0)?
   RRB RPF Constable 20/01/2019 (Shift-II)
   (A) Always zero
   (B) Always one
  - (C) Always even number
  - (D) Always odd number
- **72.** Find the sum of prime numbers between 50 and 80.

RRB RPF	Constable -18/01/2019 (Shift-I)
(A) 392	<b>(B)</b> 390
<b>(C)</b> 463	<b>(D)</b> 396

73. How many times does digit 5 occur in the count from 1 to 100? RRB RPF SI-16/01/2019 (Shift-I)

<b>(A)</b> 21	<b>(B)</b> 22
<b>(C)</b> 20	<b>(D)</b> 19

- 74. If the product of two numbers is 24 and the sum of their squares is 52, find their sum.
  RRB RPF Constable -24/01/2019 (Shift-I)
  (A) 5 (B) 10
  (C) 15 (D) 20
- **75.** When 4 is added to 8 times a number, the result obtained is the smallest 3-digit number. What is that number?

 RRB RPF Constable -22/01/2019 (Shift-II)

 (A) 12
 (B) 10

 (C) 15
 (D) 8

76. If two-thirds of a quarter of a number is 32, find the number.

	RRB RPF-SI -13/01/2019 (Shift-II
<b>(A)</b> 202	<b>(B)</b> 198
<b>(C)</b> 196	<b>(D)</b> 192

77. Calculate the difference between the prime numbers of the largest and smallest two digits.

RRB RPF Constable -17/01/2019 (Shift-I)

<b>(A)</b> 82	<b>(B)</b> 83
<b>(C)</b> 84	<b>(D)</b> 86

**78.** What is the largest four digit number which is completely divisible by 49?

	RRB RPF-SI -10/01/2019 (Shift-II)
<b>(A)</b> 9998	<b>(B)</b> 9994
<b>(C)</b> 9992	<b>(D)</b> 9996

79. Which of the following numbers is not a rational number?

	r-3i -03/01/2019 (3nift-i)
<b>(A)</b> <sup>3</sup> √1728	<b>(Β)</b> π
(C) 2.487627287	<b>(D)</b> 8.36712846781

80. Which of the following numbers is not an irrational number?
 RRB RPF Constable -18/01/2019 (Shift-III)

<b>(A)</b> √5428	<b>(B)</b> √6084
<b>(C)</b> π	<b>(D)</b> √7652

- 81. Five times a positive integer is 3 less than twice its square. Find the integer.
  RRB RPF Constable -19/01/2019 (Shift-I)
  (A) 3
  (B) 8
  (C) 2
  (D) 5
- 82. Which of the following is not a perfect square? RRB RPF Constable -20/01/2019 (Shift-I) (A) 2025 (B) 16641 (C) 1250 (D) 9801
- 83. Find the unit digit in the given factor  $(3451)^{51} \times (531)^{43}$ . RRB RPF-SI -11/01/2019 (Shift-I)
  - (A) 6 (B) 4 (C) 1 (D) 9
- **84.** When a number is divided by a denominator, the remainder 24 remains. When the double of the same number is divided by the same divisor, the remainder is 15. Find the denominator.

	RRB RPF-SI -12/01/2019 (Shift-II)
<b>(A)</b> 9	<b>(B)</b> 33
<b>(C)</b> 23	<b>(D)</b> 35

**85.** The sum of the digits of a two-digit number is 10. When the digits are interchanged, the number is reduced by 36. Find the changed number.

 RRB RPF Constable -17/01/2019 (Shift-III)

 (A) 82
 (B) 73

 (C) 37
 (D) 28

**86.** The sum of a number and the number obtained after interchanging digits position is 132. If the difference of digits is 4, find the number.

RRB RPF-SI -16/01/2019 (Shift-III) (A) 37 (B) 84

-	-		
(0	<b>;)</b> 73	(D	<b>)</b> 62

- 87. What is the place value of 8 in 634785? **RRB RPF Constable -20/01/2019 (Shift-I)**  (A) 8 (B) 80 (C) 800 (D) 80,000
- **88.** If the weight of a dozen apples is 1.8 kg, then how many apples will be in the 3 boxes with a combined weight of 23.25 kg?

 RRB RPF-SI -13/01/2019 (Shift-I)

 (A) 280
 (B) 155

 (C) 465
 (D) 215

**89.** How many three-digit numbers are divisible by 9?

RRB RPF Constable - 19/01/2019 (Shift-II)(A) 100(B) 95(C) 90(D) 105

- 90. Find the numbers, if the arithmetical mean and geometric mean of the two numbers are 7 and  $2\sqrt{10}$ . RRB RPF Constable - 17/01/2019 (Shift-III) (A) 5, 4 (B) 2, 20 (C) 4, 10 (D) 8, 5
- **91.** Find the three numbers in the arithmetical progression whose sum is 15 and the product is 105.

 RRB RPF SI - 05/01/2019 (Shift-III)

 (A) 1, 5, 9 Or 9, 5, 1
 (B) 3, 5, 7 Or 7, 5, 3

 (C) 3, 8, 7 Or 7, 8, 3
 (D) 3, 5, 8 Or 8, 5, 3

**92.** What is the total two digit numbers in the range 1 to 99?

 RRB RPF Constable -17/01/2019 (Shift-II)

 (A) 98
 (B) 90

 (C) 99
 (D) 100

**93.** If 10 is subtracted from 5 times of a number, it will be equal when adding 8 to 4 times that number, what is that number?

 RRB RPF Constable -25/01/2019 (Shift-III)

 (A) 15
 (B) 18

 (C) 22
 (D) 21

**94.** Two participants M and N bought a car. M paid 3/7 of the cost of the car as his share. M

gave Rs. 31,540 less than N. How much does the car cost?

RRB ALP	& Tec. (31-08-18 Shift-III)
(A) 2,32,680 rs.	<b>(B)</b> 2,03,175 rs.
(C) 2,20,780 rs.	<b>(D)</b> 1,85,780 rs.

- **95.** If 2/3 of a pizza is worth Rs. 300, what will be the value of 3/5 of a pizza?
  - RRB ALP & Tec. (30-08-18 Shift-I)

     (A) 180 rs.
     (B) 250 rs.

     (C) 225 rs.
     (D) 270 rs.
- **96.** When 472 pieces of plywood, with a thickness of 0.23 cm, are placed on top of each other, what will be the height in meters of such a pillar?

RRB AL	P & Tec. (29-08-18 Shift-III)
<b>(A)</b> 10.856	<b>(B)</b> 1.0856
<b>(C)</b> 108.56	<b>(D)</b> 1.856

**97.** A large rod was made by adding 15 small rods of  $23\frac{2}{7}$  m m length. What will be the length of the big rod?

RRB	ALP & Tec. (21-08-18 Shift-I)
<b>(A)</b> 349 <sup>3</sup> / <sub>7</sub> m	<b>(B)</b> 349 <sup>1</sup> / <sub>7</sub> m
<b>(C)</b> 349 <sup>2</sup> / <sub>7</sub> m	<b>(D)</b> 349 $\frac{5}{7}$ m

**98.** Which of the following numbers is divisible by 12?

RRE	B ALP & Tec. (31-08-18 Shift-II)
<b>(A)</b> 93412	<b>(B)</b> 63412
<b>(C)</b> 73412	<b>(D)</b> 83412

**99.** Which of the following number is divisible by 9?

	<b>RRB ALP &amp;</b>	Tec. (30-08-18	Shift-III)
(A) 5676	5	<b>(B)</b> 47862	-
(C) 5432	1	<b>(D)</b> 87654	

 
 100.
 Which of the following is a prime number? RRB ALP & Tec. (21-08-18 Shift-II) (A) 121
 (B) 141

 (C) 181
 (D) 161

101. Which of the following pair is not a pair of twin primes?
 RRB ALP & Tec. (21-08-18 Shift-II)
 (A) 11, 13
 (B) 71, 73
 (C) 131, 133
 (D) 191, 193

102. Which of the following is the prime number series in the numbers 1 to 20? RRB ALP & Tec. (20-08-18 Shift-I)

	<ul> <li>(A) 3,5,7,11,13,17,19</li> <li>(B) 2,5,7,9,11,13,17,19</li> <li>(C) 2,3,5,7,11,13,17,19</li> <li>(D) 1,2,3,5,7,11,13,17,7</li> </ul>	19
103.	Which of the followir complex number?	ng numbers is not a
	<b>RRB ALP &amp;</b> (A) 209 (C) 161	Tec. (14-08-18 Shift-I) (B) 203 (D) 109
104.	Which of the following r RRB ALP &	numbers is irrational? Tec. (30-08-18 Shift-I)
	(A) <sup>3</sup> √ <u>64</u> (C) <sup>6</sup> √ <u>64</u>	(B) √ <u>64</u> (D) ∜ <u>64</u>
105.	Which of the following i RRB ALP & 1	s a rational number? <b>Fec. (13-08-18 Shift-III)</b>
	(A) $\sqrt[3]{2}$ (C) $\sqrt[3]{4}$	(B) <sup>3</sup> √8 (B) <sup>3</sup> √12
106.	Which of the followir rational number?	ng numbers is not a
	(A) $\sqrt{64}$ (C) $\sqrt[3]{8}$	(B) <sup>3</sup> √64 (B) √8
107.	How many factors squares?	of 256 are perfect
	<b>RRB ALP &amp;</b> (A) 5 (C) 6	Tec. (20-08-18 Shift-II) (B) 3 (D) 4
108.	What is the difference value and face value 273965?	e between the place of 3 in the number
	<b>RRB ALP &amp;</b> (A) 2035 (C) 2997	Tec. (31-08-18 Shift-II) (B) 3962 (D) 0
109.	Find the difference of p in 833749502:	lace value of '4' and '2'

 RRB ALP & Tec. (10-08-18 Shift-II)

 (A) 49998
 (B) 30098

 (C) 39098
 (D) 39998

**110.** Divide the 69 into three parts in such a way that they are in arithmetical progression and the product of their smallest parts is 483.

 RRB ALP & Tec. (30–08–18 Shift–I)

 (A) 19, 23, 27
 (B) 17, 23, 29

 (C) 15, 23, 31
 (D) 21, 23, 25

**111.** What is to be subtracted from 1265 so that the number obtained is completely divisible by 29?

# RRB NTPC 10/08/2022(Shift : III) (A) 15 (B) 16 (C) 18 (D) 17

**112.** Which of the following numbers should be subtracted from 1184 so that the number obtained is divisible by 21?

	RRB NTPC 12/08/2022(Shift: III)
<b>(A)</b> 15	<b>(B)</b> 12
( <b>C)</b> 8	<b>(D)</b> 7

**113.** What is the least to be added in 1739 that it be completely divisible by 11?

	RRB NTPC 30.03.2016 (Shift : I)
<b>(A)</b> 11	<b>(B)</b> 2
<b>(C)</b> 1	<b>(D)</b> 10

- 114.
   When 3<sup>10</sup> is divided by 7, find the remainder.

   RRB NTPC 05/03/2021Shift : 3

   (A) 4
   (B) 3

   (C) 5
   (D) 6
- **115.** Find two consecutive numbers in which 3 times the first digit is 5 more than 2 times the second digit.

	RRB NTPC 23/07/2022 Shift : 1
(A) 5 and 6	<b>(B)</b> 6 and 7
<b>(C)</b> 7 and 8	<b>(D)</b> 9 and 10

**116.** Which four odd prime numbers have a sum of 34?

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 1,3,5,7	<b>(B)</b> 3,5,7,9
(C) 3,5,11,13	<b>(D)</b> 3,7,11,13

117. In the count from 11 to 100, how many times does digit 2 come in ten's place? RRB NTPC 12/08/2022Shift: 1

<b>(A)</b> 20	<b>(B)</b> 11
<b>(C)</b> 10	<b>(D)</b> 19

- - **(B)** Divided by itself and by 1.
  - (C) It has no divisor.
  - (D) Is not a positive integer.

119. Which of the following is a set of co-prime numbers? RRR NTPC 02/02/2021Shift : 1

	RRB NTPC 02/02/2021Shi
<b>(A)</b> (12, 7)	<b>(B)</b> (21, 42)
<b>(C)</b> (3, 9)	<b>(D)</b> (43, 129)

**120.** Which of the following is an odd composite number?

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 13	<b>(B)</b> 17
<b>(C)</b> 12	<b>(D)</b> 15

- 121. Find the sum of the first 8 odd prime numbers. RRB NTPC 11/08/2022 Shift : 2 (A) 77 (B) 98 (C) 75 (D) 100
- **122.** How many prime numbers are between positive integers 60 and 100?

	RRB NTPC 05/03/2021 Shift : 1
<b>(A)</b> 9	<b>(B)</b> 6
(C) 7	<b>(D)</b> 8

**123.** A school has 200 students, with 7/10 being boys. Find the number of girl students in the school.

	RRB NTPC 23/07/2022 Shift	t-3
<b>(A)</b> 80	<b>(B)</b> 60	
<b>(C)</b> 40	<b>(D)</b> 120	

124. If the sum of two numbers is 26 and their difference is 12, find the difference between their squares. RRB NTPC 10/08/2022Shift : 2

	RRB NTPC 10/08/2022Shift :
<b>(A)</b> 296	<b>(B)</b> 312
<b>(C)</b> 324	<b>(D)</b> 336

125. If the product of 2 numbers is 3 times its sum and one number is 12, find the other number. RRB NTPC 10/08/2022 Shift : 1

(A) 2	(В) З
<b>(C)</b> 4	<b>(D)</b> 5

(A) 8 and 7	<b>(B)</b> 6 and 9
(C) 5 and 10	<b>(D)</b> 3 and 12

**127.** The sum of three consecutive even numbers is 42. Find the middle number.

	RRB NTPC 11/08/2022Shift : 3
<b>(A)</b> 12	<b>(B)</b> 18
<b>(C)</b> 16	<b>(D)</b> 14

**128.** Find the smallest 4-digit number that is a perfect square.

 RRB NTPC 10/08/2022 Shift : 1

 (A) 1000
 (B) 1024

 (C) 1081
 (D) 1064

**129.** Find the smallest 6 digit number which is a multiple of 18.

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 100000	<b>(B)</b> 999900
<b>(C)</b> 100008	<b>(D)</b> 100006

**130.** Find the largest number of 4 digits which is completely divisible by 88.

	RRB JE - 02/06/2019 (Shift-I)
<b>(A)</b> 9944	<b>(B)</b> 9844
<b>(C)</b> 9768	<b>(D)</b> 8894

- 131. All irrational numbers RRB NTPC 19.01.2017 Shift : 3
  - (A) Is an integer

(B) is unreal.

(C) Is a whole number

(D) Is a whole number

**132.**  $(4)^{\frac{-3}{2}} = ?$  **RRB NTPC 11/08/2022Shift : 3 (A)** 1/4 **(B)** 8 **(C)** 1/8 **(D)** 4

**133.** Which of the given numbers is a rational number between 2/4 and 0.6?

	RRB NTPC 19.01.2017 Shift : 2
(A) $\frac{11}{25}$	(B) $\frac{21}{40}$
(C) $\frac{3}{4}$	(D) $\frac{11}{4}$

**134.** If a positive number is only 30 more than its square root, find the number.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 16	<b>(B)</b> 36
<b>(C)</b> 25	<b>(D)</b> 49

135. The smallest number that should be added to the sum of squares of 15 and 14 so that the resulting number can be a perfect square? RRB NTPC 11/08/2022Shift : 1

	RRB NIPC 11/08/20
<b>(A)</b> 17	<b>(B)</b> 20
<b>(C)</b> 11	<b>(D)</b> 9

**136.** Calculate the sum of squares of numbers from 1 to 9.

RRB NTPC 12/08/2022Shift : 1
<b>(B)</b> 285
<b>(D)</b> 380

**137.** Calculate the sum of squares of numbers from 1 to 10?

	RRB NTPC 23/07/2022 Shift : 2
<b>(A)</b> 384	<b>(B)</b> 285
<b>(C)</b> 385	<b>(D)</b> 380

**138.** Which of the following numbers is a perfect square?

**RRB NTPC 11/08/2022Shift : 2** (A) 0.09 (B) 8.1

,, , , , , , , , , , , , , , , , , , , ,	(=) 0.1
<b>C)</b> 0.025	<b>(D)</b> All

**139.** What will be the digit in the unit's place of  $[4523^{1632} \times 2224^{1632} \times 3225^{1632}]$ ? **RRB NTPC 02/02/2021Shift : 3** 

	RRB NTPC 02/02/2021Sh
<b>(A)</b> 1	<b>(B)</b> 0
<b>(C)</b> 4	<b>(D)</b> 5

140. Find the total prime factors in the product of  $\{(8)^{10} \times (9)^7 \times 7^8\}$ .

	RRB NTPC 05/03/2021Shift : 2
<b>(A)</b> 45	<b>(B)</b> 54
<b>(C)</b> 52	<b>(D)</b> 65

141. Find the total prime factors in the product of  $\{(16)^7 \times (27)^6 \times 5^9\}$ .

	RRB NTPC 09/05/2022 Shift :
<b>(A)</b> 28	<b>(B)</b> 43
<b>(C)</b> 55	<b>(D)</b> 56

2

142. Find the unit digit in the given product  $(4211)^{102} \times (361)^{52}$ .

 RRB NTPC 09/05/2022 Shift : 3

 (A) 3
 (B) 1

 (C) 4
 (D) 7

**143.** Find the number of the unit in the following:  $(1234)^{102} + (1234)^{103}$ 

 RRB NTPC 09/05/2022 Shift : 2

 (A) 2
 (B) 4

 (C) 0
 (D) 1

**144.** When a number is divided by 627, 43 is left as remainder. When this number is divided by 19, what will be the remainder?

 RRB NTPC 02/02/2021Shift : 1

 (A) 5
 (B) 18

 (C) 13
 (D) 7

**145.** N is a whole number which when divided by 6, the remainder 4 is left. If 2N is divided by 6, what will be the remainder?

 RRB NTPC 09/05/2022 Shift : 1

 (A) 4
 (B) 8

 (C) 2
 (D) 0

**146.** The difference between the number of two digits and the new number formed when the digits are interchanged is 45. Find the difference between the two digits.

RRB NTPC 10/08/2022Shift : 2 (A) 4 (B) 5 (C) 6

**(D)** 7

**147.** The sum of the digits of a two-digit number is 11. If the positions of the digits are interchanged then the number decreases by 63. Find the number.

RRB NTPC 10/08/2022 Shift : 3
<b>(B)</b> 92
<b>(D)</b> 38

148. The sum of two-digit number is 9. When 27 is added to the number, the digits are interchanged. Find the number.
 RRB NTPC 10/08/2022 Shift : 1

<b>(A)</b> 45	<b>(B)</b> 36
<b>(C)</b> 18	<b>(D)</b> 27

**149.** The sum of the digits of a two-digit number is 13. If those digits are interchanged, the number decreases by 27. Find the changed number.

	RRB NTPC 10/08/2022 Shift : 1
<b>(A)</b> 85	<b>(B)</b> 76
(C) 67	<b>(D)</b> 58

**150.** The sum of a two-digit number is 9. When the digits are interchanged, the number reduces by 45 Find the changed number.

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 45	<b>(B)</b> 72
(C) 63	<b>(D)</b> 27

**151.** The sum of the digits of a two-digit number is 10. If the digits are interchanged, then the number decreases by 54, find the new number.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 73	<b>(B)</b> 28
<b>(C)</b> 82	<b>(D)</b> 37

**152.** The sum of two digits of a number is 10. If the digits are interchanged, its value increases by 18. Find the number.

	RRB NTPC 11/08/2022Shift : 1
<b>(A)</b> 46	<b>(B)</b> 64
<b>(C)</b> 19	<b>(D)</b> 28

**153.** The sum of a two-digit number and the number formed by interchanging its digits is 99. If difference in both digits is 3, then find the number.

	RRB NTPC 05/03/2021Shift : 3
<b>(A)</b> 27	<b>(B)</b> 63
<b>(C)</b> 45	<b>(D)</b> 54

**154.** The difference between a two-digit number and a number obtained by interchanging the digits is 54. What is the difference between the two digits of that number?

RRB NTPC 05/03/2021 Shift : 1

<b>(A)</b> 6	<b>(B)</b> 7

- (C) 8 (D) 9
- **155.** The sum of the digits of the two-digit number is 5. The number 9 is reduced when the digits are reversed. So what will be the changed number?

	RRB NTPC 09/05/2022 Shift : 3
<b>(A)</b> 32	<b>(B)</b> 23
<b>(C)</b> 41	<b>(D)</b> 14

- 156.
   What is the face value of 4 in 145.390?

   RRB NTPC 10/08/2022 Shift : 2

   (A) 40,000
   (B) 4

   (C) 140,000
   (D) 45
- **157.** Find the difference between the place value and face value of 9 in 229301.

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 9292	<b>(B)</b> 8991
( <b>C)</b> 0	<b>(D)</b> 220

**158.** Geeta weighs 11.235 kg. Her sister weighs 1.4 times her weight. Find the total weight of both.

	RRB NTPC 11/08/2022Shift : 1
(A) 15.729 kg	<b>(B)</b> 25.964 kg
(C) 26.964 kg	<b>(D)</b> 28.964 kg

**159.** Sum of how many terms in the series 7, 14, 21, 28.... is 952?

	RRB NTPC 09/05/2022 Shift : 1
<b>(A)</b> 16	<b>(B)</b> 17
<b>(C)</b> 18	<b>(D)</b> 19

- 160. If 11, 17, 23 ..... are in a arithmetical progression, find the 12th term. **RRB NTPC 12/08/2022Shift : 3** (A) 77
   (B) 83
   (C) 71
   (D) 89
- 161.Find the value of  $6 + 11 + 16 + 21 + \dots + 71$ .<br/>RRB NTPC 11/08/2022 Shift : 2<br/>(A) 539<br/>(B) 561<br/>(C) 661<br/>(D) 639
- **162.** Instead of dividing a number by 21, a student divided by 12 and get 35 as answer. Find the correct answer.

RRB JE - 26/05/2019 (Shift-II)

<b>(A)</b> 20	<b>(B)</b> 15
<b>(C)</b> 26	<b>(D)</b> 25

**163.** Find the smallest number which when added to 231228 is divided completely by the number 33.

RRB JE - 27/05/2019 (Shift-III)
<b>(B)</b> 4
<b>(D)</b> 1

**164.** The sum of three consecutive odd numbers is 20 more than the first of these. Find the largest number among them.

	RRB JE - 28/06/2019 (Shift-III
<b>(A)</b> 13	<b>(B)</b> 9
<b>(C)</b> 11	<b>(D)</b> 7

**165.** If 3/11 < x/3 < 7/11, which of the following can be the value of 'x'?

	RRB JE - 23/05/2019 (Shift-I)
<b>(A)</b> 0.5	<b>(B)</b> 1
<b>(C)</b> 2	<b>(D)</b> 3

166. Out of three consecutive odd integers, three times of first integer is 3 more than two times of third integer. Find the value of third integer? RRB JE - 26/06/2019 (Shift-III)

	20/00/
<b>(A)</b> 15	<b>(B)</b> 13
<b>(C)</b> 11	<b>(D)</b> 9

 167.
 Find the largest prime number of two digits.

 RRB JE - 23/05/2019 (Shift-II)

 (A) 93
 (B) 89

 (C) 91
 (D) 97

168. If x + y = 11, then  $(-1)^{x} + (+1)^{y} \dots \dots$  is equal to (Where x and y are whole numbers) RRB JE - 23/05/2019 (Shift-I) (A) -1 (B) 1 (C) 2 (D) 0

**169.** 12 pieces, each measuring 225 cm, are cut and sold with a 30 meter long cloth. What is the remaining part of the original length?

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 1/3	<b>(B)</b> 1/9
(C) 1/10	<b>(D)</b> 3/10

**170.** If 1/7 of a number is subtracted from the number, the result is 30 less than the number. Find the number.

	RRB JE - 24/05/2019 (Shift-III)
<b>(A)</b> 105	<b>(B)</b> 140
<b>(C)</b> 120	<b>(D)</b> 210

171. The sum of two numbers is 22. Five times of first number is equal to 6 times of the second number. Find the larger number of these two.
PRR JF - 25/05/2019 (Shift-I)

	RRB JE - 25/05/2019 (Shif
<b>(A)</b> 12	<b>(B)</b> 15
<b>(C)</b> 10	<b>(D)</b> 16

**172.** If doubling a number and adding 20 to it gives the same answer as multiplying the same number by 8 and subtracting 4 from the product, find the number.

	RRB JE - 25/05/2019 (Shift-II)
<b>(A)</b> 3	<b>(B)</b> 4
(C) 6	<b>(D)</b> 2

**173.** The product of two numbers is 9375. When the largest number is divided by the smallest number, the quotient is 15. Find the sum of these numbers.

	RRB JE - 30/05/2019 (Shift-II)
<b>(A)</b> 400	<b>(B)</b> 380
<b>(C)</b> 425	<b>(D)</b> 395

**174.** If the sum of two numbers is 13 and the sum of their squares is 97, find their product.

	RRB JE - 28/06/2019 (Shift-III
<b>(A)</b> 72	<b>(B)</b> 36
<b>(C)</b> 110	<b>(D)</b> 84

- 175. Express 0. 125 as a rational number. RRB JE - 25/05/2019 (Shift-I) (A) 119/993 (B) 113/990 (C) 125/999 (D) 100/999
- 176. Express 5.025 as a fraction:

   RRB JE 29/05/2019 (Shift-I)

   (A)  $\frac{203}{40}$  

   (B)  $5\frac{1}{40}$  

   (C)  $5\frac{1}{4}$  

   (D)  $5\frac{1}{8}$
- 177. Find the smallest fraction from the following. **RRB JE - 27/06/2019 (Shift-III)**  (A) 3/4 (B) 11/ 13 (C) 5/7 (D) 9/11
- 178. Find the smallest number which, when added to 1780, is a perfect square.
  RRB JE 27/05/2019 (Shift-II)
  (A) 46
  (B) 49
  (C) 40
  - (C) 69 (D) 72
- **179.** Find the smallest integer whose cube is equal to itself.

	RRB JE - 22/05/2019 (Shift-I)
( <b>A)</b> -1	<b>(B)</b> 2
( <b>C)</b> 1	<b>(D)</b> 0

**180.** If the cube of a number is subtracted from  $(153)^2$ , the number thus obtained is 1457. Find the number.

	RRB JE - 24/05/2019 (Shift-I)
<b>(A)</b> 18	<b>(B)</b> 16
<b>(C)</b> 28	<b>(D)</b> 24

**181.** The square root of which of the following square numbers cannot be expressed as the sum of two prime numbers?

	RRB JE - 30/05/2019 (Shift-II)
<b>(A)</b> 81	<b>(B)</b> 49
<b>(C)</b> 121	<b>(D)</b> 144

**182.** The number obtained by subtracting 4 times of a number from three times the square of a number is 50 more than that number. Find the number.

	RRB JE - 28/05/2019 (Shift-II)
<b>(A)</b> 5	<b>(B)</b> 4
( <b>C)</b> 6	<b>(D)</b> 10

**183.** Which of these numbers is not the sum of two squares?

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 41	<b>(B)</b> 13
<b>(C)</b> 23	<b>(D)</b> 37

- 184. Which of the following is a perfect square? **RRB JE - 01/06/2019 (Shift-III)**  (A) 9801 (B) 9887 (C) 9013 (D) 9016
- 185. If the last digit of the square of a number is 1. Then what will be the last digit of its cube? RRB JE - 27/06/2019 (Shift-I)

<b>(A)</b> only 9	<b>(B)</b> 1 or 9
(C) Any odd number	<b>(D)</b> only 1

**186.** The sum and difference of the two numbers are 25 and 3 respectively. Find the difference of their squares.

	RRB JE - 27/06/2019 (Shift-III)
<b>(A)</b> 165	<b>(B)</b> 75
<b>(C)</b> 154	<b>(D)</b> 140

**187.** How many perfect squares are there between 100 and 200?

	RRB JE - 27/06/2019 (Shift-III)
<b>(A)</b> 7	<b>(B)</b> 4
<b>(C)</b> 6	<b>(D)</b> 5

**188.** Which of these numbers has the highest divisor?

RRB JE - 23/05/2019 (Shift-I)

<b>(A)</b> 156	<b>(B)</b> 240
<b>(C)</b> 172	<b>(D)</b> 200

**189.** By adding 18 to a two-digit number, the digits of that number are interchanged. The product of the numerals is '8'. Find the number.

	RRB JE - 27/06/2019 (Shift-I)
<b>(A)</b> 42	<b>(B)</b> 18
<b>(C)</b> 32	<b>(D)</b> 24

**190.** Find the difference between the place value and face value of '5' in the number 3675149. **RRB JE - 23/05/2019 (Shift-I)** 

<b>A)</b> 5000	<b>(B)</b> 4995
<b>C)</b> 495	<b>(D)</b> 4990

191. In a school picnic group, 2/9 was adults and children were 95 more than adults. How many children were there? RRB JE - 27/06/2019 (Shift-I)

	RRB JE - 27/06/2019 (Shift
<b>(A)</b> 95	<b>(B)</b> 133
<b>(C)</b> 190	<b>(D)</b> 103

**192.** Select the set that is formed by the factors of 36.

# Solution

### 1. Ans.(D)

Rule of divisibility by 11 - If the difference between the sum of digits at even places of a number and the sum of digits at odd places is 0 or divisible by 11, then that number will also be divisible by 11. Number - x4461

x + 4 + 1 - (4 + 6) = 0x + 5 - 10 = 0x = 5

### 2. Âns.(C)

If the sum of all digits of a number is divisible by 9, then that number will also be completely divisible by 9.

So on checking the option -

- (1) 56112 "Sum of digits" = 15 (X)
- (2) 89445 "Sum of digits" = 30(X)
- (3) 49653 "Sum of digits" =  $27(\checkmark)$
- (4) 58556 "Sum of digits" = 29(X)
- Thus, number divisible by 9 = 49653

### 3. Ans.(A)

Rule of divisibility by 4 - A number whose unit and the two digits are completely divisible by 4, the number is completely divisible by 4. In the given options, only the last two digits (unit and ten) of 6542176 are divisible by 4, so 6542176 will also be divisible by 4.

### RRB JE - 27/05/2019 (Shift-III)

**(A)** (2, 3, 4, 6, 9) **(B)** (2, 3, 4, 6) **(C)** (2, 3, 4, 6, 9, 12, 18) **(D)** (2, 3, 4, 6, 9, 12)

**193.** The difference of two numbers is 5. If their product is 336, find the sum of both numbers.

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 21	<b>(B)</b> 37
<b>(C)</b> 28	<b>(D)</b> 51

**194.** Which of the following number of square root will be irrational?

RRB Para	medical - 21/07/2018 (Shift-I)
<b>(A)</b> 21025	<b>(B)</b> 18025
(C) 13225	<b>(D)</b> 15625

**195.** The ratio of the sum of the first three terms of the geometric progression and the sum of the first six terms is 125: 152. What is the normal ratio of geometric progression?

### RRB Paramedical - 20/07/2018 (Shift-I)

(A) $\frac{4}{5}$	(B) <sup>5</sup> / <sub>3</sub>
(C) $\frac{5}{4}$	(D) $\frac{3}{5}$

4. Ans.(A)

Rule to divide by 6 – If a given number is divided separately by 2 and 3, then the number will also be divided by 6.

Rule of divisibility by  $2 \Rightarrow$  If the unit digit of a given number is divided by 2, then that number will be divided by 2. That is, all even numbers are divisible by 2.

Rule of divisibility by  $3 \Rightarrow$  If the sum of the digits of the given numbers is divided by 3, then that number will be divided by 3.

The options given here have only 12378 even numbers and are divisible by

$$\frac{1+2+3+7+8}{3} = \frac{21}{3} = 7$$

Hence the number 12378 is divisible by 6.

### 5. Ans.(C)

The given number will be divided by 6 only if it is divisible by 2 and 3.

Rule of divisibility by  $2 \Rightarrow$  If the unit digit of a given number is divided by 2, then that number will be divided by 2. That is, all even numbers are divisible by 2.

Rule of divisibility by  $3 \Rightarrow$  If the sum of the digits of the given numbers is divided by 3, then that number will be divided by 3.

Substituting x = 3 from option (c),

$$\Rightarrow \frac{9+8+7+3+5+4}{3} = \frac{36}{3} = 12$$
  
Hence x = 3.

### 6. Ans.(C)

Rational Numbers  $=\frac{4}{-9}, \frac{-7}{18}, \frac{5}{-6}$  और  $\frac{-2}{3}$ 

$$\frac{\frac{4}{-9}}{\frac{-7}{18}} = -0.44$$
$$\frac{\frac{5}{-6}}{\frac{5}{-6}} = -0.83$$

$$\frac{-2}{-2} = -0.66$$

First number when placed in ascending order =  $-0.83 = \frac{5}{-6}$ 

### 7. Ans.(A)

Total prime numbers in the first 200 odd natural numbers = 3,5,7,11,13,17,19,23,29,31,37,41,43 47,53,59,61,67,71,73,79,83,89,97,101,103,107, 109,113,127,131,137,139,149,151,157,163,167,

173,179,181,191,193,197,199, = 45

### 8. Ans.(C)

Two numbers or more than two numbers whose common refractor is 1 ie the maximum common denominator of those numbers is 1. Such numbers are called co – prime numbers. In options (c) 59, 97 is the appropriate co – primes pair.

### 9. Ans.(C) :

The number 729 is divisible by 3,9 and 81.

### 10. Ans.(A)

Prime numbers in the first 100 natural numbers – 2,3,5,7,11,13,17,19,23,29,31,37,41,43, 47,53,59,61,67,71,73,79,83,89,97 In this way, the first 100 natural numbers have

### 25 prime numbers. 11. Ans.(A) :

Let x be an unknown fraction. According to Question,

$$x + \frac{13}{5} = 1$$
$$x = 1 - \frac{13}{5}$$

$$x = \frac{-8}{5}$$
  
and,  $x = \frac{-8 \times 6}{5 \times 6} = \frac{-48}{30}$ 

### 12. Ans.(B)

13.

By question,  $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56}$   $= \frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \frac{1}{7} - \frac{1}{8}$   $= \frac{1}{2} - \frac{1}{8}$   $= \frac{4 - 1}{8}$   $= \frac{3}{8}$ Ans.(D) :

Let the first number be x and the second number be y. According to Question,  $x + y = 9 \dots \dots (i)$  $\frac{1}{x} + \frac{1}{y} = \frac{1}{2}$  $\frac{x+y}{xy} =$ 1 But x + y = 9Therefore  $\frac{9}{xy} = \frac{1}{2}$ xy = 18Now from option d x = 6So, y = 314. Ans.(C) Adding x to 135642 gives the largest six digit number.  $\therefore \bar{1}35642 + x = 9999999$ x = 999999 - 135642x = 86435715. Ans.(D) : Largest number of 4 digits = 9999 3 left over dividing 49 by 9999, So required number = 9999 - 3= 9996 16. Ans.(C) : The smallest four – digit number = 1000 Dividing by 47 into 1000 leaves 13 left, Hence the required number = 1000 + (47 - 13) = 1000 + 34 = 103417. Ans.(A) According to Question -

# $\frac{1}{(5+\sqrt{3})} = \frac{(5-\sqrt{3})}{(5+\sqrt{3})(5-\sqrt{3})}$ $= \frac{(5-\sqrt{3})}{(5)^2 - (\sqrt{3})^2}$ $= \frac{(5-\sqrt{3})}{25-3}$ $= \frac{(5-\sqrt{3})}{22}$

## 18. Ans.(B)

$$\frac{1}{2+\sqrt{3}}$$
 (On rationalizing the denominator)

$$\frac{\frac{1}{2+\sqrt{3}} \times \frac{2+\sqrt{3}}{2-\sqrt{3}}}{= \frac{2-\sqrt{3}}{2^2-(\sqrt{3})^2}}$$
$$= \frac{2-\sqrt{3}}{4-3} = 2 - \sqrt{3}$$

# 19. Ans.(B)

On rationalizing the denominator of the given fraction

$$= \frac{1}{(5+2\sqrt{3})} \times \frac{(5-2\sqrt{3})}{(5-2\sqrt{3})}$$
  
=  $\frac{(5-2\sqrt{3})}{(5)^2 - (2\sqrt{3})^2} [(a + b)(a - b) = a^2 - b^2]$   
=  $\frac{5-2\sqrt{3}}{25-12} = \frac{5-2\sqrt{3}}{13}$ 

20. Ans.(D) From option -(a)  $\sqrt{1000000} = \sqrt{100 \times 100 \times 100}$  $= 10 \times 10 \times 10 = 1000$  (Rational) (b)  $\sqrt[3]{1000000} = (100^3)^{1/3} = 100$ (Rational) (c)  $\sqrt[6]{1000000} = (10^6)^{1/6} = 10$  (Rational) (d)  $\sqrt[4]{1000000} = 10\sqrt[4]{100}$ (irrational) 21. Ans.(A) :  $\sqrt[4]{4} = \sqrt[4]{4}$  (Irrational number)  $\sqrt[3]{8} = \sqrt[3]{2 \times 2 \times 2} = 2$  (Rational Number)  $\sqrt{16} = \sqrt{2 \times 2 \times 2 \times 2}$  $= 2 \times 2 = 4$  (Rational Number)  $\sqrt[6]{1} = 1$  (Rational Number) 22. Ans.(B)  $\sqrt[3]{8} - 2 = 0$  Is a rational number. Whereas all the remaining  $\sqrt[3]{2} - 2$ ,  $\sqrt[3]{4} + 4$  and  $\sqrt[3]{12} + 1$  are irrational numbers. 23. Ans.(A) From option, (a)  $\sqrt[4]{1024} = 5.65$  (Irrational) (b)  $\sqrt[10]{1024} = 2$  (Rational) (c)  $\sqrt{1024} = 32$  (Rational) (d)  $\sqrt[5]{1024} = 4$  (Rational) Hence option (a) is an irrational number. 24. Ans.(C)  $\sqrt[5]{32} = \sqrt[5]{2 \times 2 \times 2 \times 2 \times 2} = 2$ (Rational number)  $\sqrt[3]{64} = \sqrt[3]{4 \times 4 \times 4} = 4$  (Rational number)  $\sqrt[3]{27} = \sqrt[3]{3 \times 3 \times 3} = 3$  (Rational number)  $\sqrt[4]{32} = 2\sqrt[4]{2}$  Which is an irrational number. 25. Ans.(B) Rational numbers can be written as p / q ( $q \neq$ 0). Hence  $\sqrt[3]{1331} = \sqrt[3]{11 \times 11 \times 11} = 11$ i.e. $\frac{11}{1}$  is a rational number. Note - The remaining options cannot be expressed as absolute rational numbers  $\left(\frac{\nu}{a}\right)$ , so they are irrational numbers. 26. Ans.(A) The square root of 576 in numbers is rational.  $\sqrt{576} = 24$  $\sqrt{512} = 22.62$  $\sqrt{480} = 21.90$  $\sqrt{544} = 23.32$ Hence, square root of 576 = 24 (which is a rational number). 27. Ans.(D) : (a)  $46232 = \sqrt{46232} = 215.016$ (b)  $46233 = \sqrt{46233} = 215.0186$ (c)  $14448 = \sqrt{14448} = 120.199$ (d)  $34225 = \sqrt{34225} = 185$ 

The square root 185 of the number 34225 will be a rational number.

### 28. Ans.(B)

From option – (a)  $\sqrt{5184} = 72$ (b)  $\sqrt{4465} = 66.82$ (c)  $\sqrt{3025} = 55$ (d)  $\sqrt{8836} = 94$ It is clear that the square root of the number 4465 is irrational. **Ans (D)** 

# 29. A<u>ns.(</u>D)

 $\sqrt{324} = \sqrt{18 \times 18} = 18$ The square root of 324 will be 18 which is a rational number.

### 30. Ans.(A)

For example 6441 = 6241 + 200=  $\sqrt{79 \times 79} + 10\sqrt{2}$ =  $79 + 10\sqrt{2} = 80.25$  $\sqrt{9604} = \sqrt{98 \times 98} = 98$  $\sqrt{7921} = \sqrt{89 \times 89} = 89$  $\sqrt{5776} = \sqrt{76 \times 76} = 76$ Hence the square root of the number 6441 will be irrational. **Ans (A)** 

# 31. Ans.(A)

 $\sqrt{144} = 12$   $\sqrt{136} = 11.66$   $\sqrt{128} = 11.31$   $\sqrt{120} = 10.95$ Thus, the square root of the number 144 is a rational number.

### 32. Ans.(B):

 $\frac{\frac{1}{(2+\sqrt{3})} \text{ On rationalization of}}{\frac{1\times(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})}} = \frac{(2-\sqrt{3})}{\frac{(2-\sqrt{3})}{(4-3)}} = \frac{(2-\sqrt{3})}{1}$ 

### 33. Ans.(B) :

Square of  $64 = 64 \times 64 = 4096$ Hence the required number = 4096 - 4042 = 54By adding 54, the number 4042 will become a perfect square.

## 34. Ans.(D)

 $137592 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 7 \times 7 \times 13$ Now, it is clear that dividing 137592 by  $7 \times 7 \times 13 = 637$  will not give remainder and it will a perfect cube of 216.  $216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$ Cube root of 216 =  $2 \times 3 = 6$ 

### 35. Ans.(B)

Adding 57 to 7864 gives 7921 which is a perfect square of 89.

### 36. Ans.(C)

 $: 4050 = 2 \times 3 \times 3 \times 3 \times 3 \times 5 \times 5$ 

: Multiplying the number by 2 in the number 4050 will be a perfect square number  $= 4050 \times 2 = 8100$  $\therefore$  Square root of number 8100 = 2  $\times$  3  $\times$  3  $\times$ 5 = 9037. Ans.(C) Let.  $30 + \sqrt{30 + \sqrt{30 + \sqrt{\dots}}} = x$ 30 + $x = \sqrt{30 + x}$ On squaring both sides  $x^2 = 30 + x$  $x^2 - x - 30 = 0$  $x^2 - 6x + 5x - 30 = 0$ x(x-6) + 5(x-6) = 0(x + 5)(x - 6) = 0x + 5 = 0x = -5(Invalid) x - 6 = 0x = 6 (Valid) 38. Ans.(C) : Factor of 729 =  $\overline{3 \times 3} \times \overline{3 \times 3} \times \overline{3 \times 3}$ Thus, the three factors (9,9,9) of 729 are a perfect square. 39. Ans.(C):  $2^8 \times 3^2 \times 5^3 \times 7^5$  Number of factors = (8 + 1)(2 + 1)(3 + 1)(5 + 1) = 648∴ Number of even factors = 648 - Number of total odd factors  $= 648 - \{(2 + 1)(3 + 1)(5 + 1)\}$  $= 648 - \{3 \times 4 \times 6\}$ = 648 - 72= 576 40. Ans.(C): Odd multiplier number =  $(5 + 1) \times (4 + 1) \times (6)$ + 1) $= 6 \times 5 \times 7 = 210$ 41. Ans.(D) Unit digit of 2136 Unit digit of  $213^6 = (213^4 \times 213^2)$  $1 \times 9 = 9$ 42. Ans.(B): factors of 216 =  $6^3 = 2^3 \times 3^3$ Number of factors of 216  $= (3 + 1)(3 + 1) = 4 \times 4 = 16$ Minimum natural number by which multiplying the number, number of factors of 216 is odd = 6 Number of factors in  $216 \times 6 = 2^4 \times 3^4$ = (4 + 1)(4 + 1)= 25 43. Ans.(D)

Let the tens digit of the number be x and the unit digit y.  $x + y = 12 \dots (i)$ Number of two digits = 10x + yNumber obtained by interchanging the digits into place = 10y + xAccording to Question, 10y + x = 10x + y + 189y - 9x = 189x - 9y = -18 $x - y = -2 \dots \dots (ii)$ (i) and (ii) On adding to, x + y = 12x - y = -22x = 10x = 5v = 7Hence the original number  $= 10x + y = 10 \times 5 + 7 = 57$ Ans.(B) : Let the tens digit = x and the unit digit = y $\therefore$  Number = 10x + yBy first condition  $x + y = 9 \dots (i)$ Second condition  $(10x + y) \times 9 = (10y + x) \times 2$ 90x + 9y = 20y + 2x88x = 11yv = 8xPutting value of y in equation (i) x + 8x = 9x = 1Putting value of x in equation (i) 1 + y = 9v = 8 $\therefore$  Number = 10x + y $= 10 \times 1 + 8$ = 18Ans.(D) : Let the unit digit of the number be b and the digit at the tens place be a. So number = 10a + bAccording to Question,  $a + b = 11 \dots (i)$ According to Question, 10b + a = 10a + b - 459a - 9b = 45 $9\ddot{a} - 9\ddot{b} = 45$ or  $a - b = 5 \dots (ii)$ Adding equation (i) and (ii) a + b = 11a-b = 52a = 16a = 8Putting value of a in equation (i), 8 + b = 11b = 3So number =  $10 \times 8 + 3 = 83$ Ans.(C)

44.

45.

46.

The face value of 6 in the number 206743 = 6 Place value of 6 = 6000 Face Value + Place value = 6006 47. Ans.(A): Place value of 3 in 935071360 935071360 > 300 →30000000 Difference = 30000000 - 300 = 2999970048. Ans.(A) : 3728456  $\rightarrow$  7 × 100000 Place value of 7 = 700000 Face value of 7 = 7Place value of 7 + Face value of 7 = 700000 + 7= 70000749. Ans.(D) The smallest three - digit number divided by 8 = 104 and the largest number = 992.  $T_n = a + (n-1)d$ Where a first term = 104 Last term = 992 d = universal difference = 8 n = number of terms = ?  $T_n = 104 + (n-1) \times 8$ 992 = 104 + 8n - 88n = 992 - 968n = 896n = 112So there are a total of 112 three digit numbers which will be divisible by 8. 50. Ans.(D) Let the number be x. In question  $x^2 = 2x + 3$  $x^2 - 2x - 3 = 0$  $x^2 - 3x + x - 3 = 0$ x(x-3) + 1(x-3) = 0(x-3)(x + 1) = 0x - 3 = 0x = 3x + 1 = 0x = -1Hence the possible numbers are - 1 or 3. 51. Ans.(C) Propotional of  $\left(\frac{3}{10} + \frac{8}{15}\right)$  $\frac{9+16}{30} = \frac{25}{30} = \frac{5}{6}$ Propotional of  $\frac{5}{6} = \frac{1}{\frac{5}{6}} = \frac{6}{5}$ 52. Ans.(D)

According to Question 1000.03 - 64.37 = 935.66935.66 + (3.4 + 7.56)= 935.66 + 10.96 = 946.6253. Ans.(A) Total rupees left = 50 - 15 + 30 - 42= 80 - 57= Rs. 23 54. Ans.(B) 16, 32, 64, 128, ..... 11th term = 16 (1, 2, 4, 8.....) Series is in G.P. (Geometric category). formula :  $t_n = ar^{n-1}$  $a = 1, n = 11, r = \frac{4}{2} = 2$  $t_{11} = 16(1 \times 2^{11-1}) = 16 \times 1024 = 16384$ 55. Ans.(D) The given Airthmetic progression is as follows  $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, 7\sqrt{2} \dots$ Tenth term =  $T_{10}$  = ? First term (a) =  $\sqrt{2}$ . Common difference (d) =  $2\sqrt{2}$ n = 10 (number of terms) Tenth term =  $T_{10} = \sqrt{2} + (10 - 1)2\sqrt{2}$  $[:: T_n = a + (n-1)d]$  $T_{10} = \sqrt{2} + 9 \times 2\sqrt{2}$  $\begin{array}{rcl} T_{10} &=& \sqrt{2} \;+\; 18\sqrt{2} \\ \hline T_{10} &=& 19\sqrt{2} \end{array}$ 56. Ans.(A) 1, 2, 3, 4, 1, 2, 3, 4, ----Total terms made up of numbers 1, 2, 3, 4  $=\frac{2007}{4}=501+3$  remainder Sum of the numbers 1, 2, 3, 4 = 10 Total sum =  $501 \times 10 + 1 + 2 + 3$ = 5010 + 6 = 501657. Ans.(C) 17, 22, 27, 32, ....., 20<sup>th</sup> term = ? : The above mentioned progression is airthmetic progression.  $\therefore T_n = a + (n-1)d$ Where a = first term. d = common difference = 5n = number of terms = 20 $T_{20} = 17 + (20 - 1)5$  $= 17 + 19 \times 5$ = 17 + 95= 112 58. Ans.(C)  $T_n = a + (n-1)d$ 142, 148, 154 ..... 12<sup>th</sup> terms a = 142d = 148 - 142 = 6 $T_{12} = 142 + (12 - 1)6$ 

= 142 + 66= 20859. Ans.(A) First term (a) = 3, ratio (r) =  $\frac{6}{2}$  = 2 n = 5 $t_n = ar^{n-1}$  $t_5 = 3(2)^{5-1} = 3 \times 2^4$  $t_5 = 3 \times 16$ Therefore, 5th term is 48 in the series. 60. Ans.(A) given, First term (a) = 5Universal diffrence (d) = 6 $T_{23} = ?$  $T_{23} = a + (n-1)d$  $T_{23} = 5 + (23 - 1)6$  $T_{23} = 5 + (22 \times 6)$  $T_{23} = 5 + 132$  $T_{23} = 137$ 61. Ans.(A) Geometric mean of numbers  $7, 7^2, 7^3, \dots, 7^n$ , Formula – geometric mean =  $\sqrt{ab}$ a = 7, r = 7 $T_n = ar^{n-1}$  $T_n = 7.7^{n-1}$  $T_n = 7^n$ Geometric mean =  $\sqrt{7.7^n}$  $=\sqrt{7^{n+1}} = 7^{\frac{n+1}{2}}$ 62. Ans.(D) In Airthmetic progression 1 + 4 + 7 + .....  $S_n = 782$ a = 1 (First term) d = 4 - 1 = 3 (Common difference)  $S_n = \frac{n}{2} [2a + (n-1)d]$  $782 = \frac{n}{2}[2 \times 1 + 3n - 3]$  $1564 = 3n^2 - n$  $3n^2 - n - 1564 = 0$  $3n^2 - 69n + 68n - 1564 = 0$ 3n(n-23) + 68(n-23) = 0(3n + 68)(n - 23) = 0n - 23 = 0 $\overline{\begin{array}{c}n = 23\\ T_n = a + (n-1)d\end{array}}$ = 1 + (23 - 1)3 $= 1 + 22 \times 3$ n = 6763. Ans.(D) are in arithmetic The given numbers progression In which First term (a) = -3Common difference (d) = -5Number of trems (n) = 10

Total sum  $S_n = \frac{n}{2} [2a + (n-1)d]$  $S_n = \frac{10}{2} [2 \times (-3) + (10 - 1)(-5)]$  $S_n = \bar{5}[-6 - 45] = 5 \times (-51)$  $S_n = -255$ 64. Ans.(B) The given series 12,19,26,33 ...... Is in airthmetic progression. Hence first term (a) = 12 common difference d = 7, number of terms (n) = 10  $T_n = a + (n-1)d$  $T_{10} = 12 + (10 - 1) \times 7 = 12 + 63 = 75$ 65. Ans.(D) Shalini's share =  $\frac{1}{6}$ Tanveer's share  $=\frac{1}{4}$ Total share of Shalini and Tanveer  $= \frac{1}{6} + \frac{1}{4} = \frac{2+3}{12} = \frac{5}{12}$ Rashid share =  $1 - \frac{5}{12} = \frac{7}{12}$ 66. Ans.(A)  $\frac{12676}{2} = 1584.5$  $\frac{11504}{11504} = 1438$ 8 12832 = 1604 12360 = 15458 Hence the number 12676 is not divisible by number 8. 67. Ans.(D) : If the sum of digits of a given number is completely divisible by 3, then that number will also be divided by' 3. 276x1, Is divisible by 3. 2 + 7 + 6 + x + 1 = 16 + xPutting the possible values of x (2, 8, 5) the number will be completely divisible by 3. Thus the sum of the possible values of x = 2 + 8 + 5= 1568. Ans.(D) Let the denominator be 'x'. Given – Divisible = 14528Quotient = 83 Remainder = 3  $Divisible = (divisor \times quotient) + remainder$  $\Rightarrow$  14528 = (x × 83) + 3  $\Rightarrow 83x = 14528 - 3$  $\Rightarrow 83x = 14525$  $\Rightarrow x = \frac{14525}{83} \Rightarrow x = 175$ 69. Ans.(C)

Let the four consecutive numbers be n, (n + 1), (n + 2) and (n + 3) respectively

According to Question -Product of four consecutive numbers = n (n + 1) (n + 2) (n + 3)Where n = 1, 2, 3 - -(product when n = 1) = 1(1 + 1)(1 + 2)(1 + 3) $= 1 \times 2 \times 3 \times 4 = 24$ Putting n = 2 $Product = 2 \times 3 \times 4 \times 5$  $= 24 \times 5 = 120$ Hence the product of four consecutive numbers is always divisible by 24. 70. Ans.(A) ⇒ 263 (17 is less than the square of 263) Which is not divisible by 2,3,5, and 7. Hence, it is a prime number. 71. Ans.(C) : Smallest prime number = 2 Multiplying any whole number (except zero) by 2 will always yield an even number. 72. Ans.(C) Sum of prime numbers between 50 and 80 =53 + 59 + 61 + 67 + 71 + 73 + 79 =463 73. Ans.(C) Number 1 to 49 Number from 5 to 50 = 11 = 11 Number with digit 5 from 61 to 100 = 4∴ Total number = 5 + 11 + 4 = 20 74. Ans.(B) Let the numbers be x and y.  $x. y = 24 \dots \dots \dots (1)$  $x^2 + y^2 = 52 \dots \dots (2)$  $(x + y)^2 = x^2 + y^2 + 2xy$  $(x + y)^2 = 52 + 2 \times 24$  $(x + y)^2 = 52 + 48 = 100$  $x + y = \sqrt{100} = 10$ 75. Ans.(A) Let the number be x. : The smallest three – digit number = 100 According to Question, 8x + 4 = 1008x = 96 $x = \frac{96}{8} = 12$ So that number is 12 76. Ans.(D) Let the number be x  $x \times \frac{1}{4} \times \frac{2}{3} = 32$  $x = 32 \times 6 = 192$ 77. Ans.(D) Largest prime number of two digits = 97 The smallest prime number of two digits = 11 Required number = 97 - 11 = 8678. Ans.(D)

The largest four – digit number is 9999. 3 left over dividing 9999 by 49, So, Required number = 9999 - 3 = 9996

So, Required number = 9999 - 3 = 999

## 79. Ans.(B)

Irrational Number is a real number that cannot be expressed as p / q. (Where p and q are integers and q is  $\neq 0$ ) For example, the square root of 2 ( $\sqrt{2}$ ) and pie ( $\pi$ ) are irrational numbers.

### 80. Ans.(B) :

Real numbers that can be expressed as p / q( $q \neq 0$ ) are called rational numbers.

 $\sqrt{6084} = \sqrt{78 \times 78} = 78$  (Rational number)

### 81. Ans.(A)

Let x be the positive integer. According to Question –  $5x = 2x^2 - 3 = 0$   $2x^2 - 5x - 3 = 0$   $2x^2 - 6x + x - 3 = 0$  2x(x - 3) + 1(x - 3) = 0 (x - 3)(2x + 1) = 0 x - 3 = 0 or 2x + 1 = 0 x = 3 or x = -1/2(Invalid)Ans.(C)

1250 is not a perfect square. While all others are perfect squares.

$$2025 = (45)^2$$
  
 $16641 = (129)^2$ 

 $9801 = (99)^2$ 

# 83. Ans.(C)

82.

85.

 $(3451)^{51} \times (531)^{43}$ It is clear By question that the last digit of 3451 and 531 is 1, so the last digit of their

product will also be 1.

## 84. Ans.(B)

Suppose x is that number, y is divisor and the quotient is 1 That Number = divisor x quotient + remainder  $x = y + 24 \dots \dots (i)$  $2x = y + 15 \dots (ii)$ Subtracting equation (i) from equation (ii) x = -9Putting the value of x in equation (i) -9 = y + 24y = 33**Ans.(C)** Let number = 10x + yBy question,  $x + y = 10 \dots (i)$ Number obtained by replacing digits = (10y + 10)

Number obtained by replacing digits = (10y x) According to Question,

(10x + y) - (10y + x) = 36  $\Rightarrow 9x - 9y = 36$  $x - y = 4 \dots (ii)$ 

Adding equation (i) and (ii), 2x = 14x = 7 $\therefore y = 3$ : Changed number  $(10y + x) = 10 \times 3 + 10 \times 3$ 7 = 3786. Ans.(B) Let the tens digit of the number be x and the digit of the unit be y.  $\therefore$  Number = 10x + yfrom question  $x - y = 4 \dots \dots (i)$ and, 10x + y + 10y + x = 13211x + 11y = 132 $x + y = 12 \dots \dots (ii)$ From equation (i) and (ii) x - y = 4x + y = 122x = 16x = 8, y = 4So number =  $10x + y = 10 \times 8 + 4 = 84$ 87. Ans.(B) Place value of 8 in  $634785 = 8 \times 10 = 80$ 88. Ans.(B) Total weight = 23.25 kg Veight of 1 apple =  $\frac{1.8}{12}kg$ Number of apples =  $\frac{\text{total net weight}}{\text{weight of 1 apple}}$  $\Rightarrow \frac{23.25}{\frac{1.8}{12}} \Rightarrow \frac{23.25 \times 12}{1.8} = 155$ Number of apples in the box = 155 89. Ans.(A) Numbers divisible by 9 = 108, 117, ......999 First term (a) = 108Last term (I) = 999Universal difference (d) = 117-108 = 9  $\because l = a + (n-1)d$  $999 = 108 + (n-1) \times 9$ 999 - 108 = (n - 1)9891 = (n-1)999 = (n-1)n = 100Hence, total number divided by three digits = 10090. Ans.(C) From option, Only 4 and 10 have airthmetic mean 7 and geometric mean  $2\sqrt{10}$ . 91. Ans.(B) From option (b), 3, 5, 7 Universal difference = 5-3 = 27 - 5 = 2By question, 3 + 5 + 7 = 15 (total sum)

 $3 \times 7 \times 5 = 105$  (total sum) 92. Ans.(B) Number of tens digits from 1 to 10 = 1Number of tens digits from 11 to 90 = 80Number of tens digit from 91 to 99 = 9Total tens digit number = 1 + 80 + 9 = 9093. Ans.(B) Let the number be x According to Question, 5x - 10 = 4x + 8x = 18So that number will be 18 94. Ans.(C) M gave = 3/7N gave = 4/7Difference = 1/7According to Question  $1/7 \text{ of } \cos t = 31540$ Hence cost = 31540 x 7 = 220780 95. Ans.(D) Price of  $\frac{2}{3}$  part of pizza = Rs. 300 Then the value of 1 part of pizza  $=\frac{300\times3}{2}=450$  Rs. Price of  $\frac{3}{5}$  portion of pizza =  $450 \times \frac{3}{5}$ = Rs.27096. Ans.(B) Required height of column  $=\frac{0.23\times472}{m}$  m 100 = 1.0856 m97. Ans.(C) Length of each rod =  $23\frac{2}{7}$  meter =  $\frac{163}{7}$  meter Similarly, the length of 15 bars =  $15 \times \frac{163}{7}$  $=\frac{2445}{7}=349\frac{2}{7}$  meter 98. Ans.(D) : A number divisible by 12 must be divisible by 3 and 4. The sum of the digits of a number divisible by 3 must also be divisible by 3. The last two digits of the number divisible by 4 must be divisible by 4. Thus 83412 option (d) 8 + 3 + 4 + 1 + 2 = 18which is divisible by 3 and the last two digits of the number 12 which are divisible by 4. That is, the number 83412 is divisible by 12. 99. Ans.(B) If a number is divisible by 9, then the sum of the digits of that number must be divisible by 9. In option (b)  $47862 \Rightarrow 4 + 7 + 8 + 6 + 2 = 27$  Which is divisible by 9.

### 100. Ans.(C)

Prime numbers are divisible by just 1 and themselves.

Example 5,11,13,19 121 = 1,11,121 141 = 1,3,47,141 factors 161 = 1,7,23,161Hence 181 is a prime number. 111. 101. Ans.(C) 131 and 133 does not contain 133 numbers. because the factors of 133 are 19,7,1,133. 102. Ans.(C) Prime numbers - Those numbers which have 112. only two factors. Own number and 1 Prime number series = 2, 3, 5, 7, 11, 13, 17, 19 103. Ans.(D) 113. A number that is formed by multiplying whole numbers is called a composite number. Therefore  $209 = 11 \times 19$ 114.  $203 = 7 \times 29$  $161 = 7 \times 23$ But 109 cannot be written as factors (except 115. 1). 104. Ans.(D) Ans.(B) 105. The rational number can be written as  $\frac{P}{q}$ ,  $(q \neq$ 0) Hence, rational number in options =  $\sqrt[3]{8} = 2$ 106. Ans.(D) 116.  $\sqrt{64} = 8$  (Rational number)  $\sqrt[3]{64} = 4$  (Rational number) 117.  $\sqrt[3]{8} = 2$  (Rational number)  $\sqrt{8} = 2\sqrt{2}$  (irrational number) Hence  $\sqrt{8}$  is not a rational number. 107. Ans.(A) 118. Square factors of 256 - 1, 4, 16, 64, 256 Thus, the total number of square factor = 5 108. Ans.(C): 119. Place value of 3 in number 273965 =  $3 \times 1000 = 3000$ And face value = 3Difference = 3000 - 3 = 2997 109. Ans.(D) 120. Number = 833749502 Place Value of 2 = 2121. Place Value of  $4 = 4 \times 10000 = 40000$  $\therefore$  Required difference = 40000 - 2 = 39998110. Ans.(D) If all three parts are a - d, a, and a + dAccording to Question, a - d + a + a + d = 69122. 3a = 69a = 23 or  $(a-d) \times a = 483$ 123.  $(23 - d) \times 23 = 483$ (23 - d) = 21

or, d = 2Now the three parts respectively (23 - 2), 23, or (23 + 2)21.23 or 25 Ans.(C) 18 is left when 1265 is divided by 29. Therefore, by subtracting 18 out of 1265, the number obtained will be completely divisible by 29. Ans.(C) completely divisible by 21. Ans.(D) Dividing 1739 by 11 leaves 1 remaining. So 11 - 1 = 10 has to be added. Ans.(A) = 5904959049 divided by 7 = remainder 4 Ans.(C) According to Question 3x = 2(x + 1) + 5 $\Rightarrow 3x = 2x + 7$  $\Rightarrow x = 7$ and 8. Ans.(D) 3 + 7 + 11 + 13 = 34Ans.(C) 11 to 20 = 1 time21 to 30 = 9 times 31 to 100 = 0 times $\therefore$  Total number = 1 + 9 = 10 Ans.(B) by 1. Ans.(A) called co - prime numbers. HCF = 1 of the numbers in (12,7)  $\therefore$  (12,7) are co – prime numbers. Ans.(D) Odd composite number = 15 Ans.(B)

Dividing by 21 in 1184 left 8. Therefore, the number obtained by subtracting 8 will be

Let both consecutive numbers be x and x + 1. Hence, both consecutive numbers will be 7

A prime number is only divided by itself and

A set of two numbers whose (H.C.F.) 1 is

First 8 odd prime numbers = 3,5,7,11,13,19,23Sum of numbers = 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 = 98

### Ans.(D) The 8 prime numbers between 60 and 100 are 61, 67, 71, 73, 79, 83, 89 and 97.

# Ans.(B)

Number of boys in school

= Total students  $\times \frac{7}{10}$  $= 200 \times \frac{7}{10} = 140$  $\therefore$  Number of girls in school = 200 - 140 = 60124. Ans.(B) If the numbers are x and y. x + y = 26x - y = 12: difference of squares  $= x^2 - v^2$ = (x + y)(x - y) $= 26 \times 12 = 312$ Ans.(C) 125. Let another number = x $x \times 12 = (x + 12) \times 3$ 12x = 3x + 369x = 36Therefore x = 4126. Ans.(B) Let the digits be x and y.  $So x + y = 15 \dots (i)$  $x - y = 3 \dots \dots (ii)$ The equation. On solving (i) and (ii), x = 9y = 6127. Ans.(D) Let there be three consecutive even numbers x. x + 2 and x + 4.  $\therefore x + x + 2 + x + 4 = 42$ 3x = 36x = 12 $\therefore$  Middle number = 12 + 2 = 14 128. Ans.(B) The smallest 4 – digit number = 1000 Thus, the smallest 4 - digit perfect square = 1024129. Ans.(C) The smallest 6 - digit number = 100000Dividing by 18 into 100000 leaves 10 as remainder Hence, the required number = 100000 + (18 - 10)= 100008 130. Ans.(A) Largest number of 4 digits = 9999 55 left over 9999 divided by 88, Hence, the required number = 9999 - 55 = 9944131. Ans.(D) All irrational numbers are real numbers. Example –  $\sqrt{2}$ 132. Ans.(C)  $(4)^{\frac{-3}{2}} = (2)^{2 \times \frac{-3}{2}}$  $= 2^{-3} = \frac{1}{2^3} = \frac{1}{8}$ 133. Ans.(B)

Rational number between 0.5 and 0.6  $= \frac{0.5 + 0.6}{2} = \frac{1.1}{2} = 0.525$ Therefore 0.5 < 0.525 < 0.6134. Ans.(B) Let the number be x, then  $x = \sqrt{x} + 30$  $x - 30 = \sqrt{x}$ Squaring both sides - $(x-30)^2 = (\sqrt{x})^2$  $x^2 + 900 - 60x = x$  $x^2 - 60x - x + 900 = 0$  $x^2 - 61x + 900 = 0$  $x^2 - 36x - 25x + 900 = 0$ x(x-36) - 25(x-36) = 0(x-36)(x-25) = 0x - 36 = 0 or, x - 25 = 0x = 36 or x = 25As a condition, 25 is not more than 30 over its square root which does not follow the conditions. Hence x = 36. 135. Ans.(B)  $15^2 + 14^2 = 225 + 196 = 421$ Let the required number be added = x421 + x = 441 $\Rightarrow x = 441 - 421 = 20$ Hence, the number to be added = 20136. Ans.(B) Sum of squares of first n numbers  $=\frac{n(n+1)(2n+1)}{2n+1}$ 6 : Sum of squares of numbers from 1 to 9  $=\frac{9(9+1)(18+1)}{2}=\frac{9\times10\times19}{2}=285$ 137. Ans.(C) Sum of squares of first n numbers  $= \frac{n(n+1)(2n+1)}{2n+1}$ Sum of squares of numbers from 1 to 10  $=\frac{10(10+1)(20+1)}{6}=\frac{10\times11\times21}{6}=385$ 138. Ans.(A)  $0.09 = (0.3)^2$ Hence only 0.09 is a perfect square number. 139. Ans.(B)  $[(4523)^{1632} \times (2224)^{1632} \times (3225)^{1632}]$  $\Rightarrow$  (3)<sup>4</sup> × (4)<sup>4</sup> × (5)<sup>4</sup> 81 × 256 × 625  $1 \times 6 \times 5$  $30 \Rightarrow 0$ 140. Ans.(C)  $(8)^{10} \times (9)^7 \times 7^8$  $= ((2)^3)^{10} \times ((3)^2)^7 \times (7)^8$  $= 2^{30} \times 3^{14} \times 7^{8}$ 

Total prime factors = 30 + 14 + 8 = 52141. Ans.(C) Total of the product of  $\{(16)^7 \times (27)^6 \times 5^9\}$ Prime factor  $= (2^4)^7 \times (3^3)^6 \times 5^9$  $= 2^{28} \times 3^{18} \times 5^{9}$ = 28 + 18 + 9 = 55142. Ans.(B) unit digit in  $(4211)^{102} \times (361)^{52}$  $\Rightarrow (1)^{102} \times (1)^{52} = 1 \times 1 = 1$ 143. Ans.(C)  $(1234)^{102} + (1234)^{103}$ Unit digit =  $(4)^{102} + (4)^{103}$  $= (4^2)^{51} + (4^2)^{51} \times 4^1$  $= (16)^{51} + (16)^{51} \times 4^{1}$  $= 6 + 6 \times 4$ = 6 + 24 = 30 $\therefore$  number of unit = 0 144. Ans.(A) : The number 627 is divisible by,19 Hence the required remainder = 5145. Ans.(C) Let when N divided by 6, quotient = a $\therefore N = 6a + 4 \dots \dots (i)$ equation (i)  $\times 2$  $2N = 2 \times 6a + 8$ 2N = 12a + 6 + 22N = 6(2a + 1) + 2Therefore, dividing 2N by 6 will give remainder 2. 146. Ans.(B) Let the tens digit = xunit digit = vAccording to Question number = 10x + y(10x + y) - (10y + x) = 459x - 9y = 45therefore x - y = 5147. Ans.(B) Let the tens digit of the number be x and the digit of the unit be y.  $\therefore$  number = 10x + yAccording to Question,  $x + y = 11 \dots \dots (i)$ and 10y + x = 10x + y - 639x - 9y = 63 $x - y = 7 \dots \dots (ii)$ Adding equation (i) and equation (ii) 2x = $18 \Rightarrow x = 9, y = 2$ Therefore number =  $10x + y = 10 \times 9 +$ 2 = 92148. Ans.(B) Let x be the digit of the unit in the two – digit number, then the tens digit = 9 - x and the

number according to the question

= 10 (9 - x) + xAgain, 10(9-x) + x + 27 = 10x + 9 - x $\Rightarrow 90 - 10x + x + 27 = 9x + 9$  $\Rightarrow 90 + 27 - 9 = 18x$  $\Rightarrow 18x = 108$ x = 6Then number = 10(9-x) + x= 10(9-6) + 6 = 36149. Ans.(D) Let the tens digit = xunit digit = 13 - x $\therefore$  number =  $10 \times x + (13 - x)$ According to Question,  $10 \times (13 - x) + x = 10 \times x + (13 - x) - 27$ 130 - 10x + x = 10x + 13 - x - 2718x = 144x = 8: Changed Number =  $10 \times (13 - x) + x$  $= 10 \times (13 - 8) + 8$  $= 10 \times 5 + 8 = 58$ 150. Ans.(D) Let the tens digit = xunit digit = ynumber = 10x + yThen  $x + y = 9 \dots \dots (1)$ According the question, (10x + y) - (10y + x) = 459x - 9y = 45 $x - y = 5 \dots$ Equation (1) + (2) $2x = 14 \Rightarrow x = 7$ From equation (1) – y = 9 - 7 = 2 $\therefore$  required number =  $10y + x = 10 \times 2 + 10 \times 2$ 7 = 27151. Ans.(B) Let the tens digit of the number be x and the digit of the unit be y.  $\therefore$  number = 10x + yx + y = 10 - - - - - - (i)According to question,  $\Rightarrow 10x + y = 10y + x + 54$  $\Rightarrow 9x - 9y = 54 \Rightarrow x - y = 6 - - - - (ii)$ equation (i) + (*ii*)  $2x = 16 \Rightarrow x = 8, y = 2$ So new number  $10y + x = 10 \times 2 + 8 = 28$ 152. Ans.(A) Let the tens digit of the number be x and the digit of the unit be y.  $\therefore$  number = 10x + y According to guestion,  $x + y = 10 \dots (i)$ 10x + y = 10y + x - 189x - 9y = -18 $x - y = -2 \dots \dots (ii)$ 

Equation (i) + Equation (ii)  $2x = 8 \Rightarrow x = 4, y = 6$ Therefore number =  $10 \times 4 + 6 = 46$ 153. Ans.(B) Considered unit number = y Ten digit = x According to Question, (10x + y) + (10y + x) = 9911x + 11y = 99 $x + y = 9 \dots \dots \dots (i)$ Again  $x - y = 3 \dots \dots (ii)$ Equation (i) + (ii) 2x = 12 $\underline{x} = 6$ From equation (i), y = 3 $\therefore$  number =  $10x + y = 10 \times 6 + 3$ = 60 + 3 = 63Ans.(A) 154. Let the tens digit of the number be x and the unit digit y.  $\therefore$  number = 10x + yAccording to Question -(10x + y) - (10y + x) = 5410x + y - 10y - x = 54 $9x - 9y = 54 x - y = \frac{54}{9} = 6$ Therefore, the difference between the digits of the number is 6. 155. Ans.(B) Let the tens digit of the number be x and the unit digit y.  $\therefore$  number = 10x + yAccording to first condition,  $x + y = 5 \dots (i)$ Number obtained by converting digits = 10y + xAccording to Question, (10x + y) - (10y + x) = 9 $\Rightarrow 9x - 9y = 9$  $\Rightarrow x - y = 1 \dots \dots (ii)$ equation (i) + equation (ii) -2x = 6x = 3From equation (ii) -3 - y = 1y = 3 - 1 = 2Hence the changed number = 10y + x $= 10 \times 2 + 3 = 23$ 156. Ans.(B) Place value of 4 in 145.390 = 4157. Ans.(B) In the number 229301, the place value of 9  $= 9 \times 1000 = 9000$ and the face value of 9 = 9Hence the difference between the place value and the face value

= 9000 - 9= 8991 158. Ans.(C) Weight of Geeta = 11.235 kg. : Geeta's sister's weight  $= 11.235 \times 1.4 = 15.729$  kg. Total weight of both = 11.235 + 15.729 = 26.964 kg. 159. Ans.(A) Given that series = 7,14,21,28 ... ... Let sum of n terms of series = 952  $7 + 14 + 21 + 28 + \dots = 952$  $\Rightarrow 7(1 + 2 + 3 + 4 + \dots) = 952$  $\Rightarrow 1 + 2 + 3 + 4 + \dots = 136$  $\Rightarrow \frac{n(n+1)}{2} = 136$  $\sim n \, \bar{\text{S}}$ um of n consecutive numbers  $=\frac{n(n+1)}{n(n+1)}$ n(n + 1) = 272Putting n = 16 from the options  $16 \times 17 = 272$ Therefore, n = 16160. Ans.(A): 11,17,23, ... ... a = 11d = 17 - 11 = 6 $\therefore T_n = a + (n-1)d$  $T_{12} = 11 + (12 - 1)6$  $= 11 + 11 \times 6 = 77$ 161. Ans.(A) Given series  $6 + 11 + 16 + 21 + \dots + 71$ a = 6, d = 5, l = 71 $\therefore l = a + (n-1)d$  $\Rightarrow 71 = 6 + (n-1)5$  $\Rightarrow (n-1) = 13$  $\Rightarrow n = 14$ Sum of Series  $S_n = \frac{n}{2}(a + \ell)$  $=\frac{14}{2}(6 + 71) = 7 \times 77 = 539$ 162. Ans.(A) Let the number be x, according to the question,  $\frac{x}{12} = 35$  $x = 35 \times 12$ x = 420That number = 420 Dividing 420 by 21  $\frac{\bar{420}}{2} = 20$ 21 Hence correct answer = 20 163. Ans.(A) When 231228 is divided by 33, 30 is left. Hence, the required number = 33 - 30 = 3

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164. Ans.(C)
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Suppose three consecutive odd numbers are x, x + 2, x + 4.According to Question x + x + 2 + x + 4 = x + 203x + 6 = x + 202x = 14x = 7Greatest number = x + 4 = 7 + 4 = 11165. Ans.(B) From option when x = .5 then .272 < .166 < .636 (X) when x = 1 then .272 < .333 < .636 ( $\checkmark$ ) when x = 2 then .272 < .666 < .636 (X) when x = 3 then .272 < 1 < .636 (**X**) Therefore it is clear that the value of x will be 1. 166. Ans.(A) Let three consecutive odd integers be x, x + 2, and x + 4 respectively. According to Question, 3x = 2(x + 4) + 33x = 2x + 8 + 3x = 11So the third integer = x + 4 = 11 + 4= 15167. Ans.(D) The number which is divided by itself and by 1 only is called the prime number. Hence it is clear that the largest prime number of two digits = 97 168. Ans.(D) Given. x + y = 11 $(-1)^{x} + (+1)^{y} = ?$ Note - When the sum of two whole numbers is an odd number, one of them will be even and the other odd. So,  $(-1)^{\text{Even / odd}} + (+1)^{\text{odd/even}} = 0$ 169. Ans.(C) Total length of fabric = 30m = 3000 cm Total length of clothes sold =  $225 \times 12$  = 2700 cm Remaining fabric length = 3000 - 2700 =300 cm remaining part =  $\frac{300}{3000} = \frac{1}{10}$ 170. Ans.(D) Let the number be x  $x - \frac{x}{7} = x - 30$  $\frac{7x-x}{7} = x - 30$ 6x = 7x - 210210 = 7x - 6xx = 210Ans.(A) 171. Let those numbers be x and y According to Question,

x + y = 22or  $5x = 6y \dots (ii)$  $x = \frac{6}{5}y$ Putting the value of x in equation (i)  $\frac{6}{5}y + y = 22$  $\frac{11}{5}y = 22$  $y = \frac{22 \times 5}{11} = 10$ y = 10 $\therefore x = \frac{6}{5} \times 10 = 12$ Larger number is 12. Ans.(B) Let number = xAccording to Question,  $2x + 20 = x \times 8 - 4$ 2x + 20 = 8x - 424 = 6xx = 4Ans.(A) Let small number = x∴ largest number = 15x According to Question,  $x \times 15x = 9375$  $15x^2 = 9375$  $x^2 = 625$ x = 25 (first number)  $\therefore$  second number =  $15x = 15 \times 25 = 375$ Hence the sum of the numbers = 375 + 25 = 400Ans.(B) Let x and y be both numbers. given,  $x + y = 13, x^2 + y^2 = 97, xy = ?$  $(x + y)^2 = x^2 + y^2 + 2xy \dots (i)$ 

Putting the value in equation (i),

 $(13)^2 = 97 + 2xy$ 169 = 97 + 2xy

2xy = 169 - 97 $xy = \frac{72}{2}$ 

xy = 36175. Ans.(C)

172.

173.

174.

 $0.\overline{125} = \frac{125}{999}$ **176. Ans.(B)** 

. Ans.(B)  $5.025 = \frac{5025}{1000}$  $= \frac{201}{40}, = 5\frac{1}{40}$ 

177. Ans.(C) 178. Ans.(C)

By adding 69 to the number 1780, the number will be 1849 which is a perfect square number. Which is like this –

1780 + 69 = 1849 $1849 = 43 \times 43$  $(43)^2 = 1849$ 179. Ans.(A) - 1 and 1 are integers whose cube is equal to itself. Hence, smallest integer = -1 $(-1)^3 = -1$ 180. Ans.(C) Let number = xAccording to question,  $(153)^2 - x^3 = 1457$  $x^3 = (153)^2 - 1457$  $x^3 = 23409 - 1457$  $x^3 = 21952$  $\therefore x = \sqrt[3]{21952} = \sqrt[3]{28 \times 28 \times 28} = 28$ 181. Ans.(C)  $\sqrt{81} = 9 = 2 + 7$  $\sqrt{49} = 7 = 2 + 5$  $\sqrt{121} = 11 = 2 + 9,3 + 8,5 + 6,7 + 4$  $\sqrt{144} = 12 = 5 + 7$ Hence option (c) cannot be expressed as the sum of two prime numbers. 182. Ans.(A) Let number = xAccording to question,  $3x^2 - x \times 4 = x + 50$  $3x^2 - 4x - x - 50 = 0$  $3x^2 - 5x - 50 = 0$  $3x^2 - 15x + 10x - 50 = 0$ 3x(x-5) + 10(x-5) = 0(x-5)(3x+10) = 0x - 5 = 0x = 5183. Ans.(C) (a)  $41 = 5^2 + 4^2(b) 13 = 2^2 + 3^2(d) 37 =$  $6^2 + 1^2$ Therefore, the number 23 is not the sum of the two squares. 184. Ans.(A) 9801 is a perfect square of 99. 185. Ans.(B) Let the number be 9 whose last digit of the square is 1, which is as follows - $9^2 = 81$  $9^3 = 729$ last digit = 9 Let the number be 11, whose last digit of the square is 1. which is like this - $11^2 = 121$  $11^3 = 1331$  the last digit of the cube of 11 Hence, last digit = 1 Hence the number will be 1 or 9. 186. Ans.(B) Let both numbers be x and y.  $x + y = 25 \dots (i)$ 

 $x - y = 3 \dots (ii)$  $x^{2} - y^{2} = (x + y)(x - y) = 25 \times 3 = 75$ Hence the difference of their squares = 75187. Ans.(B) Perfect square numbers greater than 100 or nearest  $100 = 121 = (11)^2$ Perfect square number less than 200 or nearest 200  $= 196 = (14)^2$ The number from  $(11)^2$  to  $(14)^2$  = 121,144,169,196 means there will be 4 perfect square numbers which are between 100 and 200. 188. Ans.(B)  $156 = 2^2 \times 3^1 \times 13^1 = (2 + 1)(1$ 1) = 12(divisors) $240 = 2^4 \times 3^1 \times 5^1 = (4 + 1)(1 +$ 1) = 20(divisors) $172 = 2^2 \times 43^1 = (2 + 1)(1 + 1) =$ 6(*divisors*)  $200 = 2^3 \times 5^2 = (3 + 1)(2 + 1) =$ 12(divisors) So, it is clear that the number of divisors of 240 is more than others. 189. Ans.(D) Let unit digit = xTen digit = y Number = 10y + x $xy = 8 \dots \dots (i)$ According to Question, 10y + x + 18 = 10x + y9x - 9y = 18x - y = 2From eqn. (I)  $x = \frac{8}{y}$  $\therefore \frac{8}{y} - y = 2$  $8 - v^2 = 2v$  $y^2 + 2y - 8 = 0$  $v^2 + 4v - 2v - 8 = 0$ y(y + 4) - 2(y + 4) = 0(y-2)(y + 4) = 0v = 2Substituting the value of y into equation (i)  $x \times 2 = 8$ x = 4number =  $10y + x = 10 \times 2 + 4 = 24$ 190. Ans.(B) place value of 5 in number 3675149  $= 5 \times 1000 = 5000$ And the face value of 5 = 5difference = 5000 - 5 = 4995191. Ans.(B)

Let total number = xNumber of adult =  $x \times \frac{2}{9} = \frac{2x}{9}$ Number of children =  $x - \frac{2x}{9} = \frac{9x - 2x}{9} = \frac{7x}{9}$  $\frac{7x}{9} - \frac{2x}{9} = 95$  $\frac{5x}{9} = 95$ x = 171Number of children  $=\frac{7x}{9}=\frac{7}{9}\times 171=133$ 192. Ans.(C) Total factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36 The set formed by the factors of  $36 = \{2, 3, 4,$ 6, 9, 12, 18} Ans.(B) Let the numbers be x, y respectively. x - y = 5....(i)*xy* = 336.....(*ii*)  $(x + y)^2 = (x - y)^2 + 4xy$ From equation (i) and (ii)  $(x + y)^2 = (5)^2 + 4 \times 336$  $(x + y)^2 = 25 + 1344$  $(x + y)^2 = 1369$ /1369

### 193.

$$(x + y) = \sqrt{13}$$
  
 $x + y = 37$ 

Sum of the numbers = 37

### 194. Ans.(B) :

$$\sqrt{21025} = \sqrt{5 \times 5 \times 29 \times 29}$$
  
= 145 (Rational Number)

$$18025 = \sqrt{5 \times 5 \times 7 \times 103}$$
  
= 135.257 (Irrational Number)

$$\sqrt{13225} = \sqrt{5 \times 5 \times 23 \times 23}$$
  
= 5 × 23 = 115 (Rational Number)

 $\sqrt{15625} = \sqrt{5 \times 5 \times 5 \times 5 \times 5}$ 

 $= 5 \times 5 \times 5 = 125$  (Rational Number) Therefore, it is clear that the square root of 18025 is an irrational number.

### 195. Ans.(D)

Sum of the six terms of the geometric series  $\frac{5000}{125} = \frac{152}{125}$ Sum of the three terms of the geometric series

$$\frac{a + ar + ar^{2} + ar^{3} + ar^{4} + ar^{5}}{a + ar + ar^{2}} = \frac{152}{125}$$

$$\frac{a(1 + r + r^{2} + r^{3} + r^{4} + r^{5})}{a(1 + r + r^{2})} = \frac{152}{125}$$

$$1 + r^{3} = \frac{152}{125}$$

$$r^{3} = \frac{152}{125} - 1$$

$$r^{3} = \frac{152 - 125}{125}$$

$$r^{3} = \frac{27}{125}$$

$$r = \frac{3}{5}$$

# 02. (Decimal Fractions)

1. Which of the following fractions is the largest?  $\frac{1}{8}, \frac{2}{12}, \frac{3}{16}, \frac{4}{20}$ 

RRB Group – D- 12/10/2018 (Shift – III) (A)  $\frac{3}{16}$ (C)  $\frac{1}{8}$ (B)  $\frac{4}{20}$ (D)  $\frac{2}{12}$ 

Which of the following is the largest fraction? 2.  $\frac{3}{15}, \frac{5}{20}, \frac{8}{64}, \frac{25}{1000}$ 

RRB Group - D- 10/10/2018 (Shift - III) (A)  $\frac{5}{20}$ (C)  $\frac{3}{15}$ (B)  $\frac{\frac{8}{64}}{(D)}$  (D)  $\frac{\frac{25}{25}}{1000}$ 

3. Which of the following is the smallest fraction?  $\frac{4}{9}, \frac{5}{4}, \frac{3}{8}, \frac{6}{7}$ 

RRB Group - D - 16/10/2018 (Shift - II) (A)  $\frac{3}{8}$ (B)  $\frac{4}{9}$ (D)  $\frac{5}{4}$ (C) <sup>6</sup>/<sub>-</sub>

- Which of the following fractions is the largest? 4. RRB Group - D - 16/10/2018 (Shift - II) (A)  $\frac{29}{27}$ (C)  $\frac{5}{14}$ (B)  $\frac{\frac{8}{21}}{(B)}$
- 5. Which of the following fraction is the smallest?  $\frac{6}{11}, \frac{13}{18}, \frac{15}{22}, \frac{19}{36}, \frac{5}{6}$

RRB Group -D- 24/10/2018 (Shift -II) (B)  $\frac{13}{10}$ 19 (A)  $\frac{1}{36}$ (D) <sup>1</sup>/<sub>5</sub> (C)  $\frac{\frac{30}{6}}{11}$ 

6. Which is the largest fraction among the given fractions?  $\frac{8}{6}, \frac{6}{5}, \frac{5}{3}, \frac{9}{5}$ 

RRB Group -D- 24/10/2018 (Shift -II) (A)  $\frac{5}{3}$ (C)  $\frac{9}{5}$ (B)  $\frac{6}{5}$ (D)  $\frac{8}{6}$ 

Which of the following is the smallest fraction? 7.  $\frac{3}{15}, \frac{5}{20}, \frac{8}{64}, \frac{25}{1000}$ 

RRB Group -D- 24/10/2018 (Shift -II) (B)  $\frac{25}{1000}$ (D)  $\frac{3}{15}$ (A)  $\frac{8}{\frac{64}{64}}$ (C)  $\frac{5}{20}$ 

Find the value of  $\sqrt{2}$  up to eight digits decimal. 8. RRB Group-D-12/10/2018 (Shift-II)

<b>(A)</b> 1.41421356	<b>(B)</b> 1.41421354
<b>(C)</b> 1.41421346	<b>(D)</b> 1.41421366

9. Which of the following numbers will have terminating decimal? RRB Group-D - 20/09/2022 (Shift-II)

(B)  $\frac{47}{150}$ (D)  $\frac{43}{140}$ (A)  $\frac{57}{120}$ (C)  $\frac{\frac{120}{61}}{110}$ 

10. The value of which of the following numbers will be a terminating decimal?

	RRB Group-D - 08/10/2022	(Shift-II)
(A) $\frac{9}{45}$	(B) $rac{6}{45}$	
(C) $\frac{3}{45}$	(D) $\frac{12}{45}$	

11. Which of the following will give terminating decimal?

RRB Group-D - 19/11/2022 (Shift-III) (A)  $\frac{12}{72}$ (C)  $\frac{9}{72}$ (B)  $\frac{6}{72}$ (D)  $\frac{3}{72}$ 

12. Which of the following fractions will not have a value in recurring decimal?

	RRB Group-D - 20/09/2022	(Shift-I)
$(A)^{\frac{20}{2}}$	(B) $\frac{25}{25}$	
<b>6 9</b> 56	( <b>-</b> ) <sub>56</sub>	
(C) $\frac{10}{-10}$	(D) $\frac{21}{2}$	
56	<b>(</b> - <b>)</b> 56	

13. Which of the following options is an example of a recurring decimal?

RRB Group-D - 17/11/2022 (Shift-II)

- (A)  $\frac{\frac{24}{60}}{(C)}$   $\frac{\frac{24}{24}}{120}$ (B)  $\frac{\frac{24}{90}}{(D)}$
- 14. Which of the following fractions is written as a decimal and its value will not be obtained in a terminating decimal?

Cimina	
	RRB Group-D - 22/10/2018 (Shift-III)
(A) $\frac{27}{480}$ (C) $\frac{81}{450}$	(B) $\frac{21}{640}$ (D) $\frac{240}{450}$

15. Which of the following fractions will be a terminating decimal?

RRB Group-D - 03/12/2018 (Shift-II)

(A) 
$$\frac{6}{144}$$
 (B)  $\frac{12}{144}$   
(C)  $\frac{3}{144}$  (D)  $\frac{9}{144}$ 

16.  $0.\overline{047619}$ ; When written as a simple fraction, it is equal to-

> RRB Group-D - 19/11/2022 (Shift-II) (A)  $\frac{1}{21}$ (B)  $\frac{1}{19}$ (D)  $\frac{1}{17}$

(C)	$\frac{1}{23}$		

- 17. Convert  $0.\overline{6}$  to a fraction: RRB Group-D - 28/11/2022 (Shift-II) (A)  $\frac{6}{3}$ (C)  $\frac{2}{6}$ (B)  $\frac{2}{3}$ (D)  $\frac{4}{3}$
- 18. Which of the following fractions, when written as a decimal, will not end?

RRB Group-D - 10/10/2018 (Shift-II)

(A)  $\frac{81}{150}$ (C)  $\frac{15}{48}$ (B)  $\frac{80}{150}$ (D)  $\frac{21}{600}$ 

19. What would be the fraction obtained by writing 0.0236 in its simplest form?

RRB Group-D - 25/11/2022 (Shift-I) ( 13 (D) 13

(A) $\frac{1100}{1100}$	(B) <u></u>
(C) <u>13</u>	(D) 13
3300	\$ 550

- 20. Express 7/11 in decimal form. RRB Group-D - 25/11/2022 (Shift-II) (A) 0.623 **(B)** 0. 633 (C) 0.63 (D) 0. 62
- Represent 0.0836 as the minimum common 21. fraction.

RRB Group-D - 15/11/2018 (Shift-III) (D) 23

$(\Lambda) \frac{46}{100}$	$(\mathbf{R})^{-23}$
( <b>~</b> ) <u>555</u>	$(D) \frac{1100}{1100}$
$(c)^{\frac{23}{23}}$	(D) 828
(U) <sub>275</sub>	$(D) {9900}$

22. To write 1/450 as a recurring decimal, what would it be equal to?

RRB Group- D – 12/10/2018 (Shift- I) (A) 0.2 (B) 0.02 (C) 0.002 (D) 0.0002

23. What will be the value of 0.0987 as the smallest simple fraction?

RRB Group-D - 08/10/2018 (Shift-III)



24. Which of the following fractions will give a recurring decimal?

RRB Group-D - 05/10/2018 (Shift-III) (A)  $\frac{27}{60}$ (C)  $\frac{27}{48}$ (B)  $\frac{27}{72}$ (D)  $\frac{27}{84}$ 

- 25. If the value of  $0.\overline{41}$  is given by the simple fraction  $\frac{41}{999...9(n \text{ times })}$ , then find the value of n? RRB Group-D - 01/10/2018 (Shift-III) (A) 1 (B) 3 (C) 4 (D) 2
- Which of the following is equal to  $\frac{0.3}{1000}$ ? 26. RRB Group-D-23//09//2018(Shift-I)

**(B)** 3 × 10<sup>-6</sup> (A)  $3 \times 10^{-4}$ (C) 3 × 10<sup>5</sup> (D)  $3 \times 10^{-5}$ 

- Convert the fraction  $\frac{\frac{4}{9}}{\frac{12}{12}}$  to its simple form. 27. RRB Group-D - 26/11/2022 (Shift-I) (B)  $\frac{1}{29}$ (D)  $\frac{1}{27}$ (A)  $\frac{1}{26}$ (C)  $\frac{1}{25}$
- 28. Which of the following is inversely proportional to  $1\frac{2}{3}$ ?

RRB Group-D - 30/10/2018 (Shift-II) (A)  $2\frac{2}{3}$ (B)  $\frac{3}{5}$ (D)  $\frac{2}{3}$ (C)  $3\frac{1}{2}$ 

29. Which of the following will be the minimum fraction value of 4.025?

> RRB Group-D - 30/10/2018 (Shift-II) (A)  $\frac{161}{40}$ (C)  $\frac{161}{20}$ (B)  $\frac{116}{20}$ (D)  $\frac{116}{40}$

30. Which of the following is not the same as Fraction 4/11?

	RRB Group-D - 27/11/2022 (Shift-I)
(A) $\frac{64}{176}$	(B) $\frac{20}{55}$
(C) $\frac{84}{209}$	(D) $\frac{32}{88}$

- $2\frac{1}{25} = ?$ 31. RRB Group D - 27/11/2022 (Shift-III) **(A)** 0.24 **(B)** 2.4 (C) 2.004 (D) 2.04
- 32. How many fractions of a day are 7 minutes 12 seconds?

RRB Group- D-16//10//2018(Shift-II)

(A) 
$$\frac{1}{240}$$
 (B)  $\frac{1}{225}$   
(C)  $\frac{1}{200}$  (D)  $\frac{1}{300}$ 

**33.** The sum of a fraction and its inverse is $2\frac{25}{66}$ . The larger of the two numbers is-**RRB Group-D - 05/10/2018 (Shift-II)** 

(A)  $1\frac{15}{22}$  (B)  $1\frac{5}{6}$ (C)  $1\frac{20}{33}$  (D)  $1\frac{5}{11}$ 

**34**. Sum of 5/11 and 11/5

RRB Group-D - 26/11/2022 (Shift-II)

( <b>A</b> ) <sup>146</sup>	(B) <sup>16</sup>
55 55	
$(n)^{16}$	(D) <sup>110</sup>
$(0) \frac{1}{55}$	(U) <u>55</u>

**35**. The difference between a positive fraction and its inverse is  $6\frac{39}{160}$ . Find that fraction?

RRB Group-D - 15/10/2018 (Shift-II)

(A) $\frac{32}{5}$	(B) $\frac{13}{8}$
(C) $\frac{15}{8}$	(D) $\frac{16}{5}$

**36.** The difference between a fraction and its inverse is 9/11. So what will be the difference between the cubes of both the fraction and its inverse?

 RRB Group-D - 11/10/2018 (Shift-I)

 (A)  $-\frac{1331}{2538}$  (B)  $-\frac{2538}{1331}$  

 (C)  $\frac{3996}{1331}$  (D)  $\frac{729}{1331}$ 

**37**. What is the value of  $\frac{3}{15} + \frac{13}{14} - \frac{19}{21} + \frac{31}{35} - \frac{23}{30}$ ? **RRB Group-D - 20/09/2022 (Shift-II)** 

(A) $\frac{8}{21}$	(B) <sup>1</sup> / <sub>3</sub>
(C) $\frac{2}{5}$	(D) $\frac{12}{35}$

**38.** Subtracting a fraction from 1/6 gives 1/13. Find out that fraction?

RRB Group-D - 19/11/2022 (Shift-III) (A)  $\frac{7}{78}$  (B)  $\frac{5}{13}$ (C) <sup>1</sup> (D) <sup>11</sup>

(C) 
$$\frac{1}{7}^{78}$$
 (D)  $\frac{11}{39}^{13}$ 

**39.** The sum of two fractions is 7/4. If one of them is 5/3, what will be the value of the other fraction?

RRB Group-D - 18/11/2022 (Shift-II) (A)  $\frac{1}{5}$  (B)  $\frac{2}{1}$ (C)  $\frac{1}{12}$  (D)  $\frac{1}{10}$ 

- 40. Find the difference between 0.02 and 0.002. **RRB Group-D - 17/11/2022 (Shift-III)** (A) 0.018
   (B) 0.0018
   (C) 1.8
   (D) 0.18
- **41.** Subtracting which of the following fractions from 3/4 will yield the result 5/12?

RRB Group-D - 19/11/2022 (Shift-III)

- (A)  $\frac{1}{3}$  (B)  $\frac{2}{8}$ (C)  $\frac{1}{6}$  (D)  $\frac{2}{3}$
- **42**. What should be added to 10/11 to get the sum 11/10?

RRB Group-D - 20/09/2022 (Shift-I)

(A) 
$$\frac{21}{110}$$
 (B)  $\frac{1}{-1}$   
(C)  $\frac{1}{55}$  (D)  $\frac{2}{11}$ 

**43.** What should be added to  $5\frac{3}{5}$  to get the sum  $8\frac{3}{7}$ ?

/	RRB Group-D - 25/11/2022 (Shift-III)
A) <sup>99</sup>	(B) <sup>96</sup>
35	$(-)_{35}^{35}$
C) ${33}$	(D) <u>35</u>

The sum of two fractions is 7/6. One of them is a different 3/4. Find the second fraction.
 RRB Group-D - 26/11/2022 (Shift-III)

(A)  $\frac{4}{12}$  (B)  $\frac{5}{12}$ (C)  $\frac{4}{2}$  (D)  $\frac{1}{12}$ 

**45.** Adding a fraction with 7/3 gives 4. The fraction is.....

 RRB Group-D - 28/11/2022 (Shift-I)

 (A)  $1\frac{2}{3}$  (B)  $\frac{11}{2}$  

 (C)  $-\frac{1}{2}$  (D)  $\frac{2}{3}$ 

**46.** The difference between the two fractions is 5/6. The smallest fraction of these is 3/4. What is the second fraction?

### RRB Group-D - 22/10/2018 (Shift-II)

(A) $\frac{1}{-}$	(B) <sup>19</sup>
12	<b>(</b> - <b>)</b> <sub>24</sub>
$(C)^{\frac{19}{19}}$	(D) <sup>8</sup>
$(0)_{12}$	

**47**. Value of  $\frac{5}{3} + \frac{3}{5}$  is:

RRB Group-D - 22/10/2018 (Shift-II)

(A) 
$$\frac{15}{8}$$
 (B)  $\frac{8}{15}$   
(C)  $2\frac{4}{15}$  (D)  $\frac{8}{8}$ 

48. What will be the difference between 25/12 and 15/8?

RRB Group-D - 06/12/2018 (Shift-II)

(A) $\frac{10}{10}$	(B) 7
24	(-, <sub>13</sub>
(C) $\frac{10}{4}$	(D) $\frac{3}{24}$

49. What number should be multiplied by 5/12 so that the result is 25/3? RRB Group-D - 01/09/2022 (Shift-II)

<b>(A)</b> 10	<b>(B)</b> 20
(C) $\frac{4}{5}$	(D) <sup>5</sup> / <sub>4</sub>

**50**. When 1 is added to the square root of a positive fraction, the answer is  $3\frac{1}{4}$ . The original fraction is:

RRB Group-D - 02/11/2018 (Shift-I)

(A) 
$$2\frac{1}{4}$$
 (B)  $6\frac{1}{4}$   
(C)  $5\frac{1}{16}$  (D)  $3\frac{1}{16}$ 

51. What is the difference between 11/12 and 7/8?

RRB Group-D - 11/12/2018 (Shift-III) (B)  $\frac{4}{4}$ (D)  $\frac{1}{24}$ (A)  $\frac{1}{4}$ (C)  $\frac{4}{24}$ 

52. Find the fraction which when subtracted from 3/4 gives 2/5?

RRB Group-D - 08/10/2018 (Shift-III) (A)  $-\frac{1}{1}$ (C)  $\frac{1}{20}$ (B)  $\frac{7}{20}$ (D)  $\frac{3}{10}$ 

- 53. What to add to 3/5 to get 5/4? RRB Group-D - 05/10/2018 (Shift-III) (B)  $\frac{13}{20}$ (D)  $\frac{1.25}{6}$ (A)  $\frac{15}{20}$ (C)  $\frac{2}{-1}$
- Subtracting a fraction from 1/5 gives 1/12. 54. Find that fraction?

RRB Group-D - 04/10/2018 (Shift-I) (B) $\frac{11}{30}$ (D) $\frac{5}{12}$ 

- (A)  $\frac{1}{7}$ (C)  $\frac{7}{60}$
- 55. Adding a fraction to 17/3 makes 4. Find that fraction?

RRB Group-D - 01/10/2018 (Shift-III) **(B)**  $-\frac{1}{1}$ **(D)**  $\frac{9}{2}$ (A)  $\frac{2}{3}$ (C)  $-1\frac{2}{3}$ 

56. In which of the following fractions, adding 5/16 will give 1?

	RRB Group-D - 19/11/2022 (Shift-I)
(A) $\frac{11}{32}$	<b>(B)</b> $\frac{13}{2}$
(C) $\frac{22}{32}$	(D) $\frac{6}{8}$

57. Write the sum of the place values of 5 in 6/8 and 4 in 6/25.



58. Which of the following will be the absolute value of 0.008594 up to three digits of decimal?

RRB Group-D - 08/10/2018 (Shift-II) (A) 0.008 (B) 0.009 (C) 0.00860 (D) 0.00859

59. x and v (corrected to 2 decimal places) are written as 4.51 and 2.48 respectively. What is the upper limit of the value of x + y?

- 60. Find the value of x in the following equation-144 \_ 14.4 RRB Group-D - 16/10/2018 (Shift-I) (A) 0.0001 **(B)** 0.0144 (C) 0.1 (D) 0.01
- 61. If X is an integer 0.80000 up to 5 decimal places, then the range of X will be? RRB Group-D - 30/10/2018 (Shift-I) (A) 0.79995 < x < 0.80005 **(B)** 0.799905 < x < 0.800005 (C) 0.799995 < x < 0.800005 (D) 0.79995 < x < 0.80005
- If  $\frac{0.7}{1-6c} = -0.2$ , then c=? 62. RRB Group 20 / 09 / 2018 (Shift-I) (A) 0.8 (B) 0.5 (C) 0.75 (D) 0.075
- 63. A number x is written as integer 15.84, up to two decimal places. Which statement is true in the given statement?

RRB NTPC - 09/2022 (Shift-I)

- (A) 15.835 < x < 15.845
- **(B)** 15.835 < x < 15.845
- (C) 15.835 ≤ x ≤ 15.845

(D) 15.835 x <15.845

- 64. If x is an integer 0.70000 (up to 5 decimal places), then the range of x will be? RRB Group-D - 10/10/2018 (Shift-III) (A) 0.69995 < x < 0.700005 (B) 0.699995 < x < 0.700005 (C) 0.699905 < x < 0.700005 (D) 0.69995 < x < 0.70005</li>
- **65.** The minimum value of x that makes  $\frac{65}{x-14}$  an integer is-

	RRB Group – D- 26/10/2018 (Shift-III)
<b>(A)</b> 1	<b>(B)</b> -51
(C) 79	<b>(D)</b> -1

66. What will be the product of 144/100 and 175/216?

	RRB Group 'D' 07/12/2018 (Shift-I)
(A) $\frac{7}{12}$	( <b>B</b> ) $\frac{14}{3}$
(C) $\frac{7}{6}$	<b>(D)</b> $\frac{7}{2}$

**67.** x and y (corrected to 2 decimal places) are written as 3.57 and 3.42 respectively. What is the upper limit of the value of x + y?

 RRB Group-D - 23/10/2018 (Shift-I)

 (A) 7.000
 (B) 7.010

 (C) 6.990
 (D) 6.995

**68.** x and y (corrected to 2 decimal places) are written as 2.51 and 3.50 respectively. What is the upper limit of the value of x + y?

 RRB Group-D - 15/10/2018 (Shift-II)

 (A) 6.010
 (B) 5.995

 (C) 6.000
 (D) 5.990

- 69. Find the value of x  $\frac{\frac{484}{4.84}}{\frac{48.4}{x}} = \frac{\frac{48.4}{x}}{\frac{1}{x}}$ RRB Group-D - 08/10/2018 (Shift-III) (A) 0.484 (B) 0.00484 (C) 0.0484 (D) 4.84
- x and y (corrected to 1 decimal places) are written as 6.2 and 1.3 respectively. What is the upper limit of the value of x + y?
   RRB Group-D 04/10/2018 (Shift-I)

<b>(A)</b> 4.96	<b>(B)</b> 5
<b>(C)</b> 4.77	<b>(D)</b> 5.05

71. 1.008 =? RRB Group-D - 01/10/2018 (Shift-II) (A)  $1\frac{1}{125}$  (B)  $1\frac{3}{25}$ (C)  $1\frac{2}{25}$  (D)  $1\frac{2}{125}$   $X = \frac{63.5535}{13.05}$ , Find the value of x.

72.

 RRB Group-D - 23/11/2022 (Shift-II)

 (A) 4.48
 (B) 4.87

 (C) 4.46
 (D) 4.28

- 73. If  $17 \times 29 = 493$ , then  $1700 \times 0.0029 =$ ? **RRB Group-D - 19/11/2022 (Shift-II)** (A) 0.493 (B) 0.0493 (C) 4.93 (D) 49.3
- 74. Which of the following is true? RRB Group-D - 17/11/2022 (Shift-I) (A)  $\frac{9}{16} \le \frac{13}{24}$  (B)  $\frac{9}{16} > \frac{13}{24}$ (C)  $\frac{9}{16} = \frac{13}{24}$  (D)  $\frac{9}{16} < \frac{13}{24}$

75. Which of the following is the commutative fraction?

	RRB Group-D - 04/10/2018 (Shift-I)
(A) 77	(B) <sup>5</sup>
(~) <sub>72</sub>	
(C) $\frac{105}{105}$	
<b>()</b> <sub>112</sub>	

**76.** The difference between 3/8 and any other number smaller than that is 1/5. What is another number?

	RRB Group-D - 06/12/2018 (Shift-II)
(A) $\frac{3}{40}$	(B) $\frac{2}{3}$
(C) $\frac{7}{40}$	<b>(D)</b> $\frac{8}{15}$

77. Denominator of a fraction is 5 more than its numerator. If the numerator is multiplied by 4 and the denominator by 3, the resulting fraction is 1/2. So what is the original fraction? RRB Group – D – 27/11/2018(Shift III)

		<b>D Z I I</b>
(A) $\frac{3}{2}$	-	(B) $\frac{2}{7}$
(C) $\frac{3}{4}$		(D) $\frac{1}{6}$

**78.** When 2 is added to the square of a positive fraction, the value  $4\frac{1}{4}$  is obtained. The original fraction is:

	RRB Group-D - 15/11/2018 (Shift-II)
<b>A)</b> $2\frac{3}{4}$	<b>(B)</b> 1 $\frac{1}{4}$
<b>C)</b> $2\frac{1}{4}$	<b>(D)</b> $1\frac{1}{2}$

**79.**  $\frac{5}{12}$  of a number is  $\frac{3}{4}$ . Find the number? **RRB Group-D - 10/12/2018 (Shift-I)** 

(A) 3 <sup>1</sup> / <sub>5</sub>	<b>(B)</b> 1 $\frac{7}{5}$
(C) $1\frac{4}{5}$	<b>(D)</b> 1 $\frac{5}{16}$

80. The sum of three fractions is 5. One of them is  $1\frac{1}{2}$ , while the difference between the other two is 3/4. Which is the largest of the three fractions?

RRB NTPC -	09/2022	(Shift-II)
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(A) $2\frac{1}{4}$	<b>(B)</b> $2\frac{1}{8}$
(C) $2\frac{1}{2}$	$(\mathbf{D}) 1\frac{7}{8}$

- 81. Find the divisor of  $1/(5-2\sqrt{3})$ . RRB Group-D - 05/10/2018 (Shift-III) (A)  $\frac{(5-2\sqrt{3})}{2}$ **(B)**  $\frac{5+2\sqrt{3}}{2}$ (A)  $\frac{12}{12}$ (C)  $\frac{5-2\sqrt{3}}{13}$ 13 (D)  $\frac{5+2\sqrt{3}}{5+2\sqrt{3}}$
- 82. A cake is distributed among 5 friends. 4 gets  $\frac{1}{8}, \frac{1}{6}, \frac{5}{12}, \frac{1}{12}$  share of cake respectively. How much of the cake will the fifth friend get? RRB Group-D - 17/11/2022 (Shift-I)

(A) <sup>1</sup>	 	(P) <sup>5</sup>
$(A) = \frac{1}{6}$		(D) <u>-</u> 24
(C) $\frac{1}{4}$		( <b>D</b> ) $\frac{3}{8}$

- 2 4 6 83. 3'6'9 RRB Group-D - 20/09/2022 (Shift-II) (A) Odd fraction (B) Irreducible fraction
  - (C) Equivalent fraction
  - (D) coordinate fraction
- 84. The sum of two fractions is 9/10. If one of these fractions is 8/9, what will be the other fraction?

RRB Group-D - 19/11/2022 (Shift-I)

(A)  $\frac{1}{5}$ (B)  $\frac{1}{1}$ (D)  $\frac{72}{90}$ (C)  $\frac{1}{100}$ 

85. Find the largest fraction from the following. 5/11, 3/15, 12/11, 4/7, 9/12, RRB RPF 10/01/2019 (Shift-I) (A) 12/11 **(B)** 3/15

( <b>A)</b> 12/11	( <b>D</b> ) 3/ 1
( <b>C)</b> 9/12	<b>(D)</b> 4/7

86. Which of the following is the smallest fraction?  $\frac{1}{10}, \frac{1}{100}, \frac{9}{1000}, \frac{500}{10000}$ 

RRB RPF Constable - 17/01/2019 (Shift - I) (A) <u>10000</u> (B) <u>100</u> <u>9</u> (C)  $\frac{1}{10}$ (D)  $\frac{1}{1000}$ 

87. Which of the following fractions is the largest? RRB RPF Constable - 17/01/2019 (Shift - I)

<b>(A)</b> 8/19	<b>(B)</b> 9/22
(C) 10/23	<b>(D)</b> 11/24

- 88. Place the following ratios in descending order, which will last number? RRB RPF Constable - 17/01/2019 (Shift - I) (A) 17:21 **(B)** 5:7 (C) 2:3 (D) 11:14
- 89. Which of the following is in ascending order? RRB RPF Constable -17/01/2019 (Shift-III) (A) 0.65,0.76,0.67,0.86 **(B)** 0.65,0.86,0.67,0.76 (C) 0.65,0.67,0.76,0.86 (D) 0.67,0.65,0.76,0.86
- 90. Which of the following is true for the given numbers?
  - RRB RPF-SI -13/01/2019 (Shift-I) (A) 13/33 < 32/47 < 20/47 < 25/27 (B) 13/33 < 20/47 < 25/27 < 32/27 (C) 13/33 < 20/47 < 32/47 <25/27 (D) 20/47 < 13/33 < 2/47 < 25/27
- 91. Which of the following is in descending order? RRB RPF Constable -25/01/2019 (Shift-I)

<b>(A)</b> 2/3,3/4,4/5,1/2	<b>(B)</b> 3/4,4/5,1/2,2/3
(C) 4/5,3/4,2/3,1/2	<b>(D)</b> 4/5,1/2,2/3,3/4

92. Which of the given option is in correct ascending order? RRB RPF Constable -20/01/2019 (Shift-I)

(A)  $\frac{5}{6}, \frac{3}{5}, \frac{7}{9}$ (C)  $\frac{3}{5}, \frac{7}{9}, \frac{5}{6}$ (B)  $\frac{3}{5}, \frac{5}{6}, \frac{7}{9}$ (D)  $\frac{7}{9}, \frac{3}{5}, \frac{5}{6}$ 

93. Which of the following is a terminating decimal?

RRB RPF-SI -05/01/2019 (Shift-III)

- (A)  $\frac{1}{32}$ (C)  $\frac{1}{96}$ (**B**)  $\frac{1}{24}$ (**D**)  $\frac{1}{48}$
- 94. What is the correct expression of 0.0654? RRB RPF-SI -10/01/2019 (Shift-III)

(A) $\frac{18}{275}$	<b>(B)</b> $\frac{18}{277}$
<b>(C)</b> 654	(D) $\frac{654}{1000}$

95. How can 73/8 be written in the decimal system?

> RRB RPF Constable -19/01/2019 (Shift-II) (A) 9.50 (B) 9.125 (C) 8.150 (D) 8.125

96. Simplify:  $\frac{6}{27} \div \frac{27}{30} \div \frac{20}{81}$ RRB RPF -20/01/2019 (Shift-II) (A) 9 **(B)** 6

(D) 1

(C) 3

- 97. What is the sum of 5/12 and 12/5? RRB RPF Constable -17/01/2019 (Shift-III) (B)  $\frac{17}{60}$ (D)  $\frac{169}{60}$ (A)  $\frac{17}{17}$ (C)  $\frac{60}{17}$
- 98. Find out that fraction which is when subtracted from 1/2 gives remainder of 3/4? RRB RPF-SI -12/01/2019 (Shift-III)

(A) $\frac{1}{4}$	(B) $-\frac{1}{4}$
(n) <sup>i</sup>	רח) _ <sup>1</sup>
$(0)\frac{1}{3}$	$(D) = \frac{1}{3}$

99. Which of the fractions given below is not equal to 15/23?

> RRB RPF-SI -12/01/2019 (Shift-I) (A)  $\frac{105}{162}$ (C)  $\frac{45}{69}$ (B)  $\frac{75}{115}$ (D)  $\frac{30}{46}$

- 100.  $0.065 \times 0.4 = ?$ RRB RPF-SI -11/01/2019 (Shift-I) (A) 0.26 **(B)** 0.026 (D) 0.0026 (C) 2.6
- 101. Solve the following:  $0.1404 \div 0.06 = ?$ RRB RPF Constable -18/01/2019 (Shift-I) (B) 2.34 (A) 0.234 (C) 234 (D) 23.4
- 102. If 3 is added to both the numerator and denominator of a fraction, its value becomes 10/11. If 4 is subtracted from both the numerator and denominator its value becomes 3/4. What is the value of that fraction?

RRB RPF Constable -25/01/2019 (Shift-III) (A)  $\frac{7}{8}$ (C)  $\frac{3}{4}$ (B)  $\frac{6}{13}$ (D)  $\frac{3}{2}$ 

103. Find second last term of series. 0.1, 0.9, 0.01, 0.09, ...., 0.009 RRB RPF-SI -13/01/2019 (Shift-II) (A) 0.0001 **(B)** 0.1010 (C) 0.001 **(D)** 0.0011

- 104. Solve the following: 196 - 19.6 - 1.96 - 0.196 = ?RRB ALP & Tec. (31-08-18 Shift-I) (A) 173.254 (B) 173.234 (C) 174.234 (D) 174.244
- 105. 0.196 + 1.96 + 19.6 + 196 = ?RRB ALP & Tec. (20-08-18 Shift-III) (A) 217.756 (B) 216.856 (C) 216.756 (D) 217.676
- 106. Solve the following: 123+12.3+1.23+0.123+0.0123=? RRB ALP & Tec. (17-08-18 Shift-II) (A) 136.7659 **(B)** 136.653 (C) 136.6653 (D) 136.7760
- 107. Which of the following fractions is the smallest?
  - RRB ALP & Tec. (09-08-18 Shift-II) (A)  $\frac{91}{15}$ (C)  $\frac{105}{112}$ (B)  $\frac{79}{26}$ (D)  $\frac{41}{17}$
- 108. Which of the following will provide a recurring decimal?

RRB ALP & Tec. (20-08-18 Shift-II)

$(\Delta) \frac{21}{2}$	(B) <sup>21</sup>
(~) <sub>30</sub>	(D) <sub>120</sub>
$(C) \frac{21}{2}$	(D) <sup>21</sup>
$(0)_{60}$	

109. Which of the following values will be found in terminating decimal?

RRB ALP & Tec. (10-08-18 Shift-III) (B)  $\frac{12}{36}$ (D)  $\frac{6}{36}$ (A)  $\frac{3}{36}$ (C)  $\frac{9}{36}$ 

110. Which of the following fraction will not give a recurring decimal?

> RRB ALP & Tec. (09-08-18 Shift-III) (A)  $\frac{8}{56}$ (C)  $\frac{4}{56}$

- (B)  $\frac{\frac{6}{56}}{(D)}$
- 111. Which of the fractions given below is not equal to 9/17?

RRB ALP & Tec. (31-08-18 Shift-I) (A)  $\frac{108}{221}$ (B)  $\frac{27}{51}$ (D)  $\frac{153}{289}$ (C)  $\frac{63}{119}$ 

112. The simplest form of 182/130 is : RRB ALP & Tec. (20-08-18 Shift-III)
| (A) $\frac{28}{20}$ | (B) $\frac{91}{65}$      |
|---------------------|--------------------------|
| (C) $\frac{14}{10}$ | <b>(D)</b> $\frac{7}{5}$ |

- 113. How many kilometers are there in one meter? RRB ALP & Tec. (10-08-18 Shift-III) (B) 0.1 (A) 0.0001 (C) 0.001 (D) 0.01
- 114. How much should be added to 4/5 to get 5/4? RRB ALP & Tec. (21-08-18 Shift-II) (A)  $\frac{1}{\frac{-1}{9}}$ (C)  $\frac{9}{20}$ (B)  $\frac{16}{20}$ 
  - (D)  $\frac{1.25}{0.8}$
- 115. What is the sum of 5/8 and 8/5? RRB ALP & Tec. (20-08-18 Shift-II) (B)  $\frac{80}{40}$ (D)  $\frac{89}{40}$ (A)  $\frac{13}{13}$ (C)  $\frac{13}{40}$
- 116. Which is the fraction which when subtracted from 1/2, gives 2/3? RRB AI P & Tec. (20-08-18 Shift-I)

(A) $\frac{1}{3}$	<b>(B)</b> $-\frac{1}{3}$	
(C) $-\frac{1}{6}$	(D) $\frac{1}{6}$	

The sum of two fractions is 3/4. If one of them 117. is 2/3, what will be the other fraction? RRB ALP & Tec. (20-08-18 Shift-II)

(A) $\frac{1}{5}$	(B) $\frac{1}{12}$
(C) $\frac{1}{10}$	(D) $\frac{1}{1}$

118. How much does 2/3 need to add to get 3/2? RRB ALP & Tec. (17-08-18 Shift-I)

(A) $\frac{4}{9}$	(B) <sup>5</sup> / <sub>6</sub>
(C) $\frac{1}{-1}$	(D) $\frac{1.5}{6}$

119. When a fraction is subtracted from 1/3 gives 1/12. Find it?

> RRB ALP & Tec. (14-08-18 Shift-I) (A)  $\frac{5}{12}$ (B)  $\frac{1}{4}$ (D)  $\frac{1}{9}$ (C)  $\frac{3}{4}$

120. The sum of two fractions is 5/6. If one of them is 3/4, what will the other be?

RRB ALP & Tec. (10-08-18 Shift-I)

(A) $\frac{2}{5}$	(B) $\frac{1}{10}$
<b>(C)</b> 1	(D) $\frac{1}{10}$

give 1? (A)  $\frac{4}{2}$ (C)  $\frac{5}{3}$ 

121.

RRB ALP & Tec. (10-08-18 Shift-I) (B)  $\frac{6}{21}$ (D)  $\frac{6}{14}$ 

Adding 5/7 to which of the fractions below will

- 122. Adding 5/8 to which of the fractions below will give 1?
  - RRB ALP & Tec. (09-08-18 Shift-II) (A)  $\frac{\frac{6}{24}}{(C)}$ (B)  $\frac{5}{2}$ (D)  $\frac{6}{2}$
- 123. If 23 x 19=437, then 0.0437÷1.9=? RRB ALP & Tec. (21-08-18 Shift-I) (A) 0.0023 **(B)** 2.3 (C) 0.023 (D) 0.23
- 124. If  $493 \div 29 = 17$ , then  $4.93 \div 0.0017 = ?$ RRB ALP & Tec. (13-08-18 Shift-I) (A) 290 **(B)** 0.29 (C) 2.9 (D) 2900
- 125. If 23 x 31=713, then 0.0713 ÷ 3.1=? RRB ALP & Tec. (13-08-18 Shift-III) (A) 0.0023 (B) 0.23 (C) 0.023 (D) 2.3
- 126. If  $17 \times 29 = 493$ , then  $170 \times 0.029 = ?$ RRB ALP & Tec. (10-08-18 Shift-III) (A) 0.493 **(B)** 4.93 (C) 0.0493 (D) 49.3
- 127. Find a fraction that is larger than 4/7 and smaller than 5/6?

	RRB ALP & Tec. (10-08-18 Shift-I)
(A) <sup>59</sup>	<b>(B)</b> <sup>84</sup> / <sub>84</sub>
<b>V</b> <sup>84</sup>	( <b>b</b> ) <sub>59</sub>
(C) $\frac{58}{58}$	(D) <sup>59</sup>
( <b>-</b> ) <sub>84</sub>	(-) <sub>85</sub>

128. The product of two numbers is 0.432, if one number is 1.6, what will be the other number? RRB ALP & Tec. (10-08-18 Shift-I)

<b>(A)</b> 2.7	<b>(B)</b> 0.027
<b>(C)</b> 0.27	<b>(D)</b> 27

Which of the following is true? 129.

	RRB ALP & Tec. (09-08-18 Shift-I)
(A) $\frac{29}{29} = \frac{53}{29}$	(B) $\frac{29}{29} = \frac{43}{29}$
6 12	
(C) $\frac{29}{29} > \frac{43}{29}$	(D) $\frac{29}{29} < \frac{43}{29}$
6 12	$(-)_{6}_{12}$

If a rod of  $208\frac{4}{5}$  length is cut into pieces equal 130. to  $23\frac{1}{5}$  length, then the total number of rods obtained will be:

RRB ALP & Tec. (31-08-18 Shift-I) (A) 5 (B) 7 (C) 8 **(D)** 9

If a steel rod of  $56\frac{1}{5}$  length is cut into a rod of 131.  $20\frac{3}{26}$  length, then what is the remaining length of the steel rod?

RRB ALP & Tec. (30-08-18 Shift-II) (A)  $36\frac{3}{130}$ (C)  $36\frac{11}{130}$ (B)  $36\frac{1}{130}$ (D)  $36\frac{7}{130}$ 

132. 3/4 of weight of a brick is 7/8. Then what will be 5/7 of its weight?

RRB ALP & Tec. (14-08-18 Shift-I) (A)  $\frac{20}{21}$  kg (C)  $\frac{5}{8}$  kg (B)  $\frac{5}{6}$  kg (D)  $\frac{15}{32}$  kg

133. Tapan, Ravi and Trisha shared a cake among themselves. Tapan had 1/4 of it, Trisha had 2/3 of it and the rest was with Ravi. How much of the cake did Ravi have?

RRB ALP & Tec. (14-08-18 Shift-II)

(A) $\frac{4}{7}$	(B) $\frac{1}{12}$
(C) $\frac{1}{6}$	(D) $\frac{2}{6}$

134. If the product of two numbers is 0.324. If one of them is 1.2, what will be the other number?

	RRB ALP & Tec. (13-08-18 Shift-I
<b>(A)</b> 2.7	<b>(B)</b> 0.27
(C) 0.027	<b>(D)</b> 27

135. A cake is divided between tapas, avi and rishi. Tapas got 1/2 part of cake, Rishi got 1/3 part and remaining get avi. How much part avi got?

> RRB ALP & Tec. (09-08-18 Shift-I) (**B**)  $\frac{1}{6}$ (**D**)  $\frac{3}{5}$ (A)  $\frac{2}{6}$ (C)  $\frac{3}{6}$

If the equivalent of  $\frac{60}{75}$  is 4/x, what is the value 136. of x?

> RRB ALP & Tec. (17-08-18 Shift-III) (B) 4 (D) 5

137. Which is the lowest among the following? 3/4, 3/5, 3/8, 3/11

(A) 15

(C) 18

	RRB N	TPC 12/08/2022Shift :3
	(A) 3/4 (C) 3/11	(B) 3/7 (D) 3/8
		<b>(D)</b> 5/6
138.	Which of the following	is the lowest fraction?
	(A) 6/5	(B) 4/3
	(C) 3/2	(D) 5/4
		( )
139.	Which of the following RRB N	fractions is the largest?
	<b>(A)</b> 3/4	<b>(B)</b> 4/5
	<b>(C)</b> 5/6	<b>(D)</b> 7/8
140.	Which is the sma	allest fraction among
	5/8,3/4,13/16,7/12.	Ŭ
	RRB N	TPC 12/08/2022Shift : 2
	(A) 5/8 (C) 13/16	(B) 3/4 (D) 7/12
141.	Which of the following	is the smallest fraction?
	$(\Delta)^{\frac{3}{2}}$	(B) <sup>4</sup> / <sub>-</sub>
	(n) <sub>4</sub> (n) <sup>5</sup>	(D) <sup>6</sup>
	$(C) - \frac{1}{6}$	$(D) - \frac{1}{7}$
142.	Which of the follo	wing fractions is the
	smallest?	
	RRB	NTPC 23/07/2022 Shift
	( <b>C</b> ) 2/3	( <b>D</b> ) 4/5
143.	Which is the correct	ascending order of the
	RRB N	TPC 23/07/2022 Shift-1
	(A) $\frac{1}{4}, \frac{4}{4}, 0.33$	<b>(B)</b> $\frac{1}{4}$ , 0.33, $\frac{4}{4}$
	(C) $\frac{4}{-}$ 0.33 $\frac{1}{-}$	(D) $0.33 \frac{4}{1} \frac{1}{1}$
	( <b>c</b> ) <sub>15</sub> , 0.00, <sub>3</sub>	(1) 0100, 15, 3
144.	The correct ascending	ng order of the given
	numbers is-	TDC 22/07/2022 Shift 2
	(A) $\frac{3}{4} \frac{4}{1} \frac{1}{4}$	(B) $\frac{4}{1}$ $\frac{1}{2}$
	(A) $_{10}^{10}, _{15}^{15}, _{3}^{3}$ (C) $^{1}, _{3}^{3}, _{4}^{4}$	(D) $_{15'3'10}^{43'1}$
	( <b>C</b> ) $\frac{1}{3}$ , $\frac{1}{10}$ , $\frac{1}{15}$	( <b>D</b> ) $\frac{1}{15}$ , $\frac{1}{10}$ , $\frac{1}{3}$
145.	Which of the followin	ng is true for the aiven
	numbers?	0 0
	RRB N	TPC 10/08/2022 Shift: 3
	(A) $12/43 < 32/67 < 45$ (B) $12/43 < 22/55 < 45$	5/81 < 32/67
	(C) 12/43 < 32/67 < 22	<b>2/</b> 55 < 45/81
	<b>(D)</b> 12/43 < <b>22/</b> 55 < 3	2/67 < 45/81

146. Which of the following is true for the given numbers?

#### RRB NTPC 10/08/2022 Shift: 3

(A) 25/51 < 12/19 < 47/63 < 63/79</li>
(B) 25/51 < 63/79 < 12/19 < 47/63</li>
(C) 12/19 < 25/51 < 63/79 < 47/63</li>
(D) 63/79 < 47/63 < 12/19 < 25/51</li>

**147.** Which of the following is true for the given numbers?

**RRB NTPC 10/08/2022 Shift: 1** (A) 13/21 < 57/97 < 52/94 < 36/79 (B) 36/79 < 57/97 < 52/94 < 13/21 (C) 36/79 <52/94 <13/21 < 57/97 (D) 36/79 < 52/94 <57/97 < 13/21

**148.** Which of the following is true for the given numbers?

RRB NTPC 10/08/2022 Shift: 2

- (A) 3/8 < 19/73 < 29/47 < 17/39</li>
  (B) 19/73 < 3/8 < 17/39 < 29/47</li>
  (C) 19/73 < 3/8 < 29/47 < 17/39</li>
  (D) 19/73 < 29/47 < 3/8 < 17/39</li>
- **149.** Which of the following is in ascending order? **RRB NTPC 30.03.2016 Shift: 1** (A) 2/3 3/4 4/5 1/2 (B) 3/4 4/5 1/2 2/3

( <b>A)</b> 2/3,3/4,4/3,1/2	( <b>D</b> ) 3/4,4/3,1/2,2/3
<b>(C)</b> 1/2,2/3,3/4,4/5	<b>(D)</b> 4/5,1/2,2/3,3/4

**150.** Arrange the given fractions in their correct descending order –

**RRB NTPC 02/02/2021Shift: 3** (A) 7/9,11/47,5/13,24/29 (B) 24/29,11/47,7/9,5/13 (C) 11/47,5/13,7/9,24/29 (D) 24/29,7/9,5/13,11/47

**151.** Which of the following is in ascending order- **RRB NTPC 05/04/2021Shift: 1** (A)  $\frac{2}{7}, \frac{5}{7}, \frac{3}{7}$  (B)  $\frac{3}{7}, \frac{2}{7}, \frac{5}{7}$ 

(A) $\frac{-}{3}, \frac{-}{6}, \frac{-}{4}$	(B) <u>-</u> , <u>-</u> , <u>-</u>
(C) $\frac{2}{3}, \frac{3}{4}, \frac{5}{6}$	(D) $\frac{5}{6}, \frac{3}{4}, \frac{2}{3}$

**152.** Which of the following ascending order is correct for the given numbers?

 RRB NTPC 05/04/2021Shift: 2

 (A) 1/3,1/5,2/5
 (B) 1/3,2/5,1/5

 (C) 1/5,1/3,2/5
 (D) 1/5,2/5,1/3

**153.** Which of the following ascending order is correct for the given numbers?

RRB NTPC 05/04/2021Shift: 3

$(\Delta) = \frac{5}{19} \frac{19}{11}$	(B) 11 5 19
$(-)_{\frac{1}{8}}, \frac{1}{24}, \frac{1}{16}$	
5 11 19	( ) 19 11 5
(C) - , - , - , - , - , - , - , - , - , -	(D) — , — , <del>—</del>
8'16'24	24 16 8

**154.** Which of the following is correct for the given numbers?

#### RRB NTPC 05/03/2021Shift: 3

- (A) 13/41 < 32/67 < 45/81 < 23/53</li>
  (B) 13/41 < 23/53 < 45/81 < 32/67</li>
  (C) 13/41 < 32/67 < 23/53 < 45/81</li>
- (D) 13/41 < 23/53 < 32/67 < 45/81
- **155.** Arrange the following fractions in ascending order:

RRB NTPC 05/04/2021Shift: 3

(A) 11/17 < 41/63 < 3/7 < 21/29</li>
(B) 41/63 < 3/7 < 21/29 < 11/17</li>
(C) 3/7 < 11/17 < 41/63 < 21/29</li>
(D) 3/7 < 11/17 < 21/29 < 41/63</li>

- **156.** Which of the following ascending order is correct for the given numbers?
  - RRB NTPC 11/08/2022Shift: 2(A)  $\frac{1}{3}, 0.3, \frac{2}{8}$ (B)  $0.3, \frac{1}{3}, \frac{2}{8}$ (C)  $\frac{2}{8}, 0.3, \frac{1}{3}$ (D)  $\frac{1}{3}, \frac{2}{8}, 0.3$
- **157.** Which of the following ascending order is correct for the given numbers?  $\frac{3}{4}, \frac{17}{24}, \frac{2}{3}$

	RRB NTPC 19.01.2017 Shift: 1
(A) $\frac{17}{24}, \frac{3}{4}, \frac{2}{3}$	<b>(B)</b> $\frac{3}{4}, \frac{2}{3}, \frac{17}{24}$
(C) $\frac{2}{3}, \frac{3}{4}, \frac{17}{24}$	<b>(D)</b> $\frac{2}{3}, \frac{17}{24}, \frac{3}{4}$

**158.** Which of the following ascending order is correct for the given numbers?

#### RRB NTPC 22.04.2016 Shift: 2

(A) $\frac{3}{7}$ , 0.3, $\frac{2}{7}$	<b>(B)</b> $0.3, \frac{2}{7}, \frac{3}{7}$
(C) $\frac{2}{7}$ , 0.3, $\frac{3}{7}$	<b>(D)</b> $\frac{2}{7}, \frac{3}{7}, 0.3$

**159.** Which of the following ascending order is correct for the given numbers?

RRB NTPC 05/04/2021Shift: 2

(A) $\frac{1}{2}, \frac{2}{3}, \frac{7}{12}$	<b>(B)</b> $\frac{7}{12}, \frac{2}{3}, \frac{1}{2}$
(C) $\frac{1}{2}, \frac{7}{12}, \frac{2}{3}$	( <b>D</b> ) $\frac{2}{3}, \frac{1}{2}, \frac{7}{12}$

**160.** Which of the following ascending order is correct for the given numbers?

#### RRB NTPC 05/04/2021Shift: 3

(A) $\frac{1}{3}, \frac{3}{4}, \frac{5}{8}$	$(\mathbf{B})\frac{5}{8},\frac{3}{4},\frac{1}{3}$
(C) $\frac{1}{3}, \frac{5}{8}, \frac{3}{4}$	<b>(D)</b> $\frac{3}{4}, \frac{1}{3}, \frac{5}{8}$

**161.** Which of the following ascending order is correct for the given numbers?

RRB NTPC 09/05/2022 Shift: 2

- (A) 22/7,13/17,11/19,2/3
- **(B)** 11/19,2/3,13/17,22/7

(C) 2/3,11/19,13/17,22/7 (D) 2/3,13/17,11/19.22/7

- 162. Write the given fractions in the correct ascending order. RRB NTPC 09/05/2022 Shift : 3 (A) 3 / 7,15 / 41,19 / 35,7 / 11 (B) 15 / 41,3 / 7,19 / 35,7 / 11 (C) 3 / 7,15 / 41,7 / 11,19 / 35 (D) 19 / 35,7 / 11,15 / 41,3 / 7
- 163. Which of the following ascending order is correct for the given numbers?

	RRB NIPC 23/0//2022 Shit
$(\Delta) \frac{5}{11} \frac{11}{8}$	$(\mathbf{B})^{\frac{8}{5}} \stackrel{5}{\frac{11}{5}}$
$(-)_{6}, \frac{1}{12}, \frac{1}{9}$	
$(C) \frac{5}{2} \frac{8}{2} \frac{11}{11}$	$(\mathbf{D})\frac{11}{2} = \frac{8}{2}$
<b>6</b> '9'12	

164. Which of the following is a terminating decimal range?

-	RRB NTPC 23/07/2022	Shift-2
(A) $\frac{1}{6}$	(B) $\frac{17}{25}$	
(C) <sup>10</sup> / <u>10</u>	(D) <sup>25</sup> / <u>1</u>	
• 3	· / 11	

Which of the following is equivalent to  $0.\overline{56}$ ? 165. RRB NTPC 23/07/2022 Shift-1 E 6

(A) $\frac{30}{100}$	(B) <u>30</u>
(C) $\frac{56}{99}$	(D) $\frac{560}{90}$

- 166. What is the correct expression of  $1.4\overline{27}$ ? RRB NTPC 23/07/2022 Shift-3 (B)  $\frac{157}{110}$ (D)  $\frac{157}{111}$ (A)  $\frac{1427}{1000}$ (C)  $\frac{1427}{10000}$
- 167. The correct expression of  $0.0\overline{18}$  is: RRB NTPC 05/04/2021Shift: 2 **(B)**  $\frac{18}{100}$ (A)  $\frac{1}{55}$ (C)  $\frac{18}{1000}$ (**D**)  $\frac{1}{66}$
- 168. The correct expression of  $0.0\overline{234}$  is: RRB NTPC 11/08/2022Shift: 2 (A)  $\frac{13}{\frac{555}{555}}$ (C)  $\frac{134}{990}$ (**B**)  $2\frac{34}{100}$ (**D**)  $\frac{234}{1000}$ 169. What is the correct expression of  $2.\overline{56}$ ? RRB NTPC 19.01.2017 Shift: 3
  - (A)  $2\frac{560}{90}$ (C)  $2\frac{56}{1000}$ **(B)**  $2\frac{56}{99}$ **(D)**  $2\frac{56}{100}$

- 170. What is the correct expression of  $0.02\overline{36}$ ? RRB NTPC 22.04.2016 Shift: 2
  - (A)  $\frac{13}{550}$ (C)  $2\frac{36}{1000}$ (B)  $\frac{236}{1000}$ (D)  $\frac{100}{555}$
- $126\overline{36} = ?$ 171. RRB NTPC 05/04/2021Shift: 2 (A)  $\frac{139}{1100}$ (C)  $\frac{139}{2200}$ **(B)**  $126 \frac{36}{1000}$ **(D)**  $126 \frac{36}{10000}$
- Solve 0.05 x 0.4? 172. RRB NTPC 23/07/2022 Shift: 2 **(A)** 2 **(B)** 0.2 (C) 0.02 (D) 0.002
- 173. What is the value of 0.000825 ÷ 0.05? RRB NTPC 23/07/2022 Shift : 3 (A) 0.0165 **(B)** 0.65 (D) 0.015 (C) 0.00165
- 174. Find the Solution of 0.275 + 0.569-0.336. RRB NTPC 02/02/2021Shift: 3 (A) 0.123 (B) 0.508 (C) 0.457 (D) 0.594
- 175. Convert 13/55 to decimal. RRB NTPC 09/05/2022 Shift: 1 (A) 0.20 (B) 0.236 (C) 0.245 (D) 0.257
- 176. 414 ÷ 54 is written for which mixed fraction? RRB NTPC 10/08/2022 Shift: 2 (A)  $7\frac{36}{54}$ (B) 7<sup>6</sup>

(C) $7\frac{2}{3}$	<b>(D)</b> $7\frac{\frac{3}{1}}{3}$
(C) $7\frac{2}{3}$	<b>(D)</b> $7\frac{1}{3}$

- Simplify  $\left(\frac{2}{7} + \frac{3}{5}\right) \div \left(\frac{2}{5} + \frac{2}{7}\right)$ . 177. RRB NTPC 10/08/2022 Shift : 2 (A)  $\frac{31}{24}$ (C)  $\frac{26}{25}$ 
  - (B)  $\frac{24}{31}$ (D)  $\frac{12}{12}$
- 178. Simplify:  $\frac{3}{7\frac{1}{2}} + \frac{3}{3\frac{1}{7}}$ (A)  $1\frac{3}{11}$ (C)  $2\frac{3}{7}$

Simplify: 179.  $8\frac{1}{3} \times 4\frac{1}{5} \div 5\frac{1}{4}$ 

RRB NTPC 11/08/2022Shift: 2

RRB NTPC 11/08/2022Shift : 2

(B)  $1\frac{4}{11}$ (D)  $2\frac{4}{7}$ 

	(A) $4\frac{2}{2}$	<b>(B)</b> 5 <sup>3</sup> / <sub>-</sub>	189.	0.968÷0.11=?	
	(C) $7\frac{1}{2}$	( <b>D</b> ) $6^{\frac{2}{4}}$		RRB NTI	PC 23/07/2022 Shift: 3
				(A) 88 (C) 0.88	(B) 8.8 (D) 8
180.	Choose the one which	is completely different		(0) 0.00	
	from the following.	//	190.	If 2334 / 33.1=261, ther	1 23.34 / 3.31=?
	15/20, 48/60, 21/28, 75/	/100 PC 22/07/2022 Shiff+ 2			PC 05/03/2021Shift : 3
	(A) 15/20	<b>(B)</b> 48 / 60		( <b>A</b> ) 0.201 ( <b>C</b> ) 26 1	(D) 2.01 (D) 261
	(C) 21 / 28	( <b>D</b> ) 75 / 100		(•) 2011	(=) =01
			191.	Find the smallest of the following decimals.	
181.	Solve 4/11+2/7+3/5.	DC 02/02/2021 Shift+ 2		<b>RRB N</b>	<b>FPC 10/08/2022Shift-1</b>
	(A) 37 / 35	<b>(B)</b> 481 / 385		( <b>C</b> ) 0.01 / 2	<b>(D)</b> $0.1 \times 0.02 \times 0.2$
	(C) 13 / 35	(D) 37 / 385		(-)	(-)
	E 28 20		192.	Find the smallest of the	following decimals.
182.	Simplify $\frac{3}{28} \div \frac{28}{35} \div \frac{20}{112}$ .			<b>RRB NT</b>	PC 12/08/2022Shift: 2
	RRB NT	PC 05/04/2021Shift: 2		(C) 0.01 / 2	<b>(D)</b> $0.1 \times 0.02 \times 2$
	(A) 4 / 5 (C) 4 / 7	(B) 5 / 4 (D) 7 / 4			
	(0) + / /		193.	Which of the following	fractions falls between
183.	Simplify $\frac{4}{28} \div \frac{28}{27} \div \frac{20}{110}$ .			3/5 and 7/8?	PC 02/02/2021 Shift- 1
	RRB NT	PC 11/08/2022Shift: 2		$(\Delta)^{\frac{8}{2}}$	(B) <sup>6</sup> / <sub>-</sub>
	<b>(A)</b> 7	<b>(B)</b> 4		$(n)_{9}^{12}$	$(D)_{7}^{4}$
	<b>(C)</b> 2	<b>(D)</b> 1		$(0)\frac{1}{13}$	$(D) \frac{1}{7}$
			194.	18 out of 27 matches	s plaved by a tennis
184.	The sum of a fraction	and its inverse is $5\frac{1}{5}$ .		player have been wor	. Find the number of
	Find the different one.	5		matches won as decima	al.
	RRB NT	PC 12/08/2022Shift: 1		(A) 0.667	PC 12/08/2022Shift: 2 (B) 0.067
	(A) 1 / 5 (C) 1 / 3	(B) 1 / 6 (D) 4		(C) 0.50	(D) 0.333
	(0) 173	(D) 4		<b>.</b>	
185.	$lf \frac{1}{42.21} = 0.02314$ , then $\frac{1}{2}$	$\frac{1}{10004321} = ?$	195.	Sania has won 18 of the	ne 27 matches played.
	RRB NTI	PC 19.01.2017 Shift: 2		RRB NT	PC 02/02/2021Shift: 1
	<b>(A)</b> 23.14	<b>(B)</b> 2314.27		<b>(A)</b> 0.333	<b>(B)</b> 0.033
	<b>(C)</b> 0.0002314	<b>(D)</b> 231.4		<b>(C)</b> 0.50	<b>(D)</b> 0.667
186	$\frac{3.24 \times 4}{2} = ?$		196.	Find the largest fraction	among the following
1001	0.2 RRB NTI	PC 19.01.2017 Shift: 3		5/6,6/11,2/3,8/9,6/7	among the relief migr
	(A) $\frac{324}{2}$	<b>(B)</b> $\frac{162}{162}$		RRB JE	- 01/06/2019 (Shift-III)
	$\binom{1}{25}$	$(D) \frac{324}{324}$		(A) 2/3 (C) 5/6	(B) 8/9 (D) 6/7
	$(0) \frac{1}{2}$	$(D) \frac{1}{5}$			
187.	If $\sqrt{5} = 2.236$ , then $\sqrt{5}/3$	2	197.	Find the difference be	tween the largest and
	RRB NT	- PC 12/08/2022Shift: 3		the smallest fractions a	mong 2/3, 3/4, 4/5 and
	(A) 1.851	<b>(B)</b> 1.118		5/6.	IE-22/05/2019 (Shift-I)
	<b>(C)</b> 2.236	<b>(D)</b> 1.782		(A) 3/5	(B) 1/7
188.	Find the value of '?'			<b>(C)</b> 1/6	<b>(D)</b> 2/5
	0.0043/? = 0.43		109	Which of the following it	the largest?
	RRB NT	PC 02/02/2021Shift: 2	190.	RRB JE	- 02/06/2019 (Shift-II)
	(A) 0.10 (C) 1.001	(D) 0.01 (D) 0.001			······································

	(A) 15/16 (C) 34/35	(B) 24/25 (D) 19/20
199.	Arrange the following order. 5/6,3/7,8/9,3/14	g fractions in descending
	<b>RRB</b> (A) 8/9,5/6,3/7,3/14 (C) 5/6,8/9,3/7,3/14	JE - 22/05/2019 (Shift-III) (B) 8/9,3/14,3/7,5/6 (D) 3/7,8/9,5/6,3/14
200.	Which of the followin <b>RRB</b> (A) 5/8,7/12,3/4,13/1 (B) 7/12,13/16,3/4,5/ (C) 5/8,7/12,13/16,3/ (D) 13/16,3/4,5/8,7/1	g is in descending order? J <b>E - 26/06/2019 (Shift-III)</b> 6 8 4 2
201.	Simplify: 0.623 <b>RRB</b> <b>(A)</b> $\frac{623}{999}$ <b>(C)</b> $\frac{617}{990}$	JE - 31/05/2019 (Shift-II) (B) $6\frac{23}{999}$ (D) $6\frac{23}{990}$
202.	Find the value of 0.18 RRB ( (A) 27/90 (C) 17/100	3. J <b>E - 29/05/2019 (Shift-III)</b> (B) 17/90 (D) 18/100
203.	Express $\frac{44}{5}\% + \frac{4}{5}\%$ number. (A) 0.0888 (C) 0.0896	+ $\frac{0.4}{5}$ % as a decimal JE - 26/05/2019 (Shift-III) (B) 0.0998 (D) 0.0968
204.	Which of the follow further simplified? 14 / 21, 33 / 43, 18 / RRB ( (A) 33 / 43 (C) 18 / 24	ving fractions cannot be 24, 41 / 82, 92 / 24 JE - 26/05/2019 (Shift-III) (B) 92 / 24 (D) 41 / 82
		<u>So</u>
1.	Ans.(B)	

- $\frac{1}{8} = 0.125$   $\frac{2}{12} = 0.166$   $\frac{3}{16} = 0.187$   $\frac{4}{20} = 0.200$ So, fraction  $\frac{4}{20}$  is the largest.

205.	Express 368/5	75 in the lowest form.
	(A) 28 / 29 (C) 25 / 29	(B) 30 / 25 (D) 16 / 25
206.	Which of the 18/25?	following fractions is equal to
	<b>(A)</b> 72 / 100 <b>(C)</b> 54 / 100	RRB JE - 30/05/2019 (Shift-III) (B) 36 / 75 (D) 50 / 100
207.	If $0.001 \div x = 0$	0.01, find the value of 'x'. RRB IF - 23/05/2019 (Shift-II)
	<b>(A)</b> 0.5 <b>(C)</b> 0.01	(B) 1 (D) 0.1
208.	Which of the fo of 0.0006697 u	blowing will be the correct value up to three digits of decimal? RBB JF - 23/05/2019 (Shift-II)
	(A) 0.000670 (C) 0.001	(B) 0.00669 (D) 0
209.	Which of the than 7/12 but s	four fractions below is greater smaller than 11/16? RRB JE - 27/06/2019 (Shift-I)
	(A) 1 / 2 (C) 7 / 8	(B) 5 / 8 (D) 3 / 8
210.	The sum of the a fraction is respectively denominator, becomes 2/3. numerator an fraction?	e numerator and denominator of 5 13. By adding 3 and 9 to the numerator and the value of the fraction What will be the product of the d denominator of the original
		RRB JE - 25/05/2019 (Shift-II)
	(A) 45 (C) 30	(B) 42 (D) 24

211. Which of these fractions will not result in Recurring decimal?

 

 10
 (B)  $\frac{12}{30}$  

 14
 (D)  $\frac{8}{30}$ 
(A)  $\frac{10}{30}$ (C)  $\frac{14}{30}$ 

## <u>olution</u>

2.

3.

Ans.(A) (a)  $\frac{5}{20} = 0.25$  (b)  $\frac{8}{64} = 0.125$ (c)  $\frac{3}{15} = 0.2$  (d)  $\frac{25}{1000} = 0.025$ Hence the biggest fraction  $=\frac{5}{20}$ 

**Ans.(A)**  $\frac{4}{9} = 0.444$ 

$$\frac{\frac{5}{4}}{\frac{3}{8}} = 1.25$$
$$\frac{\frac{3}{8}}{\frac{6}{7}} = 0.375$$

So, it is clear that  $\frac{3}{8}$  is the smallest fraction.

4. Ans.(B)

$$\frac{\frac{29}{77}}{\frac{8}{21}} = 0.376$$

$$\frac{\frac{8}{21}}{\frac{5}{14}} = 0.380$$

$$\frac{5}{14} = 0.357, \frac{25}{66} = 0.378$$
So,  $\frac{8}{24}$  is the largest fraction.

Ans.(A): 5.

$$\frac{6}{11}, \frac{13}{18}, \frac{15}{22}, \frac{19}{36}, \frac{5}{6}$$

$$\frac{6}{11} = 0.54, \frac{13}{18} = 0.72$$

$$\frac{15}{22} = 0.68, \frac{19}{36} = 0.52$$

$$\frac{5}{22} = 0.83$$

So, the smallest fraction is  $\frac{19}{36}$ .

Ans.(C) 6.

$$\frac{8}{6} = 1.33$$
  $\frac{6}{5} = 1.20$   
 $\frac{6}{5} = 1.66$ ,  $\frac{9}{5} = 1.80$   
So  $\frac{9}{5}$  is the biggest fraction.

7.

**Ans.(B)**  

$$\frac{3}{15} = 0.2, \qquad \frac{5}{20} = 0.25$$
  
 $\frac{8}{64} = 0.125, \frac{25}{1000} = 0.025$ 

So the smallest fraction is  $\frac{25}{1000}$ 

8. Ans.(A)  $\sqrt{2} = \sqrt{(1.41421356)^2}$  or  $\sqrt{2} = 1.41421356$ Ans.(A) 9.

(a) 
$$\frac{57}{120} = 0.475$$
 (b)  $\frac{47}{150} = 0.313$   
(c)  $\frac{61}{110} = 0.5545$  (d)  $\frac{43}{140} = 0.30714285$   
Therefore, there will be a terminating decimal of  $\frac{57}{120}$ .  
Ans.(A)

$$\frac{\frac{9}{45}}{\frac{6}{45}} = 0.2$$
  
$$\frac{\frac{3}{45}}{\frac{3}{45}} = 0.6666...$$

$$\frac{12}{45} = 0.26666.$$

Hence, it is clear from the above interpretation that the value of option (a) number  $\frac{9}{45}$  is a terminating decimal.

 $\frac{12}{72} = \frac{1}{6} = 0.166666 - \frac{6}{72} = \frac{1}{12} = 0.083333 - \frac{9}{72} = \frac{1}{8} = 0.125 = \text{terminating decimal.}$   $\frac{3}{72} = \frac{1}{24} = 0.041666 - -$ Hence option (a) is correct Hence option (c) is correct. Ans.(D): (a)  $\frac{20}{56} = 0.357142$  (b)  $\frac{25}{56} = 0.44642$ (c)  $\frac{10}{56} = 0.178571$  (d)  $\frac{21}{56} = 0.375$ Hence the value of fraction  $\frac{21}{56}$  will not come in 12. recurring decimal. **Ans.(B)** (a)  $\frac{24}{60} = 0.4$  (b)  $\frac{24}{90} = 0.266$ 13.

(c) 
$$\frac{24}{120} = 0.2$$
 (d)  $\frac{24}{30} = 0.8$   
Hence option (b) is an example of a recurring

decimal. (b) is an examp

#### 14. Ans.(D)

(a) 
$$\frac{27}{480} = 0.05625$$
  
(b)  $\frac{21}{640} = 0.0328125$   
(c)  $\frac{81}{450} = 0.18$   
(d)  $\frac{240}{450} = 0.5333 \dots = 0.5\overline{3}$   
The value of the fraction gi

ven in option (d) is not found in terminating decimal. And the remaining three options are examples of terminating decimal.

#### 15. Ans.(D)

$$\frac{\frac{6}{144}}{\frac{12}{144}} = \frac{\frac{3}{72}}{\frac{1}{24}} = \frac{1}{0.0416}$$

$$\frac{\frac{12}{144}}{\frac{12}{144}} = \frac{1}{\frac{1}{12}} = 0.083$$

$$\frac{\frac{3}{144}}{\frac{9}{144}} = \frac{1}{\frac{1}{16}} = 0.02083$$

$$\frac{9}{144} = \frac{1}{\frac{1}{16}} = 0.0625$$
Hence  $\frac{9}{144}$  is a terminating decimal fraction.
Ans.(A)

047610

$$0.\overline{047619} = \frac{047619}{99999}$$

Let, x = 0.66666 - (i)Multiplying both sides by 10 10x = 6.6666 $10x = 6 + 0.\overline{66} - (ii)$ equation (i) व (ii) से 10x = 6 + x10x - x = 69x = 6 $x = \frac{6}{9}$ or  $x = \frac{2}{3}$ 

18. Ans.(B) (a)  $\frac{81}{150} = 0.54$  (b)  $\frac{80}{150} = 0.5333333$ (c)  $\frac{15}{48} = 0.3125$  (d)  $\frac{21}{600} = 0.035$ Thus, option (b) is true. 19. Ans.(D) 0.0236  $0.02\overline{36} = \frac{0.2\overline{36}}{10}$  $= \frac{236-2}{10\times990} = \frac{234}{9900} = \frac{117}{4950} = \frac{13}{550}$ 20. Ans.(C) The numbers are repeated after the digits in decimal form of  $\frac{7}{11} = 0.6363$ . Hence the correct answer is  $0.\overline{63}$ . 21. Ans.(C) 0.0836 = ?  $= \frac{836-8}{9900} = \frac{828}{9900} = \frac{23}{275}$ Ans.(C) 22.  $\frac{1}{450} = 0.00\overline{2}$ 23. Ans.(C) Let, x = 0.0987 $100x = 9.\overline{87}$ = 9.8787 ... ... = 9.78 + 0.098787 ..... 100x = 9.78 + x99x = 9.78 $x = \frac{9.78}{99} = \frac{978}{9900} = \frac{326}{3300}$ Ans.(D) 24. Ans.(b) (a)  $\frac{27}{60} = 0.45$  (b)  $\frac{27}{72} = 0.375$ (c)  $\frac{27}{48} = 0.5625$  (d)  $\frac{27}{84} = 0.32\overline{142857}$ Therefore the fraction  $\frac{27}{84}$  will be a recurring decimal. 25. Ans.(D) Let,  $0.\overline{41} = x$ 0.414141 ..... = x Multiplying both sides by 100, 100x = 41.4141 ..... 100x = 41 + x99x = 41 $x = \frac{41}{99}$ Therefore, n = 226. Ans.(A)

 $\frac{0.3}{}=?$ 1000  $\frac{\frac{0.3}{0.3}}{1000} = \frac{0.3}{10^3} = 0.3 \times 10^{-3}$  $= 3 \times 10^{-1} \times 10^{-3}$  $? = 3 \times 10^{-4}$ 27. Ans.(D)  $\frac{\frac{4}{9}}{\frac{12}{12}} = \frac{4}{9} \times \frac{1}{12} = \frac{1}{27}$ 28. Ans.(B)  $1\frac{2}{3} = \frac{5}{3}$ Inversely proportional =  $\frac{3}{r}$ 29. Ans.(A) Fractional form of 4.025  $=\frac{4025}{1000}$  $=\frac{161}{1}$ 40 30. Ans.(C) From option, (a)  $\frac{64}{176} = \frac{4}{11}$ (b)  $\frac{20}{55} = \frac{4}{11}$ (c)  $\frac{84}{209} = 0.401$ (d)  $\frac{32}{88} = \frac{4}{11}$ The fraction of option (c) is not the same as  $\frac{4}{11}$ **Ans.(D)**  $2\frac{1}{25} = \frac{51}{25} = 2.04$ 31. 32. Ans.(C) Number of hours in 1 day = 24 $= 24 \times 60 \times 60 \text{ sec}$  $7 \min 12 \sec = (7 \times 60 + 12)$ = (420 + 12)= 432 sec Fraction =  $\frac{432}{24 \times 60 \times 60} = \frac{1}{200}$ 33. Ans.(B) Let the fractions and inverse of fractions be x and  $\frac{1}{x}$  respectively. According to Question –  $x + \frac{1}{x} = 2\frac{25}{66} - - - - - (1)$  $x + \frac{1}{x} - 2\frac{2}{66} - 2 - 2 - 2 - (1)$ From option (b) - $x = 1\frac{5}{6} = \frac{11}{6}$  Putting it in the equation - $\frac{11}{6} + \frac{6}{11} = 2\frac{25}{66}$  $\Rightarrow \frac{121 + 36}{66} = 2\frac{25}{66}$  $\Rightarrow \frac{157}{66} = 2\frac{25}{66}$  $\Rightarrow 2\frac{25}{66} = 2\frac{25}{66}$ So L project fraction = 1<sup>5</sup> So, Largest fraction =  $1\frac{5}{6}$ Ans.(A) 34.  $\frac{\frac{5}{11} + \frac{11}{5}}{\frac{25 + 121}{55}} = \frac{146}{55}$ 35. Ans.(A) Let, positive fraction = x

Inverse =  $\frac{1}{x}$ According to Question  $x - \frac{1}{x} = 6\frac{39}{160}$  $\frac{x^2 - 1}{x} = \frac{999}{160}$  $160x^2 - 160 = 999x$  $160x^2 - 999x - 160 = 0$  $160x^2 - (1024 - 25)x - 160 = 0$  $160x^2 - 1024x + 25x - 160 = 0$ 32x(5x - 32) + 5(5x - 32) = 0(32x + 5)(5x - 32) = 032x + 5 = 0,5x - 32 = 032x = -5,5x = 32 $x = \frac{-5}{32}, x = \frac{32}{5}$ Ans.(C) 36. Let the fraction be  $\frac{x}{1}$ . Then its inverse will be  $\frac{1}{x}$ According to Question,  $\frac{x}{1} - \frac{1}{x} = \frac{9}{11}$  $\Rightarrow x - \frac{1}{x} = \frac{9}{11}$ cubing on both sides,  $\begin{aligned} x^{3} - \frac{1}{x^{3}} &= \left(\frac{9}{11}\right)^{3} + 3 \times \frac{9}{11} \\ [a^{3} - b^{3} &= (a - b)^{3} + 3ab(a - b)] \\ &= \frac{729}{1331} + \frac{27}{11} \\ &= \frac{729 + (27 \times 121)}{1331} = \frac{729 + 3267}{1331} \\ &\therefore x^{3} - \frac{1}{x^{3}} = \frac{3996}{1331} \end{aligned}$ 37. Ans.(D)  $\frac{\frac{3}{15} + \frac{13}{14} - \frac{19}{21} + \frac{31}{35} - \frac{23}{30}}{= \frac{42 + 195 - 190 + 186 - 161}{24}}$ 210  $\Rightarrow \frac{423-351}{210}$  $\Rightarrow \frac{72}{210} = \frac{12}{35}$ 38. Ans.(A) Let fraction =  $\frac{x}{y}$ Then according to the question - $\frac{1}{6} - \frac{x}{y} = \frac{1}{13}$  $\frac{x}{y} = \frac{1}{6} - \frac{1}{13}$  $\frac{x}{y} = \frac{13-6}{78}$  $\frac{x}{y} = \frac{7}{78}$ 39. Ans.(C) Let a fraction =  $\frac{x}{y}$ Second fraction =  $\frac{5}{3}$  (given) According to Question,

 $\frac{x}{y} + \frac{5}{3} = \frac{7}{4}$  $\frac{x}{y} = \frac{7}{4} - \frac{5}{3} = \frac{21 - 20}{12} = \frac{1}{12}$ 40. Ans.(A) Difference of 0.02 and 0.002  $\Rightarrow \frac{0.02 \times 100}{100} - \frac{0.002 \times 1000}{1000}$  $\Rightarrow \frac{2}{100} - \frac{2}{1000}$  $\Rightarrow \frac{20-2}{1000}$  $\Rightarrow \frac{\frac{1000}{18}}{1000} = 0.018$ 41. Ans.(A) Let the fraction is  $\frac{1}{2}$  $\frac{3}{4} - \frac{1}{x} = \frac{5}{12}$  $-\frac{1}{x} = \frac{5}{12} - \frac{3}{4}$  $-\frac{1}{x} = \frac{20 - 36}{48}$  $-\frac{1}{x} = \frac{-16}{48}$  $\frac{1}{x} = \frac{1}{3}$ Ans (A) Ans.(A) 42. The number to be added is x.  $\frac{10}{11} + x = \frac{11}{10}$  $x = \frac{11}{10} - \frac{10}{11} = \frac{121 - 100}{110} = \frac{21}{110}$ 43. Ans.(A) Adding x to the given number gives  $8\frac{3}{7}$ .  $5\frac{3}{5} + x = 8\frac{3}{7}$   $x = 8\frac{3}{7} - 5\frac{3}{5} = \frac{59}{7} - \frac{28}{5}$   $= \frac{295 - 196}{35} = \frac{99}{35}$ Therefore, adding  $\frac{99}{35}$  to the number will give the number  $8\frac{3}{7}$ . 44. Ans.(B) Let x be another fraction. According to Question - $\Rightarrow x + \frac{3}{4} = \frac{7}{6} \Rightarrow x = \frac{7}{6} - \frac{3}{4}$  $\Rightarrow x = \frac{14-9}{12} = \frac{5}{12}$ 45. Ans.(A) Let the fraction be x, Then, According to Question,  $\Rightarrow \frac{x}{1} + \frac{7}{3} = 4$  $\Rightarrow \frac{3x+7}{3} = 4$  $\Rightarrow 3x + 7 = 4 \times 3$  $\Rightarrow 3x + 7 = 12 \Rightarrow 3x = 12 - 7 \Rightarrow 3x = 5$  $\Rightarrow x = \frac{5}{3} = \left(1\frac{2}{3}\right)$ 46. Ans.(C) Let x be another fraction. According to Question –

 $x - \frac{3}{4} = \frac{5}{6}$  $\Rightarrow x = \frac{5}{6} + \frac{3}{4}$  $x = \frac{38}{24} = \frac{19}{12}$ Hence the second fraction is  $\frac{19}{12}$ Ans.(C)  $\Rightarrow \frac{5}{3} + \frac{3}{5} = \frac{25+9}{15}$ 47.  $= 2\frac{4}{15}$ 48. Ans.(D) Difference of  $\frac{25}{12}$  and  $\frac{15}{8} = \frac{25}{12} - \frac{15}{8} = \frac{50 - 45}{24} = \frac{5}{24}$ 49 Ans.(B) Let the number = x $\frac{5}{12} \times x = \frac{25}{3}$  $\frac{x}{4} = 5$ x = 2050. Ans.(C) Let the original fraction =  $\frac{x}{y}$ According to Question,  $\sqrt{\frac{x}{y}} + 1 = 3\frac{1}{4}$  $\sqrt{\frac{x}{y}} = \frac{13}{4} - 1$  $\sqrt{\frac{x}{y}} = \frac{9}{4}$  $\frac{x}{y} = \frac{81}{16}, \frac{x}{y} = 5\frac{1}{16}$ Hence fractions =  $5\frac{1}{16}$ 51. Ans.(D) Difference between  $\frac{11}{12}$  and  $\frac{7}{8}$  $= \frac{11}{12} - \frac{7}{8} \\ = \frac{88 - 84}{96}$  $=\frac{4}{96}$  $=\frac{1}{24}$ 52. Ans.(B) Let that fraction be  $\frac{x}{y}$ According to Question,  $\frac{3}{4} - \frac{x}{y} = \frac{2}{5}$   $\Rightarrow \frac{x}{y} = \frac{3}{4} - \frac{2}{5}$   $\Rightarrow \frac{x}{y} = \frac{15-8}{20}$   $\frac{x}{y} = \frac{7}{20}$ Ans (P) Ans.(B) 53.

Let the number to be added to 3/5 to get 5/4 be x.  $\frac{\frac{5}{4}}{\frac{5}{4}} = \frac{3}{\frac{5}{5}} + x$  $\frac{\frac{5}{4}}{\frac{-3}{5}} = x$  $\frac{\frac{25-12}{20}}{\frac{25}{20}} = x$  $x = \frac{13}{20}$ 54. Ans.(C) Let that fraction be x / y.  $\frac{1}{5} - \frac{x}{y} = \frac{1}{12}$  $\frac{5}{5} \frac{y}{12} = \frac{12}{y}$  $\frac{1}{5} - \frac{1}{12} = \frac{x}{y}$  $\frac{12-5}{60} = \frac{x}{y}$ Therefore  $\frac{x}{y} = \frac{7}{60}$ 55. Ans.(C) Let the fraction be  $\frac{x}{y}$  $\frac{x}{y} + \frac{17}{3} = 4$   $\frac{x}{y} = 4 - \frac{17}{3}$   $= \frac{12 - 17}{3} = \frac{-5}{3}$   $\frac{x}{y} = -1\frac{2}{3}$ Ans (C) Ans.(C) 56. Let fraction = x $x + \frac{5}{16} = 1, x = 1 - \frac{5}{16}$  $x = \frac{11}{16}, x = \frac{2 \times 11}{2 \times 16} = \frac{22}{32}$ 57. Ans.(C)  $\frac{6}{8} = 0.75$ Place value of 5 in 0.75 =  $0.05 = \frac{5}{100}$  $\frac{6}{25} = 0.24$ Place value of 4 in 0.24 =  $0.04 = \frac{4}{100}$ Sum of place values of both =  $\frac{5}{100} + \frac{4}{100} = \frac{9}{100}$ Ans.(B) 58. The absolute value of 0.008594 upto three decimal place will be 0.009. 59. Ans.(A) x + y = 4.51 + 2.48 = 6.99Hence, nearest upper limit of value of (x + y)is the 6.99 = 7.000Ans.(B)  $\frac{144}{0.144} = \frac{14.4}{x}$   $144 \times x = 14.4 \times 0.144$ 60.  $x = \frac{144 \times 0.144}{144}$  $x = \frac{144 \times 0.144}{144 \times 10}$ x = 0.014461. Ans.(C)

Range of x = 0.799995 < x < 0.800005 62. Ans.(C)  $\frac{0.7}{1-6c} = -0.2$ -0.2 + 1.2c = 0.71.2c = 0.9 $c = \frac{0.9}{...}$ c = 0.7563. Ans.(D) 15.835 < x <15.845 64. Ans.(B) If x is an integer 0.70000 (up to 5 decimal places) then - $0.699995 \le x < 0.700005$ 65. Ans.(B) From options: (a)  $\frac{65}{1-14} = \frac{65}{-13} = -5$  (Maximum value) (b)  $\frac{65}{-51-14} = \frac{65}{-65} = -1$  This is an integer for which the value of x is the minimum. (c)  $\frac{65}{79-14} = \frac{65}{65} = +1$  (Maximum value) (d)  $\frac{65}{-1-14} = \frac{65}{-15} = -4.33$  (Not an integer) Hence the minimum value of x will be = -51which makes  $\frac{65}{x-14}$  a whole number. 66. Ans.(C)  $\frac{\frac{144}{100} \times \frac{175}{216}}{= \frac{7}{6}}$ 67. Ans.(A) According to Question, X and Y are correct up to 2 decimal places. X = 3.57 and y = 3.42 respectively So x + y = 3.57 + 3.42 = 6.99Hense, upper limit of x + y = 7.00068. Ans.(C) According to Question, If x = 2.51 and y = 3.50 then x + y = 2.51 + 3.50 = 6.01Minimum value of x + y = 6.00069. Ans.(A)  $\frac{484}{4.84} = \frac{48.4}{x}$  $\Rightarrow x \times 484 = 48.4 \times 4.84$  $\Rightarrow x = \frac{484 \times 484}{484 \times 1000}$ Therefore x = 0.48470. Ans.(B)  $\frac{x}{y} = \frac{6.2}{1.3} = 4.76$ Upper limit of value of  $\frac{x}{y} = 5$ 71. Ans.(A) 1.008 = ? $\Rightarrow \frac{1008}{1000} = \frac{504}{500} = \frac{252}{250} = \frac{126}{125} = 1\frac{1}{125}$ So, ? =  $1\frac{1}{125}$ 72. Ans.(B)

 $X = \frac{63.5535}{2}$  $\begin{array}{l} X = \frac{13.05}{13.05} \\ X = \frac{6355.35}{1305} = 4.87 \end{array}$ 1305 73. Ans.(C)  $17 \times 29 = 493$ , then  $1700 \times 0.0029 = ?$  $\Rightarrow 1700 \times 0.0029$  $\Rightarrow 17 \times 100 \times 0.0029$  $\Rightarrow 17 \times 0.29$ ⇒ 4.93 74. Ans.(B) From option, (a)  $\frac{9}{16} \le \frac{13}{24} = 0.56 \le 0.54$  (false) (b)  $\frac{9}{16} > \frac{13}{24} = 0.56 > 0.54$  (true) (c)  $\frac{9}{16} = \frac{13}{24} = 0.56 = 0.54$  (false) (d)  $\frac{\frac{16}{9}}{\frac{16}{16}} < \frac{\frac{13}{13}}{\frac{13}{24}} = 0.56 < 0.54$  (false) Thus, option (b) is correct. 75. Ans.(B)  $\begin{array}{l} \Rightarrow \frac{77}{72} = 1.0694 \\ \Rightarrow \frac{5}{49} = 0.1020 \\ \Rightarrow \frac{105}{112} = 0.9375 \\ \Rightarrow \frac{104}{121} = 0.8595 \end{array}$ Hence the commutative fraction is  $\frac{5}{40}$ 76. Ans.(C) Let x be the smallest other number. According to Question,  $\frac{3}{8} - x = \frac{1}{5}$  $\begin{array}{r} x = \frac{1}{5} - \frac{3}{8} \\ -x = \frac{8 - 15}{40} \end{array}$  $-x = \frac{-7}{40}$  $x = \frac{7}{40}$ 77. Ans.(A) Let the numerator be x. So fractions =  $\frac{x}{x+5}$ According to Question,  $\frac{x \times 4}{(x+5) \times 3} = \frac{1}{2}$  $\frac{4x}{3x+15} = \frac{1}{2}$ 8x = 3x + 155x = 15x = 3So, fraction =  $\frac{x}{x+5} = \frac{3}{3+5} = \frac{3}{8}$ 78. Ans.(D) Let x be the positive number. According to Question,  $x^2 + 2 = 4\frac{1}{4}$  $x^2 + 2 = \frac{17}{4}$  $4x^2 + 8 = 17$  $4x^2 = 17 - 8$ 

$$x^{2} = 9, x^{2} =$$
$$x = \frac{3}{2} = 1\frac{1}{2}$$

79. Ans.(C): Let the number be x According to Question,  $x \times \frac{5}{12} =$  $\Rightarrow x = \frac{9}{5}$  $x = 1\frac{4}{5}$ 80. Ans.(B) Let x and y be two other distinct numbers. According to Question,  $x + y + 1\frac{1}{2} = 5$   $\Rightarrow x + y = \frac{7}{2}$ ....(i) and  $x - y = \frac{2}{4}$ .....(ii) Subtracting (ii) from equation (i),  $x + y = \frac{7}{2}$  $x - y = \frac{3}{4}$  $\frac{-}{2y = \frac{7}{2} - \frac{3}{4}}$  $2y = \frac{11}{4}$  $y = \frac{11}{8} = 1.4$ Substituting the value of y into equation (i),  $x + \frac{11}{8} = \frac{7}{2}$   $x = \frac{7}{2} - \frac{11}{8} = \frac{17}{8} = 2\frac{1}{8} = 2.125$ Hence it is clear that the largest fraction will be  $2\frac{1}{2}$ . 81. Ans.(B) On rationalization of  $\frac{1}{5-2\sqrt{3}}$  $= \frac{1}{5-2\sqrt{3}} \times \frac{5+2\sqrt{3}}{5+2\sqrt{3}}$  $=\frac{5+2\sqrt{3}}{25-12}$  $=\frac{5+2\sqrt{3}}{13}$ 

82. Ans.(B)

The four friends received the part of the cake =  $\frac{1}{2} + \frac{1}{4} + \frac{5}{12} + \frac{1}{12}$ 

$$= \left(\frac{8+6}{48}\right) + \frac{6}{12} = \frac{14}{48} + \frac{6}{12} = \frac{7}{24} + \frac{6}{12} = \frac{19}{24}$$
  
 $\therefore$  Part of cake received by 5th friend =  $1 - \frac{19}{24}$   
 $= \frac{5}{24}$   
**Ans.(C)**  
 $\frac{2}{3} = 0.6$   
 $\frac{4}{6} = 0.6$   
 $\frac{6}{9} = 0.6$   
So,  $\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$   
These are called equivalent fractions.

Let  $\frac{x}{y}$  be the second fraction,  $\frac{x}{y} + \frac{8}{9} = \frac{9}{10}$  $\frac{x}{y} = \frac{9}{10} - \frac{8}{9}$  $\frac{x}{y} = \frac{81 - 80}{90}$  $\frac{x}{y} = \frac{1}{90}$ So the second fraction will be  $\frac{1}{90}$ 85. Ans.(A)  $\frac{5}{11} = 0.45, \frac{3}{15} = 0.2, \frac{12}{11} = 1.09, \frac{4}{7} = 0.57, \frac{9}{12} = 0.75$ Largest fraction =  $\frac{12}{11}$ Ans.(D):  $\frac{1}{10} = 0.1$   $\frac{1}{100} = 0.01$   $\frac{9}{1000} = 0.009$   $\frac{500}{500} = 0.05$ 86.  $\frac{300}{10000} = 0.05$ 0.1 > 0.05 > 0.01 > 0.009So, it is clear that the fraction  $\frac{9}{1000}$  is the smallest. 87. Ans.(D):  $\frac{8}{19} = 0.421, \frac{9}{22} = 0.409, \frac{10}{23} = 0.43, \frac{11}{24} = 0.458$ So, the largest fraction is 11/24. 88. Ans.(D): The given proportional numbers are  $\frac{11}{14}, \frac{17}{21}, \frac{5}{7}, \frac{2}{3} = \frac{33}{42}, \frac{34}{42}, \frac{30}{42}, \frac{28}{42}$ Decreasing order of numbers  $\frac{17}{21} > \frac{11}{14} > \frac{5}{7} > \frac{2}{3}$ So, the smallest proportional number will be 2/3. 89. Ans.(C) In ascending order 0.65 < 0.67 < 0.76 < 0.86 Hence option (c) is in ascending order. 90. Ans.(C) From option c,  $\frac{13}{33} = 0.39, \frac{20}{47} = 0.42$   $\frac{32}{47} = 0.68, \frac{25}{27} = 0.92$  0.39 < 0.42 < 0.68 < 0.92So,  $\frac{13}{33} < \frac{20}{42} < \frac{32}{47} < \frac{25}{27}$ Ans.(C) 91. Solving by option, From option (c),

84. Ans.(C)

83.

 $\frac{4}{5}, \frac{3}{4}, \frac{2}{3}, \frac{1}{2}$  $= \frac{48}{60} > \frac{45}{60} > \frac{40}{60} > \frac{30}{60}$ Hence  $\frac{4}{5}, \frac{3}{4}, \frac{2}{3}, \frac{1}{2}$  is in descending order 92. Ans.(C)  $\frac{5}{6} = 0.83 \frac{3}{5} = 0.6$  $\frac{7}{9} = 0.77$ Ascending order = 0.6, 0.77 0.83  $\frac{3}{5}, \frac{7}{9}, \frac{5}{6}$ Hence option (c) is correct. 93. Ans.(A)  $\frac{1}{32} = 0.03125$  (Termenating decimal)  $\frac{1}{24} = 0.416666667$  (Recurring decimal)  $\frac{1}{96} = 0.0104166667$  (Recurring decimal)  $\frac{1}{48} = 0.0208333333 (Recurring decimal)$ 94. Ans.(A) 0.0654  $=\frac{654-6}{9900}=\frac{648}{9900}=\frac{18}{275}$ 95. Ans.(b):  $\frac{73}{8} = 9.125$ Åns.(D) 96.  $\frac{\frac{6}{27} \div \frac{27}{30} \div \frac{20}{81}}{= \frac{6}{27} \times \frac{30}{27} \times \frac{81}{20} = \frac{6 \times 3 \times 3}{27 \times 2} = \frac{6}{3 \times 2} = 1$ Ans.(D) 97. Sum of  $\frac{5}{12}$  and  $\frac{12}{5}$ =  $\frac{5}{12} + \frac{12}{5}$ =  $\frac{25 + 144}{60} = \frac{169}{60}$ 98. Ans.(B) Let that fraction be  $\frac{1}{2}$ .  $\frac{1}{2} - \frac{1}{x} = \frac{3}{4}$   $\Rightarrow -\frac{1}{x} = \frac{3}{4} - \frac{1}{2}$   $\Rightarrow -\frac{1}{x} = \frac{3-2}{4}$   $\frac{1}{\frac{1}{x}} = -\frac{1}{4}$ Ans.(A) 4 > 105 = 3599. (a)  $\frac{105}{162} = \frac{35}{54}$ (c)  $\frac{45}{69} = \frac{15}{23}$ (b)  $\frac{75}{115} = \frac{15}{23}$ (d)  $\frac{30}{46} = \frac{15}{23}$ On simplifying all the options, it is clear that the fraction  $\frac{105}{162}$  is not equal to  $\frac{15}{23}$ . 100. Ans.(B)  $0.065 \times 0.4 = 0.026$ 101. Ans.(B)  $0.1404 \div 0.06$  $= \frac{0.1404 \times 100}{0.06 \times 10000} = \frac{1404}{600} = 2.34$ 

#### 102. Ans.(A)

Let fraction =  $\frac{x}{y}$ According to Question,  $\frac{x+3}{y+3} = \frac{10}{11}$  $\Rightarrow 11x + 33 = 10y + 30$  $\Rightarrow 11x - 10y = -3 \dots (i)$ Again  $\frac{x-4}{y-4} = \frac{3}{4}$  $\Rightarrow 4x - 16 = 3y - 12$  $\Rightarrow 4x - 3y = 4$ Solving equations (i) and (ii), x = 7 or y = 8Hence the required fraction =  $\frac{7}{2}$ 103. Ans.(C) 0.1, 0.9, 0.01, 0.09, ...., 0.009 On pairing two and according to the pattern Second last pair will be 0.001,0.009 So, second last term will be 0.001 104. Ans.(D) 196 - 19.6 - 1.96 - 0.196= 196 - 21.756= 174.244105. Ans.(A) 0.196 + 1.96 + 19.6 + 196 = 217.756106. Ans.(C) 123 + 12.3 + 1.23 + 0.123 + 0.0123 = 136.6653107. Ans.(C)  $\frac{91}{15} = 6.066$  $\frac{79}{26} = 3.038$  $\frac{105}{112} = 0.937$  $\frac{112}{\frac{41}{17}} = 0.93$ Hence option (c) is true. 108. Ans.(D)  $\frac{21}{30} = 0.7, \frac{21}{120} = 0.175, \frac{21}{60} = 0.35$  $\frac{21}{90} = 0.23333 \Rightarrow 0.23$ 109. Ans.(C) The value of  $\frac{9}{36}$  in the given fractions is terminating decimal, because  $\frac{9}{36} = \frac{1}{4} = 0.25$ 110. Ans.(D) (a)  $\frac{8}{56} = 0.142857 \dots$  $(b) \frac{6}{\frac{56}{56}} = 0.107142 \dots$ (c)  $\frac{4}{56} = 0.071428 \dots$  $(d) \frac{7}{56} = 0.125$ i.e. (d) will not give a recurring decimal. 111. Ans.(A)

Fraction =  $\frac{y}{17}$ 

 $\frac{\frac{9\times3}{17\times3}}{\frac{9\times7}{17\times7}} = \frac{27}{51}$  $\frac{\frac{9\times7}{17\times7}}{\frac{9\times17}{17\times17}} = \frac{153}{289}$ Simplifying this fraction will not result in  $\frac{9}{17}$ . Hence  $\frac{108}{221}$  is not equal to fractions  $\frac{9}{17}$ . 112. Ans.(D) 130  $=\frac{91}{65}=\frac{7}{5}$ Ans.(C) 113. 1000m = 1km $1m = \frac{1}{1000} km = 0.001 \text{ km}$ 114. Ans.(C) Let x be added to the number. According to Question,  $x + \frac{4}{5} = \frac{5}{4}$  $x = \frac{5}{4} - \frac{4}{5}, x = \frac{25 - 16}{20}, x = \frac{9}{20}$ Ans.(D) 115.  $\frac{5}{8} + \frac{8}{5} = \frac{25+64}{40} = \frac{89}{40}$ Hence answer will be (d). 116. Ans.(C) Let fraction = x / yAccording to Question,  $\frac{1}{2} - \frac{x}{y} = \frac{2}{3} \frac{x}{y} = \frac{1}{2} - \frac{2}{3}$  $\frac{x}{y} = \frac{-1}{6}$ Hence the fraction is  $\frac{-1}{6}$ . 117. Ans.(B) Sum of fractions  $\frac{3}{4}$ First fraction =  $\frac{2}{3}$ : Second fraction =  $\frac{3}{4} - \frac{2}{3}$  $=\frac{9-8}{12}=\frac{1}{12}$ 118. Ans.(B) The number to be added is x  $\frac{2}{3} + x = \frac{3}{2}$  $x = \frac{3}{2} - \frac{2}{3} = \frac{9-4}{6} = \frac{5}{6}$ 119. Ans.(B) Let the fraction be x / y. According to Question,  $\frac{1}{3} - \frac{x}{y} = \frac{1}{12}$   $\frac{x}{y} = \frac{1}{3} - \frac{1}{12} = \frac{4-1}{12} = \frac{3}{12} = \frac{1}{4}$   $\frac{x}{y} = \frac{1}{4}$ According to Question, 120. Ans.(D) Let x be another fraction. According to Question,

 $x + \frac{3}{4} = \frac{5}{6}$  $\therefore x = \frac{5}{6} - \frac{3}{4} = \frac{10-9}{12} = \frac{1}{12}$ 121. Ans.(B) Let the number to be added = x, So,  $x = 1 - \frac{5}{7}$  $x = \frac{2}{7} = \frac{6}{21}$ 122. Ans.(C) Let the fraction be x. According to Question,  $\frac{5}{8} + x = 1$  $x = 1 - \frac{5}{8}$  $x = \frac{3 \times 2}{8 \times 2}$  $x = \frac{6}{16}$ Ans.(C) 123. Given that - $23 \times 19 = 437$ By question,  $\frac{0.0437}{1.9} = \frac{0.0437 \times 100}{1.9 \times 10000}$  $= \frac{\frac{1.9}{23 \times 19}}{\frac{19}{19 \times 1000}}$  $=\frac{23}{1000}$ = 0.023124. Ans.(D) Dividing 493 by 29 gives quotient 17 and remainder 0. Similarly, dividing 4.93 by 0.0017 gives the quotient 2900 and the remainder zero. 125. Ans.(C)  $23 \times 31 = 713$  (multiplying the two). In the same way - $0.0713 \div 3.1 = 0.023$  (the two are divided). 126. Ans.(B)  $170 \times 0.029 = 17 \times 10 \times \frac{29}{1000}$  $= \frac{17 \times 29}{100} = \frac{493}{100} = 4.93$ 127. Ans.(A) Let x is different Then fractions,  $\frac{4}{7} < x > \frac{5}{6}$ Then, x (Middle fraction) =  $\frac{\text{Sum of both fractions}}{2}$  $x = \frac{\frac{4}{7} + \frac{5}{6}}{2} = \frac{\frac{24+35}{42}}{2} = \frac{59}{84}$ 128. Ans.(C) Required number =  $\frac{\text{Product of both numbers}}{\text{First numbers}}$  $=\frac{0.432}{1.6}$ = 0.27129. Ans.(C) By option -

(a) 
$$\frac{29}{6} = \frac{53}{12}$$
 (false)  
(b)  $\frac{29}{6} = \frac{43}{12}$  (false)  
(c)  $\frac{29}{6} > \frac{43}{12}$  (true)  
(d)  $\frac{29}{6} < \frac{43}{12}$  (true)  
**Ans.(D)**

Total length of the rod =  $208\frac{4}{5} = \frac{1044}{5}$ The given rod has to be cut into equal pieces of length  $23\frac{1}{5}$ .

Hence the number of rods produced

Length of total rods Length of one part

$$= \frac{\frac{1044}{5}}{23\frac{1}{5}}$$
$$= \frac{\frac{1044}{5}}{\frac{116}{5}}$$
$$= \frac{1044}{5} \times \frac{5}{116}$$
$$= \frac{1044}{5} = 9$$

 $=\frac{1}{116}$ 131. Ans.(C)

Cut steel rod =  $20\frac{3}{26} = \frac{523}{26}$ Total steel rod =  $56\frac{1}{5} = \frac{281}{5}$ Length of remaining rod =  $\frac{281}{5} - \frac{523}{26}$ =  $\frac{7306 - 2615}{130} = \frac{4691}{130} = 36\frac{11}{130}$ 

#### 132. Ans.(B)

Let the weight of the brick be x kg. According to Question,

$$\frac{5x}{4} = \frac{7}{8} \\ x = \frac{7}{8} \times \frac{4}{3} \\ \text{So,} \frac{5x}{7} = \frac{7}{8} \times \frac{4}{3} \times \frac{5}{7} \\ \frac{5x}{7} = \frac{5}{6} \\ x = \frac{5}{8} \\ x = \frac{7}{8} \times \frac{4}{3} \times \frac{5}{7} \\ x = \frac{5}{8} \\ x = \frac{$$

Therefore,  $\frac{5}{7}$  part of the weight of brick will be equal to  $\frac{5}{6}$  kg. **Ans.(B)** 

#### 133. Ans.(B

Part of Tapan =  $\frac{1}{4}$ Part of Trisha =  $\frac{2}{3}$   $\therefore$  remaining part has ravi. =  $1 - \frac{11}{12}$ =  $\frac{1}{12}$  part

#### 134. Ans.(B)

Let the second number = x first number = 1.2 Product of both numbers = 0.324 According to Question, Hence, x x1.2 = 0.324  $x = \frac{0.324}{1.2} = 0.27$ 

#### 135. Ans.(B)

136.

```
Avi's get part of cake

= 1 - \left(\frac{1}{2} + \frac{1}{3}\right)
= 1 - \left(\frac{3+2}{6}\right)
= \frac{6-5}{6} = \frac{1}{6} \text{ part}
Ans.(D)

According to Question,
```

# $\frac{\frac{60}{75}}{\frac{1}{75}} = \frac{4}{x}$ $\Rightarrow x = \frac{4 \times 75}{60}$ $\Rightarrow x = 5$

#### **137.** Ans.(C) 3 3 3 3

 $\frac{3}{4}, \frac{3}{5}, \frac{3}{8}, \frac{3}{11}$ 

 $\therefore$  The numerator of all fractions is the same, so the fraction whose denominator is the largest will be the smallest fraction. Hence the required fraction 3/11

#### 138. Ans.(A)

 $\frac{\frac{6}{5}}{\frac{3}{2}} = 1.2, \frac{4}{3} = 1.33$  $\frac{3}{2} = 1.5, \frac{5}{4} = 1.25$ 

Therefore,  $\frac{6}{5}$  is the lowest fraction.

### 139. Ans.(D)

 $\frac{3}{4} = 0.75, \frac{4}{5} = 0.80, \frac{5}{6} = 0.833, \frac{7}{8} = 0.875$ So the largest fraction is  $\frac{7}{8}$ 

#### 140. Ans.(D)

 $\frac{5}{8} = 0.625, \frac{3}{4} = 0.75, \frac{13}{16} = 0.8125$  $\frac{7}{12} = 0.58$ So the smallest fraction is 7/12.

#### 141. Ans.(A)

By options,  $\frac{3}{4} = 0.75, \frac{4}{5} = 0.80$  $\frac{5}{6} = 0.83, \frac{6}{7} = 0.85$ 

 $\therefore$  smallest fraction =  $\frac{3}{4}$ 

142. Ans.(A)  $\frac{3}{5} = 0.6, \frac{5}{6} = 0.83, \frac{2}{3} = 0.66, \frac{4}{5} = 0.8$ Hence the smallest fraction is  $\frac{3}{5}$  among the given options.

## 143. Ăns.(C)

 $\frac{1}{3} = 0.333, \frac{4}{15} = 0.266 \text{ and } 0.33$  0.266 < 0.33 < 0.333  $\frac{4}{15} < 0.33 < \frac{1}{3}$ Hence, the ascending order of numbers will be  $\frac{4}{15}, 0.33, \frac{1}{3}$ .

144. Ans.(D)

 $\frac{3}{10} = 0.30, \frac{4}{15} = 0.26, \frac{1}{3} = 0.33$ 0.26 < 0.30 < 0.33  $\frac{4}{15} < \frac{3}{10} < \frac{1}{3}$ Ans.(D) 145.  $\begin{array}{l} \frac{12}{43} = 0.27, \frac{32}{67} = 0.47, \frac{45}{81} = 0.55, \frac{22}{55} = 0.4\\ \frac{12}{43} < \frac{22}{55} < \frac{32}{67} < \frac{45}{81}\\ 0.27 < 0.4 < 0.47 < 0.55 \end{array}$ hence option d is correct. 146. Ans.(A)  $\frac{\frac{25}{51}}{\frac{47}{63}} = 0.490 \frac{12}{19} = 0.631$  $\frac{\frac{47}{63}}{\frac{63}{79}} = 0.746 \frac{63}{79} = 0.797$  $\begin{array}{r} \frac{1}{12} \\ 0.490 < 0.631 < 0.746 < 0.797 \\ \text{Therefore } \frac{25}{51} < \frac{12}{19} < \frac{47}{63} < \frac{63}{79} \end{array}$ Ans.(D) 147.  $\frac{\frac{13}{21}}{\frac{52}{94}} = 0.619, \frac{57}{97} = 0.587$  $\frac{52}{94} = 0.553, \frac{36}{79} = 0.455$ So  $\frac{36}{79} < \frac{52}{94} < \frac{57}{97} < \frac{13}{21}$ Ans.(B) 148.  $\frac{3}{8} = 0.37$   $\frac{19}{73} = 0.26$   $\frac{29}{47} = 0.61$   $\frac{17}{39} = 0.43$ The correct The correct order  $\frac{19}{73} < \frac{3}{8} < \frac{17}{39} < \frac{29}{47}$ 149. Ans.(C) Solving by option, (a)  $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{1}{2} \rightarrow 0.67, 0.75, 0.8, 0.5$ (b)  $\frac{3}{4}, \frac{4}{5}, \frac{1}{2}, \frac{2}{3} \rightarrow 0.75, 0.8, 0.5, 0.67$ (c)  $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5} \rightarrow 0.5, 0.67, 0.75, 0.8$ (d)  $\frac{4}{5}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4} \rightarrow 0.8, 0.5, 0.67, 0.75$ Hence option (c) is correct. 150. Ans.(D)  $\frac{24}{29} = 0.827, \frac{5}{13} = 0.384$  $\frac{7}{9} = 0.777, \frac{11}{47} = 0.234$ Arranged in descending order - $\frac{24}{29}, \frac{7}{9}, \frac{5}{13}, \frac{11}{47}$ 151. Ans.(C) By question,  $\frac{2}{3} = 0.66 \dots \dots$  $\frac{5}{2} = 0.83 \dots$  $\frac{3}{4} = 0.75 \dots$ In ascending order

0.66 < 0.75 < 0.83 $\Rightarrow \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$ Hence option (c) is the correct answer. 152. Ans.(C)  $\frac{1}{3} = 0.33$ = 0.25 2  $\frac{-}{5} = 0.4$ Ascending order = 0.2, 0.3, 0.4 $=\frac{1}{5},\frac{1}{3},\frac{2}{5}$ 153. Ans.(C)  $\frac{5}{8} = 0.625 \frac{19}{24} = 0.791 \frac{11}{16} = 0.687$ Ascending order 0.625 < 0.687 < 0.791  $\frac{5}{8} < \frac{11}{16} < \frac{19}{24}$ Åns.(D) 154. By question,  $\frac{13}{41} = 0.31, \frac{32}{67} = 0.47$   $\frac{45}{81} = 0.55, \frac{23}{53} = 0.43$ It is clear that,  $\begin{array}{l} 0.31 < 0.43 < 0.47 < 0.55 \\ \Rightarrow \frac{13}{41} < \frac{23}{53} < \frac{32}{67} < \frac{45}{81} \\ \end{array}$ Hence, the order of option (d) is correct. 155. Ans.(C)  $\frac{11}{17} = 0.64, \frac{41}{63} = 0.65$  $\frac{3}{7} = 0.42, \frac{21}{29} = 0.72$ Ascending order = 0.42,0.64,0.65,0.72 =  $\frac{3}{7} < \frac{11}{17} < \frac{41}{63} < \frac{21}{29}$ Ans.(C) 156. By question,  $\frac{1}{3} = 0.33, \frac{2}{8} = 0.25$  and 0.3 In ascending order 0.25 < 0.3 < 0.33  $=\frac{2}{8}, 0.3, \frac{1}{3}$ Thus, the ascending order of option (c) is correct. 157. Ans.(D)  $\frac{3}{4} = 0.75, \frac{17}{24} = 0.7083, \frac{2}{3} = 0.6$ Ascending order of numbers (increasing order)  $\frac{2}{3}, \frac{17}{24}, \frac{3}{4}$ 158. Ans.(C) By writing the given numbers in decimal value.

 $0.3, \frac{3}{7} = 0.42, \frac{2}{7} = 0.28$ Ascending order = 0.28, 0.3.0.42 $\frac{2}{7}, 0.3, \frac{3}{7}$ Ans.(C) 159.  $\frac{1}{2} = 0.5, \frac{2}{3} = 0.66, \frac{7}{12} = 0.58$ Ascending order  $\frac{1}{2} < \frac{7}{12} < \frac{2}{3}$ Ans.(C) =  $0.33, \frac{3}{4} = 0.75, \frac{5}{8} = 0.625$ 160. Ascending order =  $\frac{1}{3}, \frac{5}{8}, \frac{3}{4}$ Ans.(B)  $\frac{22}{7} = 3.14, \frac{13}{17} = 0.76$   $\frac{11}{19} = 0.57, \frac{2}{3} = 0.67$ 161. Hence, the ascending order will be  $\frac{11}{19} < \frac{2}{3} < \frac{13}{17} < \frac{22}{7}$ . 162. Ans.(B)  $:: \frac{15}{41} = 0.365, \frac{3}{7} = 0.428$  $\frac{19}{35} = 0.542, \quad \frac{7}{11} = 0.636$ Hence, the ascending order (increasing order) is as follows.  $\frac{15}{41} < \frac{3}{7} < \frac{19}{35} < \frac{7}{11}$ Thus, option (b) is correct. Ans.(C) 163.  $\frac{5}{6} = 0.83$  $\frac{11}{12} = 0.92$  $\frac{8}{9} = 0.88$ = 0.92 "Ascending order =  $\frac{5}{6}, \frac{8}{9}, \frac{11}{12}$ 164. Ans.(B) Option (a)  $\frac{1}{6} = 0.166 \dots \dots$  (Recurring decimal) Option (b)  $\frac{17}{25} = 0.68 \dots$  (Terminating decimal) Option (c)  $\frac{10}{3} = 3.33 \dots$  (Recurring decimal) Option (d)  $\frac{1}{11} = 0.090909 \dots \dots$  (Recurring decimal) Ans.(C) 165.  $0.\overline{56} = 0 + \frac{56}{99}$  $0.\overline{56} = \frac{56}{99}$ 166. Ans.(B)  $1.4\overline{27} = 1 + 4\overline{27} = 1 + 4\overline{27} = 1 + \frac{427-4}{990}$ 

 $= 1 + \frac{423}{990} = 1 + \frac{47}{110}$  $=\frac{157}{110}$ 167. Ans.(A)  $x = 0\overline{18} = \frac{18 - 0}{990}$  $=\frac{1}{55}$ 168. Ans.(A)  $0.0\overline{234} = \frac{234-0}{0000}$  $\begin{array}{rcl} 0.0234 &= & & \\ \hline & & & \\ = & \frac{234}{9990} &= & \frac{78}{3330} &= & \frac{13}{555} \end{array}$  $? = \frac{13}{13}$ 555 Ans.(B) 169.  $2.\overline{56} \Rightarrow 2 + \frac{56}{99} = 2\frac{56}{99}$ Ans.(A)  $0.02\overline{36} = \frac{236-2}{9900}$   $= \frac{234}{9900} = \frac{13}{550}$ 170. 171. Ans.(A) By question,  $0.126\overline{36} = \frac{12636 - 126}{99000} = \frac{12510}{99000}$  $=\frac{1251}{9900}=\frac{139}{1100}$ 139 172. Ans.(C)  $0.05 \times 0.4 = 0.02$ 173. Ans.(A)  $\frac{0.000825}{0.05} = 0.0165$ 174. Ans.(B) 0.275 + 0.569 - 0.336 = 0.844 - 0.336 = 0.508175. Ans.(B) 176. Ans.(C)  $414 \div 54 = \frac{414}{54} = \frac{23 \times 18}{3 \times 18} = 7\frac{2}{3}$ Ans.(A) 177.  $\left(\frac{2}{7} + \frac{3}{5}\right) \div \left(\frac{2}{5} + \frac{2}{7}\right)$  $\begin{pmatrix} 10 + 21 \\ 35 \end{pmatrix} \div \begin{pmatrix} 14 + 10 \\ 35 \end{pmatrix}$  $\frac{31}{35} \div \frac{24}{35} = \frac{31}{35} \times \frac{35}{24} = \frac{31}{24}$ Ans.(B) 178.  $\frac{\frac{3}{7\frac{1}{3}} + \frac{3}{3\frac{1}{7}}}{\frac{1}{22}} = \frac{\frac{3}{22}}{\frac{2}{3}} + \frac{3}{\frac{22}{7}}}{\frac{22}{7}}$  $= \frac{9}{22} + \frac{21}{22} = \frac{30}{22} = \frac{15}{11} = 1\frac{4}{11}$ Ans.(D)  $8\frac{1}{3} \times 4\frac{1}{5} \div 5\frac{1}{4} = \frac{25}{3} \times \frac{21}{5} \div \frac{21}{4}$   $= \frac{25}{3} \times \frac{21}{5} \times \frac{4}{21} = \frac{20}{3} = 6\frac{2}{3}$ 179.  $\frac{3}{15} = \frac{5 \times 3}{5 \times 4}$  $\frac{15}{20} = \frac{5 \times 3}{5 \times 4}$  $\frac{48}{60} = \frac{12 \times 4}{12 \times 5}$ 180.

 $\frac{21}{28} = \frac{7 \times 3}{7 \times 4}, \frac{75}{100} = \frac{25 \times 3}{25 \times 4}$ So  $\frac{48}{60}$  is different. 181. Ans.(B)  $\frac{\frac{4}{11} + \frac{2}{7} + \frac{3}{5}}{\frac{35\times4 + 2\times55 + 3\times77}{385}} = \frac{140 + 110 + 231}{385} = \frac{481}{385}$ 385 Ans.(B) 182.  $\frac{5}{28} \div \frac{28}{35} \div \frac{20}{112} = \frac{5}{28} \times \frac{35}{28} \times \frac{112}{20} = \frac{5}{4}$ Ans.(D) 183. Given - $\begin{aligned} &= \frac{4}{28} \div \frac{28}{35} \div \frac{20}{112} \\ &= \frac{4}{28} \times \frac{35}{28} \times \frac{112}{20} \\ &= 1 \end{aligned}$ Ans.(A) 184. Let number be x and its reciprocal is  $\frac{1}{x}$ . According to Question  $x + \frac{1}{x} = 5\frac{1}{5}$  $\Rightarrow \frac{x^2 + 1}{x} = \frac{26}{5}$  $\Rightarrow$  5x<sup>2</sup> + 5 = 26x  $\Rightarrow 5x^2 - 26x + 5 = 0$  $\Rightarrow 5x^2 - 25x - x + 5 = 0$  $\Rightarrow 5x(x-5) - 1(x-5) = 0$  $\Rightarrow$  (5x-1)(x-5) = 0 $\therefore 5x-1 = 0$  $\Rightarrow$  5x = 1  $\Rightarrow x = \frac{1}{5}$ 185. Ans.(B) Given - $\Rightarrow \frac{1}{43.21} = 0.02314$  $= \frac{1}{43.21 \times 10^{-5}} = \frac{10^5}{43.21} = 2314.27$ 186. Ans.(D)  $\frac{3.24 \times 4}{0.2} = \frac{3.24 \times 4 \times 10}{0.2 \times 100}$  $= \frac{324 \times 4}{20} = \frac{324}{5}$ 187. Ans.(B)  $\frac{\sqrt{5}}{2} = \frac{2.236}{2} = 1.118$  $(::\sqrt{5} = 2.236)$ 188. Ans.(B)  $\frac{\frac{0.0043}{x}}{x} = \frac{0.43}{\frac{0.0043}{43}}$  $\begin{array}{l} x = \frac{1}{0.43} \\ x = \frac{43}{4300} = \frac{1}{100} \end{array}$ x = 0.01189. Ans.(B)  $0.968 \div 0.11$  $=\frac{968}{110}$ = 8.8 190. Ans.(C)

Given - $\frac{2334}{2334} = 261 \dots (1)$ 33.1  $\because \frac{23.34}{3.31} = \frac{2334}{331}$  $= \frac{\frac{3.31}{2334}}{\frac{2334}{33.1 \times 10}} = \frac{\frac{2334}{33.1} \times \frac{1}{10}}{\frac{261}{10}}$  (From equation (1) = 26.1191. Ans.(D) Given -(A)  $0.1 \times 0.1 \times 0.1 = 0.001$ (b) 0.03 / 3 = 0.01(C) 0.01 / 2 = 0.005(d)  $0.1 \times 0.02 \times 0.2 = 0.0004$ Hence, option (d) is the smallest. 192. Ans.(D)  $\Rightarrow 0.2 \times 0.2 \times 0.2 = 0.008$  $\Rightarrow \frac{0.02}{2} = 0.0067$  $\Rightarrow \frac{0.01}{2} = 0.005$  $\Rightarrow 0.1 \times 0.02 \times 2 = 0.004$ Hence the smallest number is option (d). 193. Ans.(B)  $\therefore \frac{3}{5} = 0.60 - \dots - \frac{7}{8} = 0.875$ Option (a)  $\frac{8}{9} = 0.888$  (b)  $\frac{6}{7} = 0.857$ (c)  $\frac{12}{13} = 0.923$  (d)  $\frac{4}{7} = 0.571$ And Hence option (b) falls between  $\frac{3}{5}$  and  $\frac{7}{8}$ . 194. Ans.(A) Number of matches won =  $\frac{18}{27}$  = 0.667 195. Ans.(A) Number of matches lost =  $\frac{27-18}{27}$ 9 27 =  $=\frac{1}{3}$ = 0.333196. Ans.(B)  $\frac{5}{1} = 0.83$  $\frac{\frac{6}{6}}{\frac{11}{11}} = 0.83$  $\frac{\frac{6}{11}}{\frac{2}{3}} = 0.67$  $\frac{\frac{8}{9}}{\frac{9}{6}} = 0.89$  $\frac{6}{-} = 0.85$ Largest fraction =  $0.89 = \frac{8}{2}$ 197. Ans.(C)  $\frac{2}{3} = 0.66$  Smallest fraction  $\frac{3}{4} = 0.75$ 

 $\frac{4}{5} = 0.8$ = 0.83 Largest fraction Difference between largest and smallest fractions =  $\frac{5}{6} - \frac{2}{3} = \frac{5-4}{6} = \frac{1}{6}$ 198. Ans.(C) 15/16 = 0.93724/25 = 0.9634/35 = 0.9719/20 = 0.95Hence option (c) is the largest. 199. Ans.(A)  $\frac{5}{6} = 0.83, \frac{3}{7} = 0.42, \frac{8}{9} = 0.88, \frac{3}{14} = 0.21$ Descending order of fractions  $\frac{8}{9}, \frac{5}{6}, \frac{3}{7}, \frac{3}{14}$ 200. Ans.(D) Writing in descending order -(a) 5/8 = 0.62,7/12 = 0.58,3/4 = 0.75,13/16= 0.81(b) 7/12 = 0.58, 13/16 = 0.81, 3/4 = 0.75, 5/8= 0.62(c) 5/8 = 0.62,7/12 = 0.58,13/16 = 0.81,3/4= 0.75(d) 13/16 = 0.81, 3/4 = 0.75, 5/8 = 0.62, 7/12= 0.58201. Ans.(C)  $0.6\overline{23}$  $= \frac{\frac{623-6}{990}}{\frac{617}{990}}$  (From decimal system) =  $\frac{\frac{617}{990}}{\frac{617}{990}}$ 202. Ans.(B)  $0.1\overline{8} = \frac{18-1}{10\times9} = \frac{17}{90}$ Ans.(D)  $\frac{44}{5}\% + \frac{4}{5}\% + \frac{0.4}{5}\%$ 203.  $= \frac{48.4}{5}\%$   $= \frac{48.4}{5}\%$   $= \frac{48.4}{500} = \frac{0.484}{5} = 0.0968$  **Ans.(A)**  $\frac{14}{21} = \frac{2}{3}, \frac{33}{43} = \frac{33}{43}$   $\frac{18}{24} = \frac{3}{4}, \frac{92}{24} = \frac{23}{6}$   $\frac{41}{82} = \frac{1}{2}$ Therefore <sup>33</sup> cannot be a 204. Therefore,  $\frac{33}{43}$  cannot be simplified further.

205. Ans.(D)  $\frac{368}{575} = \frac{16}{25}$ 206. Ans.(A) A fraction equal to  $\frac{18}{25}$  would be  $\frac{72}{100}$  or  $\frac{18}{25}$ . 207. Ans.(D)  $0.001 \div x = 0.01$  $\frac{0.001}{0.001} = 0.01$  $\frac{\overset{x}{0.1}}{=} 1 \Rightarrow x = 0.1$ 208. Ans.(C) True value of 0.0006697 upto three digits of decimal= 0.001 209. Ans.(B)  $\frac{7}{12} = 0.58 \frac{11}{16} = 0.68$ Hence the value of the fraction will be greater than 0.58 but smaller than 0.68. (b)  $\frac{5}{8} = 0.62$ (d)  $\frac{3}{8} = 0.37$ (a)  $\frac{1}{2} = 0.50$ (c)  $\frac{\frac{7}{7}}{8} = 0.87$ Hence the value of the option is 0.62 which is larger than 0.58 but smaller than 0.68. Hence the fraction will be  $\frac{5}{2}$ . 210. Ans.(B) Let numerator = x and denominator = y $x + y = 13 \dots$  (i)  $\frac{x+3}{y+9} = \frac{2}{3}$ 3x + 9 = 2y + 183x + 9 = 2y + 18 (ii) Solving equations (i) and (ii), x = 7, y = 6The product of the numerator and denominator =  $xy = 7 \times 6 = 42$ 211. Ans.(B) By options, (a)  $\frac{10}{30} = \frac{1}{3} = 0.3$ (b)  $\frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 0.4$ 

(c) 
$$\frac{14}{30} = \frac{7}{15} = 0.46$$

 $(d) \ \frac{8}{30} = \frac{4}{15} = \ 0.26$ 

Hence option (b) is not in recurring decimal.

# 03. (Surds and indices)

1.	1. What will be square root of 11881? RRB Group - 19/11/2022 (Shift-II)			(A) 76 (C) 84	<b>(B)</b> 64
	(1) 100	(P) 110		(0) 04	<b>(D)</b> 00
	(A) 109 (C) 111	(D) 101	11	Find square root	of 15625
					01 10020. roup_D = 27/11/2022 (Shift-I)
2	Which of the f	allowing numbers is square root		(A) 145	(B) 125
Ζ.		Showing numbers is square root		(A) 140 (C) 405	(B) 123 (B) 150
		Crown D 40/44/2022 (Shift I)		(6) 135	<b>(D)</b> 150
		Group-D - 19/11/2022 (Shift-I)		-	
	(A) 129	(B) 121	12.	Find the Value of	√37249-
	<b>(C)</b> 119	<b>(D)</b> 131		RRB Gr	oup-D - 16/10/2018 (Shift-II)
-				<b>(A)</b> 183	<b>(B)</b> 187
3.	What is square	e root of 7569?		<b>(C)</b> 197	<b>(D)</b> 193
	RRB	Group-D - 19/11/2022 (Shift-II)			
	<b>(A)</b> 77	<b>(B)</b> 87	13	If x is positive and	$d \frac{x}{-1} = \frac{\sqrt{2187}}{\sqrt{2187}}$ then x = ?
	<b>(C)</b> 93	<b>(D)</b> 83	10.		$\sqrt{243}$ , then $\chi = 1$
				RRB Gr	oup-D - 12/11/2018 (Shift-II)
4.	What is square	e root of 8281?		<b>(A)</b> 29	<b>(B)</b> 27
	RRB	Group-D - 11/10/2018 (Shift-II)		<b>(C)</b> 23	<b>(D)</b> 21
	<b>(A)</b> 81	<b>(B)</b> 91			
	(C) 89	<b>(D)</b> 99	14.	Solve the equation	on given below ?
				$\sqrt{54} \times \sqrt{6} = ?$	
5.	What is the sq	uare root of 3364?		RRB Gro	oup-D - 23/10/2018 (Shift-III)
	RRB	Group-D - 15/10/2018 (Shift-I)		<b>(A)</b> 18	<b>(B)</b> 19
	<b>(A)</b> 64	<b>(B)</b> 62		<b>(C)</b> 20	<b>(D)</b> 16
	(C) 58	(D) 52		(-)	
	(-,	(-)	15.	Which of the follo	wing numbers is irrational?
6	What will be ve	alue of $\sqrt{183184}$ .		RRB Gr	oup-D - 15/10/2018 (Shift-III)
0.		Group-D - 30/10/2018 (Shift-II)		(A) <sup>6</sup> /4006	(B) $\frac{4}{4006}$
	(A) 414	(P) 422		(A) $\sqrt[9]{4090}$	(D) $\sqrt[3]{4090}$
	(A) 414 (C) 429	(B) 432 (D) 416		(C) √4096	<b>(D)</b> √4096
	(6) 420	<b>(D)</b> 416			
7			16.	What will be squa	are root of 25281?
7.	The square roo	DI 01 00025 IS-		RRB G	iroup 'D' 07/12/2018 (Shift-I)
		Group-D - 19/11/2022 (Snift-III)		<b>(A)</b> 149	<b>(B)</b> 143
	(A) 275	(B) 255		<b>(C)</b> 139	<b>(D)</b> 159
	<b>(C)</b> 245	<b>(D)</b> 265			
			17.	What is the squar	re root of 39204?
8.	The square ro	ot of 4624 is-		RRB Gro	oup-D - 07/12/2018 (Shift-III)
	RRB	Group-D - 19/11/2022 (Shift-III)		<b>(A)</b> 198	<b>(B)</b> 196
	<b>(A)</b> 62	<b>(B)</b> 72		<b>(C)</b> 194	<b>(D)</b> 202
	<b>(C)</b> 78	<b>(D)</b> 68			
			18.	Which of the follo	owing number is square root
9.	What is square root of 5476?			of 35721?	
	RRB	Group-D - 08/10/2022 (Shift-I)		RRB Gr	oup-D - 06/12/2018 (Shift-II)
	<b>(A)</b> 84	<b>(B)</b> 74		<b>(A)</b> 179	<b>(B)</b> 189
	<b>(C)</b> 66	<b>(D)</b> 76		(C) 171	(D) 201
	-			x - /	
10.	The square ro	ot of 4356 is	19.	The square root of	of 41616 is:
				•	

RRB Group-D - 26/11/2022 (Shift-II)

The square root of 41616 is: RRB Group-D - 01/09/2022 (Shift-II)

	(A) 196 (C) 186	<b>(B)</b> 204 <b>(D)</b> 194		<b>(A)</b> 2.14 <b>(C)</b> 2.04	( <b>B</b> ) 2.16 ( <b>D</b> ) 2.06
20.	What is square root of 1	16641?	31.	Find the value of $\sqrt{0.5}$	_
	(A) 120	(B) 121		RRB Group-I	D - 04/10/2018 (Shift-II)
	(A) 139 (C) 129	(D) 131		(A) 0.707	<b>(B)</b> 0.947
	(0) 123			( <b>C</b> ) 0.787	( <b>U</b> ) 0.897
21.	What is square root of 2 RRB Group-D	243049? - 15/11/2018 (Shift-III)	32.	The value of $\sqrt{0.6}$ is-	D - 05/10/2018 (Shift-I)
	<b>(A)</b> 497	<b>(B)</b> 503		(A) 0 944	(B) 0 874
	<b>(C)</b> 493	<b>(D)</b> 487		(C) 0.894	( <b>D</b> ) 0.774
22	What is square root of 1	10042		_	
22.	RRB Group-C	- 11/12/2018 (Shift-II)	33.	What is the value of $\sqrt{0}$	<u>).8</u> ?
	(Δ) 144	(B) 146		RRB Group-I	D - 12/10/2018 (Shift-II)
	( <b>C</b> ) 152	<b>(D)</b> 148		<b>(A)</b> 0.964	<b>(B)</b> 0.694
	(0) 102			<b>(C)</b> 0.894	<b>(D)</b> 0.984
23.	What is square root of 1	16129?	34	$ f_1/\overline{45} \pm \sqrt{20} = 11100$	then $\sqrt{190} \pm 4\sqrt{5} = 2$
	RRB Group-I	D - 10/12/2018 (Shift-I)	54.	RBB Group-I	-28 / 09 / 2018 (Shift-II)
	(A) 143	<b>(B)</b> 137		( <b>Δ</b> ) 22 360	(B) 24 595
	<b>(C)</b> 127	<b>(D)</b> 117		(C) 20.124	( <b>D</b> ) 17.888
24	What is square root of 1	104042			()
24.	RRB Group-D	) - 12/11/2018 (Shift-II)	35.	If $3\sqrt{5} + \sqrt{125} = 17.84$ ,	then $\sqrt{80} + 7\sqrt{5} = ?$
	(A) 102	<b>(B)</b> 106		RRB Group-I	D - 11/10/2018 (Shift-II)
	(C) 98	<b>(D)</b> 104		<b>(A)</b> 33.3	<b>(B)</b> 24.53
				<b>(C)</b> 22.0	<b>(D)</b> 22.3
25.	What is square root of 1	1521?			
	RRB Group-D	- 08/10/2018 (Shift-III)	36.	If $\sqrt{50} + \sqrt{128} = \sqrt{N}$ the	en N = ?
	<b>(A)</b> 41	<b>(B)</b> 39		RRB Group-D	-31 / 10 / 2018 (Shift-II)
	<b>(C)</b> 31	<b>(D)</b> 49		(A) 26 (C) 228	(B) 390 (D) 192
26	The square root of 160(			(C) 336	<b>(D)</b> 102
20.	RPR Group-D	- 05/10/2018 (Shift-III)	37	If $\sqrt{109} \pm \sqrt{242} = 25.09$	$P_{147} \pm \sqrt{192} = 2$
	(A) 130	<b>(B)</b> 110	57.	RRB Group-I	D - 18/11/2022 (Shift-II)
	(C) 140	<b>(D)</b> 120		(A) 26.89	<b>(B)</b> 27.172
	(-)	(-)		(C) 25.98	(D) 24.248
27.	The square root of 13.6	9 is		. ,	
	RRB Group-I	D - 22/11/2022 (Shift-I)	38.	If $\frac{A}{A} = \frac{\sqrt{162}}{162}$ then A =	?
	<b>(A)</b> 3.7	<b>(B)</b> 37	00.	$\sqrt{512}$ $A$ , then $\sqrt{212}$ $A$	· 24/10/2019 (Shift II)
	<b>(C)</b> 0.037	<b>(D)</b> 0.37			D - 24/10/2010 (Shint-II) (D) 144.つ
00	$\sqrt{0.00000100}$			(A) 144 (C) 288	(D) 72
28.	$\sqrt{0.00069169} = ?$	10/11/2022 (Chiff II)		(0) 200	(0) 72
		<b>(B)</b> 0 000242	39	$\int \sqrt{0.0169} x = 1.3$ then	x =?
	$(\mathbf{R}) 0.00243$	( <b>D</b> ) 0.243	00.	RRB Group-	D - 28/11/2018 (Shift-I)
	(0) 0.0200	() 0.240		(A) 10	(B) 1
29.	Find the square root of	0.0324.		(C) 100	(D) 1000
-	RRB Group-D	0 - 08/10/2022 (Shift-I)			
	<b>(A)</b> 0.18	<b>(B)</b> 1.8	40.	If $X^2 = 841$ , then $X = ?$	
	<b>(C)</b> 1.08	<b>(D)</b> 0.018		RRB Group-	D - 28/11/2018 (Shift-I)
				(A) 29	(B) 41
30.	Find the value of $\sqrt{4.243}$	36 –		(C) 39	( <b>D</b> ) 31
	RRB Group-D	) - 26/11/2022 (Shift-II)			

	Г <u>г</u>	
41.	The value of $\sqrt{214} + \sqrt{2}$	$107 + \sqrt{196}$ :
	(A) 23	(B) 15
	<b>(C)</b> 24	<b>(D)</b> 18
42.	Solve the following:	
	$(8+2\sqrt{15})(8-2\sqrt{15})$	-
	RRB Group-D	- 27/11/2018 (Shift-III)
	(A) 1 (C) 3	(B) 2 (D) 4
	(0)0	
43.	If $\sqrt{54} + \sqrt{150} = a$ , then <b>RRB Group-I</b>	$\sqrt{96} + \sqrt{216} = ?$ <b>D - 16/11/2018 (Shift-I)</b>
	(A) 1.20 a	<b>(B)</b> 1.50 a
	(C) 1.60 a	<b>(D)</b> 1.25 a
44.	If $\sqrt{324} = x8$ , then x = ?	
	(A) 3	- 18/11/2022 (Shift-III) (B) 2
	(C) 1	<b>(D)</b> 4
<b>45</b> .	Find the value of questi	on mark (?)-
	?1	
	$\sqrt{3136} - \frac{1}{2}$	
	RRB Group-	D 31/10/2018 (Shift-II)
	(A) 56	<b>(B)</b> 784
	<b>(C)</b> 1568	<b>(D)</b> 28
46.	What is square root of -	882.
	RRB Group-D	- 18/11/2022 (Shift-II)
	(C) 22/31	( <b>D</b> ) 20/31
47	$\mathbf{O}_{\mathbf{m}}$	
47.	RRB NT	PC - 09/2022 (Shift-I)
	(A) 16/111	<b>(B)</b> 225/112
	(C) 196/121	( <b>D</b> ) 9/121
48.	$\left(-\sqrt{\frac{144}{576}}\right) \times \left(-\frac{16}{\sqrt{54}}\right) = ?$	
	RRB Group-l	D - 24/10/2018 (Shift-I)
	(A) 4 (C) 1	<b>(B)</b> 9
49.	$\sqrt{\frac{256 \times 289}{4^3}} = ?$	
	RRB Group-I	D - 27/11/2018 (Shift-I)
	(A) 4.25 (C) 8.50	( <b>b</b> ) 17 ( <b>D</b> ) 34

50.	$\frac{\sqrt{196}}{4.375} \times \frac{\sqrt{900}}{9.375} = ?$	02/44/2040 (Ch:# II)
	(A) 8.25 (C) 10.24	(B) 8.24 (D) 9.24
51.	$\frac{\sqrt{0.64}}{\sqrt{0.16}} = ?$ <b>RRB Group-D</b>	) - 02/11/2018 (Shift-II)
	(A) 2 (C) 6	<b>(B)</b> 8 <b>(D)</b> 10
52.	$\frac{\sqrt{45} \times \sqrt{20}}{\sqrt{12} \times \sqrt{3}} = ?$ RRB Group-D	- 28/11/2022 (Shift-III)
	(A) 9 (C) 15	(B) 6 (D) 5
53.	1 /(5+3√2)=? RRB Group-D	) - 05/10/2018 (Shift-II)
	<b>(A)</b> $(5 - 2\sqrt{3})/12$	<b>(B)</b> $5 + 2\sqrt{3}/12$
	<b>(C)</b> 5 − 3√3/12	<b>(D)</b> (5 − 3√2)/7
54.	What will be the value 2451.	of 'X'? If $\sqrt{1849} \times \sqrt{X} =$
	<b>RRB Group-D</b> (A) 3136	- 11/10/2018 (Shift-III) (B) 3481
	(C) 3364	<b>(D)</b> 3249
55.	Which of the following square root of $(3^{38} + 3^{38})$	expressions represent
	<b>RRB Group-D</b> (A) 6 <sup>38.5</sup>	) - 16/10/2018 (Shift-II) (B) √2 × 3 <sup>19.25</sup>
	(C) $2 \times 3^{19}$	<b>(D)</b> 3 <sup>38.5</sup>
56.	If the sum of square re $\sqrt{18 + 8\sqrt{5}}$ , then what	oots of two integers is is the sum of squares
	of both integers?	
	(A) 164	- 30/10/2018 (Shift-III) (B) 388
	<b>(C)</b> 624	<b>(D)</b> 144
57.	<sup>3</sup> √0.000216 =? <b>RRB Group-D</b>	- 30/10/2018 (Shift-III)
	<b>(A)</b> 0.06 <b>(C)</b> 0.6	( <b>B</b> ) 6 ( <b>D</b> ) 2√16
58.	Which of the following of expression $(3^{34} + 3^{31})$	represents square root <sup>5</sup> ) –
	<b>RRB Group-</b> (A) $\sqrt{2} \times 3^{17.25}$	D - 31/10/2018 (Shift-I) (B) 6 <sup>34.5</sup>
	(C) $2 \times 3^{17}$	<b>(D)</b> 3 <sup>34.5</sup>

59. If the sum of square roots of two integers is  $\sqrt{14+8\sqrt{3}}$ , then what is the sum of squares of these two integers? RRB Group-D - 02/11/2018 (Shift-II) (A) 144 (B) 388 **(D)** 162 (C) 100 If  $\sqrt{1296} = (?)^2$  then what will be value of (?)

_	
	RRB Group-D - 31/10/2018 (Shift-II)
<b>(A)</b> 6	<b>(B)</b> 18
(C) 8	<b>(D)</b> 12

- 61. If  $\sqrt{0.0361}x = 1.9$ , then x =? RRB Group-D - 01/12/2018 (Shift-II) (A) 1000 **(B)** 10 **(C)** 100 (D) 1
- 62. A group of students decided that the each members would be charged amount equal to number of member. If total collection of amount is Rs.62.41, then number of members in group is .....?

	RRB Group-D - 27/11/2018 (Shift-III)
<b>(A)</b> 77	<b>(B)</b> 81
<b>(C)</b> 71	<b>(D)</b> 79

63. Solve the following  $\frac{\sqrt{4375}}{\sqrt{7}} = ?$ 

60.

RRB	RPF Constable -22/01/2019 (Shift-I)
<b>(A)</b> 64	<b>(B)</b> 25
(C) 36	<b>(D)</b> 16

64. What is square root of 10201? RRB RPF Constable -18/01/2019 (Shift-I)

<b>(A)</b> 91	<b>(B)</b> 99
<b>(C)</b> 101	<b>(D)</b> 111

- 65. What is square root of 519841? RRB RPF SI -10/01/2019 (Shift-II) (A) 721 (B) 629 (C) 631 (D) 731
- 66. What will be square root of 34596? RRB RPF Constable -19/01/2019 (Shift-II) (A) 174 **(B)** 176 (C) 204 (D) 186
- If  $\sqrt{7} = 2.6457$  and  $\sqrt{3} = 1.732$ , then  $\frac{1}{\sqrt{7}-\sqrt{3}} = ?$ 67. RRB RPF Constable -25/01/2019 (Shift-III) **(B)** 1.944 (A) 1.0944 (C) 1.009 (D) 1.0844

If  $\frac{0.27}{2} = 27$ , then p = ? 68.

P	RRB RPF SI -13/01/2019 (Shift-II)
<b>(A)</b> 0.001	<b>(B)</b> 0.1
<b>(C)</b> 0.01	<b>(D)</b> 1.0

69. If  $\sqrt{3} = 1.732$ , then what will be approximate value of  $\frac{1}{\sqrt{3}}$ ?

> RRB RPF Constable -22/01/2019 (Shift-I) (A) 0.577 (B) 2.577 (C) 1.577 (D) 0.770

- If  $\sqrt{169} = 13$ , then  $\frac{(\sqrt{.0000169})}{13} = ?$ RRB RPF Constable -24/01/2019 (Shift-III) 70. (A) 0.0013 **(B)** 0.001 (D) 0.013 **(C)** 0.0001
- $(0.14/1.4)^2 (0.11/1.1)^2 + (0.13/1.3)^2 =?$ 71. RRB RPF SI -11/01/2019 (Shift-II) (B) 0.001 (A) 1.01 (C) 0.10 (D) 0.01
- Find the value of  $\sqrt{20^2 16^2}$ : 72. RRB RPF Constable -20/01/2019 (Shift-II) **(A)** 14 **(B)** 16 (C) 18 (D) 12
- 73. As  $\sqrt{486x}$  is an integer, what is smallest positive integer x ? RRB RPF Constable -17/01/2019 (Shift-I) (A) 5 (B) 6 (D) 2 (C) 3
- The value of  $\sqrt{0.0144}$  is: 74. RRB NTPC 12/08/2022Shift : 1 (A) 0.12 **(B)** 0.012 (C) 1.2 (D) 0.0012
- 75. Simplify - $4\sqrt{18} + 7\sqrt{32} - 2\sqrt{50}$ RRB NTPC 10/08/2022 Shift : 1 **(A)** 30√2 **(B)** 32√3 **(C)** 36√2 **(D)** 30√3
- If  $\sqrt{\mathbf{x}^2 + \mathbf{y}^2} = 25$ 76. and y = 2x, then x = ? RRB NTPC 23/07/2022 Shift : 2 (A) 5 (B) 25 (C)  $\sqrt{125}$ **(D)** √5
- If  $+\sqrt{x} = 90$ , then x = ?77. RRB NTPC 02/02/2021Shift : 1

	(A) 81 (C) 80	(B) 64 (D) 72		<b>(C)</b> 3√3	<b>(D)</b> 9
	√5		87.	If $\sqrt{144} = 12$ ; the	$\ln \frac{\sqrt{.00000144}}{12} = ?$
78.	If $\sqrt{5} = 2.236$ , then $\frac{\sqrt{5}}{\sqrt{2}} = 100$	=?		RR	B NTPC 23/07/2022 Shift : 1
	RRB NT	PC 12/08/2022Shift : 2		<b>(A)</b> 0.0012	<b>(B)</b> 0.001
	<b>(A)</b> 1.581	<b>(B)</b> 1.851		<b>(C)</b> 0.0001	<b>(D)</b> 0.012
	<b>(C)</b> 2.236	<b>(D)</b> 1.782		<b>-</b>	( 40040 )
70	Solvo it		88.	The square root	of 10816 is-
79.	$2\sqrt{121}$ $\sqrt{261}$			(A) 106	(B) 96
	$\frac{5\sqrt{121} - \sqrt{501}}{\sqrt{121}}$			(C) 114	(D) 104
	$\sqrt{529} + 2\sqrt{36}$	DC 22/07/2022 Shift . 2			
	κα ΝΙ (Δ) 3/5	(B) 4/7			
	(C) 1/4	(D) 2/5	89.	$\sqrt{(3\sqrt{9}-3\sqrt{8})(9)}$	$+2\sqrt{18} = ?$
		(2) 2/3		RRB Param	nedical - 21/07/2018 (Shift-II)
80.	$(8)^{2/3} = ?$			<b>(A)</b> 2	<b>(B)</b> 4
	RRB NT	PC 05/04/2021Shift : 1		<b>(C)</b> 3	<b>(D)</b> 9
	(A) $\sqrt{4}$	<b>(B)</b> 2		·	
	(C) 4	( <b>D</b> ) 64	90.	If $\sqrt{4225} = 65$ , th	len $\sqrt{42.25} + \sqrt{0.4225} = ?$
				(A) O F	RB JE - 30/05/2019 (Shift-III)
81.	Simplify $(25)^{\frac{3}{2}}$			(A) 6.5	(B) 7.25 (D) 7.15
	RRB NT	PC 05/04/2021Shift : 2		(C) 0.25	<b>(D)</b> 7.15
	<b>(A)</b> 625	<b>(B)</b> 15625	91.	Simplify the follow	wing expression -
	<b>(C)</b> 125	<b>(D)</b> √125	• • •	$7.\sqrt{48} \pm 7.\sqrt{147}$	
	2				RB JE - 30/05/2019 (Shift-III)
82.	Simplify $(27)^{\frac{-2}{3}}$			( <b>∆</b> ) 77√7	(B) 76√3
	RRB NT	PC 05/04/2021Shift : 2		(C) $76\sqrt{7}$	(D) $77\sqrt{3}$
	<b>(A)</b> 1/18	<b>(B)</b> 9			
	<b>(C)</b> 1/9	<b>(D)</b> 18	92.	$\int \sqrt{0.0169 \times x} =$	1.3 then 'x' = ?
	-1		•=-	R	RB JE - 29/05/2019 (Shift-II)
83.	$(1000)^{\overline{3}} = ?$			<b>(A)</b> 10	<b>(B)</b> 1000
	RRB NT	PC 05/04/2021Shift : 3		<b>(C)</b> 50	<b>(D)</b> 100
	(A) 10	<b>(B)</b> 100			
	<b>(C)</b> 1/10	<b>(D)</b> 1/100	93.	Find square root-	-
94	If $\sqrt{22E} = 1E$ then $(\sqrt{0})$	0000022E /1E - 2		$\frac{a^2}{12} + \frac{b^2}{12} + 2$	
04.	177225 = 15 then (v).	PC 02/02/2021Shift · 1		b <sup>2</sup> a <sup>2</sup>	PR IF - 02/06/2019 (Shift-II)
	(A) 0.0015	(B) 0.001		(A) <sup>a</sup> <sup>b</sup>	$(\mathbf{D})^{a}  b$
	(C) 0.0001	<b>(D)</b> 0.015		(A) $\frac{1}{2b} - \frac{1}{2a}$	$(\mathbf{B}) \frac{-}{\mathbf{b}} - \frac{-}{\mathbf{a}}$
		. ,		(C) $\frac{a-b}{2}$	( <b>D</b> ) $\frac{a}{b} + \frac{b}{a}$
85.	If $\sqrt{256} = 16$ then $\frac{\sqrt{0.000}}{1000}$	$\frac{000256}{2} = ?$			
	RRB NT	PC 12/08/2022Shift · 3	94.	The difference	between 1/3 and 1/4 of a
	(A) 0.0016	<b>(B)</b> 0.001		number is equal	to it's square root.Find the
	(C) 0.0001	<b>(D)</b> 0.016		number.	
	. /	. /		( <b>A)</b> 136	(B) 144
86.	If $\sqrt{9} = 3$ then $\sqrt{81}/\sqrt{3}$	= ?		(C) 72	<b>(D)</b> 120
	RRB NT	PC 12/08/2022Shift : 3		<u> </u>	(-,
	<b>(A)</b> 3	<b>(B)</b> 3/√3			

## **Solution**

1.	Ans.(A)
	$11881 = 109 \times 109$
•	Hence, square root of $11881 = 109$
Ζ.	Ans.(C)
	$ 4 0  =  9 \times  9 $
2	Therefore, square root of $14161 = 119$
3.	
	$7009 = 07 \times 07$
	Hence, square root of $7509 = 87$
4.	Alls.(D) $9291 = 01 \times 01$
	$0201 = 91 \times 91$
5	Ans (C)
5.	Alls.(C) $2264 = 59 \times 59$
	$5504 = 50 \times 50$
6	Therefore, square root of $3304 = 30$
0.	$\frac{192194}{192194} = \frac{129}{192} = \frac{129}{1$
	$103104 = 420 \times 420$
7	Therefore, square root of $105104 = 420$
1.	
	$\sqrt{60025} = \sqrt{5 \times 5 \times 7 \times 7 \times 7 \times 7}$
	$= 5 \times / \times /$
	$= 5 \times 49$
•	= 245
ð.	
	$\sqrt{4624} = \sqrt{2} \times 2 \times 2 \times 2 \times 17 \times 17$
	$= 2 \times 2 \times 17$
	$= 4 \times 17$
~	= 68
9.	Ans.(B)
	$54/6 = 74 \times 74$
10	Hence, square root of $5476 = 74$
10.	Ans.(D) $1256 - 66 \times 66$
	$4300 = 00 \times 00$
11	Square root of $4550 = 60$
	$\sqrt{15625} = 125$
40	Hence, square root of $15625 = 125$
12.	Ans.(D)
	$3/249 = 193 \times 193$
40	The square root of 37249 will be 193.
13.	Alls.(b)
	$\frac{x}{\sqrt{2187}} = \frac{\sqrt{2187}}{\sqrt{2187}}$
	$\sqrt{243}$ x
	$x \qquad \sqrt{3 \times 9 \times 9 \times 9}$
	$\Rightarrow \frac{1}{\sqrt{9 \times 9 \times 3}} = \frac{1}{x}$
	$x \qquad 27\sqrt{3}$
	$\Rightarrow \frac{\pi}{2\sqrt{2}} = \frac{1}{2} \frac{1}{2} \frac{1}{2}$
	$9\sqrt{3}$ $x$
	$\Rightarrow x^2 = 2/\times 9 \times \sqrt{3} \times \sqrt{3}$
	$\Rightarrow x = \sqrt{27 \times 27} = 27$
14.	Ans.(A)
	$\sqrt{54} \times \sqrt{6}$

 $=\sqrt{54\times 6}$  $=\sqrt{324}$ = 1815. Ans.(C)  $\sqrt[6]{4096} = 4$  $\sqrt[4]{4096} = 8$  $\sqrt[3]{4096} = 16$ Hence  $\sqrt[8]{4096}$  is an irrational number. 16. Ans.(D) 25281 = 159 × 159 17. Ans.(A)  $39204 = 198 \times 198$ So, square root of 3204 will be 198. 18. Ans.(B) (a)  $179 \rightarrow (179)^2 = 32041$ (b)  $189 \rightarrow (189)^2 = 35721$ (c)  $171 \rightarrow (171)^2 = 29241$ (d)  $201 \rightarrow (201)^2 = 40401$ Therefore, the square root of 35721 is 189. 19. Ans.(B)  $41616 = 204 \times 204$ Therefore, the square root of 41616 is 204. 20. Ans.(C)  $=\sqrt{16641}$  $=\sqrt{3\times3\times43\times43}$  $= 3 \times 43 = 129$ 21. **Ans.(C)**  $\sqrt{243049} = \sqrt{493 \times 493}$ *Hence*  $\sqrt{243049} = 493$ 22. Ans.(D)  $21904 = 148 \times 148$ Thus, square root of 21904 = 148 23. Ans.(C) 16129 = 127 × 127 Square root of 16129 = 127 24. Ans.(A)  $\sqrt{10404} = \sqrt{2 \times 2 \times 3 \times 3 \times 17 \times 17}$  $= 2 \times 3 \times 17 = 102$ 25. Ans.(B)  $1521 = 39 \times 39$ Therefore, the square root of 1521 is 39. 26. Ans.(A)  $16900 = 130 \times 130$ Therefore, the square root of 16900 is 130. 27. Ans.(A)  $13.69 = 3.7 \times 3.7$ Therefore, the square root of 13.69 is 3.7. 28. Ans.(C)  $\sqrt{0.00069169} = \sqrt{\frac{69169}{100000000}}$ 

$$= \sqrt{\frac{69169}{10000000}} = \sqrt{\frac{263 \times 263}{10000 \times 10000}}$$

$$= \frac{263}{10000} = 0.0263$$
29. Ans.(A)  

$$\sqrt{0.0324} = \sqrt{\frac{324}{10000}}$$

$$= \sqrt{\frac{18 \times 18}{100}}$$

$$= \sqrt{\frac{18 \times 18}{100}}$$
30. Ans.(D)  

$$\sqrt{4.2436} = \sqrt{\frac{42436}{10000}} = \frac{206}{100} = 2.06$$
31. Ans.(A)  

$$\frac{0.707}{7 \quad 0.500000}$$

$$\frac{+7 \quad 49}{1407 \quad 10000}$$

$$\frac{7 \quad 9849}{1407 \quad 10000}$$

$$\frac{7 \quad 9849}{1407 \quad 10000}$$

$$\frac{10.774}{7 \quad 0.600000}$$

$$\frac{+7 \quad 49}{147 \quad 1100}$$

$$\frac{+7 \quad 1029}{1544 \quad 7100}$$

$$\frac{4 \quad 6176}{924}$$
Hence"  $\sqrt{0.6} = 0.774$  (approximately)  
33. Ans.(C)  

$$\frac{0.8 \quad 9 \quad 4}{8 \quad 0.80 \quad 00 \quad 00}$$

$$\frac{+8 \quad 64}{169 \quad 16 \quad 00}$$

$$\frac{+9 \quad 15 \quad 21}{1784 \quad 79 \quad 00}$$

$$\frac{4 \quad 71 \quad 36}{7 \quad 64}$$

Therefore  $\sqrt{0.8}$  has a value of 0.894.

34. Ans.(A)

 $\sqrt{45} + \sqrt{20} = 11.180 \Rightarrow \sqrt{45} + 2\sqrt{5} = 11.180$  $\sqrt{180} + 4\sqrt{5} = 2\sqrt{45} + 4\sqrt{5}$  $2(\sqrt{45} + 2\sqrt{5})$  $= 2 \times 11.180 = 22.360$ 35. Ans.(B)  $3\sqrt{5} + \sqrt{125} = 17.84$  $3\sqrt{5} + 5\sqrt{5} = 17.84$  $8\sqrt{5} = 17.84$  $\sqrt{5} = \frac{17.84}{8} = 2.23$ So now,  $\sqrt{80} + 7\sqrt{5}$  $=\sqrt{16\times5}+7\sqrt{5}$  $= 4\sqrt{5} + 7\sqrt{5}$  $= 11\sqrt{5}$ (Putting the value of  $\sqrt{5}$ )  $\sqrt{80} + 7\sqrt{5} = 11 \times 2.23 = 24.53$ 36. Ans.(C)  $\sqrt{50} + \sqrt{128} = \sqrt{N}$  $\sqrt{25 \times 2} + \sqrt{64 \times 2} = \sqrt{N}$  $5\sqrt{2} + 8\sqrt{2} = \sqrt{N}$  $13\sqrt{2} = \sqrt{N}$ Squaring both sides,  $(13\sqrt{2})^2 = (\sqrt{N})^2$  $169 \times 2 = N$ 338 = NN = 33837. Ans.(C) Given that  $\sqrt{108} + \sqrt{243} = 25.98$  $=\sqrt{147} + \sqrt{192}$  $= \sqrt{7 \times 7 \times 3} + \sqrt{2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3}$  $= 7\sqrt{3} + 8\sqrt{3} = 15\sqrt{3}$  $= 15 \times 1.732$ = 25.980= 25.9838. Ans.(C)  $\frac{A}{\sqrt{512}} = \frac{\sqrt{162}}{A}$  $A \times A = \sqrt{512} \times \sqrt{162}$  $A \times A = \sqrt{8 \times 8 \times 8} \times \sqrt{2 \times 9 \times 9}$  $A^2 = \sqrt{8 \times 8 \times 16 \times 9 \times 9}$  $A = 8 \times 4 \times 9$ A = 288 Ans.(A) 39.  $\sqrt{0.0169} x = 1.3$ 1.3 1.3  $\frac{1.0}{\sqrt{0.0169}} = \frac{1.3}{.13}$ x =x = 1040. Ans.(A)

$$x^{2} = 841$$

$$x^{2} = 29 \times 29$$

$$x = \sqrt{29 \times 29}$$

$$x = \sqrt{2} + \sqrt{107 + \sqrt{196}}$$

$$\Rightarrow \sqrt{214 + \sqrt{107 + 14}}$$

$$\Rightarrow \sqrt{214 + \sqrt{107 + 14}}$$

$$\Rightarrow \sqrt{214 + \sqrt{121}}$$

$$\Rightarrow \sqrt{214 + \sqrt{121}}$$

$$\Rightarrow \sqrt{214 + 11}$$

$$\Rightarrow \sqrt{225}$$

$$\Rightarrow \sqrt{15 \times 15}$$

$$= 15$$
**42.** Ans.(B)  

$$\sqrt{(8 + 2\sqrt{15})(8 - 2\sqrt{15})}$$
By,  $(a^{2} - b^{2}) = (a + b)(a - b)$ 

$$\sqrt{(8)^{2} - (2\sqrt{15})^{2}}$$

$$= \sqrt{64 - 4 \times 15} = \sqrt{64 - 60} = \sqrt{4} = 2$$
**43.** Ans.(D)  

$$\sqrt{54 + \sqrt{150}} = a$$

$$\sqrt{2 \times 3 \times 3 \times 3} + \sqrt{2 \times 3 \times 5 \times 5} = a$$

$$3\sqrt{6} + 5\sqrt{6} = a$$

$$8\sqrt{6} = a$$

$$\sqrt{6} = \frac{a}{8}$$

$$\sqrt{96 + \sqrt{216}} = ?$$

$$\sqrt{2 \times 2 \times 2 \times 2 \times 2 \times 3} + \sqrt{2 \times 2 \times 2 \times 3 \times 3 \times 3}$$

$$4\sqrt{6} + 6\sqrt{6}$$

$$\Rightarrow 10\sqrt{6} - \dots \dots (ii)$$
From equation (i) and (ii),  

$$\Rightarrow \frac{a}{8} \times 10 \Rightarrow \frac{5a}{4} = 1.25a$$
**44.** Ans.(C)  

$$\sqrt{3224} = x8$$
Squaring both sides,  

$$324 = (18)^{2}$$
Putting x = 1  

$$324 = (18)^{2}$$

$$324 = 324$$
**45.** Ans.(B)  

$$\sqrt{\frac{?}{3136}} = \frac{1}{2}$$
Squaring both sides,  

$$\left(\sqrt{\frac{?}{3136}}\right)^{2} = \left(\frac{1}{2}\right)^{2}$$

$$\frac{?}{3136} = \frac{1}{4}$$

46.	Ans.(A)
	882 441 21 × 21 21
	$\sqrt{\frac{1922}{1922}} = \sqrt{\frac{961}{961}} = \sqrt{\frac{31 \times 31}{31 \times 31}} = \frac{31}{31}$
47.	Àns.(C)
	Square of $1\frac{3}{11}$
	$(14)^2$
	$=\left(\frac{1}{11}\right)$
	_ 196
40	$-\frac{1}{121}$
48.	Ans.(C)
	$\left(-\frac{144}{1}\right) \times \left(-\frac{16}{1}\right)$
	$\left( \sqrt{576} \right)^{(\sqrt{64})}$
	(-12) (-16)
	$\Rightarrow \left(\frac{1}{24}\right) \times \left(\frac{1}{8}\right)$
	$12 \times 16 - 192 - 1$
40	$=\frac{1}{24 \times 8} = \frac{1}{192} = 1$
49.	Ans.(D)
	$256 \times 289 - 16 \times 17 - 16 \times 17 - 34$
	$\sqrt{4^3} \sqrt{4 \times 4 \times 4} \sqrt{2 \times 2 \times 2} \sqrt{3^4}$
50.	Ans.(C)
	$\rightarrow \frac{\sqrt{196}}{\sqrt{900}} \times \frac{\sqrt{900}}{\sqrt{900}}$
	4.375 9.375 14 30 420
	$\Rightarrow \frac{14}{4.375} \times \frac{30}{9.375} = \frac{420}{41.01}$
	⇒ 10.24
51.	Ans.(A)
	$\Rightarrow \frac{\sqrt{0.64}}{2} = ?$
	$\sqrt{0.16}$
	$=\frac{0.8}{0.4}=\frac{8}{4}=2$
52.	Ans.(D)
	$\sqrt{45} \times \sqrt{20}$ $3\sqrt{5} \times 2\sqrt{5}$
	$\frac{1}{\sqrt{12} \times \sqrt{3}} \Rightarrow \frac{1}{2\sqrt{3} \times \sqrt{3}}$
	$\rightarrow \frac{30}{5} = 5$
50	$=\frac{1}{6}$
53.	Ans.(D) 1
	$\frac{-}{5+3\sqrt{2}} = ?$
	By rationalizing the denominator,
	1
	$=\frac{1}{5+3\sqrt{2}}\times\frac{1}{5-3\sqrt{2}}$
	$5 - 3\sqrt{2}$
	$=\frac{1}{25-18}$
	$(5-3\sqrt{2})$
-	$=$ $\frac{7}{7}$
54.	Ans.(D) $\sqrt{1040} \times \sqrt{\pi} = 2451$
	$v_{1849} \times v_{x} = 2451$
	$\sqrt{43} \times 43 \times \sqrt{x} = 2451$

$$\sqrt{x} = \frac{2451}{43}$$

$$\sqrt{x} = 57$$

$$x = (57)^{2}$$

$$x = 3249$$
55. **Ans.(C)**

$$\sqrt{3^{38} + 3^{39}} = \sqrt{3^{38}(1 + 3)}$$

$$= \sqrt{4 \times 3^{38}}$$

$$= \sqrt{4 \times 3^{38}}$$
Suppose x and y are both integers.  
According to Question -
$$(\sqrt{x} + \sqrt{y}) = \sqrt{18 + 8\sqrt{5}}$$

$$x + y + 2\sqrt{xy} = 10 + 8 + 2\sqrt{80}$$

$$x + y + 2\sqrt{xy} = 10 + 8 + 2\sqrt{10 \times 8}$$
Hence: on comparison
$$x = 10$$

$$y = 8$$
Sum of squares
$$x^{2} + y^{2}$$

$$= 10^{2} + 8^{2}$$

$$= 100 + 64$$

$$= 164$$
57. **Ans.(A)**

$$\sqrt[3]{0.000216} = ?$$

$$\sqrt[3]{\frac{216}{1000000}}$$

$$\sqrt[3]{\frac{6 \times 6 \times 6}{\sqrt{100 \times 100} \times 100}}$$

$$= \frac{6}{100} = .06$$
58. **Ans.(C)**

$$(3^{34} + 3^{35}) \text{ square root of}$$

$$= \sqrt{3^{34}(1 + 3)} = \sqrt{4(3^{34})}$$

$$= \sqrt{2 \times 2 \times 3^{17} \times 3^{17}}$$
59. **Ans.(C)**
Let both the integer be x and y.  
According to Question,  

$$\sqrt{x} + \sqrt{y} = \sqrt{14 + 8\sqrt{3}}$$

 $(\sqrt{x} + \sqrt{y})^2 = (\sqrt{14 + 8\sqrt{3}})^2$  $x + y + 2\sqrt{xy} = 14 + 8\sqrt{3}$ x + y = 14 $2\sqrt{xy} = 8\sqrt{3}$  $\sqrt{xy} = 4\sqrt{3}$ xy = 48x + y = 14 (On the square of both sides)  $x^2 + y^2 + 2xy = 196$  $x^2 + y^2 + 2 \times 48 = 196$  $x^2 + y^2 = 196 - 96$  $x^2 + y^2 = 100$ The sum of the squares of both will be 100. 60. Ans.(A)  $\sqrt{1296} = (?)^2$  $1296 = (?)^4$  $6 \times 6 \times 6 \times 6 = ?^4$  $6^4 = ?^4$ ? = 6 61. Ans.(B)  $\sqrt{0.0361}x = 1.9$  $x = \frac{1.9}{\sqrt{0.0361}}$  $=\frac{1.9}{.19}=10$ 62. Ans.(D) Let the number of members be x money received by each member be x. All members receive money =  $x \times x$  $Rs. 62.41 = x^2$  $(62.41 \times 100) = x^2$  $x = \sqrt{6241}$ x = 79Hence the number of members is 79 and the money received by each student is 79 paise. 63. Ans.(B)  $\frac{\sqrt{4375}}{\sqrt{7}} = \sqrt{\frac{4375}{7}}$  $=\sqrt{625} = \sqrt{25 \times 25} = 25$ 64. Ans.(C)  $10201 = 101 \times 101$ Hence, square root of 10201 = 101 Ans.(A) 65.  $519841 = 721 \times 721$  $\therefore \sqrt{519841} = 721$ 66. Ans.(D)  $34596 = 186 \times 186$ Hence, square root of 34596 = 186 67. Ans.(A) Given -

Squaring both sides,

$$\sqrt{7} = 2.6457$$

$$\sqrt{3} = 1.732$$

$$\frac{1}{\sqrt{7} - \sqrt{3}} = \frac{(\sqrt{7} + \sqrt{3})}{(\sqrt{7} - \sqrt{3}) \times (\sqrt{7} + \sqrt{3})}$$

$$= \frac{\sqrt{7} + \sqrt{3}}{4}$$

$$= \frac{2.6457 + 1.732}{4} = \frac{4.3777}{4} = 1.0944$$
68. Ans.(B)  

$$\frac{0.27}{p^2} = 27$$

$$p^2 = \frac{0.27}{27} = \frac{27}{2700}$$

$$p^2 = \frac{1}{100} = (\frac{1}{10})^2$$

$$p = \frac{1}{10} = 0.1$$
69. Ans.(A)  

$$\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$= \frac{1.732}{\sqrt{3}} = 0.57733$$
So,  $\frac{1}{\sqrt{3}}$  would have an approximate value  

$$0.577$$
70. Ans.(C)  

$$\approx \sqrt{169} = 13$$

$$\frac{\sqrt{.00000169}}{13} \ll \sqrt{\frac{169}{10000000}} \times \frac{1}{13}$$

$$= \frac{13}{10000} \times \frac{1}{13} = \frac{1}{10000} = .0001$$
71. Ans.(D)  

$$\left(\frac{0.14}{1.4}\right)^2 - \left(\frac{0.11}{1.1}\right)^2 + \left(\frac{0.13}{1.3}\right)^2$$

$$= \left(\frac{14}{140}\right)^2 - \left(\frac{1}{100}\right)^2 + \left(\frac{1}{100}\right)^2$$

$$= (0.1)^2 - (0.1)^2 + (0.1)^2$$

$$= 0.01 - 0.01 + 0.01$$

$$= 0.01$$
72. Ans.(D)  

$$\sqrt{20^2 - 16^2}$$
formula  $-a^2 - b^2 = (a + b)(a - b) - \frac{1}{2}\sqrt{20 + 16}(20 - 16)$ 

$$\Rightarrow \sqrt{36 \times 4}$$

$$\Rightarrow 6 \times 2$$

$$\Rightarrow 12$$
73. Ans.(B)  
From option (b), putting x = 6

of

 $=\sqrt{486x}$  $=\sqrt{486 \times 6}$  $=\sqrt{6 \times 9 \times 9 \times 6} = 54$ 74. Ans.(A) 0.12 0.0144 1 1 01 22 44 +244 хx Thus, square root of 0.0144 = 0.1275. Ans.(A)  $4\sqrt{18} + 7\sqrt{32} - 2\sqrt{50}$  $= 4\sqrt{3 \times 3 \times 2} + 7\sqrt{4 \times 4 \times 2} - 2\sqrt{5 \times 5 \times 2}$  $= 12\sqrt{2} + 28\sqrt{2} - 10\sqrt{2}$  $= 30\sqrt{2}$ 76. Ans.(C)  $\sqrt{x^2 + y^2} = 25, y = 2x$  $\sqrt{x^2 + y^2} = 25 \dots \dots (i)$ On squaring equation (i)  $x^2 + y^2 = 625$  $x^2 + (2x)^2 = 625$  $x^2 + 4x^2 = 625$  (:: y = 2x)  $5x^2 = 625$  $x^2 = 125$  $x = \sqrt{125}$ **Ans.(A)** 77. By question,  $x + \sqrt{x} = 90$  $\Rightarrow \sqrt{x} = 90 - x$ Squaring both sides,  $(\sqrt{x})^2 = (90 - x)^2$  $\Rightarrow x = 8100 + x^2 - 180x$  $\Rightarrow x^2 - 181x + 8100 = 0$  $\Rightarrow x^2 - 100x - 81x + 8100 = 0$  $\Rightarrow x(x - 100) - 81(x - 100) = 0$  $\Rightarrow (x - 81)(x - 100) = 0$  $\Rightarrow x = 81,100$ Through options, x = 81. 78. Ans.(A)  $\sqrt{5} = 2.236$  and  $\sqrt{2} = 1.414$  $\frac{\sqrt{5}}{\sqrt{2}} = \frac{2.236}{1.414} = 1.581$ 79. Ans.(D)  $\frac{3\sqrt{121} - \sqrt{361}}{\sqrt{121} - \sqrt{19}} = \frac{3\sqrt{11 \times 11} - \sqrt{19 \times 19}}{\sqrt{19} - \sqrt{19} - \sqrt{19}}$  $\sqrt{529} + 2\sqrt{36}$  $\sqrt{23 \times 23} + 2\sqrt{6 \times 6}$  $=\frac{33-19}{23+12}$  $=\frac{14}{35}=\frac{2}{5}$ 

80. Ans.(C) By question,  $8^{\frac{2}{3}} = \sqrt[3]{8^2} = \sqrt[3]{64} = \sqrt[3]{4 \times 4 \times 4} = 4$ 81. Ans.(C)  $(25)^{\frac{3}{2}} = ((5)^2)^{\frac{3}{2}} = 5^3 = 125$ Ans:(c) 82.  $(27)^{\frac{-2}{3}} = \frac{1}{(3)^{3\times\frac{2}{3}}} = \frac{1}{(3)^2} = \frac{1}{9}$ Ans.(C) 83.  $(1000)^{\frac{-1}{3}} = \frac{1}{(1000)^{\frac{1}{3}}} = \frac{1}{(10^3)^{\frac{1}{3}}} = \frac{1}{10}$ 84. Ans.(C)  $\sqrt{225} = 15$ By question,  $\sqrt{0.00000225}$ 15 225  $\sqrt{100000000}$ = 15 15 =  $10000 \times 15$ 1  $=\frac{10000}{10000}$ = 0.0001 Ans.(C) 85. Given that,  $\sqrt{256} = 16$ ∴ By question,  $\frac{256}{\sqrt{10000000}}$ = 16 16  $= \frac{10000 \times 16}{10000 \times 16}$  $= \frac{1}{10000} = 0.0001$ 86. Ans.(C) If  $\sqrt{9} = 3$ then  $\frac{\sqrt{81}}{\sqrt{3}} = \frac{9}{\sqrt{3}} = \frac{3 \times \sqrt{3} \times \sqrt{3}}{\sqrt{3}} = 3\sqrt{3}$ 87. Ans.(C)  $\sqrt{144} = 12$ 144  $\frac{\sqrt{0.00000144}}{12} = \frac{\sqrt{\frac{144}{100000000}}}{12}$ 12  $= \frac{10000 \times 12}{10000 \times 12}$  $= \frac{1}{10000} = 0.0001$ 88. Ans.(D)  $10816 = 104 \times 104$ Therefore,  $\sqrt{10816} = 104$ 

89. Ans.(C)  

$$\sqrt{(3\sqrt{9} - 3\sqrt{8})(9 + 2\sqrt{18})} = \sqrt{(3 \times 3 - 6\sqrt{2})(9 + 6\sqrt{2})} = \sqrt{(9 - 6\sqrt{2})(9 + 6\sqrt{2})} = \sqrt{(9 - 6\sqrt{2})(9 + 6\sqrt{2})} = \sqrt{(9 - 6\sqrt{2})(9 + 6\sqrt{2})} = \sqrt{(9)^2 - (6\sqrt{2})^2} = \sqrt{81 - 72} = \sqrt{9} = 3$$
90. Ans.(D)  
If  $\sqrt{4225} = 65 = \sqrt{42.25} + \sqrt{0.4225} = 6.5 + .65 = 7.15$ 
91. Ans.(D)  
 $7\sqrt{48} + 7\sqrt{147} = 7\sqrt{16 \times 3} + 7\sqrt{49 \times 3} = 7\sqrt{4 \times 4 \times 3} + 7\sqrt{7 \times 7 \times 3} = 28\sqrt{3} + 49\sqrt{3} = 77\sqrt{3}$ 
92. Ans.(D)  
 $\sqrt{0.0169 \times x} = 1.3$   
 $\sqrt{\frac{169 \times x}{10000}} = \frac{13}{10}$   
Squaring both sides,  
 $\frac{169 \times x}{10000} = \frac{169}{100}$   
 $x = 100$   
93. Ans.(D)  
94. Ans.(B)  
Let number be x  
According to Question,  
 $\frac{x}{3} - \frac{x}{4} = \sqrt{x}$   
 $\Rightarrow \frac{x}{12} = \sqrt{x}$   
Squaring both sides,  
 $\frac{x^2}{144} = x$   
 $x = 144$ 

## 04. (Simplification)

1.	6 kg 5g = ?	
	RRB Gro	oup-D - 19/11/2022 (Shift-III)
	<b>(A)</b> 6.05 kg	<b>(B)</b> 0.65kg
	<b>(C)</b> 6.5 kg	<b>(D)</b> 6.005 kg

- 2.  $5.52 (2.3)^2 + (0.8)^3 \times 0.12 \div (0.4)^4 3.14 =?$ RRB Group-D - 22/11/2022 (Shift-I) (A) -0.51 (B) 0.42 (C) 0.51 (D) -0.63
- **3.** 30.9 + 3.09 + 0.309 + 0.039 + 309 = ? **RRB Group-D - 10/10/2018 (Shift-II) (A)** 340.138 **(B)** 243.338 **(C)** 534.388 **(D)** 343.338
- 7.892 + 35 0.005 + 10.345 = ? RRB Group-D - 30/10/2018 (Shift-I) (A) 53.232 (B) 52.232 (C) 23.322 (D) 0
- 5. 392 39.2 3.92 0.392 = ? RRB Group-D - 26/11/2022 (Shift-III) (A) 346.468 (B) 346.508 (C) 348.488 (D) 348.468
- 6. 0.098 + 0.98 + 9.8 + 98=? RRB Group-D - 27/11/2022 (Shift-III) (A) 108.338 (B) 108.428 (C) 108.878 (D) 108.378
- 7. Multiply 8795 by 125 RRB Group-D - 05/10/2018 (Shift-I) (A) 1099375 (B) 1099345 (C) 1099305 (D) 1098375
- 8. Select most appropriate option to fill in the blanks. 395 39.5 3.95 0.395=?
   RRB NTPC 09/2022 (Shift-I) (A) 351.055 (B) 351.145 (C) 351.155 (D) 351.045
- 9. 35-7.892+0.005-10.345=? RRB Group-D - 22/10/2018 (Shift-II) (A) 16.768 (B) 26.768 (C) 29.768 (D) 19.768
- **10.** What will be value 20.9 + 2.09 + 0.209 + 0.029 + 29 -

RRB Group-D - 12/10/2018 (Shift-I)

(A) 62.228	<b>(B)</b> 52.228
(C) 42.228	<b>(D)</b> 52.00

- 11.
   0.295 + 2.95 + 29.5 + 295 =? RRB Group-D - 01/10/2018 (Shift-II)

   (A) 327.856
   (B) 327.756

   (C) 327.746
   (D) 327.745
- 12.  $56 \div \frac{1}{3} \{15 + 12 (9 + 6 \overline{5 + 7})\} = ?$ RRB Group-D - 17/11/2022 (Shift-I) (A) 9 (B) 8 (C) 12 (D) 7
- **13.**  $77 \div [46 \{66 (52 63 \div 9 \times 3)\}] = ?$  **RRB Group-D - 19/11/2022 (Shift-II) (A)** 5 **(B)** 6 **(C)** 7 **(D)** 11
- 14.  $140 \div [61 \{36 (40 60 \div 12 \times 6)\}] = ?$  **RRB Group-D - 19/11/2022 (Shift-II)** (A) 2 (B) 5 (C) 4 (D) 10
- 15.  $(-5)\{(20 (-2) \times (-8)\} = ?$ RRB Group-D - 20/09/2022 (Shift-II) (A) 180 (B) -20 (C) 20 (D) -180
- 16.  $78 [5 + 3 \text{ of } (25 2 \times 10)] = ?$ RRB Group-D - 20/09/2022 (Shift-III) (A) 56 (B) 48 (C) 58 (D) 38
- 17.  $70 \div 5 \times (10 8 \div 2) \div 3 =?$ RRB Group-D - 22/11/2022 (Shift-I) (A) 7 (B) 1/3 (C) 3 (D) 28
- **18.**  $\begin{bmatrix} \left\{ 2\frac{1}{3} (5 + (2 3)) + 3\frac{1}{2} \right\} = ? \\ \text{RRB Group-D 23/11/2022 (Shift-I)} \\ \text{(A) } 11/2 \\ \text{(B) } 12/6 \\ \text{(C) } 11/6 \\ \text{(D) } 2 \end{bmatrix}$
- **19.**  $63 (-3)(-2 8 4) \div 3$  of  $\{5 + (-2)(-1)\} =$ ? **RRB Group-D - 23/11/2022 (Shift-I) (A)** -60 **(B)** 60 **(C)** 65 **(D)** 61

**20.**  $72 \div [27 - \{35 - (42 - 45 \div 9 \times 2)\}] =?$  **RRB Group-D - 08/10/2022 (Shift-II) (A)** 3 **(B)** 8 **(C)** 6 **(D)** 4

31.

32.

33.

34.

35.

36.

- 21. If  $T = (93+15) \div (3 \times 4) 24 + 8$ , then T = ?RRB Group-D - 08/10/2022 (Shift-II) (A) -4 (B) -7 (C) -2 (D) -5
- 22.  $75 \div [35 \{63 (79 54 \div 9 \times 6)\}] =$ ? RRB Group-D - 26/11/2022 (Shift-I) (A) 5 (B) 3 (C) 15 (D) 25
- 23.  $0.36 + 0.284 \div 0.4 \times 0.8 0.038 =$ ? RRB Group-D - 26/11/2022 (Shift-I) (A) 0.548 (B) 0.89 (C) 1.25 (D) 1.2
- **24.**  $3 + [32 \div 8 \times 52 \div (4 + 9)] =?$  **RRB Group-D - 28/11/2022 (Shift-II) (A)** 19 **(B)** 20 **(C)** 18 **(D)** 21
- **25.**  $144 \div [40 \{37 (25 112 \div 7 \times 4)\}]$  **RRB Group-D - 28/11/2022 (Shift-II) (A)** 4 **(B)** 8 **(C)** 2 **(D)** 6
- 26. If  $G = (96 \div 12) + 14 \times (12 + 8) \div 2$  then what will be value of one fourth of G? Group-D - 19/11/2022 (Shift-II) (A) 148 (B) 37 (C) 36 (D) 38
- 27.  $18 \div \frac{1}{8} \{11 + 16 (10 + 7 \overline{6 + 8})\} = ?$ RRB Group-D - 05/10/2018 (Shift-II) (A) 6 (B) 9 (C) 18 (D) 3
- 28.  $22 \left(\frac{1}{4}\right) \{-5 (-48) \div (-16)\} = ?$ RRB Group-D - 10/10/2018 (Shift-II) (A) 21 (B) 22 (C) 20 (D) 24
- **29.**  $(-45 + 7 \times 23 (247 \div 13) 11) \div 2 = ?$  **RRB Group-D - 16/10/2018 (Shift-III) (A)** -47 **(B)** -14 **(C)** 43 **(D)** 86
- **30.**  $74 [85 \div \{49 (41 3^5 \div 9 \times 3)\}] =?$ **RRB Group-D - 19/11/2022 (Shift-III)**

<b>(A)</b> 59	<b>(B)</b> 79
<b>(C)</b> 49	<b>(D)</b> 69
(12 – 1) of (16+	15) ×(119+113-16) = ?
RRB G	roup-D - 26/11/2022 (Shift-III)
(A) 73656	(B) 73660
(C) 73600	(D) 73650
Simplify 25 + 15 - (51) + =?	+ (4 × 15 का 17) ÷20+ 6 – 2
(A) 45	(B) 44
(C) -44	(D) -45
10 + {26 – 15 ×	$(20 - 5 \div 2 \times \overline{7 - 5})$ =?
RRB (	Froup-D - 01/10/2018 (Shift-I)
(A) 189	(B) -198
(C) 198	(D) -189
Simplify y + [y - (y + x) + <b>RRB (</b> (A) y (C) y+z	+ $\{y - (y - x)\} + (z + x)]=?$ Group-D - 30/10/2018 (Shift-I) (B) x+y+z (D) x+z
23 × 31 = 713 t	hen 0.00713 + 3.1 is equal to
= ?	roup-D - 08/10/2022 (Shift-II)
(A) 0.023	(B) 0.0023
$lf \frac{0.5 - 0.1x}{1.3 - 0.8x} = 0.2 th$	nen x=?
<b>RRB G</b>	roup-D - 08/10/2022 (Shift-II)
<b>(A)</b> -1	(B) -1
<b>(C)</b> -3	(D) -4

- **37.** If 31 × 23=713, then 310 ×0.023=? **RRB Group-D - 19/11/2022 (Shift-III) (A)** 0.713 **(B)** 71.3 **(C)** 7.13 **(D)** 0.0713
- 38. If 31 × 23=713, then what is the value of 3100 × 0.00023 ?
   RRB Group-D-08 / 10 / 2018 (Shift-II)
   (A) 71.3 (B) 7.13
   (C) 0.713 (D) 0.0713
- 39. Find value of x by solving the following equation:  $\frac{(x-5)}{3} - \frac{(x-2)}{4} = \frac{7}{2}$ RRB Group-D - 10/10/2018 (Shift-II) (A) 42 (B) 60
  - (C) 56 (D) 52

- **40.** 23× 33 = 759, then 0.00759 ÷ 3.3 = ? **RRB Group-D - 11/10/2018 (Shift-II)** (A) 0.023 (B) 0.0023 (C) 2.3 (D) 0.23
- **41.** If  $1120/\sqrt{x} = 80$ , then x =? **RRB Group-D - 08/10/2022 (Shift-I) (A)** 225 **(B)** 196 **(C)** 125 **(D)** 336
- 42. If  $p = 36 2(20 + 12 \div 4 \times 3 2 \times 2) + 10$ then what is double of p? RRB Group-D - 25/11/2022 (Shift-I) (A) -8 (B) -4 (C) -2 (D) -10
- 43.
   If 1131÷ 39=29, then 11.31 ÷ 0.0029=?

   RRB Group-D 24/10/2018 (Shift-II)

   (A) 3.9
   (B) 3900

   (C) 390
   (D) 0.39
- 44. If  $\frac{1}{x-a-b} = \frac{1}{x} \frac{1}{a} \frac{1}{b}$ , then find the value of x RRB Group-D - 15/11/2018 (Shift-I) (A) -a, b (B) a, b (C) a,-b (D) -a,-b
- 45. If  $\sqrt{75} + \sqrt{363} = \sqrt{N}$ , then what is the value of N? RRB Group-D - 05/11/2018 (Shift-III) (A) 729 (B) 438 (C) 768 (D) 27
- 46. If 202.4÷x=5.06, thenfind the value of X − RRB Group-D - 31/10/2018 (Shift-III) (A) 30 (B) 42 (C) 43 (D) 40
- 47. Evaluate  $\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$ RRB Group-D - 12/10/2018 (Shift-I) (A) 142.1414 (B) 140.1414 (C) 143.1414 (D) 141.1414
- 48. x = ?  $\frac{\frac{144}{1.44}}{RRB} = \frac{\frac{14.4}{x}}{RRB Group-D - 05/10/2018 (Shift-III)}$ (A) 0.144 (B) 1.44 (C) 0.00144 (D) 0.0144
- **49.** If 123× 356=43788, then 1.23 × 35.6=? **RRB Group-D - 23/11/2022 (Shift-II) (A)** 4.3788 **(B)** 43.788 **(C)** 0.43788 **(D)** 437.88
- $0.12 \div 0.15 = ?$ 50. RRB Group-D - 20/09/2022 (Shift-III) **(A)** 4 **(B)** 0.04 **(C)** 0.004 (D) 0.4  $\frac{7}{11} + \frac{8}{17} - \frac{1}{13} \times \frac{286}{11} = ?$ 51. RRB Group-D - 08/10/2022 (Shift-II) (A)  $\frac{-167}{187}$ (C)  $\frac{20}{187}$ (B)  $\frac{-161}{187}$ (D)  $\frac{-35}{187}$  $\frac{3-0.2}{0.1\times(3+0.2)} = ?$ 52. RRB Group-D -26/11/2022 (Shift-I) (B) 0.0875 (A) 8.75 (C) 87.5 (D) 0.875 53. Solve the following:  $\frac{(0.54 \times 0.540 - 0.460 \times 0.460)}{------} = ?$ (1 - 0.920)RRB Group-D - 10/10/2018 (Shift-II) (A) 0.1 **(B)** 2 **(C)** 1 (D) 0.01 54. Find the value of the equation given below. 1 + 21+-2  $1 + \frac{1}{3}$ RRB Group-D - 16/10/2018 (Shift-III) (A) 21/4 (B) 21/5 (C) 6/5 (D) 9/4 55. Solve the following equation  $11 \div 3 + \frac{1}{9} - 5 \times 6\left(1 \times \frac{1}{6}\right) = ?$ RRB Group-D - 16/10/2018 (Shift-III) (A)  $\frac{-1}{9}$ (C)  $\frac{11}{9}$ (B)  $\frac{-11}{9}$ (D)  $\frac{11}{9}$  $\left(\frac{55}{11}\right) + (18 - 6) \times 9 = ?$ 56. RRB Group-D - 17/11/2022 (Shift-II) (A) 100 (B) 115 (C) 113 (D) 110
- **57.**  $(2.5)^2 + 8.7 \left(\frac{1.12}{1.4}\right) \times 0.5 = ?$  **RRB Group-D 25/11/2022 (Shift-III) (A)** 14.55 **(B)** 10.95 **(C)** 14.91 **(D)** 14.32
- 58.  $\frac{0.16 \times 1.65}{0.075 \times 0.02^2} = ?$ RRB Group-D - 26/11/2022 (Shift-II)

	(A) 8400 (C) 7500	( <b>B</b> ) 8000 ( <b>D</b> ) 8800		RRB Group (A) 0.08 (C) 0.2	-D - 05/11/2018 (Shift-III) (B) 0.8 (D) 1
59.	$\frac{\frac{3}{4} + \left\{\frac{3}{4} + \frac{3}{4} \div \left(\frac{3}{4} + \frac{3}{4}\right)\right\} = RRB \text{ Group}}{(A) 1}$ (C) $\frac{3}{4}$	? <b>-D - 27/11/2022 (Shift-I)</b> (B) 2 (D) 2 $\frac{3}{4}$	68.	Solve (9.5 × 9.5 – 2.5 × 2.5 <b>RRB Paramedic</b> (A) 47 (C) 49	(−) + (1.5 <sup>2</sup> – 0.25) =? (al - 21/07/2018 (Shift-III) (B) 42 (D) 45
60.	$\frac{\frac{3}{12}}{\frac{3}{12}} of \frac{\frac{2}{5} + \frac{4}{15}}{\left(\frac{3}{5} - \frac{2}{5}\right)} = ?$ RRB Group-I (A) 5/7 (C) 5/6	D -28 / 09 / 2018 (Shift-I) (B) 2/6 (D) 6/5	69.	0.00025÷12.5=? RRB Grou (A) 0.0025 (C) 0.0002	p-D - 11/12/2018 (Shift-I) (B) 0.00002 (D) 0.000002
61.	Simplify $\left(\frac{2}{3} \times \frac{4}{6}\right) + \left(\frac{5}{3} \times \frac{7}{2}\right) - \left(\frac{11}{4}\right)$ <b>RRB Group-</b> (A) 31/9 (C) 47/18	× <sup>4</sup> <sub>3</sub> ) D - 26/10/2018 (Shift-III) (B) 16/9 (D) 29/18	70.	Simplify $\left(\frac{7}{6} \times \frac{1}{3}\right) + \left(\frac{7}{3} \times \frac{3}{2}\right) - \left(\frac{7}{3} \times \frac{3}{2$	$\left(\frac{13}{4} \times \frac{2}{3}\right) = ?$ oup 31/10/2018 (Shift-III) (B) $\frac{35}{18}$ (D) $\frac{29}{18}$
62.	2. 09 ÷ 0.000209 =? RRB Group- (A) 100000 (C) 1000	D - 07/12/2018 (Shift-III) (B) 1000000 (D) 10000	71.	Solve the following e $\frac{16}{3} - \left\{4\frac{1}{3} - \left(3\frac{1}{3} - \left(2\frac{1}{3}\right)\right)\right\}$ RRB Group	quation. $\left(-\frac{1}{3}\right)$ =? -D - 15/10/2018 (Shift-III)
63.	1.08 ÷ 0.000108 <b>RRB Group-</b> (A) 100000 (C) 1000000	D - 03/12/2018 (Shift-III) (B) 1000 (D) 10000		(A) $4\frac{1}{3}$ (C) $1\frac{1}{3}$	( <b>D</b> ) $2\frac{1}{3}$
64.	$3\frac{5}{8} + \frac{6}{16} - \frac{5}{24} + 3\frac{1}{2} =?$ <b>RRB Group-</b> (A) $\frac{751}{24}$ (C) $\frac{175}{24}$	D - 12/11/2018 (Shift-III) (B) $\frac{715}{24}$ (D) $\frac{157}{24}$	72.	$\sqrt{30} - \sqrt{30} - \sqrt{30} - $ <b>RRB Group</b> (A) 5 (C) 5.4	√30 – √ ? o-D - 30/10/2018 (Shift-II) (B) √30 (D) 6
65.	Simplify the equation: $\left(\frac{5}{6} \times \frac{1}{3}\right) + \left(\frac{7}{3} \times \frac{1}{2}\right) - \left(\frac{1}{3} \times \frac{1}{3}\right)$ RRB Group (A) $\frac{19}{36}$ (C) $\frac{14}{3}$	$\frac{11}{4} \times \frac{1}{3} =?$ -D - 05/11/2018 (Shift-I) (B) $\frac{17}{9}$ (D) $\frac{23}{23}$	73.	Solve the following $\frac{\sqrt{5}}{\sqrt{3}-\sqrt{2}} - \frac{3\sqrt{3}}{\sqrt{5-\sqrt{2}}} - $	$-\frac{\sqrt{8}}{\sqrt{5}+\sqrt{3}} = ?$ p-D -23/10/2018 (Shift-II) (B) 1/2 (D) -1 / 2
66.	$\sqrt{75.24+?} = 8.71$ <b>RRB Group</b> (A) 0.6241 (C) 6.241	<ul> <li><b>-D - 05/11/2018 (Shift-I)</b></li> <li><b>(B)</b> 6.0241</li> <li><b>(D)</b> 62.41</li> </ul>	74.	Solve the following $2\sqrt{12} \times 5\sqrt{20} \times 3\sqrt{15}$ <b>RRB Group</b> (A) 900 (C) 1200	5 =? -D - 23/10/2018 (Shift-III) (B) 1800 (D) 1500
67.	Solve the equation giv $\frac{(0.125 + 0.255)}{0.5 - 0.03 + 0.005} = ?$	ven below.	75.	Solve the following e $\frac{3^2-8^2}{(3+8)^2} = ?$	quation –

RRB Group-D - 16/10/2018 (Shift-III)			
	(A) $\frac{3}{11}$	(B) $\frac{-5}{11}$	
	(C) $\frac{\frac{1-3}{-3}}{11}$	<b>(D)</b> $\frac{\frac{15}{5}}{11}$	
76.	467 × 467 + 166 × 166 × RRB Group-D	- 2 × 467 × 166 =? 0 -01/12/2018 (Shift-II)	
	(C) 90601	( <b>D</b> ) 90060	
77.	Solve-	0.12)	
	$\sqrt{(0.13 + 0.12)}\sqrt{(0.13 - 0.12)}$	- 01/11/2018 (Shift-II)	
	(A) 0.09	<b>(B)</b> 0.03	
	<b>(C)</b> 0.9	<b>(D)</b> 0.3	
78.	Simplify the following $(3.6 + 6.4)(3.6 - 6.4) - $ <b>BRB Group-D</b>	(3.6 - 6.4) <sup>2</sup> =? - 01/10/2018 (Shift-II)	
	(A) 29.6	<b>(B)</b> -35.84	
	<b>(C)</b> 32.6	<b>(D)</b> 32.68	
79.	$(425)^2 - (424)^2 =?$	29/11/2022 (Shiff III)	
	(A) 859	( <b>B)</b> 869	
	(C) 839	<b>(D)</b> 849	
80.	${(.98)^3 + (0.02)^3 + 3 \times 0}$ <b>RRB Group-D</b>	).98 × 0.02 − 1} <b>) - 18/11/2022 (Shift-I)</b>	
	(A) 1.09 (C) 0	(B) 1.98 (D) 1.562	
81.	3.4 + 3.5 + 4.9 + 66 + 1 + 23 + 60 = ?	.9 + 6.03 + 55 + 4.004	
	(A) 327 734	e -18/01/2019 (Shift-I) (B) 27 734	
	(C) 127.734	<b>(D)</b> 227.734	
82.	0.592 + 0.8 = ?		
	(A) 7 4	( <b>B)</b> 0 74	
	<b>(C)</b> 740	<b>(D)</b> 0.074	
83.	33.33 – 0.03 + 333.333 RRB RPE Constabl	- 3.33 = ? e -25/01/2019 (Shift-I)	
	(A) 366.633 (C) 366.663	(B) 363.303 (D) 369.963	
	( <del>•</del> ) 000.000	(2) 000.000	
84.	Solve		
	10" × 10" ÷ 10" RRB RPF Constable	-22/01/2019 (Shift-III)	
	(A) 10 <sup>8</sup>	<b>(B)</b> 10 <sup>6</sup>	
	<b>(C)</b> 10 <sup>2</sup>	<b>(D)</b> 10 <sup>5</sup>	

- 85.  $\{20 (25 33)\} \div \{-5 \times 4 (-6)\} + 56 \div (-27 + 13) = ?$ RRB RPF Constable -20/01/2019 (Shift-I) (A) -2 (B) -6 (C) -4 (D) 4
- 86.  $\{40 (90 \div 5 \times \overline{16 8} + 2 + 3)\} = ?$ RRB RPF-SI -11/01/2019 (Shift-II) (A) 16 (B) 28 (C) 14 (D) 64
- 87. 2-[3-{6-(5-4-3+10)}]=? RRB RPF Constable -19/01/2019 (Shift-II) (A) -3 (B) 1 (C) 2 (D) 4
- 88. If (0.29+0.25+0.01) / 0.005 = a%, then find the value of a –
   RRB RPF Constable -17/01/2019 (Shift-III)
   (A) 5000 (B) 500
   (C) 11000 (D) 110
- 89. If  $49 \times 17 = 833$ , then what will be the value of  $0.0833 \div 4.9$ ? RRB RPF-SI -12/01/2019 (Shift-III) (A) 1.7 (B) 0.017 (C) 0.0017 (D) 0.17
- 90. If  $185 \times 28=5180$ , then what will be the value of  $\frac{51.8}{18.5}$ ? RRB RPF-SI -16/01/2019 (Shift-III) (A) 0.28 (B) 280
  - **(B)** 280 **(D)** 28

(C) 2.8

- **91.** Simplify (-4.6) × (-4.6) ÷ (-4.6 + 0.6) **RRB RPF Constable -24/01/2019 (Shift-I)** (A) -5.29 (B) -0.529 (C) -4.06 (D) 5.01
- 92. Simplify  $\frac{1\frac{1}{4} \div 1\frac{1}{2}}{\frac{1}{15} + 1 - \frac{9}{10}}$ (A) 4 (B) 5 (C) 2 (D) 3
- 93. Simplify  $0.\overline{09} \times \overline{7.3}$ RRB RPF-SI -06/01/2019 (Shift-III) (A) 11/3 (B) 61/9 (C) 2/3 (D) 67/99

- 94. Simplify  $\sqrt{12} \times \sqrt{27}$ RRB RPF-SI -06/01/2019 (Shift-III) (A)  $4\sqrt{3}$ **(B)** 3√4 (C) 18 **(D)** 9 95.  $73 \times 73 + 42 \times 42 - 2 \times 73 \times 42 = ?$ RRB RPF-SI -16/01/2019 (Shift-III) (A) 961 (B) 676 (C) 981 (D) 861  $[(525 + 252)^2 - (525 - 252)^2]/(525 \times 252) =$ 96. RRB RPF Constable -22/01/2019 (Shift-III) **(B)** 4 (A) 3 (D) 6 (C) 5 97. Find the value of the following equation:  $(469+144)^2 - (469-144)^2 = ?$ 2(469×144) RRB RPF Constable -19/01/2019 (Shift-II) (B) -1 (A) -2 (C) (D) 2 98.  $(0.2 \times 0.2 \times 0.2) \times (0.06 \times 0.06 \times 0.06) \div$  $(0.12 \times 0.12 \times 0.12) = ?$ RRB RPF-SI -10/01/2019 (Shift-III)
- (A) 0.008 (B) 0.001(C) 0.002 (D) 0.00699. Solve the following equation.  $(7.5 \times 7.5 - 2.5 \times 2.5) \div (1.5^2 + 2.75) =?$
- (A) 10 (B) 50 (C) 20 (D) 5
- 100.Solve the following equation. $11 \times 3 \div \frac{1}{9} 5 \times 6\left(1 \div \frac{1}{6}\right) = ?$ RRB RPF-SI -13/01/2019 (Shift-II)(A) -115(B) 117(C) -117(D) 115
- 101. 131 / 255+2 / 5+5-17 / 3=? RRB RPF Constable -19/01/2019 (Shift-III) (A)  $\frac{121}{255}$  (B)  $\frac{117}{255}$ (C)  $\frac{63}{255}$  (D)  $\frac{131}{255}$
- 102.
   261 + (-380) (-521) + 821 (-121) = ?

   RRB ALP & Tec. (09-08-18 Shift-II)

   (A) 800
   (B) 825

   (C) 822
   (D) 833
- **103.** Solve the following-2550 - [510 - {270 - (90 - 80 + 70)}]
- RRB ALP & Tec. (20-08-18 Shift-I) (A) 2240 (B) 2230 (C) 2220 (D) 2210 104. Solve the following-23 - [23 - (23 - (23 - 23 + 23))]RRB ALP & Tec. (20-08-18 Shift-III) (A) -1 (B) 23 (C) 1 **(D)** 0 105. Solve the following- $27 - [38 - \{46 - (15 - 13 - 2)\}]$ RRB ALP & Tec. (09-08-18 Shift-II) (A) 35 (B) 31 (C) 29 (D) 30  $4 + \frac{1}{6} \times [\{-12 \times (24 - 13 - 3)\} \div (20 - 4)] =?$ 106. RRB ALP & Tec. (31-08-18 Shift-I) (A) 4 (B) 6 (D) 3 (C) 5 107.  $14 \div \{(5 \text{ of } 2 - 3)\} \times 4(7 - 2) = ?$ RRB ALP & Tec. (31-08-18 Shift-I) (A) 1/10 **(B)** 40 **(C)** 44 (D) 14/19 108.  $45 - [38 - {80 \div 4 - (8 - 12 \div 3) \div 4}] =?$ RRB ALP & Tec. (31-08-18 Shift-III) (A) 25 (B) 27 (C) 26 (D) 28 109. Solve the following  $72 \div \frac{1}{2} \{ 15 + 12 - (9 + 6 - \overline{5} + \overline{7}) \} = ?$ RRB ALP & Tec. (30-08-18 Shift-I) **(B)** 9 (A) 6 (D) 8 (C) 12 110. Find the value of given expression - $6 - 36 \times 3 \div 6 + 5 = ?$ RRB ALP & Tec. (30-08-18 Shift-II) (A) 42/11 **(B)** 7 (C) -42/11 (D) -7 111. Solve the following  $(-6)[40 \div \{7 - (-3)\}] = ?$ RRB ALP & Tec. (30-08-18 Shift-III) (A) 24 (B) -60 (C) 60 (D) -24 112.  $4 + (1/6)[\{-10 \times (25 - 13 - 3)\} \div (-5)] =?$ RRB ALP & Tec. (21-08-18 Shift-III) (A) 8 **(B)** 9 (C) 6 (D) 7
113. 123.  $19 \times 23 = 437$ , then  $190 \times 0.023 = ?$ Solve the following  $36 - [18 - \{14 - (15 - 4 \div 2 \times 2)\}]$ RRB ALP & Tec. (13-08-18 Shift-II) RRB ALP & Tec. (17-08-18 Shift-I) (A) 0.0437 (B) 0.437 **(B)** 22 **(C)** 43.7 (D) 4.37 (A) 20 (D) 23 (C) 21 124 Calculate 114. Solve the following 4237.43 + 453.32 + 24.12 - 387.23 $24 \div (19 - 9 - 3 \times 9) = ?$ RRB NTPC 09/05/2022 Shift : 2 RRB ALP & Tec. (17-08-18 Shift-II) (A) 4327.64 **(B)** 4646.64 (C) 4676.64 (D) 4587.64 (A) -3 (B) -4 (C) 3 (D) 6 125. Simplify 9 18 90 115.  $12 + 3(-2 \times 3) - (18 \div 6) = ?$  $\frac{1}{13} \div \frac{10}{26} \div \frac{10}{52}$ RRB ALP & Tec. (17-08-18 Shift-III) (A) 5 **(B)** -9 RRB NTPC 10/08/2022 Shift : 1 (C) -5 **(D)** 9 (A) 45/26 (B) 13/45 (C) 26/45 (D) 45/13  $25 - \frac{1}{2} \{5 + 4 - (3 + 2 - 1 + 3)\} = ?$ 116. RRB ALP & Tec. (14-08-18 Shift-III) 126.  $5.16 \times 3.2=?$ (A) 23 (B) 21 RRB NTPC 10/08/2022 Shift : 2 (C) 24 (D) 22 (A) 15.502 **(B)** 16.512 (C) 17.772 (D) 17.52 117.  $23 - [24 - \{25 - (26 - 27 - 28)\}] =?$ RRB ALP & Tec. (14-08-18 Shift-III) 127. 1.1+12.12+123.123 = ?(A) -2 (B) -3 RRB NTPC 30.03.2016 Shift : 1 (C) -1 (D) 1 (A) 134.343 (B) 133.433 (C) 132.123 (D) 136.343 118.  $(-8)[36 \div \{7 - (-2)\}] \div (-4)\{19 (-3) \times (-5) = ?$ 128. 128 - 43 + 57-143 + 94=? RRB ALP & Tec. (13-08-18 Shift-II) RRB NTPC 30.03.2016 Shift : 2 (A) 2 **(B)** -4 **(B)** 285 (A) 142 **(C)** 4 (D) -2 (C) 236 (D) 93 119. 45-[38-{60÷3-(6-9÷3)÷3}] 129. Find the value of  $5231405 \times 99999$ -RRB ALP & Tec. (13-08-18 Shift-III) RRB NTPC 11/08/2022 Shift : 3 (A) 25 (B) 26 (A) 523135278595 (B) 723135268595 (C) 24 (D) 21 (D) 623135268595 (C) 523135268595 120. Solve the following 130. Solve  $\{38 - (60 \div 5 \times \overline{16 - 8} \div 2 \div 3)\} = ?$ 7342015×9999? RRB ALP & Tec. (10-08-18 Shift-III) **(B)** 29 (A) 30 RRB NTPC 11/08/2022 Shift : 3 (C) 22 (D) 37 (A) 73416544985 **(B)** 73455322985 (C) 73412807985 (D) 73412907985 121. Solve the following  $22 - (1/4)\{-5 - (-48) \div (-16)\}$ 131. Calculate RRB ALP & Tec. (09-08-18 Shift-III)  $69696 \times 9999$ **(A)** 0 (B) 24 RRB NTPC 05/04/2021Shift : 1 (C) 22 (D) 21 (A) 696980304 **(B)** 666890304 (C) 696809304 (D) 696890304 122. |3(1) - 6| = ?RRB ALP & Tec. (31-08-18 Shift-III) 132. Calculate (A) 3 **(B)** 0  $19170 \div 54 \div 5$ (C) -3 **(D)** 4 RRB NTPC 05/04/2021Shift : 3

	(A) 17	(B) 1775 (D) 1757		(A) 4.26	B NTPC 12/08/2022Shift : 1
		( <b>U</b> ) 1757		( <b>C</b> ) 6.61	( <b>D</b> ) 8.79
133.	Calculate				
	$33333 \times 9999$		143.	Solve	
	RRB	NTPC 05/04/2021Shift : 3		$(50 + 0.5 \times 20) \div$	0.7
	<b>(A)</b> 332396667	<b>(B)</b> 333297667		RR	B NTPC 10/08/2022 Shift : 2
	<b>(C)</b> 33329667	<b>(D)</b> 333296667		<b>(A)</b> 8.571	<b>(B)</b> 857.1
				<b>(C)</b> 85.71	<b>(D)</b> 72.85
134.	Calculate				
	0.00048÷0.08		144.	Solve	
	RRB	NTPC 05/03/2021Shift : 3		$\left[2^{\frac{1}{2}}-1^{\frac{1}{2}}\right]$ of $\frac{3}{2}+2$	$1^{\frac{2}{-}} \div 2^{\frac{1}{-}}$
	<b>(A)</b> 0.06	<b>(B)</b> 0.006			5 3 PNTEC 11/09/202286664 1
	<b>(C)</b> 0.0006	<b>(D)</b> 0.6		(A) 4/40	(B) 2/40
				(A) 1/10	( <b>B</b> ) 3/10
135.	Calculate			(C) $1\frac{1}{10}$	<b>(D)</b> 1
	62160 ÷ 185 ÷ 24				
	RRB	NTPC 11/08/2022Shift :1	145.	Calculate	
	<b>(A)</b> 41	<b>(B)</b> 8064		4082 ÷ 157-23	
	(C) 14	<b>(D)</b> 8046		RR	B NTPC 05/04/2021Shift : 2
	· · /			<b>(A)</b> -3	<b>(B)</b> 3
136.	Calculate			(C) 2041 / 67	<b>(D)</b> 2014 / 67
	$66666 \times 9999$				
	RRB	NTPC 11/08/2022Shift : 1	146.	Find the value of	'a' —
	(A) 665693334	<b>(B)</b> 666594334		7 _ 5	
	(C) 666953334	<b>(D)</b> 666593334		a-2 a+4	
		( )			BNIPC 19.01.2017 Shift : 2
137.	9876 + 34.567 - ? =	9908.221		(A) -19 (A) 40	(B) 38
	RRB	NTPC 05/03/2021 Shift : 2		( <b>C)</b> 19	(D) -38
	<b>(A)</b> 23.45	<b>(B)</b> 234.6	4 4 7	O'men life :	
	(C) 2.345	<b>(D)</b> 2.346	147		
				$1 \div [\{p^2/(p+6)\}$	$+ \{6p/(p+6)\}$
138.	1093×1093 = ?			KK	BNIPC 23/07/2022 Shift-2
	RRB	NTPC 22.04.2016 Shift : 1		<b>(A)</b> 1/p	(B) $\frac{1}{(p+6)}$
	<b>(A)</b> 1194649	<b>(B)</b> 1162481		(C) p+6	<b>(D)</b> p
	(C) 1424649	<b>(D)</b> 1428481			
		( )	148	If $\frac{x}{x} + \frac{y}{x} = 1$ and x	= 2 then v=?
139.	Calculate			5 <sup>7</sup> 1010 X	2, 1101 / 12
	35968 ÷ 562 ÷ 8			(A) 2/ E	
	RRB	NTPC 22.04.2016 Shift : 2		(A) 5/5	(D) 21/5
	<b>(A)</b> 80	<b>(B)</b> 512		(C) 5/ 5	<b>(D)</b> 217 5
	(C) 8	( <b>D</b> ) 521	140	IF 43 × F6 - 10m	then find the volue of m
			149.	$11.4^{\circ} \times 5^{\circ} = 10^{}$	
140.	Calculate				(B) 6
	54367 ×9999			(A) 4 (C) 9	
	RRB	NTPC 22.04.2016 Shift : 2		( <b>C</b> ) 8	(D) 2
	(A) 546315633	<b>(B)</b> 543655633	450		50 than 45 45 1 75 2
	(C) 543651633	(D) 543615633	150.	$114515 \div 17.5 = 2$	$258$ , literi 45.15 $\div$ 1.75=?
	. /			(A) 2 50	$\frac{1}{(\mathbf{P})} = \frac{1}{2} \frac{1}{$
141.	$(64 \times 5^4) - (5^4 \times 1)$	6) =?		(A) 2.58 (A) 25.0	(B) 0.258
	RRB	NTPC 05/04/2021Shift :1		( <b>U)</b> 20.8	ען) 208
	<b>(A)</b> 40,000	<b>(B)</b> 35,000	454	2.24 . 0.002 .	
	(C) 30,000	<b>(D)</b> 25,000	151.	3.24 ÷ 0.002=?	
				(A) 40.00	(B) 4000
142.	Simplify			(A) 10.20	( <b>b</b> ) 1020
	6.9-[(3.19×0.7)- (8.	5-3.04)of 0.5 -2.85		(6) 162	(U) 1.620
	/ (				

152.	$(1+2/3) \div [(1$	$(+1/3) \div (2/3 + 1)] =?$	162.	Simplify	(2/2+2/5)
	(1) 1/2	(B) 2/4		(2/3+3/5) - (	(2/3+2/3) <b>DDD NTDC 05/02/2021 Chiff : 2</b>
	(A) 4/3	(D) 3/4 (D) 35/4 2		( • ) 4	(D) 40/40
	(C) 12/25	<b>(D)</b> 25/12		(A) 1 (C) 15/ 16	( <b>B</b> ) 19/16 ( <b>D</b> ) 13/16
153.	$(0.3)^2 \div 100 = ?$			(-)	
	()	RRB NTPC 23/07/2022 Shift-3	163.	Calculate	
	(A) 0.09	<b>(B)</b> 0.00 <b>09</b>		40.7 × 40.7 >	× 40.7 + 1
	(C) 0 0 <b>09</b>	<b>(D)</b> 0.9		$40.7 \times 40.7$	$-40.7 \pm 1$
	(0) 0.000			40.7 × 40.7 -	RRB NTPC 05/04/2021Shift : 3
154	$(0.25 \times 0.004)$	+ 0 374-0 72 - 2		(Δ) 417	(B) 4 17
134.	(0.20 × 0.004)	DR NTPC 10/08/2022 Shift · 2		(C) 417	(D) 4417
	<b>(∧)</b> ₋0 345	(R) 0 325		(0) +1.7	
	(A) -0.345	(D) 0.323	16/	$07 \times 07 - 2$	
	(C) 1.94	<b>(D)</b> -0.945	104.	<i>J/ × J/ –</i> :	DDD NTDC 12/09/202286ift . 2
455	Calavilata				(D) 0400
155.	Calculate	_		(A) 9391	(B) 9409
	$0.00056 \div 0.0$			( <b>C)</b> 9049	(D) 9309
	۲ ۱	(RB NIPC 10/08/2022 Shift : 3		F1 02×10 2-2 07	×20.7]
	(A) 0.08	<b>(B)</b> 0.008	165.	1.93×19.3=2.07	$\frac{20.7}{10}$ is equals to -
	(C) 0.0008	<b>(D)</b> 0.8		L 19.3-20.7	<b>RRB NTPC 05/03/2021Shift : 2</b>
				<b>(A)</b> 0 40	<b>(B)</b> 4 00
156.	Simplify			(C) 40	(D) 0.04
	$(3/2+5/3) \div (3/2)$	2+2/3)		(0) +0	(2) 0.04
	F	RRB NTPC 10/08/2022 Shift : 3	166	Find the valu	e of the following-
	<b>(A)</b> 1	<b>(B)</b> 19/13	100.	$(250 \times 250)$	$x 250 \pm 150 \times 150 \times 150)/(250 \times 150)$
	<b>(C)</b> 13/19	<b>(D)</b> 13/16		$250 - 250 \times$	$150 \pm 150 \times 150$ $-2$
				230 - 230 ×	DDR NTDC 22 04 2016 Shift • 2
157.	Simplify			(1) 10000	(P) 400
	$(2/5+2/9) \div (2/2)$	5+5/9)		(A) 40000	( <b>B</b> ) 400
	F	RRB NTPC 10/08/2022 Shift : 1		(C) 40	<b>(D)</b> 500
	<b>(A)</b> 28/ 45	<b>(B)</b> 28/43	407	0'	
	(C) 27/34	<b>(D)</b> 7/17	167.	Simplify	
	( )			$(2.25)^{\frac{1}{2}}$	
158.	Simplify				RRB NTPC 23/07/2022 Shift-3
	$(2/9+3/5) \div (2/$	9+2/5)		<b>(A)</b> 1.5	<b>(B)</b> 15
	(_, ; ; ; ; ; ; ; ; ; (_,	RB NTPC 10/08/2022 Shift : 3		(C) 1.6	<b>(D)</b> 2/3
	(A) 37 / 28	<b>(B)</b> 47 / 43		(-)	
	(C) 43 / 47	(D) $41 / 47$	168	Simplify	
	( <b>0</b> ) +0 / +/		1001	( 1) <sup>4</sup>	
150	$5(10)^4 \pm 6(10)$	$3 \pm 4(10) = 3(1/100) = 2$		$(7)^2 \div (7^{-7})$	
155.	3(10) + 0(10)	$\frac{1}{100} = \frac{1}{100} = \frac{1}$			RRB NTPC 10 01 2017 Shift - 1
	(1) 54 60 33	(R) 54 300 07		<b>(A)</b> 1	(B) 7
	$(\mathbf{R})$ 54,00.55	(D) 54,309.97 (D) 56,020.07		(-) 1/	(D) $1/14$
	(C) 50,407.00	(D) 50,039.97		(0) 14	<b>(D)</b> 1/14
160		0.004 - 2	460	4 . 2 . 4 . 7	$2 \times 4^{2} + 2 \times 4^{3} + 2 \times 4^{4} +$
100.	0.06 × 0.23 ÷	0.004 - ?	109.	$4 + 3 \times 4 + 3$	$5 \times 4 + 5 \times 4^{2} + 5 \times 4 +$
		(P) 4 6		3 X 4° =?	
	(A) 40	( <b>D</b> ) 4.0			
	( <b>C)</b> 0.046	<b>(D)</b> 0.0046		(A) $10 \times 4^{-1}$	(B) 4°
	0 55 × 0 81			(C) 5 × 4°	<b>(D)</b> 9 × 4 <sup>+</sup>
161.	0.00000000000000000000000000000000000		4-6	0	
	1.5	RRB NTPC 05/04/2021Shift :3	170.	Simplify	
	<b>(A)</b> 0.99	<b>(B)</b> 0. <b>09</b> 9		0.8+0.08+0.0	008+8
	(C) 9.9	(D) 0.0 <b>09</b> 9			RRB JE - 26/05/2019 (Shift-III)
	. /			(A) 880.8	<b>(B)</b> 8.888
				<b>(C)</b> 8.808	<b>(D)</b> 8.088

171. Simplify:  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$ RRB JE - 23/05/2019 (Shift-I) (A) 2 **(B)** 1/50 (C) 3 (D) 1/22 172. If  $2508 \div 12.54 + (X \times 11) = 200$ , then find the value of X. RRB JE - 22/05/2019 (Shift-III) (A) 2.5 **(B)** 0 (C) 4 (D) 3.5 If  $\frac{x}{\sqrt{128}} = \frac{\sqrt{162}}{x}$ , then what is the value of 'x' ? 173. RRB JE - 23/05/2019 (Shift-III) **(A)** 14 (B) 12 (D) 13 (C) 144 If  $\frac{x}{x^2-1} = \frac{A}{x-1} + \frac{B}{x+1}$  then find the value of A and B -174. RRB JE - 23/05/2019 (Shift-III) **(A)** 2,-2 **(B)** 1 / 2,-1 / 2 (C) 1/2,1/2 (D) 2,2 If  $\frac{5x}{1 + \frac{1}{1 + \frac{x}{1 - x}}} = 1$ , the find the value of 'x' – 175. RRB JE - 29/05/2019 (Shift-II) (A) 1 (B) 1/3 (C) 5/3 (D) 2/3 176. If 138.019 + 341.981 - 146.395 = 133.605 + a, then find the value of 'a' -RRB JE - 30/05/2019 (Shift-II) (A) 248 (B) 120.085 (C) 200 (D) 295.5 If |-4x+4|-6=-6, then find the value of 'x' -177. RRB JE - 30/05/2019 (Shift-II) (A) -1 **(B)** 0 (D) 2 **(C)** 1 178. If 1.5 x=0.04 y ,thenfind the value of (y-x) /(y+x) -RRB JE - 28/05/2019 (Shift-II) **(A)** 73 / 77 (B) 0.73 / 77 (C) 73 / 770 (D) 730 / 77 179. Simplify: 1 1

$$+\frac{1}{1+\frac{1}{1-\frac{1}{2}}}$$

RRB JE - 31/05/2019 (Shift-I)

	(A) 3/8 (C) 3/2	(B) 3/4 (D) 4/3
180.	Simplify $3.\overline{36} - 2.\overline{05} + 1$	
	(A) 2. <u>61</u> (C) 2. <u>64</u>	(B) 2.64 (D) 2.64
181.	What will happe $1\frac{1}{4} + 1\frac{1}{6} - 1\frac{1}{8} =$	en in place of *? * +1 <sup>1</sup> / <sub>12</sub>
	( <b>A)</b> 5/12 ( <b>C)</b> 7/24	RRB JE - 22/05/2019 (Shift-III) (B) 7/12 (D) 5/24
182.	$\frac{\text{Simplify}}{\frac{121}{3\frac{2}{3}} + \frac{92}{7\frac{1}{3}}}$	PPR IE - 22/05/2010 (Shift II)
	(A) $41\frac{12}{13}$ (C) $43\frac{11}{19}$	(B) $40\frac{13}{11}$ (D) $45\frac{6}{11}$
183.	Simplify: $3.6 \times 0.48 \times 2.5$ $0.12 \times 0.09 \times 0$ (A) 8000	50 RRB JE - 24/05/2019 (Shift-I) (B) 8
184.	$\frac{1}{1\times 2} + \frac{1}{2\times 3} + \frac{1}{3\times 4} + \frac{1}{3\times 3} + 1$	( <b>D</b> ) 60 + $\frac{1}{4\times5} + \frac{1}{5\times6} + \dots + \frac{1}{9\times10} = ?$
	(A) 1/10 (C) 9/10	RRB JE - 24/05/2019 (Shift-III) (B) 5/11 (D) 2/5
185.	Simplify: 3 + $\frac{1}{1 + \frac{1}{2 + \frac{1}{4}}}$	
	<b>(A)</b> 48/13 <b>(C)</b> 1/12	RRB JE - 25/05/2019 (Shift-I) (B) 18/49 (D) 3/13
186.	Simplify $1.2 \times 2.5 \times 0.5$	PPR IE - 25/05/2010 (Shift-II)
	<b>(A)</b> 1.5 <b>(C)</b> 0.15	(B) 150 (D) 15
187.	Simplify 1.2 - 0.12	RRB JE - 26/05/2019 (Shift-III)
	<b>(A)</b> 11/10 <b>(C)</b> 1	(B) 11/90 (D) 9/10

188.
 Simplify
 191.
 If 
$$3\sqrt{5} + 1$$
 $\left[1 + \frac{1}{10 + \frac{1}{10}}\right] + \left[1 - \frac{1}{10 + \frac{1}{10}}\right]$ 
 (A) 22.2.3

 (C) 18.
 (C) 18.

 (C) 3/10
 (D) 91/101
 192.

 (A) 2
 (B) 101/10
  $0.1 \times 0.0$ 

 (C) 3/10
 (D) 91/101
 192.

 (A) 2/9
 (C) 1/3

 (B) 1
 (C) 1/3

 (A) 4
 (B) 1

 (C) 0
 (D) 6

 (A) 4
 (B) 1

 (C) 0
 (D) 6

 (A) 25 + 10\sqrt{6} +  $\sqrt{25 - 10\sqrt{6}}$ 
 194.

 (A) 2 $\sqrt{15}$ 
 (B) 2 $\sqrt{5}$ 

 (A) 2 $\sqrt{15}$ 
 (B) 2 $\sqrt{5}$ 

 (A) 3/4
 (C) 2 $\sqrt{55}$ 

191. If  $3\sqrt{5} + \sqrt{125} = 17.88$ , then  $\sqrt{80} + 6\sqrt{5} = ?$ RRB -JE - 31/05/2019 (Shift-I) (A) 22.25 (B) 22.35 (C) 18.75 (D) 20.235 192. Simplify  $0.1 \times 0.1 + 0.2 \times 0.2$   $0.3 \times 0.3 + 0.6 \times 0.6$ RRB JE - 27/05/2019 (Shift-I) (A) 2/9 (B) 1/9 (C) 1/3 (D) 2/3 193.  $\frac{(82+28)^2 - (82-28)^2}{82 \times 28} = ?$ RRB JE - 28/06/2019 (Shift-III) (A) 220 (B) 4 (C) 8 (D) 110

Solve:  

$$\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)^2$$
  
RRB JE - 02/06/2019 (Shift-II)  
(A) 3/4 (B) 4/3  
(C)  $2\sqrt{3}$  (D)  $\frac{4}{\sqrt{3}}$ 

# **Solution**

1.	Ans.(D) 6 kg 5 g = $(6 + -\frac{5}{2})kg$	
	= (6 + 0.005)kg	7.
	= 6.005 kg	
2.	Ans.(A)	
	$5.52 - (2.3)^2 + (0.8)^3 \times 0.12 \div (0.4)^4 - 3.14$	8.
	$= 5.52 - 5.29 + 0.512 \times 0.12 \div 0.0250 - 5.14$ $= 0.23 + 2.4 - 3.14$	
	= -0.51	
3.	Ans.(D)	
	30.9 + 3.09 + 0.309 + 0.039 + 309 = 343.338	0
4.	Ans.(A)	9.
	= 7.892 + 35 – 0 .005 + 10.345	
	= 7.892 + 10.345 + 35 – 0.005	
	= 53.237 – 0.005	40
	= 53.232	10.
5.	Ans.(C)	
	392 - 39.2 - 3.92 - 0.392	44
	= 352.8 - 3.92 - 0.392	11.
	= 348.88 - 0.392	
	= 348.488	
6.	Ans.(C)	12
	= 0.098 + 0.98 + 9.8 + 98	12.
	$=\frac{98}{98}+\frac{98}{98}+\frac{98}{98}+98$	
	1000 ' 100 ' 10 ' 20	
	$-\frac{98+980+9800+98000}{2}$	
	- 1000	

	108878
	= <u>1000</u>
	= 108.878
7.	Ans.(A):
	8795 × 125 = 8795 × (100 + 25)
	= 879500 + 219875
	= 10,99,375
8.	Ans.(C):
	395 - 39.5 - 3.95 - 0.395
	= 395 - 43.45 - 0.395
	= 395 - 43.845
	= 351.155
9.	Ans.(A)
	35 - 7.892 + 0.005 - 10.345 = ?
	= 35.005 - 18.237
	= 16.768
10.	Ans.(B)
	20.9 + 2.09 + 0.209 + 0.029 + 29
	= 52.228
11.	Ans.(D)
	0.295 + 2.95 + 29.5 + 295 = ?
	$\Rightarrow 3.245 + 324.5 = ?$
	? = 327.745
12.	Ans.(D)
	$56 \div \frac{1}{-1} \{15 + 12 - (9 + 6 - \overline{5 + 7})\}$
	3 3
	$-56 \div - (15 \pm 12)$
	$= 30 \div \frac{3}{3} \{13 + 12 - (13 - 12)\}$

$$= 56 \div \frac{1}{3} \{15 + 12 - 3\}$$

$$= 56 \div \frac{1}{3} \{24\}$$

$$= 56 \div \frac{1}{3} \times 24$$

$$= 56 \div 8$$

$$= \frac{56}{6} = 7$$
**13.** Ans.(C)  
77 ÷ [46 - {66 - (52 - 63 ÷ 9 × 3)}] = A  
 $\Rightarrow 77 \div [46 - {66 - (52 - 7 × 3)}] = A$   
 $\Rightarrow 77 \div [46 - {66 - (31)}] = A$   
 $\Rightarrow 77 \div [46 - {35}] = A$   
 $\Rightarrow 77 \div [11] = A$   
**4.** Ans.(C)  
 $= 140 \div [61 - {36 - (40 - 60 \div 12 \times 6)}]$   
 $= 140 \div [61 - {36 - (40 - 5 \times 6)}]$   
 $= 140 \div [61 - {36 - (10)}]$   
 $= 140 \div [61 - {26}]$   
 $= 140 \div {55 - 4}$   
**15.** Ans.(B)  
(-5){(20 - (-2) × (-8)} = ?  
 $= (-5){(20 - 16)}$   
 $= (-5) \times 4$   
 $= -20$   
**16.** Ans.(C)  
78 - [5 + 3 × (25 - 2×10)]  
 $= 78 - [5 + 3 × (25 - 2×10)]$   
 $= 78 - [5 + 3 × (25 - 2×10)]$   
 $= 78 - [5 + 3 × (25 - 2×10)]$   
 $= 78 - [5 + 3 × 5]$   
 $= 78 - 20$   
**17.** Ans.(D)  
70 ÷ 5 × (10 - 4) ÷ 3 = ?  
70 ÷ 5 × (10 - 4) ÷ 3 = ?  
70 ÷ 5 × (2 - 3) + 3  $\frac{1}{2}$ ] =?  
Solving with BODMAS -  
 $[{2\frac{1}{3} - (5 + (2 - 3)) + 3\frac{1}{2}]$   
 $= [{\frac{7}{3} - 4} + \frac{7}{2}]$   
 $= [{\frac{-10 + 21}{6}]$   
 $= \frac{11}{6}$   
**19.** Ans.(D)

 $63 - (-3)(-2 - 8 - 4) \div 3 \{5 + (-2)(-1)\}$  $= 63 - (-3)(-14) \div 3 \times \{5 + 2\}$  $= 63 - (-3)(-14) \div 3 \times 7$  $= 63 - (-3)(-14) \div 21$  $= 63 - 42 \div 21$ = 63 - 2= 61 20. Ans.(A)  $72 \div [27 - {35 - (42 - 45 \div 9 \times 2)}]$  $= 72 \div [27 - {35 - (42 - 10)}]$  $= 72 \div [27 - {35 - 32}]$  $= 72 \div [27 - 3]$  $= 72 \div 24$ = 321. Ans.(B)  $T = (93 + 15) \div (3 \times 4) - 24 + 8$  $= (108) \div (12) - 24 + 8$  $= 108 \div 12 - 24 + 8$ = 9 - 24 + 8= 17 - 24T = -722. Ans.(A)  $75 \div [35 - {63 - (79 - 54 \div 9 \times 6)}] = ?$  $\Rightarrow 75 \div [35 - \{63 - (79 - 6 \times 6)\}] = ?$  $\Rightarrow 75 \div [35 - \{63 - (79 - 36\}] = ?$  $\Rightarrow 75 \div [35 - \{63 - 43\}] = ?$  $\Rightarrow 75 \div [35 - 20] = ?$  $\Rightarrow 75 \div 15 = 5$ 23. Ans.(B)  $0.36 + 0.284 \div 0.4 \times 0.8 - 0.038$  $\Rightarrow 0.36 + 0.71 \times 0.8 - 0.038$  $\Rightarrow 0.36 + 0.568 - 0.038$  $\Rightarrow 0.928 - 0.038 = 0.89$ 24. Ans.(A):  $3 + [32 \div 8 \times 52 \div (4 + 9)] = ?$  $= 3 + [4 \times 52 \div 13]$  $4 \times 52$  $= 3 + \frac{1}{13}$  $= 3 + 4 \times 4$ = 3 + 16 = 1925. Ans.(D):  $144 \div [40 - {37 - (25 - 112 \div 7 \times 4)}]$  $\Rightarrow 144 \div [40 - (37 - (25 - 112 \div 28))]$  $\Rightarrow 144 \div [40 - \{37 - (25 - 4)\}]$  $\Rightarrow 144 \div [40 - \{37 - 21\}]$  $\Rightarrow 144 \div [40 - 16]$  $\Rightarrow 144 \div 24 = 6$ 26. Ans.(B)  $G = (96 \div 12) + 14 \times (12 + 8) \div 2$  $= 8 + 14 \times 20 \div 2$  $= 8 + 14 \times 10$ = 8 + 140G = 148So, one fourth of G means  $\frac{G}{4} = \frac{148}{4}$ 

$$= 37$$
27. Ans.(A)  

$$? = 18 \div \frac{1}{8} \{11 + 16 - (10 + 7 - \overline{6} + 8)\}$$

$$= 18 \div \frac{1}{8} \{11 + 16 - (10 + 7 - 14)\}$$

$$= 18 \div \frac{1}{8} \{24$$

$$? = 18 \div 3 = 6$$
28. Ans.(D)  

$$22 - \frac{1}{4} \{-5 - (-48) \div (-16)\} = ?$$

$$= 22 - \frac{1}{4} \{-5 - 3\}$$

$$= 22 + \frac{1}{4} \times 8 = 22 + 2 = 24$$
29. Ans.(C)  

$$(-45 + 7 \times 23 - (247 \div 13) - 11) \div 2$$

$$= (-45 + 161 - 19 - 11) \div 2$$

$$= (161 - 75) \div 2$$

$$= 86 \div 2$$

$$= 43$$
30. Ans.(D)  

$$74 - \left[85 \div \{49 - (41 - 3^5 \div 9 \times 3)\}\right]$$

$$? = 74 - \left[85 \div \{49 - (41 - 3^5 \div 27)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 243 \div 27)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 9)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 9)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 9)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 9)\}\right]$$

$$= 74 - \left[85 \div \{49 - (41 - 9)\}\right]$$

$$= 74 - \left[85 \div \{17]\right]$$

$$= 74 - 5 = 69$$
31. Ans.(A)  

$$(12 - 1) \text{ of } (16 + 15) \times (119 + 113 - 16)$$

$$= 11 \cancel{47} 31 \times 216$$

$$= 73656$$
32. Ans.(B)  

$$25 + 15 - (51) + (4 \times 15 \text{ of } 17) \div 20 + \overrightarrow{6-2}$$

$$\Rightarrow 25 + 15 - 51 + \left(\frac{4 \times 15 \times 17}{20}\right) + 4$$

$$\Rightarrow 40 - 51 + 51 + 4 = 44$$
33. Ans.(D)  

$$10 + \left\{26 - 15 \times (20 - 5 \div 2 \times 7 - 5)\right\} = ?$$

$$= 10 + \left\{26 - 15 \times (20 - 5 \times \frac{1}{2} \times 2)\right\}\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

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$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 15 \times (20 - 5)\right\}$$

$$= 10 + \left\{26 - 225\right\}$$

$$= -189$$
34. Ans.(B)

 $y + [y - (y + x) + \{y - (y - x)\} + (z + x)]$  $= y + [y - y - x + \{y - y + x\} + z + x]$ = y - x + x + z + x= x + y + z35. Ans.(B) 23× 31 = 713 so  $0.00713 \div 3.1 = ?$  $:: 23 \times 31 = 713$  $\frac{713}{31} = 23 - - -(i)$  $0.00713 \div 3.1$  $= \frac{713 \times 10^{-5}}{31 \times 10^{-1}}$  $= \frac{713}{31} \times 10^{-5} \times 10^{-5}$  $=\frac{713}{31}\times 10^{-4}$ Substituting the value of  $\frac{713}{31}$  from equation (i) \_  $= 23 \times 10^{-4}$ = 0.0023 36. Ans.(D)  $\frac{0.5 - 0.1x}{1.3 - 0.8x} = 0.2 \\ 0.5 - 0.1x = 0.26 - 0.16x$ 0.16x - 0.1x = 0.26 - 0.50.06x = -0.24 $x = -\frac{0.24}{0.06}$ x = -437. Ans.(C) Given that  $31 \times 23 = 713$  $310 \times 0.023 = ?$  $\Rightarrow 31 \times 10 \times \frac{23}{1000}$  $\Rightarrow \frac{31 \times 23}{100} = \frac{713}{100} = 7.13$ Ans.(C) 38.  $31 \times 23 = 713$  $3100 \times 0.00023 = 0.713$  $3100 \times 0.00023 = 0.713$ Ans.(C)  $\frac{(x-5)}{3} - \frac{(x-2)}{4} = \frac{7}{2}$   $\Rightarrow \frac{4(x-5) - 3(x-2)}{12} = \frac{7}{2}$   $\Rightarrow \frac{4x - 20 - 3x + 6}{12} = \frac{7}{2}$   $\Rightarrow \frac{x - 14}{12} = \frac{7}{2}$   $\Rightarrow x - 14 = 42$ 39.  $\Rightarrow x - 14 = 42$  $\Rightarrow x = 56$ 40. Ans.(B) 23 ×33 = 759 if 0.00759 ÷ 3.3

 $0.00759 \div 3.3$  $\frac{00759}{100000} \times \frac{1}{33} \times 10 = 0.0023$ 41. Ans.(B) 1120  $\frac{1120}{\sqrt{x}} = 80,14 = \sqrt{x}$ Squaring both sides - $(14)^2 = (\sqrt{x})^2$ 196 = x42. Ans.(A) Given that - $P = 36 - 2(20 + 12 \div 4 \times 3 - 2 \times 2) + 10$  $P = 36 - 2(20 + 3 \times 3 - 2 \times 2) + 10$ P = 36 - 2(29 - 4) + 10P = 36 - 50 + 10P = -4So double of  $P = -4 \times 2 = -8$ 43. Ans.(B)  $1131 \div 39 = 29$  (Given)  $= 11.31 \div 0.0029$  $1131 \times 10^{-2}$  $=\frac{110}{29 \times 10^{-4}}$  $= 39 \times \frac{1}{10^{-2}} = 39 \times 10^{2}$ = 390044. Ans.(B)  $\frac{1}{x-a-b} = \frac{1}{x} - \frac{1}{a} - \frac{1}{b}$  $\frac{1}{a} + \frac{1}{b} = \frac{1}{x} - \frac{1}{x-a-b}$  $\frac{a+b}{ab} = \frac{x-a-b-x}{x(x-a-b)}$  $\frac{a+b}{ab} = \frac{-(a+b)}{x(x-a-b)}$  $x^{2} - (a + b)x + ab = 0$ x(x-a) - b(x-a) = 0(x-a)(x-b) = 0x = a, x = bSo x has two values a and b. 45. Ans.(C)  $\sqrt{75} + \sqrt{363} = \sqrt{N}$ Squaring both sides  $(\sqrt{75})^2 + (\sqrt{363})^2 + 2\sqrt{75} \times \sqrt{363} = (\sqrt{N})^2$  $75 + 363 + 2 \times 5\sqrt{3} \times 11\sqrt{3} = N$ 438 + 330 = NN = 76846. Ans.(D)  $202.4 \div x = 5.06$  $\Rightarrow \frac{202.4}{x} = 5.06$ 202.4  $\Rightarrow x = \frac{202}{5.06}$ 20240  $\Rightarrow x = -$ 506 x = 40

47. Ans.(B) :  $\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$ = 140 + 0.14 + 0.0014= 140.141448. Ans.(A) By auestion - $\frac{\frac{144}{1.44}}{\frac{144}{144} = \frac{14.4}{x}} = \frac{144}{x \times 10} \text{ or } x = \frac{144 \times 144}{144 \times 100 \times 10}$ x = 0.14449. Ans.(B) By question - $123 \times 356 = 43788$  $1.23 \times 35.6 = \frac{123}{100} \times \frac{356}{10}$  $=\frac{43788}{1000}=43.788$ 50. Ans.(D) 0.12 ÷ 0.15  $\frac{1}{2} = ?$  $\frac{1}{2} = ?$  $\frac{0.12 \times \frac{1}{0.15}}{2} = ?$ 12  $\frac{1}{15 \times 2} = ?$ ? = 0.451. Ans.(A) Ans.(A)  $\frac{7}{11} + \frac{8}{17} - \frac{1}{13} \times \frac{286}{11}$   $= \frac{7}{11} + \frac{8}{17} - \frac{286}{143}$   $= \frac{7}{11} + \frac{8}{17} - 2$   $= \frac{119 + 88}{187} - 2$   $= \frac{207}{187} - 2,$   $= \frac{207 - 374}{207 - 374}$  $= \frac{\frac{187}{207 - 374}}{\frac{187}{187}}$  $= \frac{\frac{-167}{187}}{187}$ 52. Ans.(A)  $\frac{3-0.2}{0.1 \times (3+0.2)} \Rightarrow \frac{2.8}{0.32} = 8.75$ 53. Ans.(C)  $0.54 \times 0.540 - 0.460 \times 0.460$ (1 - 0.920)By,  $(a^2 - b^2) = (a + b)(a - b)$  $\Rightarrow \frac{(0.54)^2 - (0.460)^2}{(1 - 0.920)}$  $=\frac{(0.54 + 0.460)(0.54 - 0.460)}{(0.54 - 0.460)}$ (1 - 0.920) $1 \times 0.08$  $\Rightarrow \frac{1 \times 0.00}{0.08} = 1$ 54. Ans.(C)

$$\frac{1+2}{\left\{1+\frac{2}{\left(1+\frac{1}{3}\right)}\right\}} = \frac{3}{\left\{1+\frac{2\times3}{4}\right\}} = \frac{3}{10} = \frac{3}{10} = \frac{12}{10} = \frac{6}{5}$$
55. Ans.(B)  

$$11 \div 3 + \frac{1}{9} - 5 \times 6\left(1 \times \frac{1}{6}\right) = 11 \div 3 + \frac{1}{9} - 5 \times 1 = \frac{11}{3} + \frac{1}{9} - 5 = \frac{33 \pm 1 - 45}{9} = \frac{-11}{9}$$
56. Ans.(C)  

$$\left(\frac{55}{11}\right) + (18 - 6) \times 9 = ? + 128 + 9 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118 = ? + 108 = ? + 118$$

$$= \frac{3}{4} + \left\{\frac{3}{4} + \frac{3}{4} \div \frac{3}{2}\right\}$$

$$= \frac{3}{4} + \left\{\frac{3}{4} + \frac{1}{2}\right\} = \frac{3}{4} + \frac{3}{4} + \frac{1}{2}$$

$$= \frac{3 + 3 + 2}{4} = \frac{8}{4} = 2$$
60. Ans.(C)
$$\frac{3}{12} of \frac{\frac{5}{5} + \frac{1}{15}}{(\frac{3}{5} - \frac{2}{5})} = \frac{\frac{30 + 20}{75}}{\frac{1}{5}} \times \frac{3}{12}$$

$$\frac{50}{75} \div \frac{1}{5} \times \frac{3}{12}$$

$$\frac{50}{75} \div \frac{5}{1} \times \frac{3}{12}$$

$$\frac{50}{75} \times \frac{5}{1} \times \frac{3}{12}$$

$$\frac{1}{12}$$

$$\frac{50}{15} \times \frac{3}{12} = \frac{5}{6}$$
61. Ans.(C)
$$\frac{(\frac{2}{3} \times \frac{4}{6}) + (\frac{5}{3} \times \frac{7}{2}) - (\frac{11}{4} \times \frac{4}{3})}{(\frac{4}{18})}$$

$$= \frac{4}{9} + \frac{35}{6} - \frac{11}{3}$$

$$= \frac{49}{100} \div \frac{209}{100000}$$

$$\frac{209}{100} \div \frac{209}{1000000}$$

$$= \frac{209}{100} \div \frac{100000}{209}$$

$$= 100,00$$
63. Ans.(D):
$$1.08 \div 0.000108$$

$$= \frac{108}{0.00108}$$

$$= \frac{108}{0.00108}$$

$$= \frac{108}{0.00108}$$

$$= \frac{108 \times 10000}{108} = 10000$$
64. Ans.(C)
$$3\frac{5}{8} + \frac{6}{16} - \frac{5}{24} + 3\frac{1}{2}$$

$$= \frac{29}{8} + \frac{6}{16} - \frac{5}{24} + \frac{7}{2}$$

$$= \frac{6 \times 29 + 3 \times 6 - 2 \times 5 + 24 \times 7}{48}$$

$$= \frac{174 + 18 - 10 + 168}{48} = \frac{350}{48} = \frac{175}{24}$$
65. Ans.(A):  
The equation
$$= (\frac{5}{6} \times \frac{1}{3}) + (\frac{7}{3} \times \frac{1}{2}) - (\frac{11}{4} \times \frac{1}{3})$$

$$= \frac{5}{18} + \frac{7}{6} - \frac{11}{12}$$

$$= \frac{20 + 84 - 66}{72}$$

$$= \frac{104 - 66}{72} = \frac{38}{72}$$

$$= \frac{19}{36}$$
66. Ans.(A):  
Given,  
 $\sqrt{75.24 + x} = 8.71$   
 $\sqrt{75.24 + x} = 8.71$   
Squaring both sides -  
 $(75.24 + x) = (8.71)^2$   
 $75.24 + x = 75.8641$   
 $x = 75.8641 - 75.24$   
 $x = 0.6241$   
67. Ans.(B):  
 $(0.125 + 0.255)$   
 $\overline{0.5 - 0.03} + 0.005$   
 $= \frac{.380}{.475} = \frac{76}{95} = .8$   
68. Ans.(B)  
 $(9.5 \times 9.5 - 2.5 \times 2.5) + (1.5^2 - 0.25) = ?$   
 $? = \frac{(9.5)^2 - (2.5)^2}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$   
 $= \frac{7.0 \times 12.0}{(1.5 + 0.5)(1.$ 

$$\int_{30} - \sqrt{30} - \sqrt{30} - \sqrt{30} - \sqrt{\dots} = x$$
Squaring both sides,  
 $30 - x = x^2$   
 $\Rightarrow x^2 + x - 30 = 0$   
 $\Rightarrow (x + 6)(x - 5) = 0$   
 $\Rightarrow x = 5$ 
73. Ans.(A)  
 $\frac{\sqrt{5}}{\sqrt{3} - \sqrt{2}} - \frac{3\sqrt{3}}{\sqrt{5} - \sqrt{2}} - \frac{\sqrt{5}}{\sqrt{5} + \sqrt{3}} = ?$   
 $? = \frac{\sqrt{5}(\sqrt{3} + \sqrt{2})}{3\sqrt{2}} - \frac{3\sqrt{3}(\sqrt{5} + \sqrt{2})}{5^{-2}} - \frac{2\sqrt{2}(\sqrt{5} - \sqrt{3})}{5^{-3}}$   
 $= \sqrt{15} + \sqrt{10} - \sqrt{15} - \sqrt{6} - \sqrt{10} + \sqrt{6}$   
 $= 0$ 
74. Ans.(B)  
 $2\sqrt{12} \times 5\sqrt{20} \times 3\sqrt{15}$   
 $= 2\sqrt{2} \times 2 \times 3 \times 5\sqrt{2} \times 2 \times 5 \times 3\sqrt{15}$   
 $= 4\sqrt{3} \times 10\sqrt{5} \times 3\sqrt{15}$   
 $= 120 \times 15$   
 $= 1800$ 
75. Ans.(B)  
 $\frac{3^2 - 8^2}{(3 + 8)^2} = ?$   
 $= \frac{(3 + 8)(3 - 8)}{(3 + 8)^2} \{a^2 - b^2 = (a + b)(a - b) \\ (a + b)^2 = a^2 + b^2 + 2ab\}$   
 $= \frac{3 - 8}{3}$   
 $= \frac{-5}{11}$ 
76. Ans.(C)  
 $467 \times 467 + 166 \times 166 - 2 \times 467 \times 166 \\ (467)^2 + (166)^2 - (2 \times 467 \times 166) \\ (467 - 166)^2 = (301)^2 = 90601$ 
77. Ans.(A)  
 $\sqrt{(0.15 + 0.12)}\sqrt{(0.15 - 0.12)}$   
 $= \sqrt{(0.0225 - 0.0144}$   
 $= \sqrt{0.0021} = 0.09$ 
78. Ans.(B)  
 $(3.6 + 6.4)(3.6 - 6.4) - (3.6 - 6.4)^2 = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (3.6 - 6.4)[(3.6 + 6.4) - (3.6 - 6.4)] = ? \\ \Rightarrow (2.8)(12.8) = ? \\ ? - -35.84$ 
79. Ans.(D)  
(425)^2 - (424)^2 = ?

Formula:  $a^2 - b^2 = (a + b)(a - b)$  $(425)^2 - (424)^2 = (425 + 424)(425 - 424)$  $= 849 \times 1$ = 84980. Ans.(C)  $\{(.98)^3 + (0.02)^3 + 3 \times 0.98 \times 0.02 - 1\}$  $((.98)^3 + (0.02)^3 + 3 \times 0.98 \times 0.02)$ (.98 + .02) - 1 $[(0.98) + (0.02)]^3 - 1$  $(1.00)^3 - 1 = 1 - 1 = 0$ 81. Ans.(D) 3.4 + 3.5 + 4.9 + 66 + 1.9 + 6.03 + 55 + 4.004 + 23 + 60 = (66 + 55 + 23 + 60) + (3.4 + 3.5 + 4.9 + 1.9)+ 6.03 + 4.004= 204 + 23.734= 227.734 82. Ans.(B) By question,  $0.592 \div 0.8$ 0.592 = .8  $592 \times 10$ = 8 × 1000 74 = 100 = 0.7483. Ans.(B) 33.33 - 0.03 + 333.333 - 3.33  $\Rightarrow 33.30 + 330.003 = 363.303$ 84. Ans.(A)  $10^9 \times 10^2 \div 10^3 = \frac{10^9 \times 10^2}{10^3} = 10^6 \times 10^2$  $= 10^{8}$ 85. Ans.(B)  $\{20 - (25 - 33)\} \div \{-5 \times 4 - (-6)\} + 56$  $\div (-27 + 13) = ?$  $= \{20 + 8\} \div \{-20 + 6\} + 56 \div (-14)$  $= \{28\} \div \{-14\} - 4$ = -2 - 4 = -686. Ans.(A)  $\{40 - (90 \div 5 \times \overline{16 - 8} \div 2 \div 3)\} = ?$  $\Rightarrow \{40 - (90 \div 5 \times 8 \div 2 \div 3)\} = ?$  $\Rightarrow \{40 - (90 \div 5 \times 4 \div 3)\} = ?$  $\Rightarrow \{40 - (18 \times 4 \div 3)\} = ?$  $\Rightarrow$  {40 - 24} = ? ? = 16 87. Ans.(A)  $2 - [3 - \{6 - (5 - 4 - 3 + 10)\}] = ?$  $= 2 - [3 - \{6 - (8)\}]$ = 2 - [3 - (-2)]= 2 - 5= -388. Ans.(C)

Given -(0.29 + 0.25 + 0.01)= a%0.005 0.55 а  $\frac{1}{0.005} =$ 100  $55 \times 10^{-2}$ а  $\frac{1}{5 \times 10^{-3}} =$ 100 a = 1100089. Ans.(B)  $49 \times 17 = 833$  $0.0833 \div 4.9 = ?$ 0.0833  $? = \frac{0.2}{4.9}$ - = 0.01790. Ans.(C)  $185 \times 28 = 5180$ 5180 28 =185  $28 = \frac{518}{185} \times 10$ 28 518 = 10 185 518 2.8 = 185 therefore,  $\frac{51.8}{18.5} = 2.8$ 91. Ans.(A)  $(-4.6) \times (-4.6) \div (-4.6 + 0.6)$  $= (-4.6) \times (-4.6) \div (-4.0)$  $= (-4.6) \times (-4.6) \times 1/(-4)$ = -5.2992. Ans.(B)  $1\frac{1}{4} \div 1\frac{1}{2}$ + 1 -+30-27 $\frac{30}{2}$  = 5 6 5  $\frac{30}{5}$ 30  $\frac{5}{6} \times \frac{30}{5} = 5$ 93. Ans.(C) Given - $0.\overline{09} \times \overline{7.3}$  $= \frac{9}{99} \times \left(7 + \frac{3}{9}\right) = \frac{9}{99} \times \frac{66}{9} = \frac{66}{99} = \frac{2}{3}$ 94. Ans.(C) By question,  $=\sqrt{12} \times \sqrt{27} = 2\sqrt{3} \times 3\sqrt{3} = 6 \times 3 = 18$ 95. Ans:(a)  $73 \times 73 + 42 \times 42 - 2 \times 73 \times 42$  $= (73)^{2} + (42)^{2} - 2 \times 73 \times 42$  $= (73 - 42)^2 = (31)^2 = 961$ 

96. Ans.(B)  

$$\frac{(525 + 252)^{2} - (525 - 252)^{2}}{(525)^{2} + (252)^{2} + 2 \times 525 \times 252} - (525)^{2} - (252)^{2} + 2 \times 525 \times 252} = \frac{(252)^{2} + 2 \times 525 \times 252}{525 \times 252} = \frac{4 \times 525 \times 252}{525 \times 252} = 4$$
97. Ans.(D)  

$$\frac{(469 + 144)^{2} - (469 - 144)^{2}}{2(469 \times 144)} = ?$$

$$= \frac{(a + b)^{2} - (a - b)^{2}}{2(ab)} = \frac{4ab}{2ab} = 2$$
where,  $a = 469, b = 144$ 
98. Ans.(B)  

$$\frac{(0.2)^{3} \times (0.06)^{3}}{(0.12)^{3}} = \left(\frac{0.012}{0.12}\right)^{3}$$

$$= \left(\frac{1}{10}\right)^{3}$$

$$= (0.1)^{3}$$

$$= 0.001$$
99. Ans.(A):  
The given equation is as follows:  

$$(7.5 \times 7.5 - 2.5 \times 2.5) + (1.5^{2} + 2.75) = ?$$

$$= \frac{(7.5 - 2.5)(7.5 + 2.5)}{(2.25 + 2.75)}$$

$$= \frac{5.0 \times 10.0}{5.00}$$

$$= \frac{5 \times 10}{5} = 10$$
100. Ans.(B)  

$$11 \times 3 \div \frac{1}{9} - 5 \times 6\left(1 \div \frac{1}{6}\right)$$

$$= 11 \times 3 \times 9 - 5 \times 6(1 \times 6)$$

$$= 297 - 180 = 117$$
101. Ans.(C)  

$$\frac{131}{255} + \frac{2}{5} + 5 - \frac{17}{3}$$

$$= \frac{131 + 102 + 1275 - 1445}{255} = \frac{63}{255}$$
102. Ans.(C)  

$$\Rightarrow -261 + (-380) - (-521) + 821$$

$$- (-121)$$

$$= -261 - 380 + 521 + 821 + 121$$

$$= -641 + 1463 = 822$$
103. Ans.(B)  

$$= 2550 - [510 - [270 - (90 - 80 + 70)]]$$

$$= 2550 - [510 - [270 - 80]]$$

$$= 223 - [23 - (23 - 23 + 23)]]$$

 $= 23 - [23 - \{23 - 23 + 23 - 23\}]$ = 23 - [23 - 0]= 23 - 23 = 0105. Ans.(A)  $\Rightarrow 27 - [38 - {46 - (15 - 13 - 2)}]$  $= 27 - [38 - {46}]$ = 27 - [38 - 46] = 27 - [-8]= 27 + 8 = 35106. Ans.(D)  $4 + \frac{1}{6} \times \left[ \{ -12 \times (24 - 13 - 3) \} \div (20 - 4) \right]$  $= 4 + \frac{1}{6} \times [\{-12 \times 8\} \div 16]$  $= 4 + \frac{1}{6} \times (-6) = 4 - 1$ = 3 107. Ans.(B)  $14 \div \{(5 \times 2 - 3)\} \times 4(7 - 2)$  $= 14 \div \{(10 - 3)\} \times 4(7 - 2)$  $= 14 \div 7 \times 4 \times 5$  $= 2 \times 4 \times 5 = 40$ 108. Ans.(C)  $: 45 - [38 - {80 \div 4 - (8 - 12 \div 3) \div 4}]$  $= 45 - [38 - \{80 \div 4 - 4 \div 4\}]$  $= 45 - [38 - {20 - 1}]$ = 45 - [38 - 19] = 45 - 19 = 26109. Ans.(A) Given expression,  $72 \div \frac{1}{2} \{ 15 + 12 - (9 + 6 - \overline{5 + 7}) \} = ?$  $= 72 \div \frac{1}{2} \{ 15 + 12 - (9 + 6 - 12) \}$  $= 72 \div \frac{1}{2} \{ 15 + 12 - (15 - 12) \}$  $= 72 \div \frac{1}{2} \{ 15 + 12 - 3 \} = 72 \div \frac{1}{2} \{ 27 - 3 \}$  $= 72 \div \frac{1}{2} \times 24 = 72 \div 12 = 6$ 110. Ans.(D)  $6 - 36 \times 3 \div 6 + 5$  $= 6 - 36 \times \frac{3}{6} + 5 = 6 - 36 \times \frac{1}{2} + 5$ = 6 - 18 + 5, = -7111. Ans.(D) Given expression,  $(-6)[40 \div \{7 - (-3)\}] = ?$  $(-6)[40 \div \{10\}]$  $(-6)[40 \div 10]$ (-6)[4] = -24112. Ans.(D)  $= 4 + \frac{1}{6} [\{-10 \times (25 - 13 - 3)\} \div (-5)]$ 

$$\Rightarrow 4 + \frac{1}{6} [\{(-10 \times 9) \div (-5)\}] \\\Rightarrow 4 + \frac{1}{6} [(-90) \times (\frac{1}{-5})] \\\Rightarrow 4 + \frac{1}{6} [18] \Rightarrow 4 + 3 = 7$$
**113.** Ans.(C)  
36 - [18 - {14 - (15 - 4 + 2 × 2)}]   
= 36 - [18 - {14 - (15 - 2 × 2)}]   
= 36 - [18 - {14 - 11}]   
= 36 - [18 - 3]   
= 36 - 15   
= 21  
**114.** Ans.(A)  
24 ÷ (19 - 9 ÷ 3 × 9)   
= 24 ÷ (19 - 3 × 9)   
= 24 ÷ (19 - 27)   
= 24 ÷ (-8)   
= 12 + 3(-2 × 3) - (18 ÷ 6)   
= 12 + 3(-6) - 3   
= 12 - 21   
= -9  
**116.** Ans.(C)  
= 25 - \frac{1}{2} {5 + 4 - (3 + 2 - 1 + 3)}   
= 25 - \frac{1}{2} {5 + 4 - 7}   
= 25 - \frac{1}{2} {5 + 4 - 7}   
= 25 - \frac{1}{2} {4 - {25 - (26 - 27 - 28)}}   
= 23 - [24 - {25 - (26 + 1)}]   
= 23 - [24 - {25 - (26 + 1)}]   
= 23 - [24 + 2], = 23 - 26 = -3  
**118.** Ans.(A)  
If the value of the given expression above   
'A' then -  
A = (-8)[36 ÷ {7 - (-2)}] ÷   
(-4){19 - (-3) × (-5)}   
A = (-8)[36 ÷ {9}] ÷ (-4){19 - 15}   
A = (-8)[4] ÷ (-16)   
A = \frac{32}{16} = 2  
**119.** Ans.(B)  
45 - [38 - {60 + 3 - (6 - 9 ÷ 3) ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
= 45 - [38 - {20 - 3 ÷ 3}]   
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is

 $= \{38 - (60 \div 5 \times 8 \div 2 \div 3)\}\$  $= \{38 - (60 \div 5 \times 4 \div 3)\}$  $= \left\{ 38 - \left( 12 \times \frac{4}{3} \right) \right\}$  $= \{38 - 16\} = 22$ 121. Ans.(B)  $\frac{1}{4}\left\{-5 + 48 \times \left(\frac{-1}{16}\right)\right\}$ 22 -= 22 + 2 = 24122. Ans.(A) = |3(1) - 6|= |3 - 6| = 3Note: The modes always be a positive number. 123. Ans.(D) As,  $19 \times 23 = 437$ Similarily,  $190 \times 0.023 = 4.37$ . 124. Ans.(A) 4237.43 + 453.32 + 24.12 - 387.23 = 4714.87 - 387.23 = 4327.64125. Ans.(C) 9 18 90  $\frac{9}{13} \div \frac{16}{26} \div \frac{90}{52} = \frac{9}{13} \times \frac{26}{18} \times \frac{52}{90}$ 26  $=\frac{1}{45}$ 126. Ans.(B) 5.16 × 3.2 = 16.512 127. Ans.(D) 1.1 + 12.12 + 123.123 = 136.343 128. Ans.(D) 128 - 43 + 57 - 143 + 94 = 85 - 86 + 94 = 93129. Ans.(C) 5231405 ×99999 = 523135268595 **130**. Ans.(C) 7342015×9999 = 7342015(10000 - 1)= 73420150000 - 7342015 = 73412807985 Ans.(D) 131. By question, 69696 × 9999  $= 69696 \times (10000 - 1)$ = 696960000 - 69696= 696890304 132. Ans.(C)  $19170 \div 54 \div 5$ = 355÷ 5 = 71

133. Ans.(D)  $33333 \times 9999 = 33333(10000 - 1)$ = 333330000 - 33333= 333296667134. Ans.(B) By question,  $0.00048 \div 0.08$  $= \frac{0.00048}{0.08} = \frac{48 \times 100}{8 \times 100000} = \frac{6}{1000} = 0.006$ 135. Ans.(C) 62160  $= \frac{\frac{62160}{185}}{24} = \frac{62160}{185 \times 24} = 14$ 136. Ans.(D) 66666 ×9999 = 66666(10000 - 1)= 666660000 - 66666 = 666593334 137. Ans.(D) 9876 + 34.567 - ? = 9908.221 9910.567 - ? = 9908.221 ? = 9910.567 - 9908.221 ? = 2.346 138. Ans.(A)  $1093 \times 1093$  $=(1000 + 93) \times 1093$ = 1093000 + 1093 × 93  $= 1093000 + 1093 \times (100 - 7)$ = 1093000 + 109300 - 1093 × 7 = 1093000 + 109300 - 1093(10 - 3)= 1093000 + 109300 - 10930 + 3279 = 1205579 - 10930 = 1194649139. Ans.(C) 35968  $\frac{\overline{562}}{9} = \frac{35500}{562} \times \frac{1}{8}$ 4496 = 8 = 562 140. Ans.(D) 54367×9999  $= 54367 \times (10000 - 1)$ = 543670000 - 54367= 543615633 141. Ans.(C)  $(64 \times 5^4) - (5^4 \times 16)$  $= (64 \times 625) - (625 \times 16)$  $\Rightarrow 40,000 - 10,000 = 30,000$ 142. Ans.(B) By question,  $6.9 - [(3.19 \times 0.7) - (8.5 - 3.04) \text{ of } 0.5 - 2.85]$  $= 6.9 - [2.233 - 0.5 \times 5.46 - 2.85]$ = 6.9 - [2.233 - 2.73 - 2.85]= 6.9 - [-3.347]= 6.9 + 3.347 = 10.247143. Ans.(C)  $(50 + 0.5 \times 20) \div 0.7$ 

$$= (50 + 10) \div 0.7$$

$$= 60 \div 0.7$$

$$= 85.71$$
144. Ans.(C)
$$\begin{bmatrix} 2\frac{1}{3} - 1\frac{1}{2} \end{bmatrix} \text{ of } \frac{3}{5} + 1\frac{2}{5} \div 2\frac{1}{3}$$

$$= \begin{bmatrix} 7-3\\3-\frac{2}{2} \end{bmatrix} \times \frac{3}{5} + \frac{7}{5} \div \frac{7}{3}$$

$$= \frac{14 - 9}{6} \times \frac{3}{5} + \frac{7}{5} \div \frac{7}{3}$$

$$= \frac{5}{6} \times \frac{3}{5} + \frac{3}{5} = \frac{1}{2} + \frac{3}{5} = \frac{5 + 6}{10} = \frac{11}{10} = 1\frac{1}{10}$$
145. Ans.(B)
4082 \div 157 - 23
By, Rules of BODMAS
$$= 4082 \div 157 - 23$$
By, Rules of BODMAS
$$= 4082 \div 157 - 23$$

$$= 26 - 23$$

$$= 3$$
146. Ans.(A)
$$\frac{7}{a - 2} = \frac{5}{a + 4}$$

$$7a + 28 = 5a - 10$$

$$2a = -38$$

$$a = -19$$
147 Ans.(A)
$$1 \div [\{p^{2}/(p + 6)\} + \{6p/(p + 6)\}]$$

$$= 1 \div \left[\frac{p(p + 6)}{(p + 6)}\right]$$

$$= 1 \div \left[\frac{p(p + 6)}{(p + 6)}\right]$$

$$= 1 \div \frac{p(p + 6)}{(p + 6)}$$
148. Ans.(D)
$$\frac{x}{5} + \frac{y}{7} = 1$$

$$\therefore x = 2$$

$$\therefore \frac{2}{5} + \frac{y}{7} = 1$$

$$\frac{y}{7} = 1 - \frac{2}{5}$$

$$\frac{y}{7} = \frac{3}{5}$$

$$y = \frac{21}{5}$$
149. Ans.(B)
$$4^{3} \times 5^{6} = 10^{m}$$

$$(4 \times 5)^{3} \times 5^{3} = 10^{111}$$

$$20^{3} \times 125 = 10^{m}$$

$$8000 \times 125 = 10^{m} \Rightarrow 10^{m} = 1000000$$

$$\Rightarrow 10^{m} = 10^{6}$$

 $\frac{45.15}{1.75} = 25.8$ 151. Ans.(B)  $3.24 \div 0.002$  $\frac{3.24}{0.002} = \frac{324 \times 10}{2} = 1620$ 152. Ans.(D)  $\left(1 + \frac{2}{3}\right) \div \left[\left(1 + \frac{1}{3}\right) \div \left(\frac{2}{3} + 1\right)\right]$  $\begin{bmatrix} -3 & 3 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} -3 & -1 \\ 3 & -1 \end{bmatrix}$   $= \frac{5}{3} \times \frac{5}{4}$   $= \frac{25}{12}$ And (B) 153. Ans.(B)  $(0.3)^2 \div 100 = \frac{0.09}{100}$ = 0.0009 154. Ans.(A)  $(0.25 \times 0.004) + 0.374 - 0.72$ = 0.001 - 0.346= -0.345155. Ans.(B)  $0.00056 \div 0.07 = \frac{0.00056}{0.07} \times \frac{100000}{100000}$  $= \frac{56}{7 \times 1000} = \frac{8}{1000} = 0.008$ Ans (B) 156. Ans.(B)  $\begin{pmatrix} \frac{3}{2} + \frac{5}{3} \end{pmatrix} \div \begin{pmatrix} \frac{3}{2} + \frac{2}{3} \end{pmatrix} = \begin{pmatrix} \frac{9+10}{6} \end{pmatrix} \div \begin{pmatrix} \frac{9+4}{6} \end{pmatrix}$ =  $\frac{19}{6} \div \frac{13}{6}$ =  $\frac{19}{6} \times \frac{6}{13} = \frac{19}{13}$ Ans (P) 157. Ans.(B)  $\left(\frac{2}{5} + \frac{2}{9}\right) \div \left(\frac{2}{5} + \frac{5}{9}\right)$  $=\left(\frac{18 + 10}{45}\right) \div \left(\frac{18 + 25}{45}\right)$  $=\frac{28}{45}\div\frac{43}{45}=\frac{28}{43}$ Ans.(A) 158.  $\begin{pmatrix} \frac{2}{9} + \frac{3}{5} \end{pmatrix} \div \begin{pmatrix} \frac{2}{9} + \frac{2}{5} \end{pmatrix} = \begin{pmatrix} \frac{10+27}{45} \end{pmatrix} \div \begin{pmatrix} \frac{10+18}{45} \end{pmatrix} \\ = \frac{37}{45} \div \frac{28}{45} \\ = \frac{37}{45} \times \frac{45}{28} = \frac{37}{28}$ 159. Ans.(D)  $5(10)^4 + 6 \times (10)^3 + 4(10) - 3(1/100)$  $= 5 \times 10000 + 6 \times 1000 + 4 \times 10 - 3 \times \frac{1}{100}$ = 50000 + 6000 + 40 - .03= 56040 - .03 = 56039.97160. Ans.(B)  $0.08 \times 0.23 \div 0.004$ 

 $= \frac{0.08 \times 0.23}{0.004} = \frac{8 \times 23}{4 \times 10} = \frac{2 \times 23}{10} = \frac{46}{10} = 4.6$ 161. Ans.(B)  $0.55 \times 0.81$ 4.5 55 × 81 × 10  $100 \times 100 \times 45$ = 0.099162. Ans.(B) Given that,  $\left(\frac{2}{3} + \frac{3}{5}\right) \div \left(\frac{2}{3} + \frac{2}{5}\right)$  $= \frac{10 + 9}{15} \div \frac{10 + 6}{15} = \frac{19}{15} \times \frac{15}{16} = \frac{19}{16}$ 163. Ans.(C)  $40.7 \times 40.7 \times 40.7 + 1$  $\frac{100.7 \times 100.7 \times 100.7 \times 100.7 \times 1}{(40.7)^3 \times (1)^3} = \frac{(40.7)^3 \times (1)^3}{(40.7)^2 - 40.7 \times 1 + (1)^2} = (40.7 + 1)$ =40.7 + 1 = 41.7164. Ans.(B)  $97 \times 97 = (97)^2$  $(100-3)^2 = (100)^2 + (3)^2 - 2 \times 100 \times 3$ = 10000 + 9 - 600= 9409165. Ans.(B) 1.93 × 19.3 – 2.07 × 20.7 19.3 - 20.7  $\frac{10(\overline{1.93}\times\overline{1.93})-10(2.07\times2.07)}{10(1.93-2.07)}$  $=\frac{(1.93)^2 - (2.07)^2}{(2.07)^2}$ (1.93 - 2.07) $= \frac{(1.93 + 2.07)(1.93 - 2.07)}{(1.93 - 2.07)}$ (1.93 - 2.07)= 1.93 + 2.07 = 4166. Ans.(B)  $250 \times 250 \times 250 + 150 \times 150 \times 150$ =  $250 \times 250 - 250 \times 150 + 150 \times 150$  $(250)^3 + (150)^3$ = $(250)^2 - 250 \times 150 + (150)^2$  $\therefore [a^3 + b^3 = (a + b)(a^2 + b^2 - ab)]$  $\therefore = \frac{(250 + 150)[(250)^2 + (150)^2 - 250 \times 150]}{(250)^2 + (150)^2 - 250 \times 150]}$  $(250)^2 + (150)^2 - 250 \times 150$ = 250 + 150 = 400167. Ans.(A)  $(2.25)^{\frac{1}{2}}$  $=\sqrt{2.25}$ 225 =  $\sqrt{\frac{1-3}{100}}$  $15 \times 15$  $\sqrt{10 \times 10}$ 15 = 10 = 1.5

168. Ans.(A)  $(7)^2 \div (7^{\frac{1}{2}})^2$  $= 7^2 \div 7^2 = 1$ 169. Ans.(B)  $4 + 3(4 + 4^2 + 4^3 + 4^4 + 4^5)$  $\Rightarrow 4 + 3 \times 4(1 + 4 + 4^{2} + 4^{3} + 4^{4})$  $\Rightarrow 4 + 3 \times 4\left[\frac{4^{5}-1}{4-1}\right] \qquad \left\{:: S_{n} = \frac{a(r^{n}-1)}{r-1}\right\}$  $\Rightarrow 4 + 3 \times 4 \times \frac{4^5 - 1}{3}$  (When r>1)  $\Rightarrow 4 + 4^6 - 4$  $= 4^6$ 170. Ans.(B) 0.8 + 0.08 + 0.008 + 8 = 8.888171. Ans.(A)  $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$ This is a geometric series.  $a = 1, r = \frac{1}{2}$ Let the sum be S.  $S = \frac{a}{1-r_a}$  $S_{\infty} = \frac{1}{1 - \frac{1}{2}}$  $S_{\infty} = \frac{1}{\underline{1}} = 2$  $S_{\infty} = \tilde{2}$ 172. Ans.(B)  $2508 \div 12.54 + (X \times 11) = 200$  $200 + (X \times 11) = 200$  $(X \times 11) = 200 - 200$  $X = \frac{0}{11}$ X = 0173. Ans.(B)  $\frac{x}{\sqrt{128}} = \frac{\sqrt{162}}{x}$  $\Rightarrow x^2 = \sqrt{162} \times \sqrt{128}$  $\Rightarrow x^2 = \sqrt{18 \times 9 \times 16 \times 8}$  $\Rightarrow x^2 = 144$  $\Rightarrow x = \sqrt{144}$ x = 12 Ans.(C) 174.  $\frac{x}{x^2 - 1} = \frac{A}{x - 1} + \frac{B}{x + 1}$  $\frac{x}{x^2 - 1} = \frac{A(x + 1) + B(x - 1)}{(x^2 - 1)}$ x = Ax + A + Bx - Bx + 0 = x(A + B) + (A - B)On comparing -A + B = 1A - B = 02A = 1A = 1/2B = 1/2

Ans.(B) =  $\frac{5x}{1 + \frac{1}{1 + \frac{x}{x}}} = \frac{5x}{1 + \frac{(1-x)}{1-x+x}} = \frac{5x}{1 + \frac{(1-x)}{1}}$ 175.  $=\frac{5x}{2-x}=1$  $\therefore 5x=2-x$ 6x = 2 $x = \frac{1}{3}$ 176. Ans.(C) 138.019 + 341.981 - 146.395 = 133.605 + a = 138.019 + 341.981 = 146.395 + 133.605 + a = 480 = 280 + aa = 480 - 280a = 200 177. Ans.(C) |-4x+4|-6=-6|-(4 x - 4)| - 6 = -6Value of mode will not be negative. 4x - 4 = -6 + 64x - 4 = 0x = 1178. Ans.(A) 1.5 x = 0.04 y $\frac{x}{y} = \frac{.04}{1.5}$  $\frac{x}{y} = \frac{4}{150}$  $\frac{x}{y} = \frac{2}{75}$ Let x = 2ky = 75k  $\frac{y-x}{x+y} = \frac{75k-2k}{75k+2k} = \frac{73k}{77k} = \frac{73}{77}$  $\frac{Ans.(B)}{1} = \frac{1}{1 + \frac{1}{1 + \frac{1}{1 - \frac{1}{2}}}} = \frac{1}{1 + \frac{1}{1 + \frac{1}{1}}} = \frac{1}{1 + \frac{1}{1 + \frac{1}{2}}}$ 179.  $=\frac{1}{1+\frac{1}{3}}=\frac{1}{\frac{3+1}{3}}=\frac{1}{\frac{4}{3}}=\frac{3}{4}$ 180. Ans.(C)  $3.\overline{36} - 2.\overline{05} + 1.\overline{33}$  $=4.\overline{69}-2.\overline{05}=2.\overline{64}$ 181. Ans.(D) Ans.(D)  $1\frac{1}{4} + 1\frac{1}{6} - 1\frac{1}{8} = * + 1\frac{1}{12}$   $\frac{5}{4} + \frac{7}{6} - \frac{9}{8} - \frac{13}{12} = *$   $* = \frac{30 + 28 - 27 - 26}{24}$   $* = \frac{58 - 53}{24}$  $* = \frac{5}{24}$ 

Ans.(D)  $\frac{121}{3\frac{2}{3}} + \frac{92}{7\frac{1}{3}} = \frac{121 \times 3}{11} + \frac{92 \times 3}{22}$ 182.  $= \frac{6 \times 121 + 92 \times 3}{22}$ =  $\frac{726 + 276}{22}$ =  $\frac{1002}{22} = \frac{501}{11} = 45\frac{6}{11}$ Ans.(C) 183.  $3.6 \times 0.48 \times 2.50$  $0.12 \times 0.09 \times 0.5$  $= \frac{36 \times 48 \times 250}{12 \times 9 \times 5} = 16 \times 50 = 800$  $\begin{array}{c} - 12 \times 9 \times 5 \\ \text{Ans.(C)} \\ \frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} \\ + \dots + \frac{1}{9 \times 10} \\ \left[\frac{1}{1} - \frac{1}{2}\right] + \left[\frac{1}{2} - \frac{1}{3}\right] + \left[\frac{1}{3} - \frac{1}{4}\right] + \left[\frac{1}{4} - \frac{1}{5}\right] + \left[\frac{1}{5} - \frac{1}{6}\right] \\ + \dots + \left[\frac{1}{9} - \frac{1}{10}\right] \left[\frac{1}{1} - \frac{1}{10}\right] \end{array}$ 184.  $\left[\frac{10-1}{10}\right] = \frac{9}{10}$  **Ans.(A)** 185.  $= 3 + \frac{1}{1 + \frac{1}{2 + \frac{1}{4}}} = 3 + \frac{1}{1 + \frac{1}{9}}$  $= 3 + \frac{1}{1 + \frac{4}{9}} = 3 + \frac{9}{13}$  $=\frac{48}{13}$ 186. Ans.(A)  $1.2 \times 2.5 \times 0.5$  $=\frac{12\times25\times5}{10\times10\times10}=\frac{1500}{1000}=\boxed{1.5}$ Ans.(A) 187.  $1.\bar{2} - 0.1\bar{2}$  $1.2 - 0.12 = 1 + 0.\overline{2} - 0.1\overline{2} = 1 + \frac{2}{9} - \frac{(12 - 1)}{90} = 1 + \frac{2}{9} - \frac{11}{90} = 1 + \frac{20 - 11}{90} = 1 + \frac{9}{90} = 1 + \frac{1}{10} = \frac{11}{10}$ Ans (A) 188. Ans.(A)  $\left[1 + \frac{1}{10 + \frac{1}{10}}\right] + \left[1 - \frac{1}{10 + \frac{1}{10}}\right]$  $\begin{bmatrix} 1 & 10 & 10 \\ 1 & \frac{10}{101} \end{bmatrix} + \begin{bmatrix} 1 & \frac{10}{101} \\ 1 & \frac{10}{101} \end{bmatrix}$  $\begin{bmatrix} \frac{101 + 10}{101} \\ \frac{111}{101} + \frac{91}{101} \end{bmatrix} + \begin{bmatrix} \frac{101 - 10}{101} \\ 101 \end{bmatrix}$ 

189. Ans.(C)  

$$= 3 + \sqrt{8} + \frac{1}{3 - \sqrt{8}} \times \frac{3 + \sqrt{8}}{3 + \sqrt{8}} - (6 + 4\sqrt{2})$$

$$= 3 + \sqrt{8} + 3 + \sqrt{8} - (6 + 4\sqrt{2})$$

$$= 6 + 2\sqrt{8} - 6 - 4\sqrt{2}$$

$$= 6 + 4\sqrt{2} - 6 - 4\sqrt{2}$$

$$= 0$$
190. Ans.(A)  

$$\sqrt{25 + 10\sqrt{6}} + \sqrt{25 - 10\sqrt{6}}$$

$$X = \sqrt{25 + 10\sqrt{6}} + \sqrt{25 - 10\sqrt{6}} + \frac{2}{2} (\sqrt{(25)^2 - (10\sqrt{6})^2})$$

$$X^2 = 50 + 2(\sqrt{625 - 600})$$

$$X^2 = 50 + 2 \times 5$$

$$X^2 = 60$$

$$X = \sqrt{60}$$

$$X = 2\sqrt{15}$$
191. Ans.(B)  

$$3\sqrt{5} + \sqrt{125} = 17.88$$

$$8\sqrt{5} = 17.88$$

$$8\sqrt{5} = 17.88$$

$$8\sqrt{5} = 17.88$$

$$8\sqrt{5} = 7 + 10\sqrt{5} = 22.35$$
192. Ans.(B)  

$$\frac{1104 + 100}{90 + \frac{36}{100}} = \frac{5}{100} \times \frac{100}{45}$$

$$= \frac{1}{\frac{1}{9}}$$
193. Ans.(B)  
Formula  $-\frac{(a+b)^2 - (a-b)^2}{ab} = \frac{4ab}{ab} \{a = 82, b = 28\}$ 

$$\therefore \frac{(82 + 28)^2 - (82 - 28)^2}{82 \times 28} = 4$$
194. Ans.(B)  

$$(\sqrt{3} - \frac{1}{\sqrt{3}})^2$$

$$= (\sqrt{3})^2 + (\frac{1}{\sqrt{3}})^2 - 2\sqrt{3} \times \frac{1}{\sqrt{3}}$$

$$= 3 + \frac{1}{3} - 2 = \frac{9 + 1 - 6}{3} = \frac{10 - 6}{3} = \frac{4}{3}$$

## 05. (Lowest common multiple & Highest common factor)

- I.
   Find the LCM of 112, 72 and 90.

   RRB Group D- 19/11/2022 (shift II)

   (A) 3780
   (B) 7560

   (C) 2520
   (D) 5040
- Find the LCM of 72 and 84.
   RRB Group-D 19/11/2022 (Shift-I)
   (A) 12 × 6× 7
   (B) 6 × 2 × 7
   (C) 12 × 7 × 3
   (D) 72 × 84
- What is the least common multiple of two coprime numbers X and Y?
   RRB Group-D - 05/10/2018 (Shift-II)

<b>(A)</b> XY	 	(B) $\frac{(X,Y)}{2}$
<b>(C)</b> 1		<b>(D)</b> x/y

4. What will be the least common multiple of 36, 27 and 72-

	RRB Group-D - 31/10/2018 (Shift-II)
<b>(A)</b> 108	<b>(B)</b> 432
<b>(C)</b> 324	<b>(D)</b> 216

- Find the LCM of 20, 40, 25 and 30. **RRB Group D - 10 / 10 / 2018 (Shift-III)** (A) 800
   (B) 500
   (C) 600
   (D) 400
- 6. The Highest common factor of 290 and 660 is 10. What is their least common multiple? **RRB Group D - 10 / 10 / 2018 (Shift-III)** (A) 38280 (B) 9570
- (C) 19140
   (D) 191400
   7. Find the LCM of 21 and 280. RRB Group-D - 01/09/2022 (Shift-II) (A) 560
   (B) 1120
   (C) 840
   (D) 1680
- 8. Find the LCM of 120 and 280. **RRB Group-D - 12/12/2018 (Shift-I)**  (A) 840 (B) 1680 (C) 1120 (D) 720
- 9. Find the LCM of 94,188 and 235. RRB Group-D - 15/10/2018 (Shift-II)
   (A) 940
   (B) 705
   (C) 470
   (D) 1880

- 10.Find the LCM of  $15x^3 y^4$  and  $12x^2 y^5$ .<br/>
  <br/>
  <br/>
- What will be the smallest number that is when divided by 6, 7, 8, 9 and 12, each time the remainder is 2?
   RBB Group D 24 / 10 / 2018 (Shift-I)

	J = D Z = 7 107 Z 0 10 (31111-1)
<b>(A)</b> 508	<b>(B)</b> 608
<b>(C)</b> 502	<b>(D)</b> 506

**12**. What is the smallest number which, divided by 4,6,10 and 15, would yield 3 remainder each time?

	RRB Group-D - 02/11/2018 (Shift-II)
<b>(A)</b> 58	<b>(B)</b> 126
( <b>C)</b> 37	<b>(D)</b> 63

**13.** What is the largest number smaller than 5000, which when divided by 5, 6 and 7 respectively, the remainder 4, 5 and 6 remain?

RRB C	Group-D -23 / 10 / 2018 (Shift-I)
<b>(A)</b> 4830	<b>(B)</b> 4829
<b>(C)</b> 4845	<b>(D)</b> 4831

**14.** Which is the smallest number greater than 3000, which when divided by 4, 7 and 10 the remainder is 3, 6 and 9 respectively?

 RRB Group – D - 23 / 10 / 2018 (Shift-II)

 (A) 3079
 (B) 3080

 (C) 3081
 (D) 3101

 15. Find the HCF of 343,217 and 455. **RRB Group-D - 27/11/2018 (Shift-III)** (A) 9
 (B) 7
 (C) 11
 (D) 13

 16.
 Find the HCF of 140 and 196.

 RRB Group - D – 06/12 /2018 (Shift-III)

 (A) 14
 (B) 28

 (C) 21
 (D) 42

17. Find the HCF of 64, 28 and 96.
 RRB Group-D - 20/09/2022 (Shift-III)
 (A) 1 (B) 8
 (C) 4 (D) 2

18.	Find the half of HCF of 3 RRB Group-D (A) 144 (C) 36	36 and 144. - <b>17/11/2022 (Shift-III) (B)</b> 18 <b>(D)</b> 72
19.	Find the HCF of 306, 20 RRB Group-I (A) 54 (C) 34	<sup>14</sup> and 136. D <b>20 / 11/2022(Shift-I)</b> ( <b>B)</b> 68 ( <b>D)</b> 17
20.	Find the HCF of 30, 42 a RRB Group-D (A) 8 (C) 4	and 96. <b>) - 05/10/2018 (Shift-I) (B)</b> 6 <b>(D)</b> 2
21.	Find the HCF of 44, 88 a RRB Group-D (A) 8 (C) 44	and 154. <b>) - 05/10/2018 (Shift-I)</b> <b>(B)</b> 11 <b>(D)</b> 22
22.	Find the HCF of 2349, 2 RRB Group-D (A) 81 (C) 27	835 and 3078. - <b>22/10/2018 (Shift-III)</b> (B) 9 (D) 3
23.	Find the HCF of $(5^3 \times 4^3)$ . <b>RRB Group-D</b> (A) 340 (C) 230	4 <sup>3</sup> ), (3 <sup>5</sup> × 5 <sup>2</sup> × 4 <sup>4</sup> ) and <b>D - 16/11/2018 (Shift-I)</b> ( <b>B)</b> 328 ( <b>D)</b> 320
24.	59 × 29 = 1711, then and 354? <b>RRB Group-D</b> (A) 236 (C) 177	find the HCF of 6844 - <b>15/11/2018 (Shift-III)</b> (B) 118 (D) 59
25.	Find the HCF of $(3^3 \times 5^3 \times 5^2 \times 6^4)$ , $(3^3 \times 3^2 \times 5 \times 6^3 \times 5^2 $	<sup>3</sup> × 6 <sup>3</sup> ), (3 <sup>2</sup> × 3 <sup>5</sup> × 6 <sup>3</sup> ) - <b>15/11/2018 (Shift-III)</b> (B) 1600 (D) 29160
26.	Find the HCF of 40,36,1 RRB Group-D (A) 1 (C) 3	5 and 24. - <b>24/10/2018 (Shift-III)</b> (B) 5 (D) 2
27.	Find the HCF of 156, 3 RRB Group-E (A) 78 (C) 13	12 and 195. D - 11/10/2018 (Shift-I) (B) 3 (D) 39

28. Find the largest number by which all the remainder obtained by dividing 76, 151 and 226 are equal.

RRB Group-D - 16/10/2018 (Shift-III) (A) 69 **(B)** 60 (C) 75 (D) 70

29. What is the largest number by which, dividing 1657 and 2037, the remainder is 6 and 5 respectively?

	RRB Group-D -05 /	′ 10 / 2018 (Shift-I)
<b>A)</b> 150	(B)	125
C) 127	(D)	130

30. State the largest number, so that dividing the number 200 and 432 by that left remainder 2 and 3 respectively.

(

	RRB Group D 01/09/2022(Shift-III)
<b>(A)</b> 24	<b>(B)</b> 8
<b>(C)</b> 33	<b>(D)</b> 44

31. Which is the largest number from which 63, 77 and 98 are divided, leaving 3, 5 and 2 as remainder respectively?

	RRB Group-D - 05/11/2018 (Shift-II)
<b>(A)</b> 10	<b>(B)</b> 9
( <b>C)</b> 6	<b>(D)</b> 8

- Find the HCF of  $\frac{2}{3}, \frac{8}{9}, \frac{10}{27}, \frac{32}{81}$ . **RRB Group-D 17/11/2022 (Shift-I)** (A)  $\frac{160}{3}$  (B)  $\frac{160}{81}$ (C)  $\frac{2}{3}$  (D)  $\frac{2}{81}$ 32.
- Find the HCF of  $\frac{3}{5}$ ,  $\frac{9}{10}$  and  $\frac{6}{25}$ . **RRB Group-D 29/10/2018 (Shift-III)** (A)  $\frac{3}{50}$  (B)  $\frac{3}{5}$ (C) 18 (D)  $\frac{18}{50}$ 33.
- Find the LCM of  $\frac{1}{2}$ ,  $\frac{2}{5}$ ,  $\frac{4}{7}$  and  $\frac{6}{17}$ . **RRB Group D 25/11/2022 (Shift I)** 34. (A) 6 (B) 18 (C) 24 (D) 12
- Find the HCF of  $\frac{7}{9}$ ,  $\frac{14}{15}$ ,  $\frac{7}{10}$ . **RRB Group D 05/11/2018 (Shift III)** 35. (A) 7/90 (B) 7/675 (C) 7/45 (D) 14/45
- Find the HCF of  $\frac{15}{14}$ ,  $\frac{12}{35}$  and  $\frac{40}{49}$ . **RRB Group D 25/10/2018 (Shift II)** 36. **(A)** 1/7 (B) 3/490 **(C)** 1/490 (D) 1/49

**37.** Find the LCM of  $\frac{9}{8}$ ,  $\frac{15}{16}$  and  $\frac{27}{40}$ . **RRB Group-D – 23/10/2018 (Shift - III)** 

<b>(A)</b> 135	<b>(B)</b> 135/80
(C) $16\frac{7}{8}$	<b>(D)</b> $33\frac{3}{4}$

**38.** The LCM of two positive integers x and y (x> y) is x y. What will be the HCF of both the numbers?

**RRB Group-D - 03/12/2018 (Shift-III)** (A) 1 (B) x + y(C) Cannot be determined (D) x - y

**39.** The LCM of two numbers is 2604 and HCF is 12. If one of the numbers is 84, what will be the other number?

 RRB Group-D - 25/11/2022 (Shift-III)

 (A) 327
 (B) 273

 (C) 372
 (D) 237

**40.** The HCF and LCM of the two numbers are 29 and 1015 respectively. If one of these numbers is 145, what will be the other number?

 RRB Group-D - 01/09/2022 (Shift-III)

 (A) 203
 (B) 319

 (C) 361
 (D) 377

**41.** The least common multiple of two numbers is 2268. If their highest common factor is 12 and one of the two numbers is 324, then what is the second number?

	RRB Group-D - 27/11/2018 (Shift-III)
<b>(A)</b> 189	<b>(B)</b> 84
(C) 7	<b>(D)</b> 27

42. HCF of 560 and another number is 70 and their LCM is 2800. The second number is: RRB Group-D - 16/11/2018 (Shift-III)

	KKD Group-D - 10/11/2010 (Silili
<b>(A)</b> 840	<b>(B)</b> 350
<b>(C)</b> 700	<b>(D)</b> 280

**43.** The HCF of 296 and the second number is 74 and their LCM is 2072. The second number is:

 RRB Group-D - 15/11/2018 (Shift-I)

 (A) 1036
 (B) 518

 (C) 592
 (D) 148

**44.** The least common multiple of two numbers is 42 times their highest common factor. The sum of the LCM and the HCF is 602. If one of those numbers is 84, find the other number?

	RRB Group-D - 15/11/2018 (Shift-II)
<b>(A)</b> 98	<b>(B)</b> 78
(C) 87	<b>(D)</b> 89

**45.** State the highest common factor and the least common multiple of 60 and 72 respectively.

 RRB Group-D - 05/11/2018 (Shift-I)

 (A) 16 and 360
 (B) 12 and 260

 (C) 12 and 360
 (D) 10 and 360

46. The HCF of two numbers is 110 and their product is 290400. The LCM of both these numbers is RRB Group -D - 05/11/2018(Shift - III)

(A) 1980 (B) 3960 (C) 1320 (D) 2640

- 47. The ratio of two numbers is 7: 11 and their HCF is 8. What is the LCM of these numbers? RRB Group-D 05/11/2018 (Shift-III) (A) 1540 (B) 924 (C) 616 (D) 308
- **48.** The least common multiple and highest common factor of two numbers are 171360 and 14 respectively. If one of them is 2142, state the other.

RRB Group-D - 25/10/2018 (Shift-II)(A) 12240(B) 4128(C) 1120(D) 80

**49**. If the least common multiple and the highest common factor of two integers are 2184 and 2, and one of those numbers is 78, find the other number.

	RRB Group-D - 24/10/2018 (Shift-III)
<b>(A)</b> 78	<b>(B)</b> 56
<b>(C)</b> 34	<b>(D)</b> 68

**50**. The LCM of the three numbers is 4752 and HCF is 6. If two numbers are 48 and 66, find the third number.

	RRB Group – D -29.04 .2016 Shift: 3
<b>(A)</b> 54	<b>(B)</b> 56
(C) 58	<b>(D)</b> 52

**51.** The ratio of two numbers is 5: 6 and their least common multiple is 150. Find the sum of both the numbers.

RRB Group-D - 16/10/2018 (Shift-III)
<b>(B)</b> 55
<b>(D)</b> 54

**52.** The least common multiple of two numbers is 120 and the sum of their squares is 289. The sum of those numbers is:

RRB Gro	oup-D -22 /	/ 10 / 2018	(Shift-III)
---------	-------------	-------------	-------------

<b>(A)</b> 23	<b>(B)</b> 28
<b>(C)</b> 32	<b>(D)</b> 26

53. The division of two numbers gives 6 and their product is 96. Find the product of the sum and difference of these two numbers.
 RRB Group-D - 24/10/2018 (Shift-II)

	RRB Group-D - 24/10/2018 (Shift-
<b>(A)</b> 540	<b>(B)</b> 560
(C) 592	<b>(D)</b> 9180

**54.** Which is the second largest factor of both 56 and 84?

	RRB Group-D - 26/10/2018 (Shift-III)
<b>(A)</b> 23	<b>(B)</b> 18
<b>(C)</b> 14	<b>(D)</b> 24

**55.** What is the smallest number that has exactly 7 factors?

	RRB Group-D - 03/12/2018 (Shift-III)
<b>(A)</b> 100	<b>(B)</b> 36
<b>(C)</b> 64	<b>(D)</b> 16

**56.** What will be the length of the side of the largest square tile, which can be used to make a floor of tile 13.92 m long and 5.22 m wide?

RRE	3 Group-D - 24/10/2018 (Shift-III)
<b>A)</b> 58cm	<b>(B)</b> 1m16cm
<b>C)</b> 1m 74 cn	n <b>(D)</b> 87cm

**57.** Alarms from 3 different clocks sound every 2, 4 and 6 hours respectively. If the clocks are started at the same time, how many times do the alarms ring simultaneously in 3 days?

	RRB Group-D - 27/11/2022 (Shift-I)
<b>(A)</b> 6	<b>(B)</b> 3
(C) 2	<b>(D)</b> 9

**58.** Traffic lights on a cross section change at 48s, 72s and 108s respectively. If they change at 9:15:00 am, when will the next time they change together?

 RRB Group-D - 05/10/2018 (Shift-I)

 (A) 9: 22: 12 a.m.
 (B) 9: 21: 07 a.m

 (C) 9: 24: 27 a.m.
 (D) 9: 23: 17 a.m

**59.** A temple rings four bells at intervals of 12, 16, 24 and 36 minutes respectively. If they start playing at regular intervals from 6 o'clock, then when will they play together again?

	RRB	Group-D - 31/10/2018 (Shift-I)
04		

(A) 8: 24 am	<b>(B)</b> 5: 24 am
(C) 7: 24 am	<b>(D)</b> 6: 24 am

**60.** How many multiples of 512 are perfect squares?

RRB Group-D -28 / 09 / 2018 (Shift-I) (A) 6 (B) 4 (C) 3 (D) 5

**61.** Which is the smallest positive integer or natural number that divides 1920 so that the number of multiples of the quotient is odd?

	RRB Group-D - 12/12/2018 (Shift-I)
<b>(A)</b> 40	<b>(B)</b> 10
<b>(C)</b> 20	<b>(D)</b> 30

(Shift-III)

62. How many multiples of the number  $2^{10} \times 3^6 \times 5^3 \times 7^5$  are divisible by 2160?

RRB C	Group-D - 11/12/2018
<b>(A)</b> 180	<b>(B)</b> 336
<b>(C)</b> 504	<b>(D)</b> 560

63. Which is the largest 4 digit number divisible by 6, 9, 12, 13 and 15? RRB Group-D - 11/12/2018 (Shift-II)

	INTE OFORP I	
<b>(A)</b> 9326	6	<b>(B)</b> 9100
<b>(C)</b> 9360	)	<b>(D)</b> 9240

64. Find the number between 300 and 500, which is completely divisible by 6, 8, 10 and 12.

	RRB Group-D - 23/10/2018 (Shift-I)
<b>(A)</b> 320	<b>(B)</b> 340
<b>(C)</b> 490	<b>(D)</b> 360

**65.** Find the smallest square number from the following, which will be completely divisible by 6, 9, 12, 13 and 15?

RRB G	roup-D - 08/10/2018 (Snift-I)
(A) 621000	<b>(B)</b> 456000
<b>(C)</b> 173000	<b>(D)</b> 152100

- 66. Find HCF of  $6xy^2z$ ,  $8x^2y^3z^2$ ,  $12x^3y^3z^3$ . RRB Group-D - 26/11/2022 (Shift-I) (A) 2xyz (B)  $4xy^2z$ (C)  $3xy^2z$  (D)  $2xy^2z$
- 67. Find HCF of  $15x^2 + 8x 12$ ,  $3x^2 + x 2$ ,  $3x^2 2x$ ,  $9x^2 12x + 4$ . RRB Group-D - 24/11/2022 (Shift-I) (A) x - 4 (B) x - 2(C) 3x - 4 (D) 3x - 2

68. Find LCM of  $2x^3 - 16, 3(x^2 + 3x - 10), x^3 + 2x^2 - 8x$ . RRB Group-D - 10/10/2018 (Shift-I)

(A)  $6x(x + 2)(x + 4)(x + 5)(x^2 + 2x + 4)$ (B)  $6x(x-2)(x + 4)(x + 5)(x^2 + 2x + 4)$ (C)  $6(x-2)(x + 4)(x + 5)(x^2 + 2x + 4)$  (D)  $6x(x-3)(x + 4)(x + 5)(x^2 + 2x + 4)$ 

69. Which of the following is the largest number which gives the remainder 9 when 105 is divided and 20 when 164 is divided?

	RRB Group-D - 22/10/2018 (Shift-II)
<b>(A)</b> 36	<b>(B)</b> 48
<b>(C)</b> 24	<b>(D)</b> 96

70. Which is the largest number that divides 258 and 323 respectively, giving 2 and 3 remainder?

	RRB Group-D - 30/10/2018 (Shift-III)
<b>(A)</b> 40	<b>(B)</b> 24
<b>(C)</b> 64	<b>(D)</b> 132

71. There will be 245 or 343 guests on Sohrab's birthday. Chocolate is to be offered to each quest. The seller stated that she would pack the chocolate in the carton and take back any unopened carton, but would add packing costs for the carton she had to pack. In this case, how much chocolate should Sohrab have to pack in each carton?

	RRB Group-D - 12/11/2018 (Shift-I)
<b>(A)</b> 77	<b>(B)</b> 7
(C) 21	<b>(D)</b> 49

72. The number of students in 4th, 5th and 6th grade in a school was 188, 282 and 423 respectively. If each class was divided into sections and each section had the same number of students, then what was the total minimum number of sections of these three classes?

	RRB Group-D - 12/11/2018 (Shift-III)
<b>(A)</b> 20	<b>(B)</b> 18
(C) 19	<b>(D)</b> 17

73. What is the largest number of 3 digits which is completely divisible by 10, 8 and 12? RRB Group-D - 26/11/2022 (Shift-III)

<b>(A)</b> 940	<b>(B)</b> 960
<b>(C)</b> 980	<b>(D)</b> 999

74. Find the smallest number from which, if 6 reduced, it is completely divided by 12, 15, 20 and 27.

> RRB Group-D - 08/10/2022 (Shift-II) (A) 542 **(B)** 540 (C) 546 (D) 500

75. The least common multiple of 14, 42, and 77 is:

RRB RPF Constable -18/01/2019 (Shift-I) **(A)** 168 **(B)** 308

**(C)** 462 **(D)** 154

76. Find the LCM of 60,120 and 225. RRB RPF SI -06/01/2019 (Shift-II) (A) 360 **(B)** 1800 (C) 600 **(D)** 900

77.	Find the smallest number which when divided
	by 16, 24, 36 and 54, leaving the remaining
	12, 20, 32 and 50 respectively.

, -, -	RRB RPF SI -11/01/2019 (Shift-III)
<b>(A)</b> 432	<b>(B)</b> 444
<b>(C)</b> 428	<b>(D)</b> 452

78. When the largest 5-digit number is divided by 5,6 and 7, the remaining 2 is left in each case. What will that number be?

RRB RPF	Constable -19/01/2019 (Shift-II)
( <b>A)</b> 99958	<b>(B)</b> 99972
( <b>C)</b> 99858	<b>(D)</b> 99962

- 79. Find the HCF of 45.240 and 315. RRB RPF SI -16/01/2019 (Shift-I) (A) 3 **(B)** 15 (C) 45 (D) 5
- 80. Find the HCF of 3341 and 3328. RRB RPF SI -13/01/2019 (Shift-III) (A) 257 (B) 337 (C) 13 (D) 31
- 81. Find the HCF of 148 and 370. RRB RPF Constable -20 / 01 / 2019 (Shift-I) (B) 37 **(A)** 148 **(C)** 74 (D) 2
- 82. Find the largest possible length, which can be used to measure the entire lengths of 2m 76 cm, 5m 52cm, 11m 96cm.

	RRB RPF SI -12/01/2019 (Shift-III)
<b>(A)</b> 92cm	<b>(B)</b> 11.96cm
<b>(C)</b> 92m	<b>(D)</b> 1196cm

83. Find the largest number of four digits which is when divided by 8, 12, 16, and then remainder 2 is left.

RRB RPF	Constable -22/01/2019 (Shift-II)
<b>(A)</b> 9984	<b>(B)</b> 9985
<b>(C)</b> 9986	<b>(D)</b> 9987

What is the H.C.F. of  $\frac{34}{9}$ ,  $\frac{85}{18}$  and  $\frac{68}{45}$ ? RRB RPF Constable -25/01/2019 (Shift-I) 84. (A) <sup>17</sup> (

A) $\frac{-}{45}$	(B) –
17	(D) <sup>1</sup>
$\frac{0}{90}$	(U) <sub>90</sub>

- 85. Find the LCM of 2/3 and 6/7. RRB RPF SI -10/01/2019 (Shift-I) (A) 6 (B) 6/21 (C) 12/21 (D)  $\frac{2}{21}$
- 86. Find the highest common factor and least common multiple of 570 and 1425.
   RRB RPF Constable -19/01/2019 (Shift-II)
   (A) 285 2750
   (B) 285 2850

(A)	200,2700	(D)	200,2000
(C)	289,2650	(D)	185,2850

**87.** The highest common factor and least common multiple of two numbers is 12 and 720. How many possible pairs of these numbers are there?

 RRB RPF SI -05/01/2019 (Shift-I)

 (A) 3
 (B) 4

 (C) 2
 (D) 1

**88.** The LCM and HCF of the two numbers are 2400 and 16 respectively. If one number is 480, find the other number.

	RRB RPF SI -06/01/2019 (Shift-III)
<b>(A)</b> 40	<b>(B)</b> 60
( <b>C)</b> 90	<b>(D)</b> 80

**89.** The product of two numbers is 2772 and their LCM is 462. The HCF of these two numbers will be:

 RRB RPF Constable -19/01/2019 (Shift-III)

 (A) 18
 (B) 21

 (C) 6
 (D) 42

- 90.
   The product of two numbers is 3192 and their LCM is 56, then find their HCF?
   RRB RPF Constable -17/01/2019 (Shift-I)

   (A) 58
   (B) 59
   (C) 56
   (D) 57
- 91. Two numbers are in the ratio 4: 5 and their LCM is 100. Find their difference. RRB RPF SI -11/01/2019 (Shift-III)

<b>A)</b> 20	<b>(B)</b> 25
<b>C)</b> 5	<b>(D)</b> 10

**92.** Four alarm clocks ring at intervals of 3, 4, 5 and 8 minutes respectively. If they rang together at 06:00 am, then at what time will they ring together?

 RRB RPF SI -13/01/2019 (Shift-III)

 (A) 08:00 am
 (B) 10:00 am

 (C) 12:03 pm
 (D) 09:00 am

**93.** 3 bells ring at 10, 15, and 20 minute intervals. If all the three bells ring together at 5.00 pm, when will they ring together now?

RRB RPF Cons	table -24/01/2019 (Shift-III)
<b>(A)</b> 5.20 p.m	<b>(B)</b> 5.30 p.m
<b>(C)</b> 5.40 p.m	<b>(D)</b> 6.00 p.m

- 94. Find the smallest number that when added to 20000, their sum is divisible by 12, 15 and 25. RRB RPF Constable -17/01/2019 (Shift-I) (A) 180 (B) 150 (C) 200 (D) 100
- 95. The smallest cubic number greater than 1000 which is divisible by 2, 4 and 6: RRB RPF Constable -19/01/2019 (Shift-I)
  - (A) 1296 (B) 5832 (C) 1728 (D) 4096
- 96. Find the LCM of 14, 35 and 56. **RRB ALP & Tec. (29-08-18 shift - I)**  (A) 280 (B) 140 (C) 210 (D) 560

 97.
 Find the LCM of 34, 51 and 68.

 RRB ALP & Tec. (21-08-18 Shift-II)

 (A) 238
 (B) 204

 (C) 136
 (D) 102

- 99. Find the LCM of 16, 28 and 42. **RRB ALP & Tec. (14-08-18 Shift-I)** 
   (A) 168
   (B) 2
   (C) 252
   (D) 336
- 100.Find the LCM of 48 and 54.RRB ALP & Tec. (13-08-18 Shift-I)(A)  $6 \times 8 \times 9$ (B)  $48 \times 54$ (C)  $6 \times 2 \times 9$ (D)  $6 \times 8 \times 3$
- 101. When a natural number is divided by 5, 6, 7 or 8, there is 4 left as remainder in each case. Which is the smallest of all such numbers? RRB ALP & Tec. (21-08-18 Shift-III)
  (A) 214 (B) 424
  (C) 844 (D) 1264

When a natural number is divided by 4, 5, 6 or 7, the remaining 3 are left in each case. What would be the smallest such number?
 RRB ALP & Tec. (14-08-18 Shift-II)

	(A) 63 (C) 843	(B) 423 (D) 213
103.	Find the smallest number 20, 25, 35 and 40 to ge 29 and 34 respectively.	ber which is divided by t the remaining 14, 19,
	(A) 1364 (C) 1384	ec. (14-08-18 Shift-III) (B) 1394 (D) 1374
104.	The minimum number 15 and 20 the remainde <b>RRB ALP &amp; Te</b>	that when divided by er is 9 each case? c. (28.08.2015, Shift-I)
	(A) 60 (C) 69	<b>(B)</b> 65 <b>(D)</b> 309
105.	Find the HCF of 56, 140 <b>RRB ALP &amp;</b>	) and 168. <b>Tec. (30-08-18 Shift-I)</b>
	(A) 28 (C) 14	(B) 7 (D) 4
106.	Find the HCF of 162, 54 RRB ALP &	4 and 135. <b>Tec. (21-08-18 Shift-II)</b>
	(A) 9 (C) 27	<b>(B)</b> 1 <b>(D)</b> 3
107.	Find the HCF of 24, 60 RRB ALP & 1	and 90. <b>-ec. (20-08-18 Shift-III)</b>
	(A) 3 (C) 12	(B) 6 (D) 4
108.	Find the HCF of 20, 28 RRB ALP &	and 48. <b>Tec. (14-08-18 Shift-I)</b>
	(A) 8 (C) 1	(B) 2 (D) 4
1 <b>09</b> .	Find the HCF of 36, 54 RRB ALP &	and 108. <b>Tec. (14-08-18 Shift-II)</b>
	(A) 6 (C) 18	(B) 9 (D) 12
110.	Find the HCF of 36, 72 RRB ALP &	and 126. <b>Tec. (13-08-18 Shift-II)</b>
	( <b>A)</b> 18 ( <b>C)</b> 9	<b>(B)</b> 36 <b>(D)</b> 12
111.	Find the LCM of $\frac{4}{5}$ , $\frac{2}{3}$ and	
	(A) 25 (C) 40	(B) 20 (D) 30
112.	The HCF of two numbers is 72. If one of these nu	ers is 12 and their LCM Imbers is 24, then what

is the other number?	, -	
RRB ALP & Tec. (21-	08-18	Shift-II)

<b>(A)</b> 48	<b>(B)</b> 60
<b>(C)</b> 36	<b>(D)</b> 72

113. The ratio of two numbers is 14: 9 and their HCF is 15. What is the LCM of these numbers? RRB ALP & Tec. (21-08-18 Shift-II) **(B)** 2520 **(A)** 1890 **(C)** 1260 **(D)** 630 114. Three bells are played at intervals of 15, 30 and 45 minutes respectively. If they ring together at 8.00 am, when will they play together next time? RRB ALP & Tec. (31-08-18 Shift-III) (A) 8.30 AM (B) 9.30 AM (C) 9.00 AM (D) 8.45 AM

115. Which is the smallest five-digit number that is divisible by 12, 18, 20 and 25?

	~ & Tec. (31-00-10 Shift-i
<b>(A)</b> 10000	<b>(B)</b> 10800
<b>(C)</b> 11250	<b>(D)</b> 10680

**116.** Which of the following options is the smallest square, which is fully divisible by 8, 15 and 20?

	RRB ALP & Tec. (13-08-18 Shift-I)
(A) 3600	<b>(B)</b> 6400
(C) 14400	<b>(D)</b> 4900

- 117. Find the LCM of 24,96 and 36. RRB NTPC 23/07/2022 Shift-2 (A) 576 (B) 216 (C) 288 (D) 144
- 118.
   Find the LCM of 15, 25 and 29.

   RRB NTPC 10/08/2022 Shift : 2

   (A) 2335
   (B) 3337

   (C) 2175
   (D) 2375
- 119.
   Find the LCM of 18, 33 and 37.

   RRB NTPC 09/05/2022 Shift : 2

   (A) 2442
   (B) 7326

   (C) 814
   (D) 1221

120. Find the smallest number which, when added to 1456, is completely divided by 6, 5 and 4 – RRB NTPC 02/02/2021(Shift: I)

<b>(A)</b> 6	<b>(B)</b> 61
<b>(C)</b> 44	<b>(D)</b> 16

**121.** There are 8 children in a group. There are packets of pencils of one dozen pencils. What is the minimum number of packets to be

distributed for each child to receive the same number of pencil?

RRB	NTPC	12/08/2022Shift :	: 1
	(5	10	

<b>(A)</b> 4	<b>(B)</b> 3
(C) 2	<b>(D)</b> 1

....

122. If X is the smallest number that when divided by 6,7,8,9 and 12, the remainder be 2,3,4,5 and 8 respectively, find 150% of X. RRB NTPC 05/03/2021Shift : 1

<b>(A)</b> 750	<b>(B)</b> 500
<b>(C)</b> 1000	<b>(D)</b> 1200

**123.** Find the minimum number which when divided by 12, 15, 18 and 27, remainder is 10, 13, 16 and 25 respectively.

	RRB NTPC 09/05/2022 Shift : '
<b>(A)</b> 540	<b>(B)</b> 538

- (C) 542 (D) 552124. Find the smallest number which, when divided
- by 11,16,2125 and 28, leaves the remaining 3 in each case.

	RRB NTPC 09/05/2022 Shift :
<b>(A)</b> 92400	<b>(B)</b> 92597
<b>(C)</b> 92403	<b>(D)</b> 92000

**125**. HCF of  $2x^2+5x-12$  and  $x^2+x-12$  is (x+a), then find the value of a.

RRB NTPC 09/05/2022 Shift : 1

<b>(A)</b> -3	<b>(B)</b> -2
<b>(C)</b> 4	<b>(D)</b> 5

- I26.
   Find the HCF of 1757, 2259.

   RRB NTPC 05/04/2021Shift: 1

   (A) 231
   (B) 241

   (C) 251
   (D) 261
- 127. Find the HCF of 2189 and 2587. RRB NTPC 23/07/2022 Shift: 3 (A) 3 (B) 197 (C) 199 (D) 198
- **128.** Sheeba has 24 chocolates, 36 biscuits and 60 ice cream to distribute to her classmates. She wants each of her classmates to get the same number of things each. What is the maximum number of classmates in which she can share completely without saving a single thing?

	RRB NTPC 12/08/2022Shift :1
( <b>A)</b> 6	<b>(B)</b> 18
( <b>C)</b> 12	<b>(D)</b> 15

**129.** Find the largest number by which, dividing 1580 and 3800, the remainder 8 and 1 left respectively –

	RRB NTPC 11/08/2022 Shift : 2
<b>(A)</b> 262	<b>(B)</b> 131
(C) 65.5	<b>(D)</b> 393

**130.** The lengths of the three pieces of cloth are 1.26 m, 1.98 m and 1.62 m, respectively. By what maximum length can they be fully measured?

	RRB NTPC 12/08/2022Shift : 2
(A) 12 cm	<b>(B)</b> 14 cm
(C) 16 cm	<b>(D)</b> 18 cm

**131.** 50 pens, 80 pencils and 65 scales were evenly distributed among some students and it was found that 5 items were not distributed from each item. Find the number of students.

	RRB NTPC 12/08/2022Shift : 3
<b>(A)</b> 5	<b>(B)</b> 20
<b>(C)</b> 15	<b>(D)</b> 10

**132.** You have 20 big and 16 small diaries and you want to make gift packets from both types of diaries. The maximum number of gifts you can make without leaving a diary.

RRB NTPC '	11/08/2022Shift :	: 3

<b>(A)</b> 5	<b>(B)</b> 4
<b>(C)</b> 3	<b>(D)</b> 2

**133.** Find the largest number by which 270, 675 and 1215 are divided, leaving equal remainder in each case.

	RRB NTPC 11/08/2022 Shift : 3
<b>(A)</b> 45	<b>(B)</b> 135
<b>(C)</b> 270	<b>(D)</b> 75

**134.** Find the largest number so that dividing 60, 150 and 285 by that gives the same remainder in each case.

	RRB NTPC 22.04.2016 Shift : 1
<b>(A)</b> 30	<b>(B)</b> 25
<b>(C)</b> 45	<b>(D)</b> 55

**135.** Find the largest number by which when divides 391 and 318 the remainder 7 and 6 left respectively.

	RRB NTPC 12/08/2022Shift : 2
<b>(A)</b> 20	<b>(B)</b> 23
<b>(C)</b> 24	<b>(D)</b> 32

**136.** Find the HCF of 1.43, 1.87 and 20.9.

	RRB NTPC 02/02/2021Shift : 2
A ) 0 4 4	

<b>(A)</b> 0.11	<b>(B)</b> 0.10
<b>(C)</b> 1.1	<b>(D)</b> 0.11

137.	Find the HCF of 0.32, 2.72, 12.8, 14.4.		
		RRB NTPC 09/05/2022 Shift :	2
	<b>(A)</b> 16	<b>(B)</b> 1.6	
	(C) 0.16	<b>(D)</b> 2.72	

- 138.
   Find the LCM of 0.63, 10.5, 2.1, 4.20.

   RRB NTPC 09/05/2022 Shift : 1

   (A) 63
   (B) 0.63

   (C) 6.30
   (D) 6300
- 139.
   Find the LCM of 17/31, 34/62 and 48/93.

   RRB NTPC 10/08/2022 Shift : 3

   (A) 816 / 31
   (B) 802 / 31

   (C) 912 / 31
   (D) 804 / 31
- 140.
   Find the LCM of fractions given below.

   2 / 3,8 / 9,16 / 27,32 / 81

   RRB NTPC 02/02/2021Shift : 3

   (A) 32 / 81
   (B) 81 / 32

   (C) 32 / 3
   (D) 11 / 41
- 141. Find the LCM of  $\frac{2}{30}, \frac{20}{40}, \frac{4}{50}, \frac{8}{60}$ . **RRB NTPC 05/04/2021Shift : 3** (A) 40/300 (B) 2/10 (C) 1/4 (D) 4
- 142.
   Find the LCM of 13/31, 23/62 and 48/93.

   RRB NTPC 05/03/2021Shift : 3

   (A) 14352 / 31
   (B) 14452 / 31

   (C) 15432 / 31
   (D) 12534 / 31
- **143**. If the product of two numbers is 3026 and their LCM is 89, then their HCF is.

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 33	<b>(B)</b> 34	
<b>(C)</b> 35	<b>(D)</b> 29	

**144**. If the product of two numbers is 4941 and their LCM is 81, then what will be their HCF?

	RRB NTPC 23/07/2022	Shift-3
<b>(A)</b> 60	<b>(B)</b> 59	
(C) 35	<b>(D)</b> 61	

**145**. The ratio of two numbers is 8: 9 and their HCF is 6. Their LCM will be-

	RRB NTPC 23/07/2022	Shift-3
<b>(A)</b> 432	<b>(B)</b> 54	
<b>(C)</b> 48	<b>(D)</b> 423	

**146**. The LCM and HCF of the two numbers are 616 and 2 respectively. If one number is 22, find the other number.

RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> 87	<b>(B)</b> 56
<b>(C)</b> 116	<b>(D)</b> 36

**147**. HCF and LCM of two numbers are 7 and 252 respectively. If one number is 28, find the other number.

	RRB NTPC 10/08/2022	Shift:1
2	<b>(B)</b> 63	

- (A) 252(B) 63(C) 126(D) 56
- **148**. HCF and LCM of two numbers are 3 and 2730 respectively, if one number is 78, find the other number.

	RRB NTPC 10/08/2022	Shift : 2
<b>(A)</b> 107	<b>(B)</b> 103	
(C) 105	<b>(D)</b> 102	

**149**. The HCF of two numbers is 19 and their LCM is 665. If one number is 95, find the other number:

	RRB NTPC 09/05/2022	Shift: 3
<b>(A)</b> 19	<b>(B)</b> 133	
(C) 190	(D) 77	

**150**. HCF and LCM of two numbers are 3 and 2001 respectively. If one number is 69, find the other number.

	RRB NTPC 05/03/2021Shift : 3
<b>(A)</b> 58	<b>(B)</b> 87
(C) 29	<b>(D)</b> 23

151. If the product of two numbers is 3276 and LCM is 63, find their HCF. RRB NTPC 11/08/2022Shift : 2

	RRB NTPC 11/08/2022Shift :
<b>(A)</b> 54	<b>(B)</b> 51
<b>(C)</b> 53	<b>(D)</b> 52

**152**. Find HCF and LCM of 16, 24.

RRB NTPC 05/03/2021 Shift : 1

2

\_ \_ . \_ \_ \_ \_ \_ \_ \_

<b>(A)</b> 8,48	<b>(B)</b> 4,12
<b>(C)</b> 2,24	<b>(D)</b> 4,48

**153**. The ratio of two numbers is 21:29 and HCF 8, then their LCM is:

	RRB NTPC 05/04/2021Shift :
<b>(A)</b> 4872	<b>(B)</b> 168
(C) 232	<b>(D)</b> 4782

**154.** If the product of two numbers is 3276 and their LCM is 63, find their HCF.

### RRB NTPC 23/07/2022 Shift : 3

<b>(A)</b> 32	<b>(B)</b> 76
<b>(C)</b> 52	<b>(D)</b> 53

155. The ratio of two numbers is 5: 7, and their HCF is 33, what will be their LCM?

RRB NTPC 23/07/2022 Shift : 3

<b>(A)</b> 1155	<b>(B)</b> 165
<b>(C)</b> 231	<b>(D)</b> 1515

156. The least common multiple of two numbers is 78. And the ratio of these numbers is 2: 3. Find their sum

	RRB NTPC 30.03.2016 Shift : 2
<b>(A)</b> 60	<b>(B)</b> 26
<b>(C)</b> 65	<b>(D)</b> 39

- 157. What is the largest factor of 360 and 450? RRB NTPC 11/08/2022Shift : 3 (A) 90 **(B)** 45 **(C)** 10 **(D)** 9
- 158. If P is the largest number that when divides 60, 150 and 285, left same remainder in each case. Find the sum of digits P. PRB NTPC 11/08/2022 Shift : 3

	KKD NIFC 11/00/2022 31
<b>(A)</b> 7	<b>(B)</b> 5
<b>(C)</b> 4	<b>(D)</b> 9

159. The ratio of three numbers is 2: 3: 6 and their HCF is 45. Find the sum of these numbers. RRB NTPC 18,04,2016 Shift : 2 (A) 405 **(B)** 455

· /	• • •
<b>(C)</b> 495	<b>(D)</b> 525

160. The LCM of two numbers is 66. The ratio of the numbers is 2: 3. The sum of the numbers is-

	RRB NTPC 05/03/2021 Shift :1
<b>(A)</b> 60	<b>(B)</b> 55
(C) 50	<b>(D)</b> 65

161. The LCM of two numbers is 48. The ratio of both numbers is 1: 2/3. Find the sum of the numbers. 2

	RRB NTPC 19.01.2017 Shift :
<b>(A)</b> 60	<b>(B)</b> 40
<b>(C)</b> 20	<b>(D)</b> 45

- 162. The HCF of two numbers is 16 and their difference is 16. Find the numbers. RRB NTPC 12/08/2022Shift : 2 **(A)** 64,80 **(B)** 72,88 (C) 80,100 **(D)** 96,120
- 163. The sum of two numbers is 30 and their LCM is 25. Find the larger number. 1

	RRB NTPC 23/07/2022 Shift :
<b>(A)</b> 55	<b>(B)</b> 25
<b>(C)</b> 1	<b>(D)</b> 15

164. The three alarms ring at intervals of 10, 15, 30 minutes respectively. If they rang together at 9:00 am, then when will they rang together again?

RRB NTPC 23/07/2022 Shift : 1 (A) 9:30 am (B) 10:00 am (D) 11:00 am (C) 10:30 am

The three bells ring at 15, 20 and 30 minute 165. intervals, respectively, if it rang together at 11:00 am, when would they now ring together? 

KK	BNIPC 23/0//2022 Shift :
1.30 a.m.	<b>(B)</b> 12 noon

(A) 11.30 a.r	n.	(B) 12 noon
<b>(C)</b> 12.30 p⋅r	n	<b>(D)</b> 1.00 p.m

166. The four bells ring at 16, 24, 36 and 42 minutes intervals respectively. If they last rang together at 6 am in the last morning, after how many minutes (time) would they rang together again?

#### RRB NTPC 02/02/2021Shift : 2

(A) 842 min	<b>(B)</b> 964 min
(C) 886 min	<b>(D)</b> 1008 min

167. The traffic lights at four different road crossings change every 15 seconds, 18 seconds, 27 seconds and 30 seconds respectively. If they all changed together at 6: 10: 00, then at what time would they change together?

### RRB NTPC 09/05/2022 Shift : 3

(A) 6: 14: 30 pm	<b>(B)</b> 6: 40: 00 pm
(C) 6: 14: 00 pm	(D) 10: 40: 00 pm

168. The three clocks are designed to ring for every hour, two hours and three hours respectively. If they rang together three hours ago, then after how many hours will it ring together?

	RRB NTPC 12/08/2022Shift : 3
(A) 3 hours	<b>(B)</b> 6 hours
(C) 2 hours	<b>(D)</b> 1 hours

169. Three clocks have been made to sound the alarm once in every hour, in two hours, in three hours. If they all sound the alarm together, how many hours after next time will they play the alarm together?

	RRB NTPC 12/08/2022Shift : 2
(A) 3 hours	<b>(B)</b> 6 hours
(C) 4 hours	(D) 12 hours

170. Find the smallest square number which is completely divisible by 4, 9 and 14. RRB NTPC 23/07/2022 Shift-2

<b>(A)</b> 1008	<b>(B)</b> 252
<b>(C)</b> 1764	<b>(D)</b> 504

**171.** What is the smallest number of 5 digits which is completely divisible by 12, 24, 48, 60 and 96?

	RRB NTPC 10/08/2022 Shift : 1
<b>(A)</b> 10000	<b>(B)</b> 10024
<b>(C)</b> 10160	<b>(D)</b> 10080

- 172.
   Find the largest 3 digit number which is completely divisible by 15, 25 and 30?

   RRB NTPC 23/07/2022 Shift : 2

   (A) 900
   (B) 930

   (C) 960
   (D) 975
- 173. Find the largest number of 4 digits which is completely divisible by 12, 20, 32 and 44.
   RRB NTPC 02/02/2021Shift : 2

   (A) 5200
   (B) 4719
   (C) 6800
   (D) 5280
- **175.** What is the smallest number that when doubled it will be completely divisible by 4, 6, 9, 12 and 14?

	RRB NTPC 19.01.2017 Shift : 2
<b>(A)</b> 126	<b>(B)</b> 252
(C) 504	<b>(D)</b> 63

**176.** Find the smallest number which, when doubled, is completely divisible by 14, 35, 28 and 91?

	RRB NTPC 22.04.2016 Shift : 3
<b>(A)</b> 14	<b>(B)</b> 1820
(C) 910	<b>(D)</b> 1260

**177.** Find the smallest number that when divided by 10, 15, 20 and 25, left remainder 3 in each case.

	RRB NTPC 05/04/2021 Shift : 1
<b>(A)</b> 300	<b>(B)</b> 303
<b>(C)</b> 306	<b>(D)</b> 309

178. Find the smallest number that is completely divisible by 6, 8, 12 and 16. RRB NTPC 12/08/2022Shift: 3

<b>(A)</b> 48	<b>(B)</b> 24
<b>(C)</b> 64	<b>(D)</b> 80

**179.** Find the largest number by which dividing 1250 and 1615 left remainder 4 and 5 respectively.

	RRB NTPC 09/05/2022 Shift : 1
<b>(A)</b> 13	<b>(B)</b> 14
<b>(C)</b> 16	<b>(D)</b> 18

**180.** Find the largest number by which dividing 3050 and 5200 leaves remainder 7 and 9 respectively?

	RRB NTPC 11/08/2022 Shift: 1
<b>(A)</b> 149	<b>(B)</b> 111
<b>(C)</b> 153	<b>(D)</b> 179

- 181. Find the LCM of 16,24,36,52 and 54. **RRB Paramedical - 20/07/2018 (Shift-I)**  (A) 5616 (B) 5216 (C) 432 (D) 5618
- **182.** Dividing a natural number by 4, 5, 6 or 7 leaves 1 in each case. What is that smallest number?

 RRB Paramedical - 20/07/18 (Shift-II)

 (A) 421
 (B) 61

 (C) 841
 (D) 211

183. The product of two numbers is 30. If one of them is 1.25, what is the other number?
 RRB Paramedical - 21/07/2018 (Shift-II)

<b>(A)</b> 18	<b>(B)</b> 24
<b>(C)</b> 20	<b>(D)</b> 21

- **185.** Find the LCM of  $(2^2 \times 3^2 \times 5 \times 7)$ ,  $(2^2 \times 3 \times 5^2 \times 7)$  and  $(2 \times 3 \times 5 \times 7)$ .

	RRB JE 24/05/2019 (Shift-III)
<b>(A)</b> 6300	<b>(B)</b> 7200
(C) 9000	<b>(D)</b> 8400

- **186.** Find the LCM of 6(x y-y),  $8(x^4 y-x y)$ . **RRB JE - 26/05/2019 (Shift-III) (A)** 24 xy (x<sup>3</sup>-1) **(B)** 24(x<sup>3</sup>-1) **(C)** 24 x y **(D)** (x<sup>3</sup>-1) xy
- 187. Find the LCM of 2.05 1.05, 2. RRB JE – 27/06/2019 (Shift - III) (A) 205/ 100,105/100 and 200/100 LCM (B) 205, 105 and 200 LCM (C) 21/20, 41/20 and 20/20 LCM (D) 205,105 and 200/10 LCM

188.	LCM	of	36	and	k	is	72.	Find	the	poss	ible
	value	of	k.								
						_					

	RRB JE – 27/06/2019 (Shift - III)
(A) 24 Only	<b>(B)</b> 8,24,72
<b>(C)</b> 24,72	<b>(D)</b> 8 Only

**189.** Find the smallest number which is divisible by 12, 18, 21 and 30.

	RRB JE - 25/05/2019 (Shift-III)
<b>(A)</b> 1060	<b>(B)</b> 1260
<b>(C)</b> 1620	<b>(D)</b> 1020

Find the largest number which will divide 25, 35, 40 and 30 completely.
 RRB JE - 01/06/2019 (Shift-II)

<b>(A)</b> 35	<b>(B)</b> 15
<b>(C)</b> 20	<b>(D)</b> 5

( - )	-		•		
Find	the ema	llest num	her	which	wha

191. Find the smallest number which when divided by 20, 48 and 36 respectively; leave 13, 41 and 29 remainder. RRB JE – 30/05/2019 (shift-l)

<b>(A)</b> 727	<b>(B)</b> 720
<b>(C)</b> 713	<b>(D)</b> 187

- 192. Find the smallest number, which is divided by 12, 15, 20 and 54, leaving 8 in each case. **RRB JE - 02/06/2019 (Shift-II)** (A) 540
   (B) 55630.
   (C) 532
   (D) 548
   (D) 54
- **193.** The product of two co-prime numbers is 117. Find their HCF.

 RRB JE - 25/05/2019 (Shift-I)

 (A) 117
 (B) 7

 (C) 1
 (D) 13

**194.** Find the HCF of  $2 \times 3^2 \times 5^2$ ,  $5 \times 3 \times 2^2$  and  $5^2 \times 3 \times 2^2$ .

	RRB JE - 25/05/2019 (Shift-II)
<b>(A)</b> 150	<b>(B)</b> 30
(C) 60	<b>(D)</b> 90

- $\begin{array}{ccc} \mbox{195.} & \mbox{Find the HCF of } a^3b^3c^3, \ a^2b^2c^2, \ abc \ and \ a^2bc. \\ & \mbox{RRB JE 27/06/2019 (Shift-III)} \\ (A) \ a^4 \ b^4 \ c^4 & (B) \ a^3 \ b^3 \ c^3 \\ (C) \ a^2 \ b^2 \ c^2 & (D) \ abc \end{array}$
- 196.
   Find the LCM and HCF of 1.75, 5.6 and 7?

   RRB JE 23/05/2019 (Shift-I)

   (A) 24,0.2
   (B) 28,0.25

   (C) 28,0.35
   (D) 24,0.35
- **197.** Find the LCM of 36/225, 48/150 and 72/85. **RRB JE - 23/05/2019 (Shift-III)**

<b>(A)</b> 144/5	<b>(B)</b> 72/85
<b>(C)</b> 140/1	(D) $\frac{150}{22}$

**198.** Find the greater common divisor of 1.08, 0.36 and 0.9.

	RRB JE - 24/05/2019 (Shift-I)
<b>(A)</b> 0.03	<b>(B)</b> 18
<b>(C)</b> 0.18	<b>(D)</b> 1.8

- 199. Find the LCM of 1.05 and 2.1. RRB JE - 26/05/2019 (Shift-I) (A) 2.1 (B) 0.6 (C) 1.25 (D) 4
- 200. Find the HCF of 36/75, 48/50 and 72/30. RRB JE - 27/05/2019 (Shift-III) (A) 144/50 (B) 144/45 (C) 12/75 (D) 12/150
- 201. LCM of a set of fractions is-RRB JE - 30/05/2019 (Shift-I)
  (A) LCM of numerator /HCF of denominator
  (B) HCF of numerator/LCM of denominator
  (C) LCM of numerator/ LCM of denominator
  (D) HCF of numerator/ HCF of denominator
- What is the largest four digit number which is divisible by 15, 25, 40 and 75.
   RRB JE 24/05/2019 (Shift-I)

<b>(A)</b> 9200	<b>(B)</b> 9600
<b>(C)</b> 9400	<b>(D)</b> 9000

- 203. Find the largest four-digit number, which is completely divisible by 27, 18, 15 and 12.
   RRB JE 26/06/2019 (Shift-III)
   (A) 9730 (B) 9710
   (C) 9700 (D) 9720
- **204.** Find the smallest whole square number which is divisible by 21, 36 and 66.

	RRB JE - 23/03/2019 (Shift-III)
<b>(A)</b> 214344	<b>(B)</b> 231444
<b>(C)</b> 214434	<b>(D)</b> 213444

205. Find the largest number by which, dividing 115, 149 and 183 will have 3, 5, 7 left respectively.

	KKD JE - 24/03/2019 (Smith)
( <b>A)</b> 20	<b>(B)</b> 16
( <b>C)</b> 18	<b>(D)</b> 14

**206.** Find the smallest number, which is divided by 5, 6, 7, 8, with 3 remaining, and the number being a multiple of 9.

RRB JE - 26/05/2019 (Shift-II)

	<b>(A)</b> 1683 <b>(C)</b> 1677	<b>(B)</b> 843 <b>(D)</b> 1983		RF (A) 165: 1	RB JE - 28/05/2019 (Shift-II) (B) 3: 55 (D) 4: 165
207.	Divide a number leaving 9, 8 and	by 10, 9 and 8 separately, 7 remainder respectively.	216.	The two numbers	are in the ratio 4: 5. Their
	Find the smallest r	B JE - 27/05/2019 (Shift-II)		LCM is 180. Find t RR	their sum. B JE - 24/05/2019 (Shift-III)
	(A) 353 (C) 1359	( <b>D</b> ) 359		(A) 70 (C) 72	( <b>В</b> ) 90 ( <b>D)</b> 81
208.	Find the smallest number which is divided by 8, 12, 18, leaving 6, 10, 16 respectively.		217.	Which number is a <b>RF</b>	a factor of all numbers? RB JE - 25/05/2019 (Shift-II)
	RF (A) 74 (C) 146	RB JE - 30/05/2019 (Shift-I) (B) 144 (D) 70		<b>(A)</b> 2 <b>(C)</b> -1	<b>(B)</b> 1 <b>(D)</b> 0
209.	Find the LCM and HCF of the inverse of 1		218.	If two numbers, w ratio 5: 7, find thei	whose HCF is 9, are in the r difference.
	<b>RF</b> (A) 1/6., 1/4	RB JE - 22/05/2019 (Shift-I) (B) 72.6 (D) 1/6 1/7		(A) 12 (C) 8	(B) 18 (D) 24
210.	Two numbers are	in the ratio 3: 5. Their LCM	219.	Find the smallest divisible by each o	number that is completely of the numbers 12,15,20 and
	(A) 3	B JE - 22/05/2019 (Shift-III) (B) 5		27. (A) 540	RB JE - 26/05/2019 (Shift-II) (B) 510
	(C) 4	(D) 15		(C) 530	( <b>D</b> ) 520
211.	The LCM and HCF of the two numbers are 693 and 11 respectively. If one number is 99, find the other number.		220.	<ul> <li>Find the smallest three-digit number which is completely divisible by 12, 15 and 24.</li> <li>RRB JE - 26/05/2019 (Shift-IIII</li> </ul>	
	(A) 77 (C) 12	B JE - 26/05/2019 (Shift-III) (B) 79 (D) 34		(A) 180 (C) 360	( <b>B</b> ) 120 ( <b>D</b> ) 240
212.	The LCM of three numbers with a ratio of 3: 5 is 2400. Find their HCF.		221.	There are three liters, 45 liters an measurement so measured comple	cans of milk measuring 36 d 72 liters. Find the largest that all of them can be tely.
	(A) 80 (C) 120	(B) 40 (D) 200		(A) 15 liter	RB JE - 28/05/2019 (Shift-I) (B) 8 liter
213.	The HCF of two nu	umbers with a ratio of 15: 11		(C) 7 liter	( <b>D</b> ) 9 liter
	is 13. Find their LCM. RRB JE - 02/06/2019 (Shift-III)		222.	Find the largest n product of fo	umber, which will divide the ur consecutive integers
	<b>(A)</b> 4290 <b>(C)</b> 27885	( <b>B)</b> 2145 ( <b>D)</b> 165		completely.	RB JE - 02/06/2019 (Shift-II)
214.	The sum of LCM a	and HCF of two numbers is		(A) 12 (C) 6	(B) 8 (D) 24
	number is 368, find	d the second number. B JE - 01/06/2019 (Shift-III)	223.	Find the smallest completely divisible	whole cube number which is le by 2, 3, 4 and 6.
	(A) 360 (C) 92	( <b>B</b> ) 4 ( <b>D</b> ) 96		<b>R</b> (A) 1728	RB JE - 01/06/2019 (Shift-I) (B) 360
	. /			( <b>C)</b> 216	( <b>D</b> ) 512

**215.** Find the ratio of LCM and HCF of the numbers 99 and 15.

**224.** Find the smallest 3-digit number, which is completely divisible by 12, 15 and 20.

**RRB JE - 27/06/2019 (Shift-I)** (A) 115 (B) 240

- (C) 180 (D) 120
- **225.** Find HCF of  $(a^3 + b^3)$ ,  $(a + b)^2$  and  $(a^2 b^2)$ .

RRB JE - 31/05/2019 (Shift-III)

### <u>Solution</u>

1. Ans.(D) The least common multiple (LCM) of 112, 72, 90  $112 = 2 \times 2 \times 2 \times 2 \times 7$  $72 = 2 \times 2 \times 2 \times 3 \times 3$  $90 = 2 \times 3 \times 3 \times 5$  $\therefore L.C.M = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7 =$ 5040 2. Ans.(A)  $72 \Rightarrow 2 \times 3 \times 2 \times 2 \times 3$  $84 \Rightarrow 2 \times 2 \times 3 \times 7$  $LCM = 2 \times 2 \times 2 \times 3 \times 3 \times 7$  $L.C.M = 12 \times 6 \times 7$ Ans.(A) 3. The number is X and Y. Then, LCM be XY. NOTE - LCM of co - prime numbers are product of numbers. 4. Ans.(D) L.C.M of 36, 72, 27  $= 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 216$ 5. Ans.(C) L.C.M of 20, 40, 25 and 30  $= 2 \times 2 \times 2 \times 3 \times 5 \times 5 = 600$ 6. Ans.(C) First number × second number = L.C.M  $\times$  H.C.F  $290 \times 660 = L.C.M \times 10$  $L.C.M = 290 \times 66$ L.C.M = 191407. Ans.(C) L.C.M of 21 and 280 = ?  $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$ 8. Ans.(A) L.C.M of 120 and 280  $= 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 840$ 9. Ans.(A) L.C.M of 94, 188, 235  $= 2 \times 2 \times 5 \times 47 = 940$ Therefore, the least common multiple of 94, 188 and 235 is 940. 10. Ans.(A)  $15 x^3 y^4 = 3 \times 5 \times x^3 \times y^4$  $12x^2 y^5 = 2 \times 2 \times 3 \times x^2 \times y^5$ 

<b>(A)</b> (a + b)	<b>(B)</b> (a – b)
<b>(C)</b> (a + b)(a – b)	<b>(D)</b> $(a^3 + b^3)(a^2 - b^2)$

226. Find LCM of  $(a^3 - b^3)$ ,  $(a^2 - b^2)$ , (a - b). RRB JE - 27/06/2019 (Shift-I) (A) (a - b) (B)  $(a^3 - b^3)(a + b)$ (C)  $(a^3 - b^3)$  (D)  $(a^3 - b^3)(a^2 - b^2)$ 

	$LCM = 2 \times 2 \times 3 \times 5 \times x^3 \times y^5 = 60x^3 y^5$
11.	L.C.M of 6, 7, 8, 9, 12
	$= 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 504$
	Required number = $504 + 2 = 506$
I <b>2</b> .	Ans.(D)
	L.C.M of 4, 6, 10 and 15
	$= 2 \times 2 \times 3 \times 5 = 60$
	Required number = LCM + 3
	= 60 + 3 = 63
13.	Ans.(B)
	Remainder = $5 - 4 = 1$ , $6 - 5 = 1$ , $7 - 6 = 1$
	L.C.M of 5, 6, 7
	$= 2 \times 3 \times 5 \times 7 = 210$
	Required number = 5000 – 170 – 1 = 4829
14.	Ans.(A)
	4 - 3 = 1, 7 - 6 = 1, 10 - 9 = 1
	L.C.M of 4, 7, 10
	$= 2 \times 2 \times 5 \times 7 = 140$
	Let the number = $140 \text{ k} - 1$
	Therefore, putting $k = 22$
	Required number = $140 \times 22 - 1$
	= 3079
15.	Ans.(B)
	$343 = 7 \times 7 \times 7$
	217 = 7×31
	$455 = 5 \times 7 \times 13$
	H.C.F = 7
16.	Ans.(B)
	$140 = 2 \times 2 \times 5 \times 7$
	$196 = 2 \times 2 \times 7 \times 7$
	H.C.F = $2 \times 2 \times 7 = 28$
17.	
	H.C.F 07 64, 28, 96
	$64 = \underline{2} \times \underline{2} \times 2 \times 2 \times 2 \times 2$
	$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$
	$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$
	H.C.F = $2 \times 2 = 4$
18.	Ans.(B)
	H.C.F of 36, 144
	$36 = 2 \times 2 \times 3 \times 3$
	$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
	$H.C.F = 2 \times 2 \times 3 \times 3$
	H.C.F = 36

The value of half HCF = 36/2 = 18 19. Ans.(C) Maximum common factor of 360, 204 and 136  $306 = 2 \times 3 \times 3 \times 17$  $204 = 2 \times 2 \times 3 \times 17$  $136 = 2 \times 2 \times 2 \times 17$ H.C.F =  $2 \times 17 = 34$ 20. Ans.(B)  $30 = 2 \times 3 \times 5$  $42 = 2 \times 3 \times 7$  $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$ Therefore:  $H.C.F = 2 \times 3 = 6$ 21. Ans.(D) H.C.F of 44, 88 and 154  $44 = 2 \times 2 \times 11$  $88 = 2 \times 2 \times 2 \times 11$  $154 = 2 \times 11 \times 7$ Therefore required H.C.F =  $2 \times 11 = 22$ 22. Ans.(A) H.C.F of 2349, 2835 and 3078 by division method = 8123. Ans.(D)  $(5^3 \times 4^3), (3^5 \times 5^2 \times 4^4)$ HCF of and  $(3^2 \times 5 \times 4^3) = 5 \times 4^3 = 5 \times 64 = 320$ Ans.(B) 24. Both are divided by 118, so H.C.F of 6844 and 354 = 118 25. Ans.(D) Given that,  $3^3 \times 5^3 \times 6^3 \Rightarrow 3^3 \times 5^3 \times 6^3$  $3^2 \times 3^5 \times 5^2 \times 6^4 \Rightarrow 3^7 \times 5^2 \times 6^4$  $3^3 \times 3^2 \times 5 \times 6^3 \Rightarrow 3^5 \times 5 \times 6^3$ H.C.F =  $3^3 \times 5 \times 6^3 = 27 \times 5 \times 216$ = 29160 26. Ans.(A)  $40 = 2 \times 2 \times 2 \times 5$  $36 = 2 \times 2 \times 3 \times 3$  $15 = 3 \times 5$  $24 = 2 \times 2 \times 2 \times 3$ Therefore H.C.F = 1 27. Ans.(D)  $156 = 2 \times 2 \times 3 \times 13$  $312 = 2 \times 2 \times 2 \times 3 \times 13$  $195 = 3 \times 5 \times 13$  $H.C.F = 3 \times 13 = 39$ 28. Ans.(C) If the remainder is the same, then  $226 - 151 = 75 \times 1$  $151 - 76 = 75 \times 1$  $226 - 76 = 75 \times 2$ Required number = H.C.F of 75, 75, 150 Required number = 75 29. Ans.(C) 1657 - 6 = 16512037 - 5 = 2032

Hence, the number by which dividing 1657 and 2037 respectively left remainder 6 and 5 = 127

#### = 127 30. Ans.(C) 200 - 2 = 198432 - 3 = 429So the largest number = 33 31. Ans.(C) 63 - 3 = 6077 - 5 = 7298 - 2 = 96H.C.F of 60, 72, 96 = 12While the option does not have 12 but 12 will be divisible by 6. Hence option (c) is correct. 32. Ans.(D) H.C.F of fractions $\frac{HCF \text{ of numerator.}}{L.C.M \text{ of denominator}}$ $=\frac{2}{3},\frac{8}{9},\frac{10}{27},\frac{32}{81}$ = 2/81 33. Ans.(A) $H.C.F = \frac{HCF \ of \ numerator.}{L.C.M \ of \ denominator}$ H.C.F of 3,9,6 L.C.M of 5,10,25 $H.C.F. = \frac{1}{50}$ 3

## 34. Ans.(D) L.C.M of fractions $= \frac{L.C.M \text{ of numerator.}}{HCF \text{ of denominator}}$ $= \frac{LCM \text{ of } 1,2,4,6}{H.C.F \text{ of } 2,5,7,1} = \frac{12}{1} = 12$ 35. Ans (a): H.C.F of fractions $= \frac{HCF \text{ of numerator.}}{L.C.M \text{ of denominator}}$ $= \frac{HCF \text{ of } 7,14,7}{LCM \text{ of } 9,15,10} = \frac{7}{90}$ 36. Ans.(C) H.C.F of $\frac{15}{14}, \frac{12}{14}$ and $\frac{40}{16}$

$$= \frac{HCF \text{ of } 15,12,40}{LCM \text{ of } 14,35,49}.$$
Here,  
 $15 = 3 \times 5 \times 1$   
 $12 = 4 \times 3 \times 1$   
 $40 = 2 \times 2 \times 2 \times 5 \times 1$   
H.C.F = 1  
Now, L.C.M of 14, 35 and 49  
 $14 = 2 \times 7$   
 $35 = 5 \times 7$   
 $49 = 7 \times 7$   
 $7 \times 2 \times 5 \times 7 = 490$   
So the H.C.F of fractions given here  
 $\Rightarrow 1/490$   
**37. Ans.(C)**  
L.C.M of 9, 15, 27 = 135  
H.C.F of 8, 16, 40 = 8  
L.C.M =  $\frac{L.C.M \text{ of numerator.}}{HCF \text{ of donomenator}} = \frac{135}{8} = 16\frac{7}{8}$ 

38. Ans.(A) First number  $\times$  second number = L.C.M  $\times$ H.C.F  $x \times y = xy \times H.C.F$ ∴ H.C.F = 1 39. Ans.(C) According to Question, L.C.M = 2604 and H.C.F = 12 First number = 84 Let second number = xFormula L.C.M × H.C.F = First number × second number  $2604 \times 12 = 84 \times x$  $\Rightarrow \frac{2604 \times 12}{84} = x$  $\Rightarrow \frac{2604 \times 3}{21} = x$  $\Rightarrow \frac{2604}{7} = x$ 372 = xSo the second number = 37240. Ans.(A) Let second number = x $L.C.M \times H.C.F = First number \times second$ number  $29 \times 1015 = 145 \times x$ 29435  $\frac{1}{145} = x$ So the second number = 203 41. Ans.(B) Let second number = xthen, x = 324 = 2268 = x 12∵ Product of two numbers = L.C.M × H.C.F  $2268 \times 12$  $\Rightarrow x = \frac{2200}{324}$  $x = \frac{27,216}{324}$ x = 84Thus, second number = 84 42. Ans.(B) First number x second number = L.C.M  $\times$  H.C.F  $560 \times \text{second number} = 70 \times 2800$ second number =  $\frac{70 \times 2800}{560} = \frac{2800}{8} = 350$ 43. Ans.(B) First number x second number = L.C.M  $\times$  H.C.F  $296 \times \text{second number} = 2072 \times 74$ Second number  $=\frac{2072\times74}{296}=\frac{2072}{4}$ Second number = 51844. Ans.(A)  $LCM = HCF \times 42$ 

LCM + HCF = 602 $HCF \times 42 + HCF = 602$ HCF(42 + 1) = 602 $HCF = \frac{602}{43} = 14$ first number  $\times$  second number =  $LCM \times HCF$  $84 \times$  second number =  $14 \times 42 \times 14$ second number =  $\frac{14 \times 42 \times 14}{84}$  = 98 45. Ans.(C)  $60 = 2 \times 2 \times 3 \times 5$  $72 = 2 \times 2 \times 2 \times 3 \times 3$  $H.C.F = 2 \times 2 \times 3 = 12$ Again.  $60 = 2 \times 2 \times 3 \times 5$  $72 = 2 \times 2 \times 2 \times 3 \times 3$  $L.C.M = 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$ Therefore, H.C.F and L.C.M = 12 and 360 46. Ans.(D)  $L.C.M \times H.C.F = First number \times second$ number  $L.C.M \times 110 = 290400$ L.C.M = 264047. Ans.(C) Ratio of numbers = 7:11Let the number = 7x and 11xH.C.F = 8So number = 56, 88 L.C.M × 8 = First number × second number  $L.C.M \times 8 = 56 \times 88$ L.C.M = 61648. Ans.(C) Second number =  $\frac{L.C.M.\times H.C.F}{First number}$  $=\frac{171360\times 14}{2142}=1120$ **49**. Ans.(B) Suppose the other number is x The product of the numbers =  $L.C.M \times H.C.F$  $78 \times x = 2184 \times 2$  $x = \frac{2184 \times 2}{78} = 56$ **50**. Ans.(A) H.C.F of all three numbers is 6. : A number divisible by 6 will be the required answer.  $\therefore$  Third number = 54 51. Ans.(B) Let the numbers be 5x and 6x respectively. L.C.M = 15030x = 150x = 5numbers = 25 and 30 total sum = 25 + 30 = 55

52. Ans.(A) Let both numbers be a and b.  $a^2 + b^2 = 289$ ab = 120a = 15b = 8a + b = 15 + 8 = 2353. Ans.(B) Suppose those two numbers are x and y, then according to the question - $\frac{x}{y} = 6 \Rightarrow x = 6y - - - - (i)$ xy = 96 - - - - (ii)Putting the value of equation (i) in (ii) 6y. y = 96 $6y^2 = 96$  $y^2 = 16$ y = 4 $\therefore x = 6 \times 4 = 24$  $(x + y)(x - y) = (24 + 4) \times (24 - 4)$  $= 28 \times 20 = 560$ 54. Ans.(C)  $56 = 2 \times 2 \times 2 \times 7$  $84 = 2 \times 2 \times 3 \times 7$ First largest factor =  $7 \times 2 \times 2 = 28$ Second largest factor  $7 \times 2 = 14$ 55. Ans.(C) Number of factors of  $a^x \times b^y \times c^z$  $= (x + 1) \times (y + 1) \times (z + 1)$ Where a, b, c are prime numbers. Therefore Number of factors of  $2^2 \times 5^2 = 100$ = (2 + 1)(2 + 1) = 9Number of factors of  $2^2 \times 3^2 = 36$ = (2 + 1)(2 + 1) = 9Number of factors of  $64 = 2^6$ =(6 + 1) = 7Number of factors of  $16 = 2^4$ = (4 + 1) = 556. Ans.(C) The side of the largest square tile = H.C.F (13.92 m, 5.22 m) H.C.F of 1392 cm, 522 cm = 174 Thus, length of the side = 174 cm. = 1 m 74 cm 57. Ans.(A) Time taken to replay all three clocks simultaneously L.C.M of 2, 4 and 6 = 12 hour Number of alarms ringing in 3 days and 72 hours =  $\frac{72}{12}$  = 6 time 58. Ans.(A) L.C.M of 48s, 72s and 108s = 432 sec  $= 7min \ 12sec$ 

Hence, the traffic lights will change simultaneously next time = 9:15:00 +0:07:12 = 9:22:12 a.m.Ans.(A) L.C.M of 12, 16, 24, 36  $= 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$ i.e. 2 hour 24 minut First interval = 6: 00 Will ring together =  $\frac{2:24}{8:24}$  am Ans.(D) The number 512 is mainly divided by  $1^2$ ,  $2^2$ ,  $4^2$ ,  $8^2$  and  $16^2$ . Thus, 5 multiples of 512 are perfect squares. Ans.(D) Number of multiples in  $\left[\frac{1920}{40} = 48 = 2^4 \times 3\right]$ = (4 + 1)(1 + 1)= 10 even Number of multiples in  $\left[\frac{1920}{10} = 192 = 2^6 \times 3\right]$  $= (6 + 1) \times (1 + 1)$ = 14 (even) Number of multiples in  $\left[\frac{1920}{20} = 96 = 2^5 \times 3\right]$ = (5 + 1)(1 + 1)= 12 (even) Number of multiples in  $\left[\frac{1920}{30} = 64 = 2^{6}\right]$ = (6 + 1)= 7(odd)Ans.(C) Factor of  $2160 = 2^4 \times 3^3 \times 5$ Let total coefficient = n  $n = \frac{2^{10} \times 3^6 \times 5^3 \times 7^5}{2^4 \times 3^3 \times 5^1}$  $n = 2^6 \times 3^3 \times 5^2 \times 7^5$ Total divisible multiplier = (6 + 1)(3 + 1)(2 + 1)(5 + 1) $= 7 \times 4 \times 3 \times 6$ = 504Ans.(C)  $L.C.M = 2 \times 2 \times 3 \times 3 \times 5 \times 13 = 2340$ The greatest number of four digits = 9999 Required number = 9999 - 639 = 9360Ans.(D) L.C.M of 6, 8, 10 and 12 = 120 Hence, the multiples of 120 will be 360, 480. Ans.(D) Only 152100 is a perfect square in the given alternatives, other numbers are not perfect squares. L.C.M of 6, 9, 12, 13, 15 = 2340 152100/2340 = 65 (a fully divisible number) Therefore, the smallest square number is 152100 which is a square of 390 and will be completely divisible by 6, 9, 12, 13 and 15.

59.

60.

61.

62.

63.

64.

65.

66. Ans.(D)  $6xv^2z$  $= 2 \times 3 \times x \times y \times y \times z \ 8x^2 \times y^3 \times z^2$  $= 2 \times 2 \times 2 \times x \times x \times y \times y \times y \times z \times z$  $12 \times x^3 \times y^3 \times z^3$  $= 2 \times 2 \times 3 \times x \times x \times x \times y \times y \times y \times 2$  $\times z \times z$ H.C.F =  $2xy^2z$ 67. Ans.(D) Factors of  $15x^2 + 8x - 12$ = (5x + 6)(3x - 2)Factors of  $3x^2 + x - 2$ = (3x-2)(x + 1) $3x^2 - 2x = x(3x - 2)$ Factors of  $9x^2 - 12x + 4$ = (3x-2)(3x-2)H.C.F = Common factors = (3x - 2)68. Ans.(B)  $2x^3 - 16 = 2(x^3 - 8)$  $= 2(x-2)(x^{2}+4+2x)$  $3(x^{2} + 3x - 10) = 3(x^{2} + 5x - 2x - 10)$ = 3[x(x + 5) - 2(x + 5)]= 3(x-2)(x + 5) $x^{3} + 2x^{2} - 8x = (x - 2)(x^{2} + 4x)$ = x(x-2)(x + 4)Therefore, L.C.M =  $3 \times 2 \times x \times (x - 2)(x + 1)$  $(x + 5)(x^2 + 4 + 2x)$  $= 6x(x-2)(x + 4)(x + 5)(x^{2} + 4 + 2x)$ 69. Ans.(B) : 105 - 9 = 96 and 164 - 20 = 144Hence, that large number = H.C.F of 96 and 144 = 4870. Ans.(C) 258 - 2 = 256323 - 3 = 320H.C.F of 320 and 256 = 64 Therefore, the largest number will be 64, by which dividing 258 and 323 will give the remaining 2 and 3 respectively. 71. Ans.(D) Number of chocolates in each carton = HCF of 245 and 343 So the required number of chocolates in each carton = 49 **72**. Ans.(C) H.C.F of 188, 282 and 423 = 47 Thus, number of students in each section of each class = 47Hence Total minimum number of blocks of all three classes  $\Rightarrow \frac{188}{47} + \frac{282}{47} + \frac{423}{47} = 4 + 6 + 9$ = 19 Ans.(B) 73. L.C.M of 10, 8, 12 = 120

Largest number of three digits = 999

There are 39 remaining when 999 divided by 120, Hence the required number would be = 999 -39 = 96074. Ans.(C) L.C.M of 12, 15, 20 and 27 - $12 = 2 \times 2 \times 3$  $15 = 3 \times 5$  $20 = 2 \times 2 \times 5$  $27 = 3 \times 3 \times 3$ L.C.M. = 2 × 2 × 3 × 5 × 3 × 3 = 540required number = 540 + 6 = 54675. Ans.(C)  $L.C.M = 7 \times 2 \times 3 \times 11$  $= 77 \times 6$ = 46276. Ans.(B) L.C.M of 60, 120 and 225  $= 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 = 1800$ 77. Ans.(C)  $\therefore 16 - 12 = 4, 24 - 20 = 4$ 36 - 32 = 4, 54 - 50 = 4Required L.C.M = (L.C.M of 16, 24, 36 and54) - 4 = 432 - 4 = 42878. Ans.(D) Largest number of five digits = 99999 L.C.M of 5, 6 and 7 = 210 Number divided by 5, 6, 7 = 99999 - 39= 99960But in each case the remainder is 2 so number = 99960 + 2 = 9996279. Ans.(B)  $\therefore 45 = 3 \times 3 \times 5 = 3^2 \times 5$  $240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5 = 2^4 \times 3 \times 5$  $315 = 3 \times 3 \times 5 \times 7 = 3^2 \times 5 \times 7$ : L.C.M of 45, 240 and 315 = 3 ×5 = 15 80. Ans.(C)  $3341 = 13 \times 257$  $3328 = 2 \times 13$ Therefore H.C.F of 3341 and 3328 is 13. 81. Ans.(C) H.C.F of 148 and 370 = ?  $148 = 74 \times 2$  $370 = 74 \times 5$ H.C.F = 74 82. Ans.(A)  $2 \text{ m } 76 \text{ cm} = 2 \times 100 + 76 = 276 \text{ cm}$  $5 \text{ m} 52 \text{ cm} = 5 \times 100 + 52 = 552$  $11 \text{ m} 96 \text{ cm} = 11 \times 100 + 96 = 1196 \text{ cm}$ Thus, the greatest possible length = HCF of 276, 552 and 1196 = 92 cm 83. Ans.(C)  $L.C.M = 2 \times 2 \times 2 \times 2 \times 3 = 48$ The largest four digit number = 9999 The largest four digit number divisible by 48

= 9999 - 15 = 9984But the remainder should be 2. So, required number = 9984 + 2 = 998684. Ans.(C) H.C.F of  $\frac{34}{9}, \frac{85}{18}, \frac{68}{45}$  $\frac{34}{9} = \frac{2 \times 17}{3 \times 3}$  $\frac{\frac{85}{18}}{\frac{68}{18}} = \frac{\frac{5 \times 17}{3 \times 3 \times 2}}{\frac{2 \times 2 \times 17}{2 \times 2 \times 17}}$  $\frac{66}{45} = \frac{-}{3 \times 3 \times 5}$ H.C.F of fraction =  $\frac{\text{HCF of numerator}}{\text{L.C.M of denominator}} = \frac{17}{90}$ 85. Ans.(A)  $LCM \ of \frac{2}{3} \& \frac{6}{7} = \frac{L.C.M \ of numerator}{HCF \ of \ denominator} = \frac{6}{1} = 6$ 86. Ans (b):  $570 = 2 \times 3 \times 5 \times 19$  $1425 = 3 \times 5 \times 5 \times 19$  $H.C.F = 3 \times 5 \times 19 = 285$  $L.C.M = 2 \times 3 \times 5 \times 5 \times 19 = 2850$ 87. Ans.(B) Product of the numbers =  $\frac{L.C.M}{H.C.F}$  $=\frac{720}{12}=60$ Possible Pairs – (1, 60), (4, 15), (3, 20), (5, 12) So the number of possible pairs is 4. 88. Ans.(D) L.C.M = 2400 H.C.F = 16First number = 480 Second number = ? First number  $\times$  Second number = L.C.M  $\times$ H.C.F  $480 \times \text{Second number} = 2400 \times 16$ Second number =  $\frac{2400 \times 16}{480}$  = 80 Ans.(C) 89. The product of two numbers = L.C.M × H.C.F 2772 = 462 × H.C.F  $H.C.F = \frac{2772}{462}, H.C.F = 6$ 90. Ans.(D) Product of numbers = 3192 LCM = 56 $HCF = \frac{\text{Product of numbers}}{LCM} = \frac{3192}{56} = 57$ 91. Ans.(C) Let the number be 4x, 5x respectively. L.C.M of 4x and 5x = 20x20x = 100x = 5Difference between numbers = 5x - 4x = x = 5Hence the difference of the numbers will be 5.

92. Ans.(A) L.C.M of 3, 4, 5,  $8 = 2 \times 2 \times 3 \times 5 \times 2$ = 120 minute  $6 + \frac{120}{60} = 6 + 2 = 8$ Therefore, the watches will ring together at 8:00 am. 93. Ans.(D) L.C.M of 10, 15 and 20 = 60 required time = 5:00pm + 60 mint = 5:00pm + 1 hour = 6:00pmNext time, bell will ring together = 6:00 pm 94. Ans.(D) L.C.M of 12, 15, 25 = 300 20000 divided by 300, remaining = 200Hence, the required number to be added in 20000 = (300 - 200) = 10095. Ans.(C): L.C.M of 2, 4, 6 = 12 cube of  $12 = (12)^3 = 1728$ Hence the required number = 1728 96. Ans.(A) The numbers given are 14, 35 and 56. LCM is as follows;  $14 = 2 \times 7$  $35 = 5 \times 7$  $56 = 2 \times 2 \times 2 \times 7$ Required L.C.M =  $7 \times 5 \times 2 \times 2 \times 2 = 280$ Thus, option (a) is the correct option. 97. Ans.(B)  $34 = 2 \times 17$  $51 = 3 \times 17$  $68 = 2 \times 2 \times 17$ L.C.M of 34, 51 and  $68 = 2 \times 2 \times 3 \times 17 = 204$ 98. Ans.(D)  $15 = 3 \times 5$ ,  $18 = 2 \times 3 \times 3$  $24 = 2 \times 2 \times 2 \times 3$ L.C.M of 15, 18 and  $24 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$ = 36099. Ans.(D) L.C.M of 16, 28 and 42  $= 2 \times 2 \times 2 \times 2 \times 3 \times 7 = 336$ 100. Ans.(A) The least common multiple of 48 and 54  $48 = 3 \times 2 \times 2 \times 2 \times 2$  $54 = 3 \times 3 \times 3 \times 2$  $LCM = 3 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 6 \times 8 \times 9$ required L.C.M =  $6 \times 8 \times 9$ 101. Ans.(C) LCM of numbers =  $5 \times 7 \times 2 \times 3 \times 4 = 840$ According to first condition, Smallest number = 840 + 4 = 844 102. Ans.(B) Smallest number = (L.C.M of 4, 5, 6, 7) + 3 = 420 + 3 = 423
103. Ans.(B) 20 - 14 = 625 - 19 = 635 - 29 = 640 - 34 = 6Hence the LCM for the smallest number (20, 25, 35, 40) = 1400The smallest number which is divided by 20, 25, 35 and 40 to get the remaining 14 = 1400 - 6 = 1394104. Ans.(C)  $15 = 3 \times [5]$  $20 = 4 \times 5$ Reg no = 60+9=69 $L.C.M = 3 \times 4 \times 5 = 60$ 105. Ans.(A) H.C.F of 56, 140 and 168,  $56 = 2 \times 2 \times 2 \times 7$  $140 = 2 \times 2 \times 5 \times 7$  $\begin{array}{l} 168 = 2 \times 2 \times 2 \times 7 \times 3 \\ \text{H.C.F} = 2 \times 2 \times 7 \end{array}$  $= 4 \times 7 = 28$ 106. Ans.(C) H.C.F of 162, 54, 135 = 27 107. Ans.(B) H.C.F of 24, 60, 90 = 6 108. Ans.(D) H.C.F of 20, 28 and 48  $20 = 2 \times 2 \times 5$  $28 = 2 \times 2 \times 7$  $48 = 2 \times 2 \times 2 \times 2 \times 3$  $H.C.F = 2 \times 2 = 4$ Therefore, HCF of 20, 28 and 48 is 4. 109. Ans.(C) H.C.F of 36, 54 and 108  $36 = 2 \times 2 \times 3 \times 3$  $54 = 2 \times 3 \times 3 \times 3$  $108 = 2 \times 2 \times 3 \times 3 \times 3$  $H.C.F = 2 \times 3 \times 3 = 18$ Ans.(A) 110. Given numbers = 36, 72, 126  $36 = 2 \times 2 \times 3 \times 3$  $72 = 2 \times 2 \times 2 \times 3 \times 3$  $\begin{array}{rll} 126 &=& 2\times3\times3\times7\\ \text{Required H.C.F} &=& 2\times3\times3 \,=\, 18 \end{array}$ 111. Ans.(B) L.C.M =  $\frac{L.C.M \text{ of } 4,2,5}{L.C.M \text{ of } 5,3,7} = 20/1 = 20$ 112. Ans.(C) H.C.F × L.C.M = First number × Second number  $12 \times 72 = 24 \times Second$  number  $\frac{12 \times 72}{2}$  = Second number 24 Second number =  $3 \times 12 = 36$ 113. Ans.(A) Let the numbers be 14x and 9x H.C.F = 15

Hence the first number =  $14 \times 15 = 210$ Second number =  $15 \times 9 = 135$ First number x Second number = L.C.M  $\times$  H.C.F  $210 \times 135 = 15 L.C.M$  $L.C.M = \frac{210 \times 135}{15} = 1890$ 15 114. Ans.(B) LCM of 15, 30 and 45 = 90 minutes Hence the required time = 8:00 + 90 minutes = 9:30 pm 115. Ans.(B) LCM of 12, 18, 20 and 25 =  $2 \times 2 \times 3 \times 3 \times$  $5 \times 5 = 900$ The smallest five-digit number that is divisible by 12, 18, 20 and 25 = 900 x 12 = 10800 116. Ans.(A) LCM of 8, 15 and 20  $8 = 2 \times 2 \times 2$  $15 = 3 \times 5$  $20 = 2 \times 2 \times 5$  $2 \times 2 \times 2 \times 3 \times 5 = 120$ Out of the above options, the number of option (a) is 3600 which is a square of 60 and, divided by 120 which is LCM of 8, 15, 20. Hence, that number will be completely divided by 8, 15 and 20. 117. Ans.(C) L.C.M of 24, 96 and 36 =  $2 \times 2 \times 2 \times 2 \times 2 \times 2$  $3 \times 3 = 288$ 118. Ans.(C)  $15 \rightarrow 1 \times 3 \times 5$  $25 \rightarrow 1 \times 5 \times 5$  $29 \rightarrow 1 \times 29$  $LCM = 1 \times 3 \times 5 \times 5 \times 2929 = 2175$ 119. Ans.(B)  $\therefore LCM = 3 \times 6 \times 11 \times 37 = 7326$ 120. Ans.(C) LCM of 6, 5, 4. = 60When 1456, is divided by 60, remainder is 44. So, required number = 60 - 16 = 44121. Ans.(C) By question, L.C.M of 12 and 8 = 24 Number of pencils = 24Hence the minimum number of packets = 24/12 = 2122. Ans.(A) X is the smallest number that when divided by 6,7,8,9 and 12, the remainder be 2,3,4,5 and 8 respectively. 6 - 2 = 47 - 3 = 48 - 4 = 49 - 5 = 412 - 8 = 4

So, X = (LCM of 6, 7, 8, 9 and 12) - 4= 504 - 4 = 500Thus, 150% of  $X = 5 \times 150 = 750$ 123. Ans.(B) The required number = (LCM of 12, 15, 18)and 27) - 2 = 540 - 2 = 538124. Ans.(C) Number = (LCM of 11, 16, 21, 25 and 28) + 3  $= 2 \times 2 \times 7 \times 11 \times 4 \times 3 \times 25 = 92400$  $\therefore$  Required number = 92400 + 3 = 92403 125. Ans.(C) First term  $2x^2 + 5x - 12$  $= 2x^2 - 3x + 8x - 12$ = x(2x-3) + 4(2x-3)= (x + 4)(2x - 3)Second term  $= x^{2} + x - 12$  $= x^2 + 4x - 3x - 12$ = x(x + 4) - 3(x + 4)= (x + 4)(x - 3)Now HCF of both terms = (x + 4)And (x + 4) compared to (x + a)a = 4126. Ans.(C) HCF of 1757, 2259 = 251 127. Ans.(C) HCF of 2189 and 2587 = 199 128. Ans.(C) According to the question, the number of chocolate, biscuits, ice cream is 24, 36 and 60 respectively. Number of students = H.C.F of 24, 36 and 60 = 12 129. Ans.(B) The largest number = HCF of (1580 - 8) and (3800 - 1) = H.C.F of 1572 and 3799 = 131130. Ans.(D) H.C.F of 126 cm, 198 cm and 162 cm = 18 cm : Maximum length = 18 cm. 131. Ans.(C) By question, 50 - 5 = 4580 - 5 = 7565 - 5 = 60H.C, F of 45, 75 and 60 = 15 Hence, number of students = 15 132. Ans.(B) H.C.F of 20 and 16 = 4 .. The maximum number of gifts you can make without leaving a diary = 4 133. Ans.(B)

By question,  $675 - 270 = 405 = 3 \times 3 \times 3 \times 3 \times 5$  $1215 - 675 = 540 = 2 \times 2 \times 3 \times 3 \times 3 \times 5$  $1215 - 270 = 945 = 3 \times 3 \times 3 \times 5 \times 7$  $H.C.F = 3 \times 3 \times 3 \times 5$ Required number = 135 134. Ans.(C) H.C.F of 60, 150 and 285  $60 = 2 \times 2 \times 3 \times 5$  $150 = 2 \times 3 \times 5 \times 5$  $285 = 3 \times 5 \times 19$  $H.C.F = 3 \times 5 = 15$ Hence the number will be 15K where K = 1, 2,3. . . . . . . . . . Putting K = 3, number =  $15 \times 3 = 45$  $\Rightarrow \frac{60}{45} = 1$  divider + 15 (reminder)  $\Rightarrow \frac{150}{45} = 3 \text{ divider } + 15 \text{ (reminder)}$  $\Rightarrow \frac{285}{45} = 6 \text{ divider } + 15 \text{ (reminder)}$ : The remainder are the same. So the required number is 45 135. Ans.(C) By question, 391 - 7 = 384318 - 6 = 312H.C.F of 384 and 312 = 24 Required number = 24Ans.(D) 136. 1.43, 1.87, 20.9 143 187 209 100'100'10 HCF of numerator H.C.F of fraction =  $\frac{HCF OF HUMERARE}{LCM of denominator}$  $=\frac{11}{100}=0.11$ Ans.(C) 137.  $\frac{32}{100}, \frac{272}{100}, \frac{128}{10}, \frac{144}{10}$ HCF (32, 272, 128, 144) = 16 LCM (100, 10) = 100  $\frac{16}{100} = 0.16$ Ans.(A) 138. By question,  $0.63 = \frac{63}{100}, 10.5 = \frac{105}{10}, 2.1 = \frac{21}{10}, 4.20 =$  $=\frac{42}{10}$  $\stackrel{100}{\sim} \frac{10}{LCM} \stackrel{10}{of} \frac{63}{100}, \frac{105}{10}, \frac{21}{10}, \frac{42}{10} = \frac{LCM \text{ of } 63,105,21,42}{HCF \text{ of } 100,10,10,10}$   $= \frac{21 \times 3 \times 5 \times 2}{10} = \frac{630}{10} = 63$ Ans (A) 139. Ans.(A) L.C.M of  $\frac{17}{31}$ ,  $\frac{34}{62}$  and  $\frac{48}{93} = \frac{L.C.M \text{ of } 17,34 \text{ and } 48.}{HCF \text{ of } 31,62 \text{ and } 93}$  $=\frac{816}{31}$ 140. Ans.(C)

By question,  $LCM \text{ of } \frac{2}{3}, \frac{8}{9}, \frac{16}{27}, \frac{32}{81} = \frac{LCM \text{ of } 2,8,16 \text{ and } 32}{HCF \text{ of } 3,9,27 \text{ and } 81} =$ = 32/3141. Ans.(D) LCM of fraction =  $\frac{\text{LCM of numerator}}{\text{HCF of denominator}}$ Hence LCM of  $\frac{2}{30}, \frac{20}{40}, \frac{4}{50}, \frac{8}{60}$  $= \frac{\text{LCM of } 2,20,4 \text{ and } 8}{\text{HCF of } 30,40,50 \text{ and } 60} = \frac{40}{10} = 4$ 142. Ans.(A) *LCM of*  $\frac{13}{31}, \frac{23}{62}$  and  $\frac{48}{93} = \frac{LCM of 13, 23, 48}{HCF of 31, 62, 93} = \frac{14352}{31}$ 143. Ans.(B) From the formula, The product of two numbers = HCF × LCM : H.C.F =  $\frac{3026}{5}$ 80 H.C.F = 34144. Ans.(D) From the formula, LCM × HCF = Product of both numbers  $81 \times H.C.F = 4941$  $\therefore$  H.C.F =  $\frac{4941}{81}$  = 61 145. Ans.(A) HCF of both numbers = 6 $\therefore$  First number = 8  $\times$ 6 = 48 Second number =  $9 \times 6 = 54$ Ist number  $\times$  IInd number = HCF  $\times$  LCM  $48 \times 54 = 6 \times LCM$  $LCM = \frac{48 \times 54}{6}$  $\sqrt{LCM} = 432$ 146. Ans.(B) Let the second number be y. From the formula, [First number × Second number =  $HCF \times LCM$ ]  $22 \times y = 616 \times 2$ y = 56So the second number is (y) = 56147. Ans.(B)  $\therefore$  First number x Second number = HCF x LCM.  $28 \times \text{Second number} = 7 \times 252$  $\therefore$  Second number = 63 148. Ans.(C) HCF = 3LCM = 2730 $N_1 = 78$  $N_2 = ?$ formula  $N_2 = \frac{LCM \times HCF}{N_1}$  $N_2 = \frac{2730 \times 3}{78}$  $N_2 = 105$ 

#### 149. Ans.(B)

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Suppose the second number is N
         From the formula,
         First number × Second number =
         HCF \times LCM
         95 \times N = 19 \times 665
         N = \frac{19 \times 665}{95}
        N = \frac{665}{2}
         N = 133
150.
         Ans.(B)
         By question,
         First number × Second number = HCF ×
         LCM.
         \Rightarrow 69 × Second number = 3 × 2001
         \Rightarrow Second number = \frac{6003}{69} = 87
         So second number = 87
151.
         Ans.(D)
         We know that.
         First number × Second number = HCF ×
         LCM.
         \Rightarrow 3276 = 63 \times HCF
         \Rightarrow HCF = \frac{3276}{63} = 52
152.
         Ans.(A)
         On factorization -
         16 = 2 \times 2 \times 2 \times 2
         24 = 2 \times 2 \times 2 \times 3
         H.C.F of 16,24 = 2 \times 2 \times 2 = 8
         and L.C.M. = 2 \times 2 \times 2 \times 2 \times 3 = 48
153.
         Ans.(A)
         Let the numbers be 21x and 29x respectively.
         and H.C.F = 8
         First number = 21 \times 8 = 168
         232 = 2 \times 2 \times 2 \times 29
         Hence the LCM of numbers
         = 2 \times 2 \times 2 \times 3 \times 7 \times 29 = 4872
154.
         Ans.(C)
         HCF => \frac{3276}{63} = 52
155.
         Ans.(A)
         HCF = 33
         Ratio of numbers = 5: 7
         \therefore First number = 5 \times 33 = 165
         And second number = 7 \times 33 = 231
         LCM = \frac{231 \times 165}{33}
         LCM = 1155
156.
         Ans.(C)
         Let the numbers be 2x and 3x.
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L.C.M = 78.  $2 \times 3 \times x = 78$ x = 13 $\therefore$  Total of numbers  $(5x) = 5 \times 13 = 65$ 157. Ans.(A)  $\therefore$  Biggest factor = ? H.C.F of 360 and 45 = 90Hence the largest factor = 90 158. Ans.(D) Required number = HCF of (150 - 60), (285 - 60)150) and (285 - 60)  $90 = 2 \times 3 \times 3 \times 5$  $135 = 3 \times 3 \times 3 \times 5$  $225 = 3 \times 3 \times 5 \times 5$  $H.C.F = 3 \times 3 \times 5 = 45$ Sum of digits = 4 + 5 = 9159. Ans.(C) Ratio of numbers = 2:3:6and HCF = 45 $\therefore$  numbers  $\Rightarrow 2 \times 45 = 90$  $\Rightarrow 3 \times 45 = 135$  $\Rightarrow 6 \times 45 = 270$ Required sum = 495160. Ans.(B) Ratio of numbers = 2: 3 Let the number be 2x and 3x. L.C.M of 2x and  $3x = 2 \times 3 \times x = 6x$ By question 6x = 66 $\Rightarrow x = 11$ Total numbers = 2x + 3x $= 5x = 5 \times 11 = 55$ 161. Ans.(B) Let the number = 3x, 2xAccording to Question -L.C.M = 486x = 48x = 8Numbers = 24,16Total sum = 24 + 16 = 40162. Ans.(A) Solve this type of question optionally. From option (a), the difference of 80 and 64 = 16 And the HCF of 64 and 80 is also 16. Whereas, option (b) is 72 and the difference of 88 is 16. But their HCF is not 16. While option (c) is the difference of 80 and 100 is 20. Option (d) The difference between 96 and 120 is 24. 163. Ans.(B) Let x be a large number and y be a small number. According to Question,

 $x + y = 30 \dots \dots \dots (i)$ L.C.M of x and y = 25 .....(ii) From given option. So if x = 25 then y = 5Then, LCM of 25 and 5 = 25And 25 + 5 = 30164. Ans.(A) L.C.M of 10, 15, 30 = 30 Next time all three alarms will ring after 30 minutes. So it will be at 9.30 am. 165. Ans.(B) L.C.M of 15, 20 and 30 = 60 All three bells ring at an interval of 60 minutes = 1 hour So the three bells will ring together again at 12 noon. 166. Ans.(D) LCM of 16, 24, 36, 42  $L.C.M = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 1008$ Therefore, all four bells will ring together again after 1008 minutes. 167. Ans.(A)  $\therefore L.C.M = 3 \times 3 \times 3 \times 2 \times 5 = 270 = 4$ Therefore, they will change simultaneously after 270 seconds = 4 minutes 30 seconds Required time = 6: 10: 00 + 4 : 30 = 6:14:30168. Ans.(A) All three clocks will ring together = LCM of 1, 2 and 3 = 6 hours Since the clocks rang together three hours ado. Then they would ring together = (after 6hours) after 3 hours from now. 169. Ans.(B) By question, the interval of the three clocks ringing simultaneously = L.C.M of 1 hour, 2 hour, and 3 hour = 6So next time after 6 hours, they will sound the together again. 170. Ans.(C) LCM of 4,9 and 14 - $LCM = 2 \times 2 \times 3 \times 3 \times 7 = 252$ : 252 is not a square number. While its multiple 1764 is a perfect square number. Therefore, as per option 1764 will be the square number which is completely divisible by 4, 9 and 14. 171. Ans.(D) L.C.M of 12, 24, 48, 60 and 96  $= 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5$ = 480Smallest number of 5 digits = 10000 After dividing 10000 by 480, remainder is 400.

: The smallest number of 5 digits which is divisible by 12, 24, 48, 60 and 96 = 10000 + (480 - 400) = 10080172. Ans.(A) L.C.M of 15, 25 and 30 = 150 Largest three digit number = 999 After dividing 999 by 150, remainder is 99. Hence required number = 999 - 99 = 900173. Ans.(D) L.C.M of 12, 20, 32 and 44 =  $2 \times 2 \times 3 \times 5 \times$  $8 \times 11 = 5280$ The largest 4 digit number = 9999 After dividing 9999 by 5280, remainder is 47119.  $\therefore$  required number = 9999 - 4719 = 5280 174. Ans.(C) By question, L.C.M of 15, 18, 27 and 30 = 270 Now the largest number must be divided by 270. Hence option (c) 810 (divisible by 270) is the correct answer. 175. Ans.(A) Let that be the smallest number = xAccording to Question,  $\Rightarrow$  L.C.M of 2x = 4, 6, 9, 12 and 14  $\Rightarrow 2x = 252$  $\Rightarrow x = 126$ required number = 126176. Ans.(C) By question, L.C.M of 14, 35, 28 and 91  $= 2 \times 7 \times 5 \times 2 \times 13 = 1820$ required number  $=\frac{1820}{2}=910$ 177. Ans.(B) Number = (L.C.M of 10, 15, 20, 25) + 3 L.C.M of 10, 15, 20 and 25  $= 2 \times 2 \times 5 \times 5 \times 3 = 300$ Required number  $\Rightarrow$  300 + 3 = 303 178. Ans.(A) L.C.M of 6, 8, 12 and 16  $= 2 \times 2 \times 2 \times 2 \times 3$ = 48 $\therefore$  Required number = 48 179. Ans.(B) 1250 - 4 = 12461615 - 5 = 1610 $HCF \ of \ 1246 \ and \ 1610 \ = \ 14$ Therefore, the largest number is 14, by which dividing 1250 and 1615, leaving the remainder 4 and 5 respectively. 180. Ans.(D) 3050 - 7 = 30435200 - 9 = 5191Hence the required number = H.C.F of 3043 & 5191 = 179

181. Ans.(A)  $3 \times 3 \times 3 \times 13 = 5616$ 182. Ans.(A) L.C.M of 4, 5, 6 & 7 = 420Required number = 420 + 1 = 421Therefore, dividing 421 by 4, 5, 6 and 7 will give 1 remainder in each case. 183. Ans.(B) Let the second number = xAccording to Question,  $1.25 \times x = 30$  $\frac{30}{1.25} = \frac{3000}{125}$ x =Hence, second number x = 24184. Ans.(C)  $ab^2 c^2 = a \times b \times b \times c \times c$  $a^{2}bc = a \times a \times b \times c$  $a^{3}b^{3}c^{2} = a \times a \times a \times b \times b \times b \times c \times c$  $L.C.M = a^3 b^3 c^2$ 185. Ans.(A)  $2^2 \times 3^2 \times 5 \times 7 = 1260$  $2 \times 2 \times 3 \times 5^2 \times 7 = 2100$  $2 \times 3 \times 5 \times 7 = 210$  $LCM = 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7 = 6300$ Ans.(A) 186. 6(xy - y) = 6y(x - 1) $8(x^4y - xy) = 8xy(x^3 - 1)$  $= 8xy (x - 1) (x^{2} + x + 1)$  $\therefore$  L.C.M = 24xy (x - 1) (x<sup>2</sup> + x + 1)  $= 24xy (x^3 - 1)$ 187. Ans.(A)  $2.05 = \frac{205}{100}$  $1.05 = \frac{105}{105}$  $2 = \frac{200}{100}$ There? Therefore L.C.M of (2.05, 1.05, 2) = L.C.M of  $\left(\frac{205}{100}, \frac{105}{100}, \frac{200}{100}\right)$ 188. Ans.(B) L.C.M of 36 and K = 72 From option -Possible values of K = 8, 24 and 72. 189. Ans.(B) LCM of 12, 18, 21 and 30 = 420 Available numbers divisible by 420  $= 420 \times 3 = 1260$ 190. Ans.(D) H.C.F of numbers 25, 35, 40 and 30  $25 = 5 \times 5$  $35 = 5 \times 7$  $40 = 5 \times 8$  $30 = 5 \times 6$ H.C.F = 5Hence the required number will be 5. 191. Ans.(C)

It is clear that, (20 - 13) = (48 - 41)=(36-29)=7Required number = (L.C.M of 20, 48, 3) - 7 $= (2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5) - 7$ = 720 - 7 = 713192. Ans.(D) Required number = (L.C.M of 12, 15, 20, 54) $+8 = (2 \times 2 \times 3 \times 3 \times 3 \times 5) + 8$ = 540 + 8 = 548193. Ans.(C) Co-prime numbers: The pair of such numbers whose HCF is 1, called the co-prime numbers. Ans.(B) 194.  $2 \times 3^2 \times 5^2$  $5 \times 3 \times 2^2$  $5^2 \times 3 \times 2^2$ H.C.F =  $2 \times 3 \times 5$ H.C.F = 30195. Ans.(D) H.C. F of  $a^3b^3c^3$ ,  $a^2b^2c^2$ , abc and  $a^2bc$ .  $a^{3}b^{3}c^{3} = a \times a \times a \times b \times b \times b \times c \times c \times c$  $a^{2}b^{2}c^{2} = a \times a \times b \times b \times c \times c$  $abc = a \times b \times c$  $a^{2}bc = a \times a \times b \times c$ H.C.F =  $a \times b \times c$ 196. Ans.(C) L.C.M of 1.75, 5.6, 7, *L.C.M* of  $=\frac{175}{100}, \frac{560}{100}, \frac{700}{100}$ L.C.M of fraction  $=\frac{\text{L.C.M of numerator}}{\text{H.C.F of denominator}}$  $=\frac{2800}{100}=28$ H.C.F of  $\frac{175}{100}$ ,  $\frac{560}{100}$ ,  $\frac{700}{100} = \frac{\text{H.C.F of numerator}}{\text{L.C.M of denominator}}$  $=\frac{35}{100}=.35$ Therefore, the LCM and HCF will be 28, 0.35 respectively. 197. Ans.(A) L. C. M of  $\frac{36}{225}, \frac{48}{150}, \frac{72}{85}$ L.C.M of fraction =  $\frac{1.0.141 \text{ Grade}}{\text{H.C.F of denominator}}$ = L.C.M of 36,48,72 H.C.F of225,150,85  $=\frac{144}{5}$ 198. Ans.(C) HCF of 1.08, 0.36, 0.9 = HCF of  $\frac{108}{100}$ ,  $\frac{36}{100}$ ,  $\frac{90}{100}$ =  $\frac{HCF of 108,36,90}{LCM of 100,100,100} = \frac{18}{100} = 0.18$ 199. Ans.(A)  $1.05 = \frac{105}{100} = \frac{21}{20}$ 2.1 =  $\frac{21}{10}$ LCM of  $\frac{21}{20}$  &  $\frac{21}{10} = \frac{\text{LCM of } 21 \text{ & } 21}{\text{HCF of } 20 \text{ & } 10}$ =  $\frac{21}{10} = 2.1$ 

200. Ans.(D)

HCF of  $\frac{36}{75}, \frac{48}{50} \& \frac{72}{30} = \frac{HCF \ of \ (36,48,72)}{LCM \ of \ (75,50,30)} = \frac{12}{150}$ 

201. Ans.(A) LCM of a set of fractions = LCM of numerator /HCF of denominator 202. Ans.(B) Largest number of 4 digits = 9999 L.C.M of 15, 25, 40 and 75 = 600 399 is left as remainder when 9999 is divided by 600. Hence the largest 4 digit number which is divisible by 15, 25, 40, 75= 9999 - 399= 9600 203. Ans.(D) L.C.M of 2, 15, 18, 27 = 540279 is remainder when 9999 is divided by 540. Hence the required number = 9999 - 279 = 9720204. Ans.(D) L.C.M of 21, 36 & 66 =  $2 \times 2 \times 3 \times 3 \times 7 \times 11$ Hence, We have to multiply 7 and 11 to LCM of 21, 36 and 66 to get the required square number. Required whole square number =  $2 \times 2 \times 3 \times 3 \times 7 \times 7 \times 11 \times 11 = 213444$ 205. Ans.(B) Number = H.C.F of (115 - 3), (149 - 5) & (183)-7)= H.C.F of 112,144 or 176 = 16Therefore, the required number is 16. 206. Ans.(A) L.C.M of 5, 6, 7 and 8 = 840  $840 \times 2 = 1680$ number =  $\frac{1683}{100}$ 1680 Remainder = 3The nearest number to 1680 will be 1683 because, + 3 is the remainder left by dividing 1680 and is also a multiple of 9. 207. Ans.(D) (10-9) = (9-8) = (8-7) = 1 $\therefore$  required number = (L.C.M of 10, 9, 8) - 1 = 360 - 1 = 359208. Ans.(D) 8-6 = 2,12-10 = 2,18-16 = 2Difference between digits is same L.C.M of 8, 12, 18 = 72required number = 72 - 2 = 70209. Ans.(C) Inverse of 18 =  $\frac{1}{18}$ Inverse of 24 =  $\frac{1}{24}$  $LCM of\left(\frac{1}{18}, \frac{1}{24}\right) = \frac{LCM of(1,1)}{HCF of(18,24)} = \frac{1}{6}$  $HCF of\left(\frac{1}{18}, \frac{1}{24}\right) = \frac{HCF of(1,1)}{LCM of(18,24)} = \frac{1}{72}$ 

210. Ans.(B) Let the numbers be 3x and 5x. LCM of numbers 3x and 5x = 15 xAccording to Question, 15x = 75 $x = \frac{75}{15}$ x = 5SO. H.C.F of both number = 5211. Ans.(A)  $\therefore$  L.C.M  $\times$  H.C.F = First number × Second number  $693 \times 11 = 99 \times$  Second number Scond number =  $\frac{693 \times 11}{1000}$ = 77 212. Ans.(B) Let the numbers be 3x, 4x and 5x respectively. L.C.M of 3x, 4x, 5x = 60 x $\Rightarrow 60x = 2400$  $\Rightarrow x = 40$ Hence the numbers = 120, 160, 200HCF of 120, 160, 200  $120 \Rightarrow 2 \times 2 \times 2 \times 3 \times 5$  $160 \Rightarrow 2 \times 2 \times 2 \times 2 \times 2 \times 5$  $200 \Rightarrow 2 \times 2 \times 2 \times 5 \times 5$ Therefore, the H.C.F =  $2 \times 2 \times 2 \times 5 = 40$ 213. Ans.(B) Numbers be  $(15 \times 13)$ ,  $(11 \times 13)$ Hence the number is 195, 143 L.C.M of 195,  $143 = 3 \times 5 \times 11 \times 13 = 2145$ 214. Ans.(B) Let H.CF = xL.C.M = 92xL.C.M + H.CF = 37292 x + x = 372372  $x = \frac{1}{93}$ x = 4First number x second number = LCM x HCF  $368 \times \text{second number} = 92x \times x$  $368 \times$  second number =  $92 \times 4 \times 4$ second number =  $\frac{92 \times 4 \times 4}{2}$ 368 second number = 4 215. Ans.(A) LCM of No. 99, 15  $= 3 \times 3 \times 5 \times 11 = 495$ HCF of Number 99. 15=3  $\frac{\text{L.C.M}}{\text{H.C.F}} = \frac{495}{3}$ L.C.M : H.C.F = 165:1216. Ans.(D) Let the numbers be 4x and 5x LCM of numbers 4x and 5x = 20 xAccording to Question, 20 x = 180

x = 9Hence, the numbers will be = 36 and 45. Sum of the numbers = 36 + 45 = 81217. Ans.(B) The factor of all numbers is always 1.  $12 = 1 \times 2 \times 3 \times 4$  $15 = 1 \times 3 \times 5$ 218. Ans.(B) Let those two numbers be 5x and 7x HCF of 5x and 7x = x $\therefore x = 9$ Difference of numbers = 7x - 5x = 2x $= 2 \times 9 = 18$ 219. Ans.(A) Required number = LCM of 12, 15, 20, 27 Required number =  $3 \times 5 \times 4 \times 9 = 540$ Hence the number 540 will be completely divisible by the given numbers. 220. Ans.(B) Required number = LCM of (12, 15, 24) $= 2 \times 2 \times 2 \times 3 \times 5 = 120$  $\therefore$  required number = 120 221. Ans.(D) 9 liters is used for the largest measurement. 222. Ans.(D) Product of four consecutive whole numbers  $= 2 \times 3 \times 4 \times 5$ = 120 which is completely divisible by 24 223. Ans.(C) L.C.M of 2, 3, 4,  $6 = 2 \times 2 \times 3 = 12$ Required whole cube number  $= 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 216$ 224. Ans.(D) L.C.M of 12, 15, 20  $= 2 \times 2 \times 3 \times 5 = 60$ The smallest three digit number = 100 When 100 is divided by 60 remainder is 40. Hence the required number = 100 + (60 - 40) = 120225. Ans.(A)  $(a^3 + b^3) = (a + b)(a^2 + b^2 - ab)$  $(a + b)^2 = (a + b)(a + b)$ or  $(a^2 - b^2) = (a + b)(a - b)$ Required H.C.F = a + b226. Ans.(B) L.C.M of  $(a^3 - b^3)$ ,  $(a^2 - b^2)$ , (a - b) $(a^3 - b^3) = (a - b)(a^2 + b^2 + ab)$  $(a^2 - b^2) = (a - b)(a + b)$ (a-b) = (a-b) $LCM = (a - b)(a + b)(a^2 + b^2 + ab)$  $= (a^3 - b^3)(a + b)$ 

# 06. (Percentage)

- 62% population of a city is educated. If number of uneducated people in city is 24567, then what is the number of educated people? RRB Group-D -08/10/2022 (Shift-I) (A) 41823 (B) 64650 (C) 35688 (D) 40083
- 2. What will be population of a city after 2 years, which is currently 1.2 million and rate of increase is 4%.

**RRB Group-D - 08/10/2022 (Shift-II)** (A) 1297920 (B) 1207920

(C) 1300000 (D) 1297820	
	)

**3.** The population of a city is growing at a rate of 5% per annum. If current population of city is 1,85,220, then what was population of that city a year ago?

RRB Gr	oup-D - 16/10/2018 (Shift-I)
<b>(A)</b> 1,76,000	<b>(B)</b> 1,70,500
<b>(C)</b> 1,76,400	<b>(D)</b> 1,76,200

**4.** The population of a city is 8000. If number of males increases by 8% and number of females by 12%, So population will be 8680. Find the number of women in city.

F	RRB Group-D - 30/10/2018 (Shift-II)
<b>(A)</b> 2500	<b>(B)</b> 1500
(C) 2000	<b>(D)</b> 1000

5. The population of a colony increased to 54000 in 2018. Which is increasing at the rate of 5% per annum. Find the population of colony 2 years ago.

	RRB NTPC - 09/2022 (Shift-I)
<b>(A)</b> 45980	<b>(B)</b> 48980
<b>(C)</b> 49500	<b>(D)</b> 50000

6. In a city, every year, the number of people increased by 3% at beginning of year. If current population of that city is 30,00,000, then what will be population after 3 years.

RRB Group-D - 02/11/2018 (Shift-II)

(A) 3277181	<b>(B)</b> 3217881
(C) 3278181	<b>(D)</b> 3281781

7. Pranjoy got 272 marks in an examination which was equivalent to getting 64% marks. What was the exam marks?

	RRB Group-D - 26/11/2022 (Shift-I)
<b>(A)</b> 425	<b>(B)</b> 475
(C) 450	<b>(D)</b> 440

An examination was conducted for the students of class 10, 96% of students passed and 50 failed. How many students attended?
 RRB Group-D - 15/10/2018 (Shift-III)

<b>(A)</b> 1600	<b>(B)</b> 1400	-
<b>(C)</b> 1200	<b>(D)</b> 1250	

**9.** Diksha scored 58% in an exam, Whose maximum marks were 450. He received ...... marks.

	RRB Group-D - 01/10/2018 (Shift-III)
(A) 276	<b>(B)</b> 261
<b>(C)</b> 290	<b>(D)</b> 275.5

**10.** The percentage of marks to pass an exam should be 42%. If maximum number is 450, then how many marks must be obtained to pass the exam?

	RRB Group-D - 15/11/2018 (Shift-III)
<b>(A)</b> 201	<b>(B)</b> 168
(C) 210	<b>(D)</b> 189

**11.** In an examination, Chitra got 58.5 marks, which was equivalent to getting 78% marks. What was exam marks?

	RRB Group-D - 19/11/2022 (Shift-II)
<b>(A)</b> 85	<b>(B)</b> 65
<b>(C)</b> 75	<b>(D)</b> 80

12. In a class, someday 5% of student is absent. If number of students present is 38, then what is total number of students in the class on that day?

	RRB Group-D - 20/09/2022	(Shift-III)
<b>A)</b> 40	<b>(B)</b> 50	
<b>C)</b> 33	<b>(D)</b> 45	

**13.** A student is required to marks 40% to pass. He got 40 marks in an exam and he failed by 40 marks. What is maximum marks that can be obtained for exam?

	RRB Group-D - 26/11/2022 (Shift-I)
<b>(A)</b> 500	<b>(B)</b> 400

(C) 250 (D) 200

**14.** The following table shows the results of students who participating in exam. What is the percentage of passed students?

	Result	number of students	
	Passed	150	
	Fail	100	
RRB Group-D - 04/10/2018 (Shift-II)		-II)	

<b>A)</b> 40%	<b>(B)</b> 60%
<b>C)</b> 50%	<b>(D)</b> 30%

**15.** A candidate gets 20% marks and fails by 35 marks, while the second candidate gets 50% marks which is 32 more than minimum marks required to pass. What is the integer for the exam?

RRB Group-D - 30/10/2018 (Shift-III)

<b>(A)</b> 250	(B) $\frac{670}{3}$
<b>(C)</b> 450	<b>(D)</b> 500

**16.** Durba got 70% marks in an examination. In another examination he got 20 out of 25 marks. If its total marks is 78%, then what were maximum marks in first exam?

	RRB Group 'D' 07/12/2018 (Shift-I)
<b>(A)</b> 7.6	<b>(B)</b> 6.25
(C) 7.25	<b>(D)</b> 6

**17.** A student probably got some of the maximum marks. It was 75% as a percentage. If another question of one mark had been added to question paper and he would have answered it correctly, the percentage of his score would have been 76%. What was initial maximum mark of exam?

	RRB Group 'D' 07/12/2018 (Shift-I)
<b>(A)</b> 24	<b>(B)</b> 25
<b>(C)</b> 20	<b>(D)</b> 19

**18.** The percentage of minimum marks required to pass an exam is 38%. If the maximum number is 750, then how many marks is required for a student to pass the exam?

 RRB Group-D - 01/09/2022 (Shift-III)

 (A) 285
 (B) 304

 (C) 323
 (D) 266

**19.** If Santi spends 50 % of his monthly salary on food, 20 % on rent and saves Rs. 1500, then what is his monthly salary?

 RRB Group-D - 24/10/2018 (Shift-II)

 (A) rs.5500
 (B) rs.5000

 (C) rs.6000
 (D) rs.4500

**20.** The annual income of Nathan is Rs. 15,00,000 and he pays an EMI of Rs 40,000

every month for his car. What percentage of his monthly salary goes to EMI?

	RRB Group-D - 19/11/2022 (Shift-I)
(A) 28 %	<b>(B)</b> 32 %
(C) 24 %	<b>(D)</b> 20 %

Alok saves Rs.1,200 per month after spending 85% of his salary. What is his monthly salary?
 RRB Group-D - 19/11/2022 (Shift-I)
 (A) rs 8 000
 (B) rs 8 500

<b>(A)</b> rs.8,000	<b>(B)</b> rs.8,500
(C) rs.10,000	(D) rs.12,000

**22.** The annual income of Somnath is Rs. 24,00,000. Per month, he pays an EMI of Rs. 40,000 for his vehicle. What percentage of his monthly income is spent in EMI?

	RRB Group-D - 15/11/2018 (Shift-I)
<b>(A)</b> 20	<b>(B)</b> 18
<b>(C)</b> 10	<b>(D)</b> 24

**23.** On an average, Meenu uses 15% of her monthly salary for shopping, restaurants and malls. The remaining 40% is used towards household expenses and 45% goes to his savings. If in a month, she spends Rs. 40,000 on house, then what is his annual income.

RRB Group-D - 16/10/2018 (Shift-I)		
(A) rs.1020000	<b>(B)</b> rs.1400000	
(C) rs.1200000	(D) rs. 1000000	

24. The annual income of limit is Rs. 15,00,000. Per month, he gets Rs. 30,000 EMI. What percentage of his monthly salary goes to EMI?

	RRB Group-D - 28/11/2022 (Shift-III)
<b>A)</b> 24	<b>(B)</b> 26
<b>C)</b> 28	<b>(D)</b> 25

25. Sunaina works in a private company and his annual income is 3 lakhs. He has a new and an old car. 5% of his income is spent on maintenance of new car and old spends 2% more than the new. What is total annual expenditure on maintenance of both cars?

RRB Group-D - 28/11/2022 (Shift-II		
(A) rs.20,000	<b>(B)</b> rs.36,000	
(C) rs.12,500	(D) rs.25,000	

**26.** Per month, Kritika spends 30% of her income on house rent and 60% of remaining is spent on household expenditure. If she saves Rs. 6300 every month, then what is his total monthly income?

RRB Group-D 17 / 09 / 2018 (Shift-II)

<b>(A)</b> rs.22,000	<b>(B)</b> rs. 20,500
<b>(C)</b> rs.22,500	<b>(D)</b> rs.25,000

27. Meenakshi spends an average of 10% of her monthly salary on shopping and visiting restaurants and malls. The remaining 80% is spent on his household expenses and saves 10%. If the monthly household expenditure is Rs. 48,000, then what is the monthly income? RRB Group-D - 25/11/2022 (Shift-III)

(A) rs.60,000	(B) rs.80,000
(C) rs.1,20,000	<b>(D)</b> rs.54,000

**28.** On average, Pramod uses 10% of his monthly salary to fill petrol in his car. The remaining 80% is spent in domestic work and saves 10% of salary. If, on a monthly basis, he spends Rs. 24000 on housework, then what is his annual income?

RRB Gro	up-D - 26/11/2022 (Shift-III)
(A) rs.360000	<b>(B)</b> rs.160000
(C) rs.80000	<b>(D)</b> rs.240000

29. Manoj spends 33% of his income on food. He received an increase of Rs.1,000 in his salary, But he did not increase spending on food. Due to which his expenditure on food was reduced to 27%. What was his initial salary?
RRB Group-D - 04/10/2018 (Shift-II)

	ip-D - 04/10/2016 (Si
(A) rs.4,500	<b>(B)</b> rs.6,500
(C) rs.5,500	<b>(D)</b> rs.5,000

**30.** Suman is the mistress of an agricultural land. He leased it to a third party for 5 years. In addition to income from this lease, She also gets a salary of Rs. 6,00,000 per year. In five years, the total income from agricultural land is 50% of his one year's salary. How much money does she earn each year?

RRB Group-D - 10/10/2018 (Shift-I)

(A) rs.3,00,000	(B) rs.6,60,000
(C) rs.6,00,000	<b>(D)</b> rs.6,30,000

- 31. 76% of a number is 95. number is : **RRB Group-D - 25/11/2022 (Shift-II)**  (A) 124 (B) 125 (C) 120 (D) 130
- **32.** Find that number, Which is 30% more than 240.

 RRB Group-D - 31/10/2018 (Shift-II)

 (A) 312
 (B) 340

 (C) 331
 (D) 320

**33.** 108% of a number is 189. That number is – **RRB Group-D - 10/10/2018 (Shift-III)** 

<b>(A)</b> 200	<b>(B)</b> 175
<b>(C)</b> 190	<b>(D)</b> 180

- What is the percentage of 6 hours a day? RRB Group-D - 31/10/2018 (Shift-I) (A) 30% (B) 40% (C) 25% (D) 45%
- **35.** What is the percentage of  $1\frac{1}{2}$  day is 15 minutes?

 RRB Group-D - 05/11/2018 (Shift-I)

 (A) 10 %
 (B)  $\frac{5}{6}$ %

 (C)  $\frac{25}{36}$ %
 (D)  $41\frac{2}{3}$ %

- 36. 48 out of 60 .....%.
   RRB Group-D 05/11/2018 (Shift-III)
   (A) 72 (B) 75
   (C) 78 (D) 80
- What will be 46% of 250? **RRB Group-D - 23/10/2018 (Shift-I)**  (A) 92 (B) 115 (C) 126.5 (D) 103.5
- **38.** By increasing a number by 45%, it becomes 725. Find that number.

	RRB NTPC - 09/2022 (Shift-II)
<b>(A)</b> 500	<b>(B)</b> 450
<b>(C)</b> 600	<b>(D)</b> 525

**39.** The price of an item decreases by 25%. How much will new price have to be increased to maintain original price?

#### RRB Group-D - 31/10/2018 (Shift-I)

<b>(A)</b> 108%	(B) $\frac{105}{3}$ %
(C) $\frac{50}{7}\%$	(D) $\frac{100}{3}$ %

**40.** First salary of an employee increased by 10% and after that it was reduced by 10%. How much did his salary change?

	RRB Group-D - 15/11/2018 (Shift-II)
<b>(A)</b> 1%	<b>(B)</b> 2.2%
<b>(C)</b> -1%	<b>(D)</b> 2.4%

**41.** If numerator of a fraction y/x increases by 12%, and its denominator decreases by 2%, the value of that fraction becomes 6/7. Find the original fraction.

	RRB Group-D - 01/11/2018 (Shift-II)
<b>(A)</b> 3/4	<b>(B)</b> 4/3
(C) 1/2	<b>(D)</b> 1/5

**42.** By reducing the price of an item by 20%, sales increase by 20%, what is impact on revenue earned?

 RRB Group-D - 23/10/2018 (Shift-I)

 (A) Increases by 4%.
 (B) Increases by 5%.

 (C) 4% is less.
 (D) 5% is less.

**43.** Bought a car for Rs. 16,000. Its value is less than 10% per year. What will be the cost after 2 years?

RRB Gro	up-D - 05/10/2018 (Shift-II)
<b>(A)</b> rs.12,060	<b>(B)</b> rs.12,960
<b>(C)</b> rs.12,000	<b>(D)</b> rs.12,900

**44.** It has been decided to provide electricity connection to all 1200 houses without electricity in the village. If the rate of electrification is 75% per year, then after 2 years, then what will be number of families living without electricity connection?

-	RRB Group-D -15/10/2018 (Shift-I)
<b>(A)</b> 45	<b>(B)</b> 75
( <b>C)</b> 55	<b>(D)</b> 65

**45.** 10% increase in cost of an item in a shopping mall and then it was reduced by 10%. What is the total percentage increase or decrease?

RRB Group-D - 17/11/2022 (Shift-III)		
(A) 1.5% increase	(B) 1% increase	
(C) 1% decrease	(D) 1.5% decrease	

**46.** If the price of tomato increases by 25% and Sudha wants to spend only 15% more on tomatoes. then what percentage will decrease in amount of tomato obtained by Sudha.

RRB - Group - 18/11/2022 (Shift-II)

<b>(A)</b> 10%	<b>(B)</b> 12%
<b>(C)</b> 8%	<b>(D)</b> 12.5%

**47**. If a person's salary increases by 11% in first year and the second year is reduced by 11%, then what will be percentage change in his salary at beginning of third year relative to the starting salary?

RRB Group-D - 05/10/2018 (Shift-I)(A) -1.21(B) -1.23(C) +1.21(D) +1.22

**48**. A food retail chain has 30% of the sales from dairy products and the rest are fresh produce. If the chain has sales of about Rs 50,000 each month then what is the sale amount of dairy products.

RRB Group-D - 28/11/2022 (Shift-III)

<b>(A)</b> rs. 15,000	(B) rs. 25,000
(C) rs. 22,000	(D) rs. 30,000

**49**. An investor invests 1/2 part of his fund at 5%, 1/4 part at 10% and remainder at 8%. After 2 years his income is Rs. 2800, then Find the fund.

RRB NTPC 11/0	8/2022 Shift : 1
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(A) rs.10000	(B) rs.15000
(C) rs.20000	(D) rs.12000

**50**. Sugar production in 2001 was 1584 million kg. which was 20% higher than in 1991. Find the production (in million kg) of sugar in 1991.

<b>RRB NTPC</b>	02/02/2021Shi	ft : 1	
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<b>(A)</b> 1980	<b>(B)</b> 1280
( <b>C)</b> 1900	<b>(D)</b> 1320

**51**. A medicine supervisor dismisses 0.05% of the medicine as defective medicine. How many medicines will be tested for 4 medicine to dismiss?

	RRB NTPC 22.04.2016 Shift : 1
<b>(A)</b> 5000	<b>(B)</b> 8000
( <b>C)</b> 6000	<b>(D)</b> 8500

**52**. Achyutya opens a tea shop with an investment of Rs. 25,000. He spends 30% of this amount on furnishing of shop and 20% in buying other essential materials for shop. How much money does he have left to buy the materials for his shop?

RRB Group-D - '	17/11/2022 (Shift-I)
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(A) rs. 12,500	<b>(B)</b> rs.5,000
(C) rs.20,000	<b>(D)</b> rs.12,000

**53.** Mridula operates a small pet shop. The following is his expenditure distribution. 90% in procurement and 10% in paying rental and electricity bills. If she spends Rs. 15,000 on rental and electricity on a monthly basis, then how much does each month spend in procurement?

RRB Group-D - 20/09/2022		(Shift-II)
(A) 1.35 lakh	<b>(B)</b> 5 lakh	
(C) 4.5 lakh	(D) 2 lakh	

54. A grocery store purchases 600 bottles of packaged juice from two different sellers. 20% is taken from Stock seller -1 and 80% in Stock seller -2. The purchase price of a bottle is Rs. 25. After reviewing material of seller-2, the shopkeeper finds that 25% of the material can only be used for a period of one day. He

decides to return the material. How much money will he get back from seller-2?

#### RRB Group-D - 26/11/2022 (Shift-I)

<b>(A)</b> rs. 4,000	<b>(B)</b> rs.3,750
<b>(C)</b> rs.3,000	<b>(D)</b> rs.3,500

**55**. Last year, Manish Corner invested 1,00,000 on Shop 1 and 1,50,000 on Shop 2 to replace furniture.They expense recovered in over next three quarters: Quarter 1-20%, Quarter 2-55%, What was the amount (in rupees) received in quarter 3?

RRB Grou	up-D - 31/10/2018 (Shift-II)
<b>(A)</b> rs. 60,500	<b>(B)</b> rs. 62,500
( <b>C)</b> rs. 62,600	<b>(D)</b> rs. 70,000

**56.** Last year, Mayank's money investment in a small business venture was Rs. 20,000. To provide services to new customers this year, he plans to increase money funding by 30% from the investment he made last year. How much does he plan to invest this year.

RRB Gro	up-D - 26/11/2022 (Shift-II)
(A) rs.60,000	<b>(B)</b> rs.22,500
(C) rs.26,000	<b>(D)</b> rs.23,000

**57**. A sports showroom has different sporting goods. 50% of sales are from swimming goods in store. 40% of sales are from outdoor game accessories and 10% from indoor game accessories. If, in a particular month, the store sells swimming costume of Rs. 10,000, then what is estimated figure of outdoor game sales?

#### RRB Group-D - 26/11/2022 (Shift-III)

( <b>A)</b> rs.8000	<b>(B)</b> rs. 5000
( <b>C)</b> rs.3000	<b>(D)</b> rs. 4000

**58.** Suresh buys two books for Rs. 1,200, he sells one for 20% profit and sells other at a loss of 16%. If the selling price of both books is same. then find the approximate cost price of book.

RRB Group-D - 22/10/2018 (Shift-II)(A) rs.550 and rs.650(B) rs.600 and rs.600(C) rs.500 and rs.700(D) rs.400 and rs.800

**59**. A resort offers special discounts on weekends. They maintain a log of customers visiting over the weekend. On average this year, they see a 15% increase in their number of customers. Last year he had 1,500 customers. How many customers do they have this year?

RRB Group-D - 03/12/2018 (Shift-III)

<b>(A)</b> 1,825	<b>(B)</b> 1,700
( <b>C)</b> 1,650	<b>(D)</b> 1,725

**60.** A solution contains 320g water and 33 g of normal salt. Find the concentration of the solution in terms of mass by mass percent.

RKB G	sroup-D - 19/11/2022 (Shift-I)
<b>(A)</b> 9.35 g	<b>(B)</b> 9.35%
<b>(C)</b> 9.09%	<b>(D)</b> 13.05%

**61.** A solution contains 320g water and 31 g of normal salt. Find the percentage of concentration of the solution in terms of mass by mass percent.

	RRB	Group-D - 19/11/2022 (Shift-II)
(A) 9.60	%	<b>(B)</b> 9.60 %
<b>(C)</b> 8.83	%	<b>(D)</b> 9.09 %

**62.** A solution contains 320g water and 45 g of normal salt. Calculate the concentration of the solution in terms of mass by mass percent.

RRB G	roup-D - 30/10/2018 (Shift-I)
<b>(A)</b> 12.33 %	<b>(B)</b> 12.36 %
<b>(C)</b> 10.36 %	<b>(D)</b> 12.43 %

**63.** A solution is prepared by mixing 45 grams of salt in 520 grams of water. Calculate the concentration in terms of mass percentage.

RRB	Group-D - 20/09/2022	(Shift-I)
<b>(A)</b> 7.96 %	<b>(B)</b> 8.86 %	
<b>(C)</b> 8.1 %	<b>(D)</b> 6.96 %	

**64.** 8% salt in a solution contains. If volume of the solution is 550 ml, then what is the quantity of salt in it?

RF	RB Group-D - 01/12/2018 (Shift-II)
(A) 42.5 ml	<b>(B)</b> 48 ml
(C) 38.5 ml	<b>(D)</b> 44 ml

**65.** Shyam's marks is 25% more than Divya's marks. How much percentage Divya's marks are less than Shyam?

RRB	Group-D - 03/10/2022 (Shift-I
<b>(A)</b> 20 %	<b>(B)</b> 15 %
<b>(C)</b> 10 %	<b>(D)</b> 40 %

**66.** If the sides of a square are increased by 10%, So the area of square increases \_\_\_\_\_.

RRB	Group-D - 10/10/2022 (Shift-II)
<b>(A)</b> 40 %	<b>(B)</b> 10 %
<b>(C)</b> 20 %	<b>(D)</b> 21 %

67. If one side of square is increased by 30%, Find percentage of increase in its area. RRB Group-D - 30/10/2022 (Shift-II)

<b>(A)</b> 84 %	<b>(B)</b> 112 %
<b>(C)</b> 69 %	<b>(D)</b> 72 %

**68.** If the length of rectangle increases by 15% and breadth decreases by 20%, find percentage change in area of the rectangle.

RRB Group	-D - 01/09/2022 (Shift-I)
(A) 0.8 % decrease	(B) 0.8 % increase
(C) 8 % decrease	(D) 8 % increase

**69.** A candidate received 62% vote in an election and he won election by 35640 votes. What was total number of votes in election, if none of the votes have been invalid?

RRB Gr	oup-D - 05/11/2018 (Shift-III)
<b>(A)</b> 356400	<b>(B)</b> 57484
<b>(C)</b> 93790	<b>(D)</b> 148500

**70.** 5% of population of a town dies in an epidemic, and 8% of the remaining population panicked and left the towns. If total population of town is 88274 right now, then in beginning, find the total population of town.

RRB RPF Con	stable -17/01/2019 (Shift-III)
<b>(A)</b> 1,21,600	<b>(B)</b> 1,01,000
<b>(C)</b> 99,800	<b>(D)</b> 84,500

**71.** If Anju scores 68 out of 80 in Hindi, 46 out of 60 in Mathematics and 74 out of 90 in Science and 35 out of 45 in English. So in which subject did Anju get the maximum percentage marks?

	RRB RPF-SI -05/01/2019 (Shift-II)
(A) Math	(B) Hindi
(C) English	(D) Science

72. In an examination, 40 out of 85 students scored less than 50%. What is the ratio of number of students scoring less than 50% marks to number of students scoring 50% marks or above:

 RRB RPF Constable -18 / 01 / 2019 (Shift-I)

 (A) 8 : 9
 (B) 3 : 4

 (C) 9 : 8
 (D) 5 : 7

**73.** Morris used to spend 25% of his income on food. He got an increment of one thousand rupees, but he did not increase his spending on food items. As a result, his spending on food fell to 20%. What was his initial income?

 RRB RPF SI -16/01/2019 (Shift-I)

 (A) rs. 6500
 (B) rs.6000

 (C) rs.5000
 (D) rs.4000

74. Arun's income is 150% of Bala's income. Chandru's income is 120% of Arun's income.

If total income of Arun, Bala and Chandru is Rs. 86000, find the income of Chandru.

RRB RPF Cons	stable -19/01/2019 (Shift-III)
( <b>A)</b> rs.36000	<b>(B)</b> rs. 32000
(C) rs.30000	(D) rs. 34000

**75.** What is the percentage of 1 hour to 1 minute 12 seconds?

	RRB RPF SI -06/01/2019 (Shift-II)	
<b>A)</b> 2 %	<b>(B)</b> 12 %	
<b>C)</b> 11 %	<b>(D)</b> 1.2 %	

**76.** If 40% of 70 is x% more than 30% of 80, then find the value of 'x'.

RRE	8 RPF SI -13/01/2019 (Shift-III)
<b>(A)</b> 40%	<b>(B)</b> 16.67%
<b>(C)</b> 14.28%	<b>(D)</b> 33.33%

**77.** The price of rice increases from Rs. 25 per kg. to Rs. 30 per kg. By what percentage should consumption be reduced in order to keep expenses the same?

# Constable -22/01/2019 (Shift-II) (A) $16\frac{2}{3}\%$ (B) $8\frac{1}{3}\%$ (C) 10% (D) 16%

**78.** What is the percentage of single discount equivalent to two consecutive discounts 12% and 5% ?

 RRB RPF SI -11/01/2019 (Shift-II)

 (A) 17%
 (B) 8.5%

 (C) 16.4%
 (D) 15.2%

**79.** In new budget, the price of petrol has been increased by 10%. What percentage of a motor vehicle passenger can reduce petrol consumption, then that there is no increase in its total expenditure on petrol?

#### RRB RPF SI -10/01/2019 (Shift-II)

<b>(A)</b> 10%	<b>(B)</b> 9 $\frac{1}{11}$ %
<b>(C)</b> 11 %	( <b>D</b> ) $11\frac{1}{9}\%$

**80.** The salary of a worker has increased by 25%. By what percentage should the new salary be reduced to restore the original salary?

RRB RPF Constable -20/01/2019 (Shift-I)		
<b>(A)</b> 12%	<b>(B)</b> 15%	
<b>(C)</b> 20%	<b>(D)</b> 10%	

**81.** Anita operates a fashion boutique. Following are the title of his expenditure-30% in procurement and 40% in tailor payment and 30% in rent and electricity. If his total expenditure is Rs. 50,000 per month, then how much money has he spent in paying the tailor?

RRB RPF Constable -24/01/2019 (Shift-I)

( <b>A)</b> rs.19,000	<b>(B)</b> rs.18,000
( <b>C)</b> rs.20,000	<b>(D)</b> rs.21,000

**82**. A small scale business has the following expenses, 25% on purchase, 25% on salary of employees and 50% on maintenance. If the business pays a total salary of Rs. 2,00,000, then what is its cost on maintenance?

RRB	RPF SI -12/01/2019 (Shift-III)
(A) rs. 3,00,000	<b>(B)</b> rs. 4,00,000
(C) rs. 2,00,000	<b>(D)</b> rs. 2,50,000

**83.** If 90% of y is x, then what percentage of x will be y?

RRB RPF	Constable -25/01/2019 (Shift-III)
<b>(A)</b> 11.1	<b>(B)</b> 111.1
<b>(C)</b> 101.1	<b>(D)</b> 121.11

**84.** If the length and breadth of a rectangle are increased by 8% and 12% respectively, then what is percentage increase in the area of that rectangle?

**RRB RPF Constable -18/01/2019 (Shift-III)** (A) 20.96 % (B) 22 %

( <b>H</b> ) 20.00 /0	
<b>(C)</b> 20 %	<b>(D)</b> 24 %

**85.** In an election, a candidate won by 75% of valid votes. Out of a total 560000 votes, 15% votes were invalid. What is number of valid votes received by winning candidate?

RR	B RPF SI -12/01/2019 (Shift-III)
<b>(A)</b> 350000	<b>(B)</b> 280000
<b>(C)</b> 275000	<b>(D)</b> 357000

**86.** Charan scored 54 marks in an exam. Which was equal to 72% of total marks. What was exam marks?

	RRB ALP & Tec. (30-08-18 Shift-I)
<b>A)</b> 75	<b>(B)</b> 85
<b>C)</b> 80	<b>(D)</b> 65

**87.** Tanya's salary was increased by 15%. His increased salary is Rs. 14,030. What was his basic salary?

RRB AI	_P & Tec. (21-08-18 Shift-I)
(A) rs.12,400	<b>(B)</b> rs.12,000
(C) rs.12,300	<b>(D)</b> rs.12,200

**88.** Veer spends 15% of his monthly income on rent and the remaining 60% on home work. If he saves Rs. 2210, then what will be his monthly income?

RRB ALP & Tec. (10-08-18 Shift-I)

<b>(A)</b> rs.6500	(B) rs.7500
(C) rs.8000	(D) rs.7000

89. 72% of a number is 90. What is the number? RRB ALP & Tec. (30-08-18 Shift-I)

	(A) 120 (C) 130	( <b>B</b> ) 125 ( <b>D)</b> 124
90.	What is 58% of 3 ( <b>A)</b> 217 ( <b>C)</b> 210	50? (B) 203 (D) 196
91.	84% of a number RRB A (A) 120 (C) 125	r is 105. What is the number? <b>LP &amp; Tec. (21-08-18 Shift-II)</b> <b>(B)</b> 112 <b>(D)</b> 115

**92**. Including VAT (Value-added tax), the price of a television is Rs. 14000. If the rate of VAT is 12%, then what is the original price of television?

RRB	ALP & Tec. (29-08-18 Shift-I)
(A) rs.12,000	<b>(B)</b> rs.13,000
(C) rs.12,500	<b>(D)</b> rs.13,500

**93**. The price of sugar increases by 30%. By what percentage should Sita reduce sugar consumption so that there is no increase in her expenditure?

RRB ALP & Tec. (29-08-18 Shift-I)

<b>(A)</b> 23 <sup>1</sup> / <sub>13</sub> %	<b>(B)</b> $22\frac{1}{13}\%$
( <b>C</b> ) 23%	<b>(D)</b> 22%

**94**. An alloy contains 15% silver. If there is 51 grams of silver in a alloy,then what is the quantity of other metal?

RRB AL	_P & Tec. (17-08-18 Shift-II)
(A) 204 gram	<b>(B)</b> 340 gram
( <b>C)</b> 300 gram	<b>(D)</b> 289 gram

**95.** What will be the amount of glucose required to prepare a solution of 250 grams containing 5% glucose?

RRB AL	P & Tec. (29-08-18 Shift-I)
(A) 125 gram	<b>(B)</b> 12.5 gram
<b>(C)</b> 50 gram	<b>(D)</b> 25 gram

**96.** 111 out of 200 persons in a village are literate. What is percentage of uneducated people in village?

	RRB NTPC 02/02/2021Shift : 3
(1) 150/	(P) 11 50/

<b>(A)</b> 45%	( <b>B</b> ) 44.5%
<b>(C)</b> 55.5%	<b>(D)</b> 54%

**97.** In a classroom test, a student got 22 out of 25 marks. What is the percentage of student's marks.

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 88	<b>(B)</b> 80	
<b>(C)</b> 90	<b>(D)</b> 75	

**98.** If a student's mark is increased by 25%, then his marks becomes 75. What is his actual marks?

	RRB NTPC 23/07/2022 Shift-2
<b>(A)</b> 60	<b>(B)</b> 50
<b>(C)</b> 15	<b>(D)</b> 25

60% students in a class of 60 students are boys. If 25 % girls go to school by bicycle then what is the number of girls who do not come to school by bicycle?
 RRB NTPC 02/02/2021Shift : 2

	RRB NTPC 02/02/2021Shift :
<b>(A)</b> 24	<b>(B)</b> 27
<b>(C)</b> 18	<b>(D)</b> 36

**100.** A student got 9 out of 25 marks in an examination conducted in a class. Express the marks obtained by student in percentage.

		311
<b>(A)</b> 30	<b>(B)</b> 36	

<b>(C)</b> 35	<b>(D)</b> 25

**101.** A student got 470 marks in 6 subjects. If each subject marks is 100, find the percentage of his marks.

	RRB NTPC 10/08/2022Shift : 3
<b>(A)</b> 67.33%	<b>(B)</b> 69.45%
<b>(C)</b> 78.33%	<b>(D)</b> 78.67%

**102.** A person pays Rs. 8960 per month for repayment of loan which is 28% of his monthly salary. Calculate his monthly salary. **RRB NTPC 02/02/2021 Shift : 1** 

(A) rs.32,000	<b>(B)</b> rs.34,000
(C) rs.28,000	<b>(D)</b> rs.30,000

**103.** An employee's salary was increased by 30% Due to which his salary increased to Rs. 910. What was his salary before increase?

	RRB NTPC 19.01.2017 Shift : 2
(A) rs.1300	<b>(B)</b> rs.880
<b>(C)</b> rs.700	<b>(D)</b> rs.810

- 104.
   What is 15% of 34?

   RRB NTPC 23/07/2022 Shift-1

   (A) 5.1
   (B) 5
  - (C) 5.2 (D) 4.9

- 105.
   What is 40% of 3/5th of 24?

   RRB NTPC 23/07/2022 Shift-2

   (A) 14.4
   (B) 5.76

   (C) 7.2
   (D) 9.6
- 106.
   Express 95 in 200 as a percentage.

   RRB NTPC 02/02/2021Shift : 2

   (A) 42.5%
   (B) 47.5%

   (C) 45%
   (D) 95%
- 107. Find the value of symbol '?'-'?' % of 40=1.20 RRB NTPC 02/02/2021Shift : 2 (A) 3 (B) 9 (C) 4 (D) 5
- A team wins 45 games, which was 60% of the games played. How many games did the team play?
   RRB NTPC 09/05/2022 Shift : 3

KKB I	NTPC 09/05/2022 Shi
(A) 50 games	<b>(B)</b> 75 games
(C) 60 games	<b>(D)</b> 65 games

- 109. 32% of what number is 25.6? RRB NTPC 12/08/2022Shift : 1 (A) 8.19 (B) 32 (C) 80 (D) 10.24
- **110**. What is a single discount equivalent to 25%, 20% and 10% successive discounts?

#### RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> 40 %	<b>(B)</b> 46 %
(C) 50 %	<b>(D)</b> 54 %

**111**. Mukesh gets 30%, 25%, 15% sequential discounts on his shirt. Find single equivalent discount.

#### RRB NTPC 11/08/2022 Shift : 2

- (A) 52.34%
  (B) 38.35%
  (C) 55.38%
  (D) 57.38%
- **112**. Sumit's salary reduced by 40% and after that it was increased by 40%. Find the final loss percentage in his salary.

### RRB NTPC 11/08/2022 Shift : 3

<b>(A)</b> 16%	<b>(B)</b> 45%
<b>(C)</b> 44%	<b>(D)</b> 66%

**113**. In new government policy, the price of onion is increased by 35%. What percentage (%) should a person reduce onion consumption so that there is no increase in his expenditure?

#### RRB NTPC 09/05/2022 Shift : 3

<b>(A)</b> 25%	<b>(B)</b> 29%
<b>(C)</b> 26%	<b>(D)</b> 33%

**114**. The price of a residential flat increases by 15% each year. If present cost is Rs 60,00,000, then how much will it cost after 2 years?

RRB NTPC 23/07/2022 Shift : 3

(A) rs. 78,00,000	<b>(B)</b> rs.83,45,000
( <b>C)</b> rs.85,39,500	<b>(D)</b> rs.79,35,000

**115**. Bank agrees to lend Rs. 2,38,75,697 to Arvind, 17% less than the amount required to start his business. What amount does he need?

RRB NTPC 10/08/2022 Shift : 2

(A) rs. 28765900	(B) rs. 4375303
(C) rs. 5700108	(D) rs. 5125533

**116**. A company's profits extended 10% from April to May, It then decrease 20% from May to June then increased by 50% from June to July. What is percentage increase in profits from April to July?

#### RRB NTPC 02/02/2021Shift : 3

<b>(A)</b> 15%	<b>(B)</b> 45%
(C) 32%	<b>(D)</b> 13%

**117.** The length and breadth of a rectangle should be changed by + 15% and -10% respectively. then what percentage will change in area of the rectangle?

#### RRB NTPC 05/04/2021Shift : 3

<b>(A)</b> 2.5 %	<b>(B)</b> 3.0 %
<b>(C)</b> 3.5 %	<b>(D)</b> 4.5 %

**118.** Ram got 40% marks in an exam and he failed by 20 marks. Aditya got 45% marks and his marks was 30 more than the required marks to pass. How many % marks are required to pass?

 RRB Paramedical - 20/07/2018 (Shift-III)

 (A) 38%
 (B) 42%

 (C) 43%
 (D) 33%

**119**. The average salary of male employees in a firm is Rs 5,200 and the average salary for women is Rs. 4,200. The average salary of all employees is Rs 5,000. What is the percentage of male employees in that firm?

RRB Paramedical - 21/07/2018 (Shift-III)

<b>(A)</b> 40%	( <b>B</b> ) 80%
<b>(C)</b> 20%	<b>(D)</b> 60%

**120.** The population of a village increased from 18000 to 22500. Find the percentage of increase.

	RRB JE - 29/05/2019 (Shift-III)
<b>(A)</b> 25%	<b>(B)</b> 15%
(C) 30%	<b>(D)</b> 20%

121. The population of a city increased by 10% and 20% in two consecutive years but there was a decrease of 25% in the second year. Find the ratio between population in third year and population before 3 years.

	RRB JE - 01/06/2019 (Shift-I)
<b>(A)</b> 100 : 99	<b>(B)</b> 99 : 100
(C) 2 : 1	<b>(D)</b> 1 : 1

**122.** The ratio of number of boys and girls in a school is 3 : 2. If 20% boys and 25% girls receive scholarship, then what percentage of students do not get scholarship?

RRB 、	JE - 0	2/06/201	9 (Shi	ft-III)
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<b>(A)</b> 80%	<b>(B)</b> 70%
<b>(C)</b> 56%	<b>(D)</b> 78%

**123.** If 20% of a = b, then which of these is equal? b% of 20 ?

	RRB JE - 24/05/2019 (Shift-I)
<b>(A)</b> a 20%	<b>(B)</b> a 4%
<b>(C)</b> a 5%	<b>(D)</b> a 30%

**124.** Eighth part of a number is equal to what percent?

	RRB JE - 26/05/2019 (Shift-II)
<b>(A)</b> 12.5%	<b>(B)</b> 25%
<b>(C)</b> 2.5%	<b>(D)</b> 1.25%

**125.** If 75% of 480 + x % of 540 = 603, then find the value of 'x'.

	RRB JE - 27/05/2019 (Shift-III)
<b>(A)</b> 55	<b>(B)</b> 65
(C) 35	<b>(D)</b> 45

**126.** When 35 is subtracted from a number then it decreases to 80 percent of itself. What will be 4/5 part of number?

	RRB JE - 30/05/2019 (Shift-II)
<b>(A)</b> 90	<b>(B)</b> 120
<b>(C)</b> 140	<b>(D)</b> 70

**127.** If 5% of A + 4% of B = 2 / 3(6 % of A + 8% of B), then A : B = ?

	RRB JE - 30/05/2019 (Shift-III)
(A) 1 : 1	<b>(B)</b> 4 : 3

(C) 1:2 (D) 5:4

- 128. What is percentage form of ratio 1:8? RRB JE - 28/05/2019 (Shift-II) (A) 6.25% **(B)** 12.5% (C) 8% (D) 80%
- 129. The price of a book was first increased by 25% and then it was reduced by 20%. What is the change in its actual value?

RRB JE - 25/05/2019 (Shift-III)

- (C) 10% increase
- 130. If the consumption of sugar increases from 12 kg. to 15 kg. Then find the percentage increase.

# Solution

# (D) 10% decrease

1. Ans.(D) Educated population of the city = 62%Uneducated population = (100 - 62) = 38%If the total population of the city is x So number of Uneducated people =  $24567 = \frac{x \times 38}{100}$  $x = \frac{24567 \times 100}{38} = 64650$ Total educated population of the city  $= \frac{64650 \times 62}{100} = 40083$ 2. Ans.(A) Present the population of the city = 1,20,0000 Percent growth rate = 4% Population after year =  $1200000 \left(1 + \frac{4}{100}\right)$  $= 1200000 \times \frac{26}{25} \times \frac{26}{25}$  $1200000 \times 676$ = -625 = 12979203. Ans.(C)

Let, A year ago the population of the city is 100 x. Increasing by 5% per annum -Present population = 105 x According to Question 105 x = 185220 x = 1764One year ago population = 100 x $= 100 \times 1764 = 176400$ 

#### 4. Ans.(D)

Let the number of men in the city = xNumber of women in the city = 8000 - xAccording to Question,

#### RRB JE - 01/06/2019 (Shift-III)

<b>A)</b> 39.2%	<b>(B)</b> 20%
<b>C)</b> 25%	<b>(D)</b> 33.3%

131. When the price of a bicycle was reduced by 20%, then number of bicycles sold increased by 20%. What effect did the store have on sales?

### RRB JE - 27/06/2019 (Shift-III)

(A) 4% decrease (B) 4% increase (C) 10% increase (D) 10% decrease

## $= x \times \frac{108}{100} + (8000 - x) \times \frac{112}{100} = 8680$ $=\frac{108x + 8000 \times 112 - 112x}{100} = 8680$ 100 = 896000 - 4x = 8680004x = 896000 - 8680004x = 28000x = 7000Hence number of women = 8000 - 7000 = 1000

5.

6.

7.

Ans.(B)

Let the population of the colony be 2 years ago.

: 2 Year before population  $54000 = P\left(1 + \frac{5}{100}\right)^2$  $54000 = P \times \frac{21}{20} \times \frac{21}{20}$  $\Rightarrow P = \frac{20}{54000 \times 20 \times 20}$  $\Rightarrow P = \frac{210000}{21 \times 21}$ 441 P = 48980 (approximately) Ans.(C) Population of the city after n years, = Present Population  $\left(1 + \frac{r}{100}\right)^n$ Where, n = 3 years, and r = 3%Hence population after 3 years  $= 30,00,000 \left(1 + \frac{3}{100}\right)^{3}$ = 30,00,000 ×  $\frac{103 \times 103 \times 103}{100 \times 100 \times 100}$  $= 3 \times 103 \times 103 \times 103 = 3278181$ Ans.(A) 64% = 272 $1\% = \frac{272}{64}$ 

 $100\% = \frac{272}{64} \times 100 = 425$  numbers Hence, the examination was of 425 marks. 8. Ans.(D) Number of students = 100% Passed student = 96% Failed student = 4% :: 4% = 501% = 50/4 $\therefore$  Total number of students present = 100%  $=\frac{50\times100}{100}$ = 1250 9. Ans.(B) Marks obtained by Diksha = 58% Maximum marks = 450 Marks obtained by Diksha =  $\frac{58}{100} \times 450$  $=\frac{58\times9}{2}=261$ 10. Ans.(D) Maximum marks = 450 Percent required to pass the exam = 42%Marks required for passing =  $450 \times \frac{42}{100} = 189$ 11. Ans.(C) If the exam was for N marks then - $58.5 = \frac{N \times 78}{100}$  $N = \frac{5850}{78} = 75$ Hence, the examination was of 75 marks. 12. Ans.(A) Let the total students in the class = 100%Percentage of students present in class = 100 -5 = 95%Student present in class = 38 Total number of students =  $38 \times \frac{100}{95} = 40$ 13. Ans.(D) Let the total maximum number be x. According to Question,  $x \times \frac{40}{100} = 40 + 40$  $\frac{40x}{100} = 80$ x = 200Ans.(B) 14. % of passed students =  $\frac{\text{Passed Students}}{\text{Total students}} \times 100$  $=\frac{150}{250}\times 100$ = 60%15. Ans.(B) Let total marks of exam be x. 20% of x + 35 = 50% of x - 3235 + 32 = 50% of x - 20% of x 67 = 30% of x

 $\frac{30}{100}x = 67$  $x = \frac{670}{3}$ 16. Ans.(B) Let maximum marks of first exam = x And score = v As first condition - $\frac{y}{x} = \frac{70}{100}, y = \frac{7x}{10}$ Second condition: y + 2078  $\frac{\frac{y}{x} + 25}{\frac{x}{x} + 25} = \frac{78}{100}$  $\frac{7x + 200}{x + 25} = \frac{78}{10}$ 70x + 2000 = 78x + 19508x = 50x = 6.25Hence, maximum marks = 6.2517. Ans.(A) Let Maximum Marks = x Marks = yAccording to first condition - $\frac{y}{x} = \frac{75}{100}$  $y = \frac{3x}{4} - - - - - (1)$ According to second condition:  $\frac{y+1}{x+1} = \frac{76}{100}$  $\frac{3x}{4} + \frac{1}{x} = \frac{76}{100}$  {From equation (I)} 3x + 476  $\frac{1}{x+1} = \frac{70}{25}$ 75x + 100 = 76x + 76x = 24Thus, Maximum Marks = 24 18. Ans.(A) Marks required to pass the exam  $= 750 \times \frac{38}{100} = 285$ 19. Ans.(B) Let monthly salary = Rs. X total expense = 50% + 20% = 70% And savings = 30% Savings = Rs. 1500  $\therefore x \times \frac{30}{100} = 1500$  $\frac{x \times 3}{10} = 1500$ x = 5000Total monthly salary = Rs.5000 20. Ans.(B) Nathan's annual income = Rs. 15,00,00

30% of x = 67

Nathan's Monthly Income  $=\frac{1500000}{12}=125000$ Hence the percentage of his monthly salary that goes into the EMI of the vehicle =  $\frac{40000 \times 100}{125000} = \frac{4000}{125} = 32\%$ Ans.(A) 21. Suppose monthly salary of Alok is Rs. x. According to Question - $1200 = x \times \frac{15}{100}$ x = Rs.800022. Ans.(A) Annual income of somnath = 2400000 Monthly income =  $\frac{1}{12} \times 2400000 = 200000$ EMI Monthly Payment = 40000 Spending percentage of EMI  $= \frac{40000}{200000} \times 100 = 20\%$ 23. Ans.(C) 40% = Rs.40000 $100\% = \frac{40000}{40} \times 100 = 100000$ annual salary = 12 × 100000 = Rs. 120000024. Ans.(A) Annual income = Rs. 15,00,000 monthly income =  $\frac{15,00,000}{12}$ = Rs. 1,25,000 EMI deposit every month = Rs. 30,000 Monthly EMI Installment Percentage. 30,000  $\frac{125,000}{125,000} \times 100$ = 3000 = 125 = 24%25. Ans.(B) Sunaina's annual income = Rs.3,00,000 Expenditure on new car = 5% of income 5  $= 300000 \times \frac{3}{100}$ = Rs.15000Expenditure on old car 5 + 2 = 7% $= 300000 \times \frac{1}{100}$ = Rs.21000Total annual expenditure on both cars = 15000 + 21000= Rs. 36000 26. Ans.(C) Suppose his monthly income = Rs.100x ∴ Rent expense = Rs. 30 x ∴ Household expenditure =  $\frac{70 \times 60}{100}$  = Rs. 42x  $\therefore$  Total expense = 30 x + 42 x = 72x : Savings = 100 x - 72 x = 28 x

: Kritika's total monthly income  $=\frac{6300}{28}\times 100$ = Rs. 22500 27. Ans.(A) Let the monthly income = 100% Expenditure on household expenses = 80% Monthly Household Expenditure = Rs. 48,000  $\therefore 80\% = 48000$  $100\% = \frac{48000}{80} \times 100$  $= 600 \times 100$ monthly income = Rs. 60000 28. Ans.(A) Let monthly income = Rs xMonthly expenses for household work 80% = Rs. 24000  $x \times \frac{80}{100} = 24000$ x = 30000Annual Income =  $30000 \times 12 = 360000$ 29. Ans.(A) Let the income of Manoj = Rs.x Food expenses =  $x \times \frac{33}{100} = \frac{33x}{100}$ Manoj's new income = x + 1000Reduction in expenditure =  $(x + 1000) \times \frac{27}{100}$ Previous Expense = New Expense  $\frac{33x}{100} = \frac{27x + 27000}{100}$ 33x = 27x + 270006x = 27000x = 450030. Ans.(B) Suman's salary per year = Rs.6,00,000 Income from agriculture in 5 year = Salary of one year  $\times \frac{50}{100}$ Income from agriculture in 5 year = Rs.30,0000Income from agriculture in 1 year  $=\frac{30,0000}{5}=60000$ Total annual earning = 600,000 + 60000= Rs.660000 31. Ans.(B) Let the number be x According to Question  $x \times \frac{76}{100} = 95$  $x = \frac{95 \times 100}{76}$  $x = \frac{5 \times 100}{4}$ x = 12532. Ans.(A)  $240 \times 130$ - = 312100

33. Ans.(B)  
Let the number be x  

$$x \times \frac{108}{100} = 189$$
  
 $x = \frac{189 \times 100}{108}$   
 $x = 175$   
34. Ans.(C)  
One day = 24 hours  
 $\therefore \frac{6}{24} \times 100 = 25\%$   
35. Ans.(C)  
Number of minutes in  $1\frac{1}{2}$  days  $= \frac{3}{2} \times 24 \times 60$   
 $= 36 \times 60$  minutes  
 $\therefore$  Percentage  $= \frac{15}{36 \times 60} \times 100$   
 $= \frac{25}{36}\%$   
36. Ans.(D)  
 $\frac{48 \times 100}{60} = 80\%$   
37. Ans.(B)  
 $\frac{250 \times 46}{100} = \frac{25 \times 46}{10}$   
 $= \frac{1150}{10} = 115$   
38. Ans.(A)  
Let the number be x.  
According to Question,  
 $x + \frac{45}{100}x = 725$   
 $\frac{100x + 45x}{100} = 725$   
 $145x = 725 \times 100$   
 $x = 500$   
39. Ans.(D)  
Decrease / increase%  
 $= \frac{100x}{(100 \pm x)}$   
*increase*%  $= \frac{100 \times 25}{75} = \frac{100 \times 25}{75}$   
 $\frac{100 \times 25}{75} = \frac{100}{3}\%$   
40. Ans.(C)  
formula  
Increase/Decrease %  
 $= x + y + \frac{x \times y}{100}$   
 $= 10 + (-10) + \frac{10 \times (-10)}{100}$   
 $= 10 - 10 - \frac{100}{100} = -1\%$   
41. Ans.(A)  
Let fraction be y / x  
According to Question,

 $\Rightarrow \frac{y \times 112}{x \times 98} = \frac{6}{7}$  $\Rightarrow \frac{y}{x} = \frac{6 \times 98}{7 \times 112} = \frac{6 \times 14}{112}$  $\Rightarrow \frac{y}{x} = \frac{3}{4}$ Hence the fraction will be 3/4. 42. Ans.(C) Formula, Change in percentage =  $\pm x \pm y \pm \frac{xy}{100}$  $= -20 + 20 - \frac{20 \times 20}{100}$ = -4% or 4% Decrease 43. Ans.(B) Price after 2 years  $= 16000 \left(1 - \frac{10}{100}\right)^2$  $= 16000 \times \frac{81}{100} = Rs. 12960$ 44. Ans.(B) Number of households getting electricity connection in the first year  $= 1200 \times \frac{75}{100} = 900$ Number of remaining houses not getting electricity connection = 1200 - 900 = 300Number of households getting electricity connection in the second year  $= 300 \times \frac{75}{100} = 225$ Number of remaining houses = 300 - 225 = 75Hence, after 2 years, the number of families living without electricity connection is 75. 45. Ans.(C) There is always a loss when the cost of an item is increased once by x percent and then decrease by x percent. Loss percentage =  $\frac{x^2}{100}$ %  $=\frac{10^2}{100}$  $=\frac{100}{100}\%$ = 1% There will be decrease / loss. **46**. Ans.(C) Let initial price of tomato = Rs.x/ kg

Price after 25% increase  $=x \times \frac{125}{100} = Rs.\frac{5x}{4}/kg$ Sudha spent on tomatoes  $=x \times \frac{115}{100} = \frac{23x}{20}$  $\therefore$  Tomato's quantity  $=\frac{\frac{23x}{20}}{\frac{5x}{4}} = \frac{23x \times 4}{20 \times 5x} = \frac{23}{25}kg$ Decrease in tomato's quantity  $1 - \frac{23}{25} = \frac{2}{25}kg$ 

: Decrease% =  $\frac{\frac{2}{25}}{1} \times 100 = 8\%$ 47. Ans.(A) Percentage change in salary  $= \left(\frac{100 + 11}{100} \times \frac{100 - 11}{100} - 1\right) \times 100$  $=\left(\frac{89}{100}\times\frac{111}{100}-1\right)\times100$  $=\frac{-121}{10000}\times 100$ = -1.21% 48. Ans.(A) Sale of dairy products = 30% Sale of fresh product = 70% Sales amount each month = Rs. 50,000 Sale of dairy products =  $50,000 \times \frac{30}{100}$ = Rs.15.000 49. Ans.(C) Assuming investment capital is Rs.x. Remaining part =  $x - \left(\frac{x}{2} + \frac{x}{4}\right) = \frac{x}{4}$  $\therefore \frac{\frac{x}{2} \times 5 \times 2}{100} + \frac{\frac{x}{4} \times 10 \times 2}{100} + \frac{\frac{x}{4} \times 8 \times 2}{100} = 2800$  $\frac{x}{20} + \frac{x}{20} + \frac{x}{25} = 2800$  $\frac{5x + 5x + 4x}{100} = 2800$ 14x = 280000 $\Rightarrow x = Rs.20000$ 50. Ans.(D) Sugar production in 1991  $= \frac{1584}{100 + 20} \times 100$  $=\frac{1584}{120} \times 100 = 1320$  Million kg. 51. Ans.(B) : To reject 0.05 drugs, 100 drugs to be checked.  $\therefore \text{ To reject 1 drugs} = \frac{100}{0.05} \text{ drug to be checked}$  $\therefore \text{ To reject 4 drugs} = \frac{100}{0.05} \times 4$  $=\frac{100\times400}{5}$  = 20 × 400 = 8000 drug to be checked 52. Ans.(A) Achyutya have Amount = 25, 000 Amount spent in shop furnishing and other materials = 30% + 20% = 50% Hence, remaining money = 50% of 25000= Rs. 12500 53. Ans.(A) 10% paid by Mridula on rent and electricity bill = 15000So 90% (Procurement cost) = 135000 = Rs.1.35 Lakh 54. Ans.(C)

Total number of bottles = 600 Seller II Seller I  $600 \times \frac{20}{100} - 120 \quad 600 \times \frac{80}{100} 480$ 25% Spoiled 75% Full price (120 Bottel (360 Bottle) Hence the total money received for returning the spoiled bottles = 120 × 25 = Rs. 3000 Ans.(B) Total investment amount = 100000 + 150000= Rs. 250000 Quarter 1 – – – – – – 20% Quarter 2 - - - - - - - 55% Remaining in guarter  $3 = \{100 - (20 + 55)\} =$ 25% Hence 25% will be recieved in guarter 3.  $= 250000 \times \frac{25}{100} = Rs.62500$ Ans.(C) Investment by Mayank last year = Rs. 20000 Plan to increase capital = 30% Capital Increased =  $20000 \times \frac{30}{100} = Rs.6000$ Hence the amount of capital planned to invest this year = 20000 + 6000 = Rs. 26000 Ans.(A) Sale of swimming cast in a particular month = Rs.10000 :: 50% of the sales in the store are swimming aoods. According to Question -50% = 10000 Total Sale Price of Sports Goods
 = Rs.20000 : Sale Price of Outdoor Game Accessories  $= 20000 \times \frac{40}{100} = Rs.8000$ Ans.(C) Let the cost price of an item be Rs. is x. Cost price of second item = Rs. (1200 - x)According to Question,  $\frac{x \times 120}{100} = (1200 - x) \times \frac{84}{100}$  $\Rightarrow 120x + 84x = 1200 \times 8$  $\Rightarrow 204x = 1200 \times 84$  $\Rightarrow x = \frac{1200 \times 84}{204}$  $\Rightarrow x = Rs.494.11 \approx Rs.500$ 

55.

56.

57.

58.

Hence the cost price of the second item = 1200 - 500 = Rs. 700 59. Ans.(D) Increase = 15% Number of subscribers last year = 1500 Number of subscribers presently  $= 1500 \times \frac{115}{100} = 15 \times 115$ = 1725 Ans.(B) 60. Concentration% of the solution  $=\frac{33}{\frac{320}{3300}+33}\times100$ = 353  $= 9.348 \approx 9.35\%$ 61. Ans.(C) Concentration% of the solution  $=\frac{31}{320+31}\times 100$  $= \frac{31}{351} \times 100 = 8.83\%$ 62. Ans.(A) Concentration of the solution  $=\frac{45}{320+45}\times 100$ 4500 = 365 = 12.33%63. Ans.(A) Required concentration% =  $\frac{45}{565} \times 100$  $=\frac{4500}{565}=7.96\%$ 64. Ans.(D) Volume of mixture = 550 ml Salt = 8 % So the quantity of salt =  $550 \times \frac{8}{100} = 44 \, ml$ 65. Ans.(A) Let marks of Divya = 100 So Shyam's mark =  $100 \times \frac{125}{100} = 125$ Shyam's marks – Divya's marks = 125 - 100 = 25 percentage difference =  $\frac{25}{125} \times 100$  $=\frac{100}{5}$ = 20%Hence, Divya's marks are 20% less than Shvam. 66. Ans.(D) Percentage change =  $x + y + \frac{xy}{100}$ Changing the area of the square by increasing the side of the square by 10% =  $10 + 10 + \frac{10 \times 10}{100} = 21\%$ 

67. Ans.(C) Area of the square =  $side^2$ Formula -Increase % =  $x + y + \left(\frac{xy}{100}\right)$ Increase % =  $30 + 30 + \left(\frac{30 \times 30}{100}\right)$ Increase % = 69%68. Ans.(C) Increase in length = 15% = xIncrease in Width = 20% = yArea effects =  $x - y - \frac{x \times y}{100}$ =  $15 - 20 - \frac{15 \times 20}{100} = -5 - \frac{300}{100}$ = -5 - 3= -8%That is, there will be a decrease of 8%. 69. Ans.(D) Total votes = 100 % 100 62%Difference 24% 24% = 35640 $100\% = \frac{35640 \times 100}{24}$ 24  $= 5940 \times 25$ = 14850070. Ans.(B) Considered town population = 100% Remaining population after epidemic = 95% Number of nervous people = 8% Remaining people =  $\frac{95 \times 92}{100}$  = 87.40% Given that -87.40% = 88274 $100\% = \frac{88274 \times 100}{87.40} = 1,01,000$ 71. Ans.(B) Hindi % =  $\frac{68}{80} \times 100 = \frac{68}{4} \times 5 = 85\%$ Maths % =  $\frac{46}{60} \times 100 = \frac{230}{3} = 76.67\%$ Science % =  $\frac{74}{90} \times 100 = \frac{740}{9} = 82.22\%$ English % =  $\frac{35}{45} \times 100 = \frac{35}{9} \times 20 = \frac{700}{9}$ = 77.78%Hence Anju got maximum percentage marks in Hindi. 72. Ans.(C)

Students scoring 50% or more than 50% marks: Students scoring less than 50%

= (85 - 40) : 40= 45 : 40 = 9:8 73. Ans.(D) Assumed initial income = Rs. y According to Question  $y \times \frac{25}{100} = (y + 1000)\frac{20}{100}$ 25y - 20y = 200005y = 20000y = Rs.4000Hence the initial income was Rs.4000. 74. Ans.(A) Let, Bala's income = xArun's income =  $x \times \frac{150}{100} = \frac{3x}{2}$ Chandu's income =  $\frac{3x}{2} \times \frac{120}{100} = \frac{9x}{5}$ According to Question  $x + \frac{3x}{2} + \frac{9x}{5} = 86000$  $\frac{10x + 15x + 18x}{10} = 86000$  $43x = 10 \times 86000$ x = 20000Hence Chandu's income  $=\frac{9\times 20000}{5}$  = Rs.36000 75. Ans.(A) Required % =  $\frac{(60 \text{ sec} + 12 \text{ sec})}{60 \times 60} \times 100$ =  $\frac{72}{60 \times 60} \times 100 = 2\%$ 76. Ans.(B) 40% of 70 = 70 ×  $\frac{40}{100}$  = 28 30% of 80 = 80 ×  $\frac{30}{100}$  = 24 difference = 28 - 24 = 4According to Question 28 is x% more than 24  $\therefore x = \frac{4}{24} \times 100$  $x = 16.66 \approx 16.67\%$ 77. Ans.(A) Initial price of rice = Rs. 25 per kg, Now the price of rice = Rs. 30 per kg. Increase in price = 30 - 25 = Rs.5 per kg % decrease of rice  $=\frac{5}{30} \times 100$  $=\frac{50}{3}=16\frac{2}{3}\%$ 78. Ans.(C) If two consecutive discounts are a% and b%, then equivalent discount = a + b - ab / 100 $\therefore$  12% and 5% equivalent discount  $= 12 + 5 - \frac{12 \times 5}{100}$ = 17 - 0.6 = 16.4%

#### 79. Ans.(B)

80.

81.

Formula – When the price has been increased by x% and consumption has been reduced so that expenditure remain same, Then –

Decrease % =  $\left(\frac{x}{100 + x}\right) \times 100$ Given - Increase = 109 Consumption Reduction=  $\left(\frac{10}{100+10}\right) \times 100$  $=\frac{1}{11} \times 100 = 9\frac{1}{11}\%$ Ans.(C) From the formula -Percentage decrease =  $\frac{x}{100 + x} \times 100$  $\therefore \text{ Percentage decrease in salary} = \frac{25}{100 + 25} \times 100$  $= \frac{25}{125} \times 100$  $=\frac{100}{5}=20\%$ Ans.(C) Purchase + Tailor + Rent & Electricity = Total expenditure (in%) 30 % + 40 % + 30 % = 100 % But. 100% = 500001% = 500

Percentage spent on tailor = 
$$40\%$$
  
=  $40 \times 500$  = Rs. 20000

## 82. Ans.(B)

Amount spent on salary = 25%= Rs.2,00,000 Hence the amount spent on maintenance = 50% $2.00,000 \times 50$ 

$$\Rightarrow 50\% = \frac{2,00,000 \times 50}{25} = Rs.400000$$

#### 83. Ans.(B)

According to Question,  $y \times 90\% = x$   $\frac{x}{y} = \frac{90}{100}$  x: y = 9:10What percentage of x is y Let k% of x be y.  $x \times \frac{k}{100} = y$ ,  $9 \times \frac{k}{100} = 10$   $\therefore k = \frac{10}{9} \times 100 = 111.1$ Ans.(A) Percentage increase

Percentage incre  
= 
$$x + y + \frac{xy}{100}$$

84.

Percent increase in area of rectangle  $= 8 + 12 + \frac{8 \times 12}{100}$  $= 20 + \frac{24}{25}$ = 20 + 0.96= 20.96%85. Ans.(D) Let the winning candidate get the total number of valid votes = xTotal votes = 560000 According to Question,  $x = 560000 \times \frac{75}{100} \times \frac{85}{100}$  $x = 560000 \times \frac{3}{4} \times \frac{17}{20}$  $x = 7000 \times 51$ x = 35700086. Ans.(A) The marks obtained in the exam by Charan = 54, which is 72% of the total marks. If the total marks in the exam is x, then  $54 = \frac{x \times 72}{100}$  $x = \frac{100 \times 54}{72}$ x = 75 marks Ans.(D) 87. Let basic salary = Rs. x According to Question  $x \times \frac{115}{100} = 14030,$ x = Rs. 12,20088. Ans.(A) Let the monthly income of Veer = Rs. x According to Question,  $\frac{(100-15)}{100} of x \times \frac{(100-60)}{100} of x = 2210$  $x \times \frac{85}{100} \times \frac{40}{100} = 2210$  $x = \frac{2210 \times 100 \times 100}{85 \times 40}$ = Rs.650089. Ans.(B) If the value of the number is x then -90 =  $\frac{x \times 72}{100}$ or, 10 =  $\frac{x \times 8}{100}$ or,  $x = \frac{1000}{8}$ x = 125Ans.(B) 90. 58% of 350  $= 350 \times \frac{58}{100} = 7 \times \frac{58}{2} = 7 \times 29 = 203$ 

91. Ans.(C)

Let the number be x According to Question  $x \times \frac{84}{100} = 105$ ,

$$x = \frac{100}{105 \times 100}$$

x = 12592. Ans.(C)

> Let, original price of the television be Rs. x. According to Question,

$$x \times \frac{112}{100} = 14000$$

x = Rs. 12,500

Consumption reduction% = 
$$\frac{x}{100+x} \times 100$$
  
=  $\frac{30 \times 100}{100+x} = \frac{3000}{100+x} = 23\frac{1}{100+x}$ %

$$= \frac{100 + 30}{100 + 30} = \frac{130}{130} = \frac{23}{13}\%$$

94. Ans.(D)

93.

 $\therefore \text{ Quantity of second alloys} = \frac{51 \times 85}{15}$  $= \frac{17 \times 85}{5}$  $= 17 \times 17$ = 289 gram

### 95. Ans.(B)

Mass of solution = 250 g Total amount of glucose in the solution = 5% Therefore, the amount of glucose in the solution in grams  $\frac{5}{5}$ 

$$= 250 \times \frac{5}{100} = 12.5$$
 gram

96. Ans.(B) Illiterate person = 200 - 111 = 89 $\% = \frac{89}{200} \times 100 = 44.5\%$ 

# 97. Ans.(Ā)

Percentage of students' marks =  $\frac{22}{25} \times 100$ = 22 × 4 = 88%

# 98. Ans.(A) Let his actual score be x, Then according to the question, $\Rightarrow x \times \frac{125}{100} = 75 \Rightarrow x = \frac{75 \times 100}{125} = 60$

99. Ans.(C)

Number of boys in 60 students =  $\frac{60\times60}{100}$  = 36 Then, number of girls = 60 - 36 = 24 Number of girls going to school by bicycle =  $\frac{24 \times 25}{100}$  = 6 Rrquired number = 24 - 6 = 18

# 100. Ans.(B) Percentage of marks obtained by the student $=\frac{9}{25} \times 100 = 36$

Total maximum marks = 600 Percentage of marks =  $\frac{470 \times 100}{600}$  = 78.33% 102. Ans.(A) According to Question, 28% = Rs.8960  $\therefore 100\% = \frac{8960}{28} \times 100 = 32000$ Hence monthly salary = Rs.32000 103. Ans.(C) Let the old salary = 100 xAfter increasing by 30% 130 x = Rs.910 x = Rs. 7 Pre - increment salary = 100x  $= 100 \times 7 = \text{Rs.}700$ 104. Ans.(A)  $15\% \ of \ 34 = \frac{34 \times 15}{100} = \frac{510}{100} = 5.1$ Ans.(B)  $24 \times \frac{3}{5} \times 40\% = 24 \times \frac{3}{5} \times \frac{40}{100}$ 105.  $=\frac{144}{25}=5.76$ Ans.(B) 106.  $\frac{95}{200} \times 100 = 47.5\%$ 107. Ans.(A) '?' % of 40 = 1.20  $\frac{1}{100} \times 40 = 1.20$  $? = \frac{1.20 \times 100}{40}$  $? = \frac{120}{40}$  $\Rightarrow? = 3$ Ans.(B) 108. Let x be the number of games played by the team. According to Question,  $x \times 60\% = 45$  $\Rightarrow x = \frac{45}{60} \times 100$  $\therefore x = \frac{3}{4} \times 100 = 75$ 109. Ans.(C) Let the number be x  $x \times \frac{32}{100} = 25.6 \Rightarrow x = \frac{25.6 \times 100}{32}$  $x = \frac{2560}{32} \Rightarrow x = 80$ **110**. Ans.(B) Discount =  $100 \times \frac{75}{100} \times \frac{80}{100} \times \frac{90}{100} = 54\%$ Equivalent discount = 100 - 54 = 46%

#### 111. Ans.(C)

The discounts on shirts by Mukesh are 30%, 25%, and 15% respectively. : Single Discount

$$= 100 - 100 \times \frac{70}{100} \times \frac{75}{100} \times \frac{85}{100}$$
$$= 100 - 70 \times \frac{3}{4} \times \frac{17}{20}$$
$$= 100 - 44.62 = 55.38\%$$

112. Ans.(A)

If a number is increased by x% and reduced by x%, there is always a loss and the loss will  $(x)^2$ k

$$pe = \left(\frac{x}{10}\right)$$
 percent.

Intended loss in pay =  $\left(\frac{x}{10}\right)^2$  percentage 

$$=\left(\frac{40}{10}\right)^{2} = 16\%$$

113. Ans.(C)

% decrease in consumption = 
$$\frac{R}{100 + R} \times 100$$
  
=  $\frac{35}{100 + 35} \times 100 = \frac{35}{135} \times 100$   
=  $\frac{7}{27} \times 100 = 25.92 \approx 26\%$ 

Ans.(D) 114.

Flat price after 2 years  
= 
$$6000000 \left(1 + \frac{15}{100}\right)^2$$
  
=  $6000000 \times \frac{23}{20} \times \frac{23}{20}$   
=  $15000 \times 529$   
=  $Rs. 79,35,000$ 

115. Ans.(A)

\_

The amount of quantity required to Arvind = 100

2,38,75,697 × 
$$\frac{100}{100 - 17}$$
  
= 287659 × 100 = *Rs*.28765900  
116. Ans.(C)  
April to may

$$= 10 - 20 + \frac{10 \times (-20)}{100} = -10 - 2$$
$$= -12\%$$

April to july

$$= -12 + 50 + \frac{(-12) \times 50}{100} = 32\%$$

117. Ans.(C) Let length of the rectangle = 100 And width = 100 $Area = 100 \times 100 = 10000$ After changing Length = 115, width = 90Area = 115 × 90 = 10350 Increase = 10350 - 10000 = 350 Increase % =  $\frac{350}{10000} \times 100 = 3.5\%$  118. Ans.(B) 40% marks + 20 marks = 45% marks - 30 marks 20 + 30 = 5%5% = 501% = 10100% = 1000 Total marks to pass =  $1000 \times \frac{40}{100} + 20$ = 420 Thus, percentage of marks =  $\frac{420}{1000} \times 100$ = 42%119. Ans.(B) Let the number of male employees in the firm = XAnd number of female employees = y Total salary of male employees = Rs. 5200 x Total salary of women employees = Rs. 4200 v Total salary of all employees = Rs. 5000 (x + y)5200 x + 4200 y = 5000 x + 5000 y200 x = 800 yx = 4 yx : y = 4: 1  $x \% = \frac{4}{5} \times 100 = 80\%$ Hence the percentage of male employees in the firm is 80. 120. Ans.(A) % Increase =  $\frac{(22500 - 18000) \times 100}{18000}$  $=\frac{4500\times100}{18000}=25\%$ Ans.(B) 121. Let, population of city = xPopulation after three years  $x \times \frac{(100 + 10)}{100} \times \frac{(100 + 20)}{100} \times \frac{(100 - 25)}{100}$  $x \times \frac{110}{100} \times \frac{120}{100} \times \frac{75}{100} = \frac{99x}{100}$ 99x $\therefore \frac{\text{Third Year Population}}{\text{Population three years ago}} = \frac{\frac{99x}{100}}{x}$  $= \frac{\frac{99x}{100}}{\frac{100}{x}} \times \frac{1}{x} \& = \frac{99}{100} = 99:100$ 122 Ans.(D) Let the number of boys in school = 3xNumber of girls in school = 2xTotal number of students = 5x Number of boys not getting scholarship =  $3x \times \frac{80}{100} = \frac{12x}{5}$ Number of girls not getting scholarship =  $2x \times \frac{75}{100} = \frac{3x}{2}$ Number of students not getting scholarship

 $=\frac{12x}{5} + \frac{3x}{2} = \frac{39x}{10}$ Percentage of s scholarship  $\frac{39x}{5x} \times 100$ students aettina not  $=\frac{39x}{10} \times \frac{1}{5x} \times 100 = 78\%$ 123. Ans.(B)  $a \frac{\times 20}{-} = b$ 100 a : b 5:1  $\frac{20 \times 1}{100} = \frac{1}{5}$  $\frac{a \times 4}{100} = \frac{5 \times 4}{100} = \frac{1}{5}$ Ans.(A) 124. Let the number be x and its eighth is equal to v%. According to Question - $\frac{x}{8} = x \times \frac{y}{100}$  $y = \frac{100}{8}$ v = 12.5%125. Ans.(D) 75% of 480 + x% of 540 = 603 $480 \times \frac{75}{100} + 540 \times \frac{x}{100} = 603$  $540 \times \frac{x}{100} = 603 - 480 \times \frac{3}{4}$  $540 \times \frac{x}{100} = 603 - 360$  $540 \times \frac{x}{100} = 243$  $x = \frac{243 \times 100}{540}, x = 45$ 126. Ans.(C) Let the number be x According to Question,  $x - 35 = x \times \frac{80}{100}$  $x - 35 = \frac{4x}{5}$ 5x - 175 = 4x $x_4 = 175$  $\frac{4}{5}$  part of number 175 = 175  $\times \frac{4}{5}$  = 140 127. Ans.(B) 5% of A + 4% of B =  $\frac{2}{2}$  (6% of A + 8% of B)

$$\frac{A \times 5}{100} + \frac{B \times 4}{100} = \frac{2}{3} \left( \frac{6 \times A}{100} + \frac{8 \times B}{100} \right)$$
  
$$\frac{5A}{100} - \frac{12A}{300} = \frac{16B}{300} - \frac{4B}{100}$$
  
$$\frac{3A}{300} = \frac{4B}{300}$$
  
$$3A = 4B$$
  
$$\frac{A}{B} = \frac{4}{3}, A : B = 4 : 3$$

#### 128. Ans.(B)

Percent Form of 1:8 =  $\frac{1}{8} \times 100 = 12.5\%$ 

Ans.(B) 129. Percentage change =  $x - y - \frac{xy}{100}$  $= 25 - 20 - \frac{25 \times 20}{100}$ 

$$= 25 - 25 = 0\%$$

Hence there will be no change in the actual price.

#### 130. Ans.(C)

Initially sugar consumption = 12 kg Now sugar consumption = 15 kg Increase = 15 - 12 = 3 kg % Increase =  $\frac{3}{12} \times 100 = 25\%$ 

#### Ans.(A) 131.

Percentage change =  $x - y - \frac{xy}{100}$ =  $-20 + 20 - \frac{20 \times 20}{100}$ 

= -4%

Hence there will 4% decrease on sales.

## 07. Profit & Loss

8.

 Anurag loses 1/7 of the purchase price by selling a pen for Rs. 144. If the pen is sold for Rs. 189, what will be the profit percentage? **RRB Group-D - 17/11/2022 (Shift-I)** (A) 11%
 (B) 12 5%

(A) 11%	( <b>B</b> ) 12.5%
<b>(C)</b> 11.5%	<b>(D)</b> 14%

2. One person bought a dress in a cell and saved Rs 5. If he spends Rs. 45, then how much will he save?

RRB Group-D –	31/10/2018	(Shift-III)
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<b>(A)</b> 15 %	<b>(B)</b> 30 %
(C) 10 %	<b>(D)</b> 18 %

**3.** If the cost price of 15 oranges is equal to the selling price of 20 oranges, the loss percentage is:

	RRB Group-D	- 20/09/2022	(Shift-II)
(A) 30	%	<b>(B)</b> 75%	
(C) 25	%	<b>(D)</b> 40%	

**4.** A man buys 5 pens for 1 rupee and sells 4 for 1 rupee. Find its profit percentage.

	RRB Group-D - 08/10/2022	(Shift-II)
(A) 25%	<b>(B)</b> 40%	
(C) 50%	<b>(D)</b> 20%	

5. The selling price of an article with 16.5% profit was Rs. 466. If that item was sold for Rs. 330, what would be the percentage loss?

RRB Group-D - 15/10/2018 (Shift-I)

<b>(A)</b> 17.25	( <b>B)</b> 17.75
<b>(C)</b> 17	<b>(D)</b> 17.5

6. The cost price of two items is Rs. 200 and Rs. 600. A shopkeeper makes a profit of Rs. 300 by selling both. If the shopkeeper sold the first item at 30% profit, then at what profit does he sell the second item?

	RRB Group-D - 31/10/2018 (Shift-II)
(A) 50%	<b>(B)</b> 30%
(C) 20%	<b>(D)</b> 40%

7. A man sold two bicycles at a total profit of 20%. If he bought them each for 3,500 and sold the first one at a profit of 5%, then how much profit (%) should he make from the second?

	RRB Group-D - 31/10/2018 (Shift-II)
(A) 20%	<b>(B)</b> 35%
(C) 25%	<b>(D)</b> 30%

The carpenter incurs a loss of 10% by selling one footboard for Rs. 72. What percentage of profit or loss will he make on selling the footboard for Rs. 96?

 RRB Group-D - 04/10/2018 (Shift-II)

 (A) profit, 10%
 (B) profit, 20%

 (C) loss, 16%
 (D) loss, 25%

**9.** The difference between a 13% loss and a 15% gain was Rs. 63. The cost price of the item in question is Rs ......

	RRB Group-D - 01/09/2022(Shift-III)
<b>A)</b> 225	<b>(B)</b> 207
<b>C)</b> 198	<b>(D)</b> 243

A discount of 10% and 14% on the selling price of a chair makes a difference of Rs. 27. Find the value of the chair.
 RRB Group-D - 08/10/2018 (Shift-II)

<b>(A)</b> 586 rs.	<b>(B)</b> 440 rs.
<b>(C)</b> 675 rs.	<b>(D)</b> 880 rs.

- 2/3 of the goods were sold at 6% profit and the remaining at 3% loss. If the total profit was Rs. 540, what was the total cost of the goods?
   RRB Group-D 24/10/2018 (Shift-I) (A) 17,000 rs. (B) 18,000 rs.
  - (C) 16,500 rs. (D) 18,500 rs.
- **12.** The difference between 18% loss and 17% profit is Rs. 63. The cost price of the article is

		<b>RRB</b> Group-D	- 01/09/2022 (Shift-III)
(A)	189	rs.	(B) 180 rs.
(C)	175	rs.	<b>(D)</b> 198 rs.

**13.** The difference of 33% loss and 7% profit on selling an item is Rs. 220. What is the cost price of the item?

RRE	3 Group-D - 11/12/2018 (Shift-II)
(A) 600 rs.	<b>(B)</b> 525 rs.
<b>(C)</b> 575 rs.	<b>(D)</b> 550 rs.

**14.** spurti had sold the pair of shoes for Rs. 2,223 at a profit of 17%. What was the cost price of the pair of shoes?

RRB Gr	oup-D - 01/10/2018 (Shift-II)
<b>(A)</b> 1,905 rs.	<b>(B)</b> 1,870 rs.
<b>(C)</b> 1,880 rs.	<b>(D)</b> 1,900 rs.

**15.** Sharad bought 2 bags for Rs. 900. He sold one at 25% profit and the other at 25% loss. If the selling price of both bags is the same, then what is the cost price of both bags?

RRB Group-D - 30/10/2018 (Shift-III)

- (A) Respectively 437.5 rs. and 462.5 rs.
- (B) Respectively 330 rs. and 570 rs.

(C) Respectively 347.5 rs. and 552.5 rs.

- (D) Respectively 337.5 rs. and 562.5 rs.
- **16.** When a mobile is sold at 6% profit, it gets Rs. 870 more than when sold at 6% loss. What is the cost price of a mobile phone?

 RRB Group-D -22/11/2022 (Shift-I)

 (A) 6000 rs.
 (B) 7000 rs.

 (C) 6265 rs.
 (D) 7250 rs.

**17.** If an item is sold at 13% loss and 14% profit, the difference between the two values is Rs. 162. What is the cost price of the item?

RRB Group-D - 03/12/2018 (Shift-II) (A) 625 rs. (B) 620 rs.

(C) 600 rs.	<b>(D)</b> 640 rs.

**18.** An item sold at a loss of 12%. If it is sold at Rs. 49 higher price, then 2% profit is made. The cost price of the item is Rs. .....

	RRB Group-D - 16/11/2018 (Shift-I)
<b>(A)</b> 325	<b>(B)</b> 300
(C) 375	<b>(D)</b> 350

**19.** A person buys two watches for Rs.. 480. He sells one watch at 15% loss and the other at 19% profit. He then realize that he has sold both the watches at the same price. Find the cost price of both the watches.

RRB Group-D - 18/11/2022 (Shift-III)(A) 280, 200 rs.(B) 270, 190 rs.(C) 285, 200 rs.(D) 280, 205 rs.

- 20. A toy bought for Rs. 925 was sold at a loss of 16%. What was the selling price of the toy.
  (A) 785 rs.
  (B) 777 rs.
  (C) 775 rs.
  (D) 787 rs.
- **21.** An item purchased for Rs. 2275 was sold at a profit of 8%. What was the selling price of the item?

RRB Group-D 02/11/2018 (Shift-I)

<b>(A)</b> 2, <b>09</b> 3 rs.	<b>(B)</b> 2,443 rs.
(C) 2,457 rs.	(D) 2,453 rs.

 A toy was bought for Rs. 1125 and sold at a loss of 16%. The selling price of the toy was-RRB Group-D - 01/10/2018 (Shift-II)

	0up-D - 01/10/2010 (
(A) 960 rs.	<b>(B)</b> 945 rs.
<b>(C)</b> 955 rs.	<b>(D)</b> 975 rs.

23. By selling an old phone for Rs. 6,360, Ranjita received 47% less than the cost of buying it a few years back. At what price should Ranjita sell it to get a profit of 13%?
RRB Group-D - 05/10/2018 (Shift-I)

(A) 13,560 rs.	<b>(B)</b> 10,550 rs.	
(C) 11,550 rs.	<b>(D)</b> 12,550 rs.	

24. If a person bought an item for Rs. 96 and sold it at a profit of 25%, then what was the selling price of that item?

RRB Gr	oup-D - 19/11/2022 (Shift-III)
(A) 120 rs.	<b>(B)</b> 125 rs.
<b>(C)</b> 114 rs.	<b>(D)</b> 115 rs.

**25.** Pawan sold an item at a loss of 12.5%. If he had sold the item for Rs. 56 more, he would have gained 22.5%. What should be the selling price of the item to get 25% profit?

	RRB Group-D	- 19/11/2022 (Shift-II)
<b>(A)</b> 182	rs.	<b>(B)</b> 190 rs.
<b>(C)</b> 185	rs.	(D) 200 rs.

26. A person bought an item for Rs. 1,975 and sold it at a profit of 12%. What was the selling price of the item?
PPB Group-D - 23/11/2022 (Shift-I)

RRB Gro	up-D - 23/11/2022 (Shift-
(A) 2,212 rs.	<b>(B)</b> 2,192 rs.
(C) 2,222 rs.	<b>(D)</b> 2,202 rs.

**27.** On selling a jute bag for Rs. 48, Ashmita lost 20%. What should be the selling price of jute bags to earn a profit of 20%?

 RRB Group-D - 18/11/2022 (Shift-II)

 (A) 72 rs.
 (B) 52 rs.

 (C) 56 rs.
 (D) 68 rs.

**28.** A computer company sells two brands of computers in a single day on which it gets a profit of Rs. 15,000. If the profit from one brand is 35% of the total profit, then what was the selling price of the computer of the other brand?

 RRB Group-D - 25/11/2022 (Shift-III)

 (A) 8,750 rs.
 (B) 8,000 rs.

 (C) 9,750 rs.
 (D) 9,000 rs.

**29.** One person sold a tea set for Rs. 3,540, which was 41% below the cost price. To get a profit of 11%, the seller should have sold the set in a higher amount of Rs ......

#### RRB Group-D - 28/11/2022 (Shift-I)

(A) 2,460 rs.	<b>(B)</b> 1,812.60 rs.
(C) 3,120 rs.	(D) 2,664.42 rs.

**30.** A small scale business made a profit of Rs. 75,000 last year. This year, profit increased by 25%. What is the actual profit earned this year?

RRB Gro	up-D - 28/11/2018 (Shift-I)
<b>(A)</b> 87,750 rs.	<b>(B)</b> 80,750 rs.
(C) 90,750 rs.	<b>(D)</b> 93,750 rs.

- In 1 year the company sold Rs. 5,00,000. Year 3 increased by 35% compared to Year 1 and Year 3. What is the real benefit in year 3? RRB Group-D - 02/11/2018 (Shift-II) (A) 2,50,000 rs. (B) 6,75,000 rs. (C) 6,00,000 rs. (D) 1,75,000 rs.
- **32.** Bajaj Electronics sells two microwaves, each at the rate of Rs.4,800. On one, he gains 20% and on the other he loses 20%. What percentage of profit or loss did he make in the entire transaction?

RRB Group-D - 08/10/2018 (Shift-III)

		-		-
(A)	) 5% loss		(B) 4 % profit	i

(A) 0 /0 1000	( <b>b</b> ) + 70 prom
(C) 5% profit	<b>(D)</b> 4% loss

**33.** A seller buys a dozen pencils for Rs.25 and sells 5 pencils for Rs.12. Find the percentage of profit or loss?

	RRB Group-D	- 08/10/2018 (Shift-II)
(A)	15% loss	(B) 15.2% loss
(C)	15.2% profit	(D) 15% profit

**34.** A man bought 3 oranges for one rupee and bought 2 oranges for one rupee. At what price would he have sold each dozen to earn a profit of 20%?

	RRB Group-D - 30/10/2018 (Shift-I)
<b>(A)</b> 8	<b>(B)</b> 18
<b>(C)</b> 10	<b>(D)</b> 6

**35.** By selling 12 watches, a shopkeeper makes a profit equal to the selling price of 2 watches. Find its profit in percentage.

RRB Group-D - 10/10/2018 (Shift-III)

(A) 10.07%	( <b>D</b> ) 22%
<b>(C)</b> 20%	<b>(D)</b> 25%

**36.** A boy buys eggs at the rate of Rs.16 per 18 eggs and sells them at the rate of Rs.20 per 22 eggs. What is his profit/loss percentage? **RRB Group-D - 15/11/2018 (Shift-III)** 

RRB Group-D - 15/11/2018	
(A) $\frac{23}{11}$ % profit	<b>(B)</b> $\frac{23}{11}$ % loss
(C) $\frac{25}{11}$ % profit	<b>(D)</b> $\frac{78}{11}\%$ loss

**37.** A man bought some oranges at the rate of 3 fruits for one rupee and some more oranges at the rate of 2 fruits at one rupee. If number of both type of oranges are same then, at what price per dozen will he have to sell oranges to get 20% profit?

RRB G	roup-D - 15/10/2018 (Shift-III)
(A) 5 rs.	<b>(B)</b> 4 rs.
(C) 10 rs.	<b>(D)</b> 6 rs.

**38.** A weaver sells a sari to the shopkeeper at a price of Rs. 150 and gets 25% profit. The shopkeeper sells the same sari to a customer with 30% profit. If the weaver could sell the saree directly to the customer for Rs. 180, what would be his profit in% and the profit of the customer in rupees?

#### RRB Group-D -30/10/2018 (Shift-II)

(A) 50%, 25 rs.	(B) 60%, 20 rs.
(C) 50%, 15 rs.	(D) 40%, 20 rs.

**39.** A shopkeeper sold two items, one at 25% profit and the other at 15% loss and got a profit of Rs. 35. If the value of goods sold at 25% profit is twice that of goods sold at 15% loss, find the sum of the cost price of both goods.

	RRB Group-D - 28/11/2022 (Shift-I)
<b>A)</b> 100	<b>(B)</b> 400
<b>C)</b> 300	<b>(D)</b> 200

**40.** Rima buys a car for Rs.75,000. She spends Rs.10,000 on its repair. He later sold the car to Chiru at a profit of 15%. Cheeru sold it to Ritu at a 10% profit. How much did Ritu spend to buy the car?

(

RRB Gro	up-D - 19/11/2022 (Shift-II)
<b>A)</b> 1,02,575	<b>(B)</b> 1,05,752
<b>C)</b> 1,02,252	<b>(D)</b> 1,07,525

**41.** A person buys a land for Rs. 3 lakh. He sells 25% of it at 25% loss and 40% at 25% profit. In order to earn a total of 15% profit, he will have to sell the remaining plot for how many rupees?

#### **RRB Group-D - 11/10/2018 (Shift-II)** (A) 1.37.500 (B) 1.38.750

<b>A)</b> 1,37,500	<b>(B)</b> 1,38,750
<b>C)</b> 1,34,500	<b>(D)</b> 1,45,000

**42.** Kaveri bought a toy for Rs. 280 and sold it for Rs. 315. How much profit did he get?

RRB RPF SI -05/01/2019 (Shift-II)

<b>(A)</b> 17.5%	<b>(B)</b> 12.5%
<b>(C)</b> 16%	<b>(D)</b> 15.25%

**43.** Heeru bought the old car for Rs. 47000 and spent Rs. 3000 to repair it. If he sells the car for Rs. 58000, what will be his profit percentage?

 RRB RPF Constable -18/01/2019 (Shift-III)

 (A) 18%
 (B) 16%

 (C) 17%
 (D) 15%

**44.** Geeta bakes cakes for events. For the birthday party, she made a cake and sold it for Rs. 700. The cost of the material for making the cake was Rs. 350. What is the percentage of his profit margin?

 RRB RPF Constable -17/01/2019 (Shift-I)

 (A) 200%
 (B) 50%

 (C) 100%
 (D) 150%

**45.** Including a profit of 16%, Rishi sold a pair of shoes for Rs 2,059. What was the cost price of the shoes?

RRB RPF Constable -19/01/2019 (Shift-II)(A) 1,800 rs.(B) 1,760 rs.(C) 1,780 rs.(D) 1,775 rs.

**46.** Jack sells a dress for Rs. 1440 and earns 20% profit. What will be the cost price of the dress?

R	RB RPF SI -10/01/2019 (Shift-II)
(A) 1152 rs.	<b>(B)</b> 1240 rs.
(C) 1200 rs.	<b>(D)</b> 1180 rs.

**47.** By selling a transistor for Rs. 572, a shopkeeper gains an amount equal to 30% of the transistor's cost price. Find the cost price of the transistor.

RRB RPF SI -10/01/2019 (Shift-II)

(A) 400 rs.	<b>(B)</b> 440 rs.
(C) 340 rs.	<b>(D)</b> 420 rs.

**48.** A seller sells 12 chairs at 12% profit and 4 chairs at 3% loss. If his total profit is Rs. 1650, then what is the cost price of each chair?

RRB RPF SI -06/01/2019 (Shift-I)

<b>(A)</b> 1490 rs.	<b>(B)</b> 1250 rs.
(C) 1100 rs.	<b>(D)</b> 1380 rs.

**49.** An item was sold for Rs. 1235 at a loss of 5%. Find the selling price of the article at a profit of 10%.

#### RRB RPF Constable -22/01/2019 (Shift-III)

<b>(A)</b> 1,335 rs.	<b>(B)</b> 1,380 rs.
<b>(C)</b> 1,430 rs.	<b>(D)</b> 1,300 rs.

**50.** K buys a car for 4.50 lakhs and spends Rs 1.25 lakhs on its accessories. He sells the car at a loss of 20%. Then find the selling price of the car?

RRB RPF SI -11/01/2019 (Shift-III)

<b>(A)</b> 4.00 lakh	<b>(B)</b> 4.20 lakh
(C) 4.40 lakh	<b>(D)</b> 4.60 lakh

**51.** Seller lost 22% by selling a set of books for Rs. 1,755. What should be their selling price to earn 6% profit?

 RRB RPF Constable -20/01/2019 (Shift-II)

 (A) 2,375 rs.
 (B) 2,385 rs.

 (C) 2,355 rs.
 (D) 2,365 rs.

**52.** If a person bought an item for Rs. 96 and sold it at a profit of 12.5%, then what was the selling price of the item?

	RRB ALP & Tec. (31-08-18 Shift-I)
(A) 105 rs.	<b>(B)</b> 110 rs.
(C) 112 rs.	( <b>D)</b> 108 rs.

**53.** The cost price of a set of 2 pants + 4 shirts or a set of 1 pants + 6 shirts is Rs. 5,600. A shopkeeper decides to sell them separately. He sold 10 shirts for Rs 6,000. Find the amount of profit or loss per shirt.

RRB RPF SI -12/01/2019 (Shift-II)

(A) profit 1000 rs.	<b>(B)</b> loss 1000 rs.
(C) profit 100 rs.	<b>(D)</b> loss 100 rs.

**54.** There is a difference of 3 rupees in the selling price when an item is sold at a profit of 2% and 18%, then the ratio of the both selling prices is:

RRB RPF C	onstable -20/01/2019 (Shift-II)
<b>(A)</b> 51: 59	<b>(B)</b> 51: 53
<b>(C)</b> 51: 60	<b>(D)</b> 55: 59

**55.** There is a difference of 3 rupees in the selling price when an item is sold at a profit of 4% and 10%, then the ratio of the both selling prices is:

	RRB RPF SI -11/01/2019 (Shift-II)
(A) 52: 55	<b>(B)</b> 51: 55
<b>(C)</b> 34: 35	<b>(D)</b> 55: 52

**56.** If a shopkeeper cheats up to 1% in buying and selling fruits, using less weight, then what percentage is his total profit?

RRB RPF Constable -17/01/2019 (Shift-III)

<b>(A)</b> 2.25%	<b>(B)</b> 2.02%
<b>(C)</b> 2.75%	<b>(D)</b> 2.5%

57. A shopkeeper sold 6 radios at a 20% loss. Find the profit at which he should sell the TV. so that he has 0 losses. The cost price of the TV is 3 times each radio.

RRB RPF Constable -19/01/2019 (Shift-II) **(A)** 40% **(B)** 50% (C) 30% (D) 60%

58. The cost price of 20 tables is equal to the selling price of 'x' tables. If there is a profit of 25%, find the value of 'x'.

	RRB RPF SI -12/01/2019 (Shift-II)
<b>(A)</b> 18	<b>(B)</b> 16
<b>(C)</b> 25	<b>(D)</b> 15

59. Bella is a farmer. He has a few acres of land. Last month, he had a good crop that gave him a 90% return on his initial investment (which was about Rs 90,000). How much money does he need to invest in almost every season?

RRB RPF Constable -24/01/2019 (Shift-I) (A) 1,00,000 rs. **(B)** 3,00,000 rs. (C) 6,00,000 rs. (D) 1,50,000 rs.

60. By selling a table for Rs. 16,870, a shopkeeper loses Rs. 1080. What will be his percentage of loss (rounded off to one decimal)?

> RRB ALP & Tec. (31-08-18 Shift-II) (A) 6.1% **(B)** 6.2% (C) 6.4% (D) 6.0%

- 61. Kaushik bought a toy for Rs. 160 and sold it for Rs. 180. The percentage profit was %. RRB ALP & Tec. (20-08-18 Shift-I) (B) 12.5 (A) 15.25 (C) 17.5 (D) 16
- 62. The selling price of a washing machine is  $1\frac{1}{2}$  of its cost price. Find the profit percentage.

RRB ALP & Tec. (20-08-18 Shift-II) **(B)** 66% (A) 33% **(D)**  $66\frac{1}{2}\%$ (C)  $33\frac{1}{3}\%$ 

63. The selling price of an article with a 16% profit was Rs. 435. If the item was sold for Rs. 330, what would be the loss percentage?

RRB ALP & Tec. (31-08-18 Shift-II) (A) 12.25 **(B)** 13

**(C)** 12 (D) 12.5 64. Sahil sold an item for Rs. 280 at a loss of 20%. What was the cost price of the item? PPR AI P & Tec. (20-08-18 Shift-III)

	RRD ALP & Tec. (20-00-
<b>(A)</b> 336	<b>(B)</b> 340
(C) 350	<b>(D)</b> 1,400

65. A bad item, valued at Rs. 1,200, is sold at a 15% loss. If the price is reduced by another 5%, what will be its selling price?

RRB AL	P & Tec. (21-08-18 Shift-I)
(A) 1000 rs.	<b>(B)</b> 969 rs.
(C) 960 rs.	(D) 990 rs.

66. Vishnu spends Rs.5000 to buy 12 tables and some chairs. A table costs Rs.50 and a chair costs Rs.40. Find the ratio of the number of chairs purchased to the number of tables.

	RRB ALP & Tec. (13-08-18 Shift-I)
( <b>A)</b> 5:2	<b>(B)</b> 55:6
( <b>C)</b> 5:1	<b>(D)</b> 55:4

67. A shopkeeper lost 11% on selling an item for Rs. 979. If the shopkeeper sells the item for Rs. 1232, then the profit is%

	RRB NTPC 11/08/2022 Shift : 1
<b>(A)</b> 12%	<b>(B)</b> 21%
<b>(C)</b> 11%	<b>(D)</b> 14%

68. Mr. If Rajesh buys a toy for Rs. 27.50 and sells it for Rs. 28.60, and then there is a percentage profit of -

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 5%	<b>(B)</b> 4%	
<b>(C)</b> 6%	<b>(D)</b> 3%	

69. 15 laptops at the rate of Rs. 15,000 each were bought and all were sold for 2.97 lakhs. Find the profit percentage-

	<b>RRB NTPC 23/07/2022</b>	Shift-2
<b>(A)</b> 28%	<b>(B)</b> 40%	
(C) 33.335	<b>(D)</b> 32%	

70. The selling price of a product is Rs. 1,458 and its cost price is Rs. 1.350. Find the profit percentage.

	RRB NTPC 10/08/2022Shift-1
<b>(A)</b> 5%	<b>(B)</b> 6%
<b>(C)</b> 7%	<b>(D)</b> 8%

71. A shopkeeper sells cricket bats in such a way that the selling price of 35 bats is equal to the purchase price of 50 bats. State his profit percentage.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 33.33%	<b>(B)</b> 42.83%
( <b>C)</b> 50%	<b>(D)</b> 60%

72. An item was sold at a loss of 20% for Rs. 15,000. Find the cost price of the item. RRB NTPC 10/08/2022Shift : 2

(A) 17,750 rs.	<b>(B)</b> 17,250 rs.
(C) 18,750 rs.	<b>(D)</b> 18,250 rs.

**73.** A shopkeeper makes a profit of 33% after giving a discount of 12%. What is the cost price for a chair for shopkeeper whose marked price is Rs. 4740?

	RRB NTPC 10/08/2022 Shift : 2
(A) 3136 rs.	<b>(B)</b> 4050 rs.
(C) 3674 rs.	<b>(D)</b> 3497 rs.

**74.** A shopkeeper valued the new item at Rs. 1280. If even after giving 10% discount, he gets 20% profit on the cost price, then find the cost price of the item.

	RRB NTPC 10/08/2022 Shift : 3
(A) 1120 rs.	<b>(B)</b> 960 rs.
(C) 1000 rs.	<b>(D)</b> 940 rs.

**75.** A shopkeeper put the marked price of an item at Rs. 160. If even after giving 10% discount, he gets 20% profit on the cost price, then find the cost price of the article?

RRB N	ITPC 10/08	3/2022	Shift	:1
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<b>(A)</b> 140 rs.	<b>(B)</b> 120 rs.
(C) 150 rs.	(D) 132 rs.

**76.** A shopkeeper marks Rs. 320 on an item. If even after 10% discount, he gets a profit of 20%, find the cost price of that item.

RRB NTPC 10/08/2022 Shift : 2

<b>(A)</b> 240 rs.	<b>(B)</b> 280 rs.
(C) 300 rs.	<b>(D)</b> 264 rs.

**77.** Three boxes containing 25 packets of 10 pencils box sold for Rs. 8,625, if the profit is 15%, find the cost price.

 RRB NTPC 12/08/2022Shift :1

 (A) 7,400 rs.
 (B) 7,500 rs.

 (C) 7,600 rs.
 (D) 7,700 rs.

**78.** A wholesaler sells a water purifier at a loss of 40%. If the selling price is increased by 125 rupees then the wholesaler gains 10%. What was the cost price of the water purifier?

RRB NTPC 05/03/2021Shift : 1

(A) 250 rs.	(B) 225 rs.
(C) 275 rs.	<b>(D)</b> 300 rs.

**79.** When Bablu reduces the selling price of shoes from Rs. 360 to Rs. 345, he loses 4% more. Find the cost price of the shoes.

#### RRB NTPC 09/05/2022 Shift :1

<b>(A)</b> 275 rs.	<b>(B)</b> 375 rs.
<b>(C)</b> 425 rs.	<b>(D)</b> 450 rs.

**80.** An item was sold at a profit of 15% for Rs. 920. Find the selling price of the article at a profit of 20%.

	RRB NTPC 05/03/2021	Shift : 2
(A) 1,000 rs.	<b>(B)</b> 980 rs.	
<b>(C)</b> 960 rs.	<b>(D)</b> 940 rs.	

Bev sold a mobile for Rs 2210 at a loss of 15%. To get 15% profit on the same mobile, how many rupees will be sold?
 BER NTEC 23/07/2022 Shift-3

	KKD NIFC 23/0//2022	Shint
(A) 2980 rs.	<b>(B)</b> 3000 rs.	
(C) 2970 rs.	<b>(D)</b> 2990 rs.	

**82.** One item was sold for a discount of 35% for Rs. 26,000. If the discount is 15%, find the selling price of the article.

	RRB NTPC 10/08/2022Shift : 3
(A) 36,000 rs.	<b>(B)</b> 40,000 rs.
(C) 38,000 rs.	<b>(D)</b> 34,000 rs.

**83.** An item is sold at a loss of 20% for Rs. 2,400. What should be his selling price to get 20% profit?

	RRB NTPC 12/08/2022Shift : 1
(A) 3,300 rs.	<b>(B)</b> 3,600 rs.
(C) 3,500 rs.	<b>(D)</b> 3,400 rs.

**84.** An item was sold at a discount of 20% for Rs. 2,400. If the discount is 25%, find the selling price of the item-

	RRB NTPC 12/08/2022Shift :
(A) 2,250 rs.	<b>(B)</b> 2,000 rs.
<b>(C)</b> 1,800 rs.	<b>(D)</b> 2,150 rs.

85. The selling price of a mobile is Rs. 7500 which is being sold at a profit of 50%. A customer asked for some discount from the salesmen. But salesmen were strictly instructed not to sell mobile below 35% profit. In this case, how much of the selling price will the salesman be able to give to the customer?

#### RRB NTPC 05/03/2021Shift : 3

2

(A) 6000 rs.	<b>(B)</b> 5000 rs.
<b>(C)</b> 6750 rs.	<b>(D)</b> 5500 rs.

**86.** A shopkeeper buys a hundred oranges for Rs. 60. He spends 15% on transportation. What should be the selling price of hundred oranges to earn 20% profit?

## RRB NTPC 05/03/2021Shift : 3

<b>(A)</b> 72 rs.	<b>(B)</b> 81.8 rs.
(C) 82.8 rs.	<b>(D)</b> 83.8 rs.

**87.** The cost price of 5 kg of wheat and 10 kg of lentils is Rs. 70 and Rs. 80 per kg respectively. On selling, 10% profit is obtained on wheat and 20% on lentils. So what was the selling price of all the items?

01	RRB NTPC 12/08/2022Shift : 2
(A) 1,375 rs.	<b>(B)</b> 1,345 rs.
(C) 1,400 rs.	<b>(D)</b> 1,350 rs.

 88. An item was sold for 12.5% profit at Rs. 2,250. What was the amount of profit? **RRB NTPC 10/08/2022Shift-1** (A) 275 rs. (B) 250 rs.

() =	(=) ====
(C) 225 rs.	<b>(D)</b> 300 rs.

- 89. If Reena sells 12 mobile phones for Rs. 188,160, whose purchase price is Rs. 14,056 per phone, how much profit did she make?
  RRB NTPC 11/08/2022Shift : 1
  (A) 19,488 rs.
  (B) 17,621 rs.
  - (A) 19,488 rs. (B) 17,621 rs. (C) 21,014 rs. (D) 18,958 rs.
- **90.** The MRP of a watch is Rs. 4750 and a discount of 12% is given on its sale. If the shopkeeper bought the watch for Rs. 3,850, what would be his profit?

	RRB NTPC 23/07/2022 Shift : 2
(A) 240 rs.	<b>(B)</b> 570 rs.
(C) 900 rs.	<b>(D)</b> 330 rs.

**91.** Jeeva bought an item for Rs. 2500 and sold it at 25% more than the cost price and paid Rs. 125 as tax on it. Find his profit in rupees?

<b>(A)</b> 500 rs.	<b>(B)</b> 550 rs.
<b>(C)</b> 475 rs.	<b>(D)</b> 625 rs.

**92.** If a shopkeeper cheats up to 25% in buying and selling fruit by using less weight, then his total profit percentage is:

RRB NTPC 05/04/2021Shift : 3

(A) 65 $\frac{2}{3}$ %	<b>(B)</b> 66 $\frac{2}{3}$ %
(C) 66 $\frac{3}{2}\%$	(D) 64 <sup>3</sup> / <sub>3</sub> %

**93.** The cash difference is Rs. 3 on the basis of 8% and 12% profit of an item. What is the ratio of selling prices of both?

RRB NTPC 23/07/2022 Shift-3

<b>(A)</b> 27: 28	<b>(B)</b> 27: 29
<b>(C)</b> 29: 31	<b>(D)</b> 27: 31

**94.** There is a difference of Rs. 3 between the two selling prices when an item is sold at a profit of 8% and 18%. The ratio between the two selling prices is:

#### RRB NTPC 05/04/2021Shift : 3

<b>(A)</b> 54: 59	(B) 54: 61
<b>(C)</b> 59: 61	<b>(D)</b> 55: 59

**95.** Mohan earns 20% after giving 15% discount on the face value of a jeans. What is the ratio of the cost price of jeans to marked price?

	RRB NTPC 09/05/2022 Shift : 3
7.04	(D) 17.01

<b>(A)</b> 17.24	( <b>D</b> ) 17.34
<b>(C)</b> 16: 13	<b>(D)</b> 21: 23

.....

**96.** There is a difference of 3 rupees on the profit of 8% and 16% in the selling price of an article, then the ratio of the two selling prices is-

	RRB NTPC 11/08/2022Shift : 1
<b>(A)</b> 27: 29	<b>(B)</b> 27: 31
(C) 29: 31	<b>(D)</b> 27: 32

**97.** The cash difference between the selling prices of a commodity at 4% and 8% profit is Rs. 3. What is the ratio of these two selling prices?

	RRB NTPC 19.01.2017 Shift : 3
(A) 25: 27	<b>(B)</b> 26: 27
(C) 26.31	<b>(D)</b> 26: 29

**98.** There is a difference of 3 rupees in the selling price when an item is sold at a profit of 2% and 16%, then what will be the ratio of the two selling prices?

	RRB NTPC 05/04/2021Shift : 2
( <b>A)</b> 51: 58	<b>(B)</b> 51: 53
<b>C)</b> 57: 58	<b>(D)</b> 55: 58

**99.** When selling an article at a profit of 4% and 12%, the difference in the selling price is Rs. 3, then the ratio of the two selling prices is:

	RRB NTPC 05/04/2021Shift : 3
<b>(A)</b> 13: 14	<b>(B)</b> 13: 15
<b>(C)</b> 12: 15	<b>(D)</b> 13: 53

**100.** If a shopkeeper cheats up to 11% in buying and selling fruits, using less weight, then his total profit percentage is-PPR NTPC 05/04/2021Shift : 1

	RRB NIPC 05/04/2021Shift :
<b>(A)</b> 24.25%	<b>(B)</b> 24.72%
<b>(C)</b> 24.78%	<b>(D)</b> 24.75%

**101.** If a shopkeeper cheats up to 7% in buying and selling fruits, using less weight, then his total profit percentage is-

	RRB NTPC 11/08/2022Shift : 2
<b>(A)</b> 15.25%	<b>(B)</b> 15.05%
<b>(C)</b> 15.75%	<b>(D)</b> 15.55%

- 102. Vikas buys 5 bananas for Rs.4 and sells 4 bananas for Rs.5. Find its profit%.
   RRB NTPC 09/05/2022 Shift : 3

   (A) 55.56%
   (B) 53.25%
   (C) 45.50%
   (D) 56.25%
- 103.
   A man buys 10 oranges for Rs. 3 and sells 8 oranges for Rs. 3; Find the profit percentage.

   RRB NTPC 12/08/2022Shift : 3

   (A) 20%
   (B) 25%

   (C) 27%
   (D) 30%
- **104.** The price of 2 pencils, 4 pens and 8 erasers is Rs. 12 and 8 pens, 10 pencils and 4 erasers are worth Rs. 36. How much will 3 pencils, 3 pens and 3 erasers cost?

	RRB NTPC 10/08/2022 Shift : 3
(A) 10 rs.	<b>(B)</b> 15 rs.
(C) 12 rs.	<b>(D)</b> 18 rs.

**105.** A chocolate merchant loses 20% by selling 90 chocolates for Rs 160. How much chocolate should he sell for Rs 96 to earn a profit of 20%?

	RRB NTPC 10/08/2022 Shift : 1
<b>(A)</b> 45	<b>(B)</b> 36
(C) 54	<b>(D)</b> 28

**106.** A fruit seller sells mangoes at the rate of Rs 9 per kg and loses 10%. At which rate he should sell mangoes, to earn a profit of 5%.

	RRB NTPC 09/05/2022 Shift : 2		
<b>(A)</b> 10 rs.	<b>(B)</b> 10.5 rs.		
$(\mathbf{a}) \circ \mathbf{c}$			

- (C) 9.5 rs. (D) 11.11 rs.
- **107.** In a volatile market, a commodity was purchased at different dates at units prices of (i) Rs. 11, (ii) Rs. 9, (iii) Rs. 8 and Rs. 10. It was sold at Rs. 2 more than its purchase price. Which item has gained the most in percentage?

	RRB NTPC 19.01.2017 Shift : 2
<b>(A)</b> (i)	<b>(B)</b> (ii)
<b>(C)</b> (iii)	<b>(D)</b> (iv)

**108.** John buys four old tractors for Rs. 2 lakh. He spent a total of 3 lakhs in the maintenance and repair of these four tractors. If he already sells one tractor out of four tractors for Rs. 1

lakh, then what is the average selling price of the remaining 3 tractors to get 40 percent total profit?

 RRB NTPC 11/08/2022 Shift : 3

 (A) 1.5 lakh
 (B) 1.2 lakh

 (C) 2 lakh
 (D) 2.3 lakh

**109.** A horse and a cow were sold for Rs. 12000 each. The horse was sold at 20% profit and cow at 10% loss. How much profit or loss the horse and cow were sold (up to 2 decimal places).

 RRB Paramedical - 21/07/2018 (Shift-II)

 (A) Profit of 1000 rs.
 (B) loss of 1000 rs.

 (C) Profit of 666.67 rs.
 (D) No gain no loss

110. Shefali bought a set of cups for Rs. 575, but later sold them for Rs. 506 to take out the old goods. What percentage of his loss was? RRB Paramedical - 20/07/2018 (Shift-I)

RRB Para	medical - 20/07/2018 (S
<b>(A)</b> 13%	<b>(B)</b> 14%
<b>(C)</b> 16%	<b>(D)</b> 12%

**111.** The cost price of 25 items is the same as the selling price of 20 items. Find the profit percentage.

	RRB JE - 24/05/2019 (Shift-I		
<b>(A)</b> 50%	<b>(B)</b> 25%		
<b>(C)</b> 40%	<b>(D)</b> 30%		

**112.** Profit on the sale of a product is 25%. If the values of the purchase price and the selling price are interchanged, then what is the percentage loss?

RRB	JE - 27/05/2019 (Shift-II)
(A) Loss of 12%	(B) Loss of 16%
(C) Loss of 20%	(D) Loss of 25%

**113.** Two items each having a cost price of Rs. 2500. One is sold at 5% profit. If there is a profit of 20% in total, find the percentage profit made on the sale of other product.

	RRB JE - 01/06/2019 (Shift-III)
<b>(A)</b> 20%	<b>(B)</b> 25%
<b>(C)</b> 30%	<b>(D)</b> 35%

114. A person sells 18 khats for Rs. 16800 and gets a profit equal to the purchase price of 3 khats. Find the cost price of a bed.

	RRB JE - 29/05/2019 (Shift-i
<b>(A)</b> 750 rs.	<b>(B)</b> 650 rs.
<b>(C)</b> 800 rs.	<b>(D)</b> 700 rs.

**115.** By selling an item, Madan made a profit equal to one-quarter of its cost price. If he sold it for Rs. 375, what was the cost price?

	RRB JE - 29/05/2019 (Shift-I)			RRB JE - 26/05/2019		
	<b>(A)</b> 312.50 rs. <b>(C)</b> 300 rs.	(B) 350 rs. (D) 281.75 rs.		(A) No gain or loss (C) 10% loss	(B) 10% profit (D) 4% loss	
116.	When selling 17 b loss equal to the co cost price of a ball. <b>RR</b> (A) 40 rs. (C) 60 rs.	alls for Rs. 720, there is a ost price of 5 balls. Find the B JE - 02/06/2019 (Shift-II) (B) 55 rs. (D) 45 rs.	124.	Ravi sold two bicycle he gained 20% on c on the other. Find transaction. (A) 10% profit	es at the same price, b one bicycle and lost 20 his profit or loss in th JE - 01/06/2019 (Shift- (B) 20% profit	
117.	A bicycle purchase	ed for Rs. 1400 is sold at a	125	(C) 20% loss	(D) 4 % loss	
	loss of 15%. Find t RF (A) 1290 rs. (C) 1190 rs.	he selling price. RB JE - 01/06/2019 (Shift-I) (B) 1090 rs. (D) 1385 rs.	125.	An item with a purch sold at a 5% loss and with the money recei profit. How much loss <b>RRB</b> .	d another item purchas ved is sold again at a 5 s or gain did it have? JE - 26/06/2019 (Shift-	
118.	There is a loss of Rs. 2400. What sh	25% on selling an item for nould be the selling price to		(A) 2.5% profit (C) 2% loss	(B) 2.5 rs. loss (D) 2 rs. Profit	
	get a profit of 25%	? RB .IE - 01/06/2019 (Shift-I)	126.	A merchant sells the	shirt at 6% less than t	
	(A) 2700 rs. (C) 3600 rs.	(B) 4000 rs. (D) 4200 rs.		the shirt 15% above the percentage of merchant?	e the cost price. What profit earned by t	
119.	If an item is sold for Rs. 8000 at 25% profit,			RRB	JE - 26/06/2019 (Shift-	
	find the profit. <b>RRB JE - 30/05/2019 (Shift-II)</b>			<b>(A)</b> 8.1% <b>(C)</b> 13.5%	( <b>B)</b> 21% ( <b>D)</b> 9%	
	(C) 1800 rs.	( <b>D</b> ) 1000 rs.	127.	Pens are bought at the and are sold at 6	he rate of 8 for 40 rupe for 40 rupees. Find t	
120.	The cash differe prices of an article Rs. 3. Find the ration RRI (A) 51: 52	nce between the selling at a profit of 4% and 6% is o of both selling prices. B JE - 24/05/2019 (Shift-III) (B) 52: 53		percentage of loss or RRB (A) 40% profit (C) 30% loss	profit. <b>JE - 24/05/2019 (Shift</b> <b>(B)</b> 33.33% profit <b>(D)</b> 20% profit	
4.04	(C) 51: 53	<b>(D)</b> 52: 55	128.	Find the percentage of 33 meters of cloth	of profit made on the sa , if the profit made in th	

121. If the loss is 15%, find the ratio of the cost price and the selling price. RRB .JE - 27/06/2019 (Shift-I)

	KKD JE - 21/00/2019 (311
<b>(A)</b> 17: 20	<b>(B)</b> 15: 17
<b>(C)</b> 10: 9	<b>(D)</b> 20: 17

122. Two identical items are sold at the rate of Rs.200 each, one of which has a 10% profit, but the other has a loss of 10%. Find the net percentage loss or profit.

RRB JE - 24/	/05/2019	(Shift-III)
	00/ 1	

(A) 2% profit	<b>(B)</b> 2% loss
(C) 1% profit	<b>(D)</b> 1% loss

123. The marked price of an item is 20% higher than the cost price and is sold at a discount of 20%. Find the net result of this sale.

#### t-I)

out )% his

RRB JE -	01/06/2019	(Shift-III)
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- is ed 5% (III)
- the on is the

	RRB JE - 26/06/2019 (Shift-III)
<b>A)</b> 8.1%	<b>(B)</b> 21%
<b>C)</b> 13.5%	<b>(D)</b> 9%

es the

t-l)

(A) 40% profit	(B) 33.33% profit
(C) 30% loss	(D) 20% profit

ale his sale is equal to the selling price of 11 meters of cloth.

	RRB JE - 26/05/2019 (Shift-I)
<b>(A)</b> 25%	<b>(B)</b> 45%
(C) 60%	<b>(D)</b> 50%

129. A fruit seller bought 100 oranges for Rs.80. If 20 of them are rotten, at what price should the remaining oranges be sold to earn 25% profit? 

	RRB JE - 27/05/2019 (Shift-III)
(A) 1.20 rs.	<b>(B)</b> 1.25 rs.
(C) 1.50 rs.	<b>(D)</b> 1 rs.

130. Ten dozen chocolates are bought at the rate of Rs.10 per dozen and are sold at the rate of Rs.2 per piece. If the merchant had to spend
Rs.50 on transportation, find the percentage profit.

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 60%	<b>(B)</b> 18%
<b>(C)</b> 50%	<b>(D)</b> 40%

**131.** A person buys apples at the rate of 8 for 34 rupees and sells them at 12 for 57 rupees. How many apples will have to be sold to get a net profit of Rs.45?

RRB JE - 02/06/2019 (Shift-III)

## Solution

5.

6.

7.

8.

1.	Ans.(B)
	Given – Cost Price(CP)
	$LOSS = \frac{1}{7}$
	Sale Price $(SP) = 144$
	Thus, Loss = cost rice (CP) - Sale Price (SP)
	$\frac{CP}{7} = CP - 144$
	$CP - \frac{CP}{7} = 144$
	$\frac{6CP}{7} = 144$
	$CP = 24 \times 7$
	CP = 168
	New Selling Price = 189
	Profit% = $\frac{SP - CP}{CP} \times 100$
	189 - 168
	$=$ $\frac{168}{168}$ × 100
	$=\frac{21}{2} \times 100 = 1250\%$
•	168 160 - 12.50%
2.	Ans.(C)
	-50 ruppes
	Profit% or Savings%
	50 - 45
	$=\frac{100}{50} \times 100$
	5
	$=\frac{1}{50} \times 100 = 10\%$
3.	Ans.(C)
	Let, cost price of 1 orange = Rs.1
	So, cost price of 20 oranges. = Rs.20
	Cost price of 15 oranges = the selling price of
	20 oranges
	So loss% = $\frac{20}{20} \times 100$
	loss% = 25%
4.	Ans.(A)
	Cost price of a pen = Rs. $\frac{1}{5}$

Sale price of a pen = Rs.  $\frac{1}{4}$ 

<b>(A)</b> 90	<b>(B)</b> 150
<b>(C)</b> 100	<b>(D)</b> 135

A sells goods to B for Rs. 300 at 25% profit.
 'B' sells it to C at a loss of 10%. In this deal, the purchasing price of C is equal to what percentage of the purchase price of A?
 RRB JE - 23/05/2019 (Shift-I)

<b>(A)</b> 97.5%	<b>(B)</b> 112.5%
(C) 87.5%	<b>(D)</b> 110%

Profit  $=\frac{1}{4}-\frac{1}{5}=\frac{1}{20}$ Profit percentage  $=\frac{\frac{1}{20}}{\frac{1}{r}} \times 100$  $=\frac{5}{20} \times 100 = 5 \times 5 = 25\%$ Ans.(D) Selling price = Cost Price ×  $\frac{(100 + Profit / Loss)}{100}$  $466 = \text{cost price} \times \frac{(100 + 16.5)}{100}$ 100 cost price =  $\frac{466 \times 100}{116.5}$ cost price = 400loss = 400 - 330 = 70 $loss\% = \frac{70 \times 100}{400} = 17.5\%$ Ans.(D) Profit on first item =  $\frac{200 \times 30}{100} = 60$ Profit on second item =  $\frac{300-60}{600} \times 100$  $= \frac{240 \times 100}{600} = 40\%$ Profit on second item = 40% Ans.(B) Total cost price = 3500 + 3500 = Rs.7000Selling price on 20% profit =  $7000 \times \frac{120}{100}$ = 8400 Rs.Selling price of 1st cycle at 5% of profit SP<sub>1</sub>  $= 3500 \times \frac{105}{100} = 3675$ remaining = 8400 - 3675 = 4725profit = 4725 - 3500  $= \frac{1225 \ Rs.}{\frac{1225}{3500} \times 100}$ profit% = 35%Ans.(B)  $Cost price = \frac{selling price}{100 - Loss} \times 100$  $= \frac{\frac{72 \times 100}{100 - 10}}{100 - 10}$  $=\frac{7200}{90}=80$ Again,

Selling price = 96 Rs. profit % =  $\frac{\text{Selling price} - \text{cost price}}{\text{Cost price}} \times 100$  $=\frac{96-80}{80}\times 100 = 20\%$ 9. Ans.(A) Cost price of the item is X Rs. Sell at a loss of 13% =  $\frac{(100-13)\times X}{100-13} = \frac{87X}{100-13}$ Sell at a loss of  $13\% = \frac{100}{100}$ Sell on a Profit of  $15\% = \frac{(100+15)\times X}{100} = \frac{115X}{100}$ According to Question,  $\frac{115X}{100} - \frac{87X}{100} = 63$  $\frac{28X}{2} = 63$ 100  $X = \frac{63 \times 100}{28} = 225 Rs.$ 10. Ans.(C) Let, cost of chair = Rs.x According to Question,  $= \frac{x \times 90}{100} - \frac{x \times 86}{100} = 27$  $\Rightarrow \frac{4x}{100} = 27$  $\Rightarrow x = 27 \times 25$  $\Rightarrow x = 675 Rs.$ 11. Ans.(B) Let the total cost of goods = Rs. x According to Question,  $x \times \text{selling Price of } \frac{2}{3} \text{ Part} = \frac{2x}{3} \times \frac{106}{100} = \frac{212x}{300}$ remaining part =  $x - \frac{2x}{3} = \frac{x}{3}$  $\therefore$  selling Price of  $\frac{x}{3}$  Part  $=\frac{x}{3} \times \frac{97}{100} = \frac{97x}{300}$ Selling Price of Total Goods =  $\left(\frac{212x}{300} + \frac{97x}{300}\right)$  = profit =  $\frac{309x}{300} - x = 540$  $\frac{9x}{300} = 540$ x = Rs.18000Hence the total cost of the goods was Rs. 18000. Ans.(B) 12. According to Question,  $\frac{117x}{100} - \frac{82x}{100} = 63$  $\frac{35x}{3} = 63$ 100 x = Rs.18013. Ans.(D) Let CP = Rs.x : According to Question,  $x \times \frac{107}{100} - \frac{x \times 67}{100} = 220$  $x \times \frac{40}{100} = 220 \Rightarrow x \times \frac{4}{10} = 220$ x = Rs.550So the cost price of the item will be Rs. 550. 14. Ans.(D) Let Cost price (CP) = xProfit % = 17

Selling price = Rs.2223  $\therefore CP = \frac{SP}{(100 + P\%)} \times 100$  $=\frac{2223}{117}\times 100$ = Rs.190015. Ans.(D) Let cost of first bag = Rs.xAnd selling price of second bag = Rs.(900 - x)According to Question,  $x \times \frac{125}{100} = (900 - x) \frac{75}{100}$ 5x = 2700 - 3x8x = 2700 $x = \frac{2700}{8} = 337.5$ First bag price = 337.5 Second bag price = 800 - 337.5 = 562.516. Ans.(D) As per the first condition -Selling price =  $\frac{\text{cost price } \times (100 + \text{profit}\%)}{100 + \text{profit}\%}$  $= \frac{x \times 106}{100}$ By second condition Selling price =  $\frac{\text{cost price} \times (100 - \text{loss}\%)}{100 - \text{loss}\%}$  $= \frac{x \times 94}{100}$ Therfore,  $\frac{106x}{100} = \frac{94x}{100} + 870$  $\frac{\frac{106x}{100}}{\frac{100}{12x}} - \frac{\frac{94x}{100}}{\frac{94x}{100}} = 870$  $\frac{12x}{12} = 870$  $x = \frac{870 \times 100}{12} = Rs.7250$ 17. Ans.(C) Let the cost price of the item = x Rs. According to Question,  $x \times \frac{114}{100} - x \times \frac{87}{100} = 162$  $\Rightarrow \frac{x}{100} [114 - 87] = 162$  $\Rightarrow x = \frac{162 \times 100}{27}$  $x = 6 \times 100$ x = 600Hence, the cost price of the item = Rs. 600 18. Ans.(D) Let the cost price = Rs.x Selling Price at a 12% loss = Selling Price at 2% profit =  $\frac{102x}{100}$ According to Question,  $\frac{102x}{100} - \frac{88x}{100} = 49$ 14x = 4900x = Rs.35019. Ans.(A) Let the cost price of first watch = Rs.x Cost price of second watch = Rs. (480 - x)

According to Question,

309*x* 

300

 $\begin{array}{l} x \times \frac{85}{100} \, = \, (480 - x) \times \frac{119}{100} \\ \Rightarrow \, 5x \, = \, 480 \times 7 - 7x \end{array}$  $\Rightarrow 12x = 480 \times 7$ x = 280 Rs.Cost price of second watch = 480 - 280 =Rs.200 20. Ans.(B) Cost price = 925 loss = 16% Selling price = ? Cost price =  $\frac{\text{Selling price } \times 100}{(100 - \text{loss}\%)}$ 925 =  $\frac{\text{Selling price } \times 100}{(100 - 16\%)}$  $925 \times 84 =$  Selling price  $\times 100$ Selling price =  $\frac{925 \times 84}{100}$ Selling price =  $37 \times 21$ Selling price = Rs.777 21. Ans.(C) Cost Price = 2275 Rs. Profit% = 8%Selling Price = ? Cost Price =  $\frac{\text{Selling price } \times 100}{100 \pm \text{Profit% loss\%}}$ 2275 =  $\frac{\text{Selling price } \times 100}{100 \pm 8}$ Selling price  $=\frac{2275 \times 108}{100} = \frac{245700}{100}$ Selling price = 2457 Rs. 22. Ans.(B) Given that -Cost price of Toys = 1125 % loss = 16% Selling price =? Formula, Cost Price (CP) =  $\frac{\text{selling price (SP)}}{(100 - \text{loss})} \times 100$  $\Rightarrow 1125 = \frac{SP}{84} \times 100$  $\Rightarrow SP = \frac{1125 \times 84}{100}$  $=\frac{1125\times84}{100}=Rs.945$ 23. Ans.(A) Let cost price of phone = Rs..x  $\therefore x \times \frac{(100-47)}{100} = 6360$   $\Rightarrow x = \frac{6360 \times 100}{53}$ 53 = Rs. 12,000Hence the selling price at 13% profit = cost price  $\times \frac{100 + 13}{100}$ = 12,000  $\times \frac{113}{100}$  = *Rs*. 13,560 24. Ans.(A)  $\mathsf{Profit\%} = \frac{\mathsf{Selling price}}{\mathsf{Cost price}} \times 100$  $125 = \frac{\text{selling price}}{_{96}} \times 100$ Selling price =  $\frac{125 \times 96}{100}$  = Rs.120

25. Ans.(D)

26.

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Let the cost price of goods be x and the selling price be y. Therefore -12.5 =  $\frac{(x-y)\times 100}{x}$ , and 22.5 =  $\frac{(y+56-x)\times 100}{x}$ or, 22.5 =  $\frac{(y+56-x)\times100\times12.5}{(x-y)\times100}$  $\Rightarrow 22.5(x - y) = (y - x + 56) \times 12.5$  $\Rightarrow$  9(x - y) = (y - x + 56) × 5  $\Rightarrow$  9x - 9y = 5y - 5x + 280  $\Rightarrow 14x - 14y = 280$  $\Rightarrow x - y = 20$ Now, 12.5 =  $\frac{20 \times 100}{x}$  or  $x = \frac{2000}{12.5} = Rs.160$ Thus, the purchase price of the article = Rs. 160. Now the selling price of the item for 25%  $\text{profit} = \frac{25 \times 160}{100} + 160 = 5 \times 8 + 160$  $= 40 \times 160 = Rs.200$ Ans.(A) Cost price of goods = Rs.1,975 Profit % = 12%  $\left[\text{Selling price} = \text{Cost price } \times \frac{100 \pm \text{profit/loss}}{100}\right]$ Selling price =  $\frac{1975 \times (100 + 12)}{100}$  $=\frac{1975\times112}{100}$  $=\frac{221200}{100}=2212$ Thus, the selling price of the article = Rs.2,212 Ans.(A) Let the cost price (C.P) = xSelling price (S.P) = 48, loss = 20% : C.P.  $\times \frac{80}{100} = 48$ C.P. = 60 Rs.If the profit is 20% then  $\mathsf{CP} \times \frac{120}{100} = SP$  $\frac{60 \times 120}{5} = SP$ 100 SP = Rs.72Ans.(C) Profit of two brand computer company = 15.000 Rs. 35% of total profit from a brand  $= 15000 \times \frac{35}{100} = Rs.5250$ : Selling price of another brand of computer = 15000 - 5250= Rs.9,750Ans.(C) Selling price of tea set = Rs. 3,540. And loss = 41%  $\therefore \text{ Cost price of tea set} = \left(\frac{100}{100-41} \times 3540\right)$ = 6000 rupees Intended profit = 11%

Selling price of tea set =  $((100 + 11) / 100 \times$ 6000) = Rs.6660 Hence the higher amount for the sale of tea sets = 6660 - 3540 = Rs.3120 30. Ans.(D) Profit earned in increased of 25%  $= 75000 \times \frac{(100 + 25)}{100}$   $\Rightarrow 75000 \times \frac{125}{100} = Rs.93750$ 31. Ans.(D) Real profit in year 3,  $= 5,00,000 \times \frac{35}{100}$ = Rs. 1,75,00032. Ans.(D) profit – loss% =  $\left(\pm a \pm b \pm \frac{a.b}{100}\right)$  $= \left( +20 - 20 - \frac{20 \times 20}{100} \right) \%$ = (+20 - 20 - 4)%= -4 or 4% loss33. Ans.(C) : Cost Price of 12 Pencils = Rs. 25 : Cost price of 1 pencil = Rs.  $\frac{25}{12}$ ·· Selling price of 5 pencils = Rs. 12 : Selling price of 1 pencil = Rs.  $\frac{12}{5}$ : Required percentage profit  $\frac{\frac{12}{5} - \frac{25}{12}}{\frac{25}{25}} \times 100$  $= \frac{\frac{144-125}{60}}{\frac{25}{12}} \times 100$  $= \frac{19}{60} \times \frac{12}{25} \times 100 = 15.2\%$ 34. Ans.(D) :: 3 oranges price = Rs.1 Price of 1 orange = Rs.  $\frac{1}{2}$ 2 Orange Price = Rs.1Price of 1 orange = Rs.  $\frac{1}{2}$  $\therefore$  The price of mixing two oranges  $=\frac{1}{3}+\frac{1}{2}=\frac{5}{6}$ Price of 1 orange from mixture =  $\frac{5}{12}$ Selling price of 1 orange on  $2\overline{0}\%$  profit =  $\frac{5}{12} \times \frac{120}{100}$ Selling price of 1 orange = Rs.  $\frac{1}{2}$ Selling Price of 12 oranges (a dozen) at 20% profit = 6 rupees 35. Ans.(C) Selling price of 12 watches = Cost price of 12 watches + Selling price of 2 watches SP of 10 watches = CP of 12 watches

 $= \frac{\text{Selling price}}{\text{Cost price}} = \frac{12}{10}$ Profit = Selling price – Cost price = 12 - 10 = 2Profit % =  $\frac{2}{10} \times 100 = 20\%$ 36. Ans.(C) Cost price of 1 egg =  $\frac{16}{18}$ Selling price of 1 egg =  $\frac{20}{22}$ profit =  $\frac{20}{22} - \frac{16}{18}$ =  $\frac{360 - 352}{18 \times 22} = \frac{8}{18 \times 22}$ =  $\frac{8 \times 18}{18 \times 22 \times 16} \times 100$ profit % =  $\frac{25}{11}$ % 37. Ans.(D) First type, Cost price of 3 oranges = Rs.1 :. Purchase price of 6 oranges =  $\frac{1}{2} \times 6 = Rs.2$ Second types, Cost price of 2 oranges = Rs.1 : Purchase price of 6 orange =  $\frac{1}{2} \times 6 = Rs.3$ Total cost price of 12 oranges = 2 + 3 = Rs.5 Selling price of 12 oranges to get 20% profit =  $5 \times \frac{120}{100} = Rs.6$ 38. Ans.(C) Cost Price of Sari by the Weaver (CP) =  $150 \times \frac{100}{125} = Rs. 120$ Shopkeeper's cost Price (CP) = Rs. 150 Shopkeeper's Sale Price (SP) and Customer's Cost Price (CP) =  $150 \times \frac{130}{100} = 195 Rs.$ So when the weaver sells directly to the customer, Weaver's profit% =  $\frac{180-120}{120} \times 100 = 50\%$ Customer profit = 195 - 180 = Rs.1539. Ans.(C) Let the cost price of goods sold at 25% profit = 2x Cost price of goods sold at 15% loss = x According to Question,  $\frac{2x \times 125}{100} + \frac{x \times 85}{100} = 3x + 35$  $\frac{250x+85x}{2} = 3x + 35$ 100 335x - 300x = 350035x = 3500x = 100Hence price of the second item = 2x = 200Total = 100 + 200 = Rs.300 40. Ans.(D) Price of car purchased by Rima = 75,000 Repair expense = 10,000Total cost = 85,000

Selling Price of Car (to Chiru)

 $= 85000 \times \frac{115}{100} = 97,750$ Chiru's cost price = 97,750 Rs. Sale Price of Cheeru (to Ritu) =  $97,750 \times$  $\frac{110}{100} = 10,7525$ Thus the amount spent by Ritu in buying a car = Rs. 107, 525 41. Ans.(B) Total purchase price = 3 lakh rupees Selling price to earn a total of 15% profit =  $3,00,000 \times \frac{115}{100} = 3,45,000$ Cost price  $I = 3,00,000 \times \frac{25}{100} = 75,000$ Selling price  $I = 75000 \times \frac{75}{100} = 56250$ Cost price  $II = 3,00,000 \times \frac{40}{100} = 1,20,000$ Selling price  $II = 1,20,000 \times \frac{125}{100} = 1,50,000$ Total selling Price = selling Price I + selling Price II = 56, 250 + 1, 50, 000 = 206, 250 Remainder = 345000 - 206250 = Rs.138750 Hence, the remaining plot would have to be sold for Rs 138,750 for a total profit of 15%. 42. Ans.(B) Cost price (CP) of toys = Rs.280 Selling price (SP) of toys = Rs.315 Profit (P) = 315 - 280 = Rs.35Formula - $P\% = \frac{P}{CP} \times 100$  $= \frac{35}{280} \times 100$  $= \frac{\frac{5\times100}{40}}{12.5\%} = \frac{50}{4}$ 43. Ans.(B) Total cost of car = 47000 + 3000= Rs.50.000Selling price of car = 58,000 Rs. Profit = Selling price - Cost price Profit = 58,000 - 50,000 = Rs.8,000So, profit% =  $\frac{8,000 \times 100}{50,000}$  = 16% Ans.(C) 44. Cost Price (Cost) = Rs.350Selling price = Rs.700 $\operatorname{Profit}_{\%}^{\%} = \frac{\operatorname{Selling price} - \operatorname{Cost price}}{\operatorname{Cost price}} \times 100$  $= \frac{700 - 350}{350} \times 100$  $=\frac{350}{350}\times 100$ = 100%45. Ans.(D) Selling price of a pair of shoes = 2,059 Profit = 16%

 $\frac{\text{Cost price}}{100} = \frac{\text{Selling price}}{(\text{Profit} + 100)}$ *Cost* price of Shoes  $= \frac{2,059 \times 100}{(100 + 16)}$  $= \frac{2,059 \times 100}{116} = Rs. 1,775$ 46. Ans.(C) Selling price = 1440 Rs. Profit% = 20% $\begin{array}{l} \text{Cost price} = \frac{\text{selling price } \times 100}{(100 + \text{Profit%})} \\ = \frac{1440 \times 100}{100 + 20} = \frac{1440 \times 100}{120} = Rs.1200 \end{array}$ 47. Ans.(B) Let the cost price of transistor = Rs.x Profit =  $x \times \frac{30}{100} = \frac{3x}{10} Rs.$ : Selling price = Cost price + Profit  $\therefore 572 = x + \frac{3x}{10}$  $572 = \frac{10x + 3x}{10}$ 13x = 5720x = Rs.44048. Ans.(B) Let the cost price of each chair = Rs.x According to Question -Sellig price =  $12x \times \frac{(100 + 12)}{100} + 4x \times \frac{(100 - 3)}{100}$  $=\frac{3x \times 112}{25}+\frac{97x}{25}$  $=\frac{336x+97x}{25}=\frac{433x}{25}$ Cost price = 12x + 4x = 16xProfit = Selling price - Cost price  $1650 = \frac{433x}{25} - 16x$  $1650 \times 25 = 433x - 400x$  $x = \frac{1650 \times 25}{33}$  $x = 50 \times 25 = 1250$ Hence, the cost price of a chair is = Rs. 1250. Ans.(C) 49.  $CP = \frac{31}{100 - loss \%}$  $CP = \frac{SP \times 100}{100 - 5}$   $CP = \frac{1235 \times 100}{95} = 1300$  $SP = CP \times \frac{100 + Pr \text{ ofit }\%}{2}$  $SP = CP \times \frac{100}{100}$   $SP = CP \times \frac{100 + 10}{100}$   $SP = 1300 \times \frac{110}{100} = Rs.1430$ 50. Ans.(D) Total cost of car = 4.50 + 1.25 = Rs 5.75 lakh : Selling price=  $\frac{100 - loss\%}{100} \times Cost price$  $= \left(\frac{100-20}{100}\right) \times 5.75$  $=\frac{80}{100} \times 5.75 = 4.600 = 4.60$  Lakh Ans.(B) 51.

Cost price =  $\frac{\text{Selling price}}{(100 \pm L/P\%)} \times 100$ Let the selling price = x According to Question,

$$\frac{1755}{78} = \frac{x}{100}$$

$$\frac{1755}{78} = \frac{x}{100}$$

$$x = \frac{1755 \times 100}{78}$$

$$x = \frac{1755 \times 100}{78}$$
Selling price = 96  $\left(1 + \frac{12.3}{100}\right)$ 

$$= 96 \times \frac{112.5}{100}$$

$$= 96 \times 1.125$$

$$= Rs. 108$$
Hence the selling price of that item is Rs. 108.  
**53. Ans.(D)**  
 $2P + 4S = 5600 \dots (i) \text{ where } S = Shirt$   
 $1P + 6S = 5600 \dots (ii) P = Pant$   
Multiplying 2 in equation (ii) and subtracting  
from equation (i)  
 $8S = 5600$   
 $1S = 700$   
 $\therefore Cost price of 1 Shirt = Rs.700$   
and selling price of  $10 \text{ Shirt} = 6000$   
 $\therefore \text{ Lets price of 1 Shirt} = \frac{6000}{10} = Rs.600$   
 $\therefore \text{ Loss } = 700 - 600 = Rs.100$   
**54. Ans.(A)**  
Let cost price of the item = Rs.X  
Difference of selling prices = Rs. 3  
By question,  
 $x \times \frac{118}{100} - x \times \frac{102}{100} = 3$   
 $\frac{16x}{100} = 3$   
 $x = \frac{75}{4}$   
Required Ratio  $= \frac{75}{4} \times \frac{102}{100} : \frac{75}{4} \times \frac{118}{100}$   
 $= 51:59$   
**55. Ans.(A)**  
Let the cost price of the item = x  
According to Question,  
 $\frac{x \times 110}{100} - \frac{x \times 104}{100} = 3$   
 $110x - 104x = 300$   
 $Cost price = 50$   
Selling price at 4% profit  $= \frac{50 \times 104}{100} = 52$   
Selling price at 10% profit  $= \frac{50 \times 104}{100} = 55$   
Required Ratio = 52 : 55  
**56. Ans.(A)**  
Let cost price of one radio be the = Rs.100  
So. Total Cost price of Radio = Rs.600  
According to Question,

Sales Price =  $600 \times \frac{80}{100} = 480 Rs.$  $\therefore \text{ loss} = 600 - 480$ = Rs. 120Cost of a TV =  $3 \times$  (the value of one radio)  $= 3 \times 100$ = Rs.300Let if TV sold at x% profit, there will be no gain or loss.  $300 \times \frac{x}{100} = 120$ 3x = 120x = 40%Ans.(B) Let the cost price of a table = Rs. 1 Then the cost price of 20 tables = Rs.20 selling price of x table = Rs. 20Selling Price = Cost Price  $\left(\frac{100 + profit}{100}\right)$  $20 = x \times \frac{125}{100}$  $x = \frac{100 \times 20}{125}$ x = Rs.16Ans.(A) Let the initial investment = Rs.x  $\therefore x \times 90\% = 90000$  $x \times \frac{90}{100} = 90000$ x = 100000 Rs.Ans.(D) Selling price of Table = Rs.16,870 Loss = Rs.1080 Then, cost price of table = 16870 + 1080 = 17,950. loss % =  $\frac{\text{loss}}{\text{Cost price}} \times 100 = \frac{1080}{17950} \times 100$  $= \frac{108000}{17950} = 6.0167$ loss % = 6.01 Ans.(B) Cost price of Toys = 160 Selling price = 180 Profit % =  $\frac{180-160}{160} \times 100 = \frac{1}{8} \times 100$ Profit % = 12.5%Ans.(C) Let cost price = Rs 100.  $1\frac{1}{3}$  of selling price = 100 Selling price =  $100 \times \frac{4}{3} = \frac{400}{3}$ profit =  $\frac{400}{3} - 100$ =  $\frac{100}{3}$ % profit =  $\frac{\text{profit}}{\text{Cost price}} \times 100$  $=\frac{3}{100} \times 100 = \frac{100}{3}\%$  $= 33\frac{1}{2}\%$ Ans.(C)

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Cost price of article =  $435 \times \frac{100}{116} = 375 Rs$ . If selling price be Rs.330 then Loss% =  $\frac{375-330}{375} \times 100$  $=\frac{45}{375} \times 100 = 12\%$ 64. Ans.(C) Cost price =  $\frac{\text{Selling price} \times 100}{3}$ (100-loss\%)  $=\frac{280\times100}{80}=350$  Rs. 65. Ans.(B) Selling price at a loss of 15%  $= 1200 \times \frac{(100-15)}{100}$  $= 1200 \times \frac{85}{100}$ = Rs.1020Again, selling price after reduction of 5% =  $1020 \times \frac{(100-5)}{100}$ =  $1020 \times \frac{95}{100}$ = Rs.96966. Ans.(B) Total expenditure = Rs. 5000 Price of 1 table = Rs. 50 Price of 12 tables = Rs.  $50 \times 12 = 600$ Remaining = 5000 - 600 = 4400 Rs. Cost Price of 1 chair = Rs. 40 Number of chairs purchased =  $\frac{4400}{40}$  = 110 Ratio to number of chairs and table = 110 : 12 ⇒ 55: 6 67. Ans.(A)  $\frac{100 - \log \%}{100 + \operatorname{profit}\%} = \frac{\operatorname{First selling price}}{\operatorname{Second selling price}}$  $\frac{100-11}{100+x} = \frac{979}{1232} \text{ or } \frac{89}{100+x} = \frac{979}{1232}$ 100 + x = 112 or x = 12∴ Profit% = 12 68. Ans.(B)  $Profit\% = \frac{Profit}{Cost price} \times 100$  $= \frac{28.60 - 27.50}{27.50} \times 100$  $= \frac{1.10 \times 100}{27.50} = \frac{110}{27.5} = 4\%$ 69. Ans.(D) According to Question, Cost price of 15 laptop =  $15000 \times 15 =$ 225000  $\frac{Profit}{Profit} = \frac{Profit}{\frac{Cost price}{297000 - 225000}} \times 100$   $\frac{Profit}{225000} = \frac{297000 - 225000}{225000} \times 100$  $= \frac{72000}{225000} \times 100 = 32\%$ 70. Ans.(D) The selling price of item = Rs. 1458 Cost price of the item = Rs. 1350

$$Profit\% = \frac{Profit}{Cost \text{ price}} \times 100 = \left(\frac{1458 - 1350}{1350}\right) \times 100 = \frac{108}{1350} \times 100 = 8\%$$

#### 71. Ans.(B)

If selling price of a items be equal to cost price of b items then, -% Profit =  $\frac{b-a}{a} \times 100$ Hence % profit of shopkeeper =  $\frac{50-35}{35} \times 100$  $=\frac{15}{35} \times 100 = 42.83\%$ 

#### 72. Ans.(C)

Cost Price =  $\left(\frac{100}{100 - \text{Loss}\%}\right) \times$  Selling price  $= \left(\frac{100}{100-20}\right) \times 15000$  $= \frac{100}{80} \times 15000 = Rs.18750$ 

#### 73. Ans.(A)

Marked price of chair = Rs. 4740. Selling price of chair =  $4740 \times \frac{100-12}{100} = 474 \times \frac{88}{10}$ Cost price =  $474 \times \frac{88}{10} \times \frac{100}{100+33}$ =  $\frac{474 \times 88 \times 10}{133} = 3136.24 \approx 3136$ 

#### 74. Ans.(B)

Let cost price of item = Rs.x Marked price = Rs. 1280, Discount = 10%selling Price of goods =  $1280 \times \frac{100-10}{100}$  $= 1280 \times \frac{90}{100}$ By question –  $x = 1280 \times \frac{90}{100} \times \frac{100}{100 + 20}$  $x = 1280 \times \frac{90}{120} x = 960 Rs.$ 

#### 75. Ans.(B)

Selling price of item =  $160 \times \frac{90}{100} = 144$  $\therefore \text{ Cost price } = \left(\frac{100}{100+20}\right) \times 144$  $=\frac{100}{120} \times 144 = 120 Rs.$ 

Ans.(A) 76. Cost price = CP, Marked Price (MP) = 320 Profit = 20%Discount = 10%  $\frac{CP \times 120}{MP} = \frac{MP}{MP} \times 90$ 100 100  $\frac{CP \times 120}{100} = \frac{320 \times 90}{100}$  $CP = \frac{32 \times 9 \times 10}{12}$  $CP = 240 R_{\odot}$ 

77. Ans.(B)  
Cost price = 
$$\left(\frac{100}{100 + 15}\right) \times 8625$$
  
=  $\frac{100}{115} \times 8625 = 7500 Rs.$ 

Let, cost price of water purifier is Rs.x According to Question  $x \times \frac{(100-40)}{100} + 125 = \frac{x \times 110}{100}$  $\Rightarrow \frac{60x}{100} + 125 = \frac{110x}{100}$  $\Rightarrow \frac{50x}{100} = 125$  $\Rightarrow \frac{x}{2} = 125$  $\Rightarrow x = 125 \times 2 = 250$ Ans.(B) 79. By question, 4% = 360 - 345 = 15 Rs. $\therefore 100\% = \frac{15}{4} \times 100$ = 375 Rs. Hence, cost price of shoes = Rs. 375 80. Ans.(C)  $CP = SP \times \frac{100}{100 + \text{Pr ofit }\%}$  $CP = 920 \times \frac{100}{100 + 15}$  $CP = 0220 \times \frac{100}{100}$  $CP = 920 \times \frac{100}{115}$ CP = 800Now the selling price on 20% profit  $SP = CP \times \frac{100 + \text{Pr ofit }\%}{100}$  $= 800 \times \frac{100 + 20}{100} = 800 \times \frac{120}{100} = Rs.960$ 81. Ans.(D) Cost price of bus =  $2210 \times \frac{100}{100-15}$ =  $2210 \times \frac{100}{85}$  = 2600 *Rs*. Sale price of bus at 15% profit = Cost price  $\times \frac{100 + 15}{100}$  $= 2600 \times \frac{115}{100}$ = 2990 Rs.82. Ans.(D) Let Marked price of item = Rs.x : Selling price = Marked price  $\times \left[1 - \frac{\overline{\varsigma c}}{100}\right]$  $26000 = x \times \left[1 - \frac{35}{100}\right]$  $26000 = x \times \frac{65}{100}$  $x = \frac{26000 \times 100}{57}$ x = 40000 Rs.If the discount is 15% then selling price =  $40000 \times \left[1 - \frac{15}{100}\right] \\ = 40000 \times \frac{85}{100} = Rs.34000$ 83. Ans.(B) Cost price of item =  $\left(\frac{100}{100-20}\right) \times 2400$  $=\frac{100}{80}\times 2400 = 3000 Rs.$  $\therefore \text{ Selling price at 20\% profit} = \left(\frac{100 + 20}{100}\right) \times 3000$  $= 120 \times 30 = Rs.3600$ 

84. Ans.(A)  $\frac{100 - D_1\%}{100 - D_2\%} = \frac{SP_1}{SP_2}$ where D = Discount and SP = Selling price $\frac{100-20}{100-25} = \frac{2400}{SP_2}$  $\frac{100-25}{SP_2} = \frac{1}{SP_2}$  $SP_2 = \frac{2400 \times 75}{80}$  $SP_2 = Rs. 2250$  $\therefore$  Selling price = Rs.2250 85. Ans.(C) Given that -Selling price = Rs.7500 Profit = 50%: Cost price =  $\frac{7500 \times 100}{150}$  = *Rs*. 5000 Again, New profit = 35% : Selling price =  $\frac{5000 \times 135}{100}$  = *Rs*. 6750 86. Ans.(C) Cost price of 100 oranges including expenditure on transportation  $= 60 \times \frac{(100 + 15)}{100} = 60 \times \frac{115}{100} = Rs.69$ So, selling price of 100 oranges at 20% profit  $= 69 \times \frac{(100 + 20)}{100} = 69 \times \frac{120}{100} = Rs.82.8$ 87. Ans.(B) Cost price of 5 kg wheat =  $70 \times 5 = 350$ Cost Price of 10 kg Lentil =  $80 \times 10 = 800$ According to Question, Selling price of all items =  $\frac{350 \times 110}{100} + \frac{800 \times 120}{100}$ = 385 + 960 = Rs.134588. Ans.(B) Given that -Selling price = Rs. 2250Profit = 12.5%  $\therefore \text{ Cost price } = \frac{\text{Selling price } \times 100}{(100 + 12.5)}$  $2250 \times 100$ = 112.5 = Rs.2000Hence, profit = selling price - cost price = 2250 - 2000= Rs. 25089. Ans.(A) Selling price of 12 mobiles = 188,160 Cost price of 12 mobiles =  $12 \times 14,056$ = 168.672Total profit received by Reena = 188,160 - 168,672 = Rs.19,488 90. Ans.(D) Marked price (MP) = 4750, cost price (CP) = 3850, (discount %) = 12% Selling price  $SP = \frac{MP \times (100 - \text{discount }\%)}{100}$  $=\frac{4750\times(100-12)}{100}$ SP 100  $SP = \frac{4750 \times 88}{100} = 4180$ (Profit) = SP - CP = 4180 - 3850 = Rs.330

91. Ans.(A) Selling price = Cost price  $\times \frac{(100 \pm P/L)}{100}$ Selling price =  $\frac{2500 \times 125}{100}$  = 3125 Profit = Selling price - (Cost price + tax) Profit = 3125 - (2500 + 125)Profit = 3125 - 2625 = 50092. Ans.(B) 100 125  $\frac{75 \quad 100}{75 \quad 125}$ % Profit =  $\frac{50}{75} \times 100 = 66 \frac{2}{3}\%$ 93. Ans.(A) Let the cost price of the item = Rs.x Difference of selling prices = Rs. 3 By question  $x \times \frac{112}{100} - x \times \frac{108}{100} = 3$  $\frac{4x}{100} = 3, x = \frac{300}{4} = 75$ : Required Ratio =  $75 \times \frac{108}{100} : 75 \times \frac{112}{100}$ = 108:112 = 27:2894. Ans.(A) Let the cost price of the item = x Rs. Difference of selling prices = Rs. 3By question  $x \times \frac{118}{100} - x \times \frac{108}{100} = 3$  $\frac{10x}{100} = 3$ x = 30Required ratio =  $30 \times \frac{108}{100} : 30 \times \frac{118}{100}$ = 54:59 95. Ans.(A) Let the marked price of jeans is Rs. 100. According to the question, Cost price =  $\frac{100 \times 85}{120}$ Hence ratio of cost price of jeans to marked price  $\Rightarrow \frac{100 \times 85}{120}: 100$ ⇒ 8500:12000 = 17:2496. Ans.(A) Let cost price of item = Rs.x then,  $\frac{x \times 116}{100} - \frac{x \times 108}{100} = 3$ 116x - 108x = 3008x = 300 $x = \frac{300}{8}$ Ratio of selling prices  $= \frac{300 \times 108}{8 \times 100} : \frac{300 \times 116}{8 \times 100} = 108 : 116$ Required ratio = 27:2997. Ans.(B) Let the cost price of the item = x Rs. Difference of selling prices = Rs. 3

 $x \times \frac{108}{100} - x \times \frac{104}{100} = 3$  $\frac{4x}{100} = 3$ x = 75Required ratio =  $75 \times \frac{104}{100}$ :  $75 \times \frac{108}{100}$  = 26: 27 98. Ans.(A) Let the cost price of the item = Rs.xAccording to Question,  $\frac{116x}{100} - \frac{102x}{100} = 3, \frac{14x}{100} = 3$ Cost price  $x = \frac{150}{7}$ Selling price =  $\frac{150}{7} \times \frac{102}{100} : \frac{150}{7} \times \frac{116}{100}$  $=\frac{51}{7}:\frac{58}{7}$ Required ratio = 51: 58 99. Ans.(A) Let the cost price of the item = Rs.xSelling price at 4% profit =  $\frac{104x}{100}$ And Selling price at 12% profit. =  $\frac{112x}{100}$ According to Question,  $= \frac{112x}{100} - \frac{104x}{100} = 3$  $\therefore 8x = 300 x = \frac{300}{8}$ Ratio of selling price =  $\frac{104x}{100}$ :  $\frac{112x}{100}$  $= \frac{104}{100} \times \frac{300}{8} : \frac{112}{100} \times \frac{300}{8}$ = 104:112 = 13:14100. Ans.(B) 100 111 89 100 89 111 Profit % =  $\frac{22}{89} \times 100 = 24.72\%$ 101. Ans.(B) 100 107 100 93 107% Profit =  $\frac{14}{93} \times 100 = 15.05\%$ 102. Ans.(D) : Cost price of 5 Bananas = 4 Rs.  $\therefore$  Cost price of 1 Banana =  $\frac{4}{5}$ Selling price of 4 Banana = 5 Selling price of 1 Banana =  $\frac{5}{4}$ Profit = selling price - Cost price  $= \frac{5}{4} - \frac{4}{5} = \frac{25 - 16}{20}$ Profit =  $\frac{9}{20}$ Hence Profit % =  $\frac{9}{20} \times 100 \times \frac{5}{4} = \frac{225}{4}$ = 56.25% 103. Ans.(B) Cost price of 1 orange =  $Rs.\frac{3}{10}$ 

Selling price of 1 orange = 
$$Rs.\frac{3}{8}$$
  
Profit % =  $\frac{\frac{3}{8}-\frac{3}{10}}{\frac{3}{10}} \times 100$   
=  $\left(\frac{\frac{30-24}{10}}{\frac{30}{10}} \times 100\right)$ %  
=  $\left(\frac{6}{80} \times \frac{10}{3} \times 100\right)$ %  
= 25%

104. Ans.(C)

Let the price of each pencil, pen and eraser be x, y and z respectively. By question -2x + 4v + 8z = 1210x + 8y + 4z = 3612x + 12y + 12z = 48x + y + z = 4 $3x + 3y + 3z = 4 \times 3 = \text{Rs.12}$ 

#### 105. Ans.(B)

·· Selling price of 90 chocolate = Rs.160 : Selling price of 1 chocolate = Rs.  $\frac{160}{90} = Rs. \frac{16}{9}$ Cost price of 1 chocolate =  $\frac{16}{9} \times \frac{100}{(100-20)}$  $=\frac{16}{9}\times\frac{100}{80}$ 

$$= Rs.\frac{20}{2}$$

Selling price of 1 chocolate to get 20% profit  $= \frac{20}{9} \times \frac{100 + 20}{100}$  $= \frac{20}{9} \times \frac{120}{100}$ 

Selling price of 1 chocolate =  $Rs.\frac{8}{2}$ So, Number of chocolates in 1 Rupee = 3/8 Number of chocolates in Rs.96  $= 96 \times \frac{3}{8} = 36$ 

#### Ans.(B) 106.

107.

108.

Cost price of 1 kg fruit =  $\left(\frac{100}{100-10}\right) \times 9 = 10$ : Selling price of fruit for 5% profit  $= \left(\frac{100 + \text{profit}\%}{100}\right) \times \text{ Cost price}$  $= \left(\frac{100 + 5}{100}\right) \times 10 = 10.5 \text{ Rs.}$ Ans.(C) Selling price after increasing Rs. 2 in cost price (i) 13 (ii) 11 (iii) 10 (iv) 12 (i) % Profit =  $\frac{2}{13} \times 100 = 15.38\%$ (ii) % Profit =  $\frac{2}{11} \times 100 = 18.18\%$ (iii) % Profit  $= \frac{1}{10}^{2} \times 100 = 20\%$ (iv) % Profit  $= \frac{2}{12} \times 100 = 16.66\%$ The highest profit occurred on the item (iii). Ans.(C)

Total cost price on all four tractors = 2 + 3 = 5lakhs Selling price of tractor to get 40 percent profit  $=\frac{5\times140}{100}=$  7 lakh : 1 tractor is sold for 1 lakh : Average selling price of the remaining 3 tractors  $=\frac{7-1}{3}=2$  lakh 109. Ans.(C) Cost price of Horse = Selling price  $\times$ 100 100 + profit %  $= 12000 \times \frac{100}{(100+20)} = 10000 \, Rs.$ Cost price of cow =  $12000 \times \frac{100}{(100-10)}$  $= 12000 \times \frac{100}{90} = 13333.33 \, Rs.$ Hence profit = (12000 + 12000) - (10000 + 12000)13333.33) = 24000 - 23333.33 = Rs.666.67110. Ans.(D) Cost price of a cup set = 575 Rs. Selling price = 506 Rs. Loss = Cost price - Selling price = 575 - 506 loss = 69 Rs.  $loss\% = \frac{loss}{Cost price} \times 100$  $=\frac{69}{575} \times 100$ = 12%111. Ans.(B) Profit % =  $\left(\frac{25-20}{20}\right) \times 100 = 25\%$ 112. Ans.(C) Let the Cost price = 100Selling price = 100 + 25 = 125According to Question -On changing the value of the cost price and the selling price Cost price = 125 Selling price = 100 Loss % =  $\frac{125-100}{125} \times 100 = \frac{25}{125} \times 100 = 20\%$ 113. Ans.(D) Suppose another item sold at x% profit According to Question,  $2500 \times \frac{(100+5)}{100} + 2500 \times \frac{(100+x)}{100}$  $= 5000 \times \frac{(100 + 20)}{100}$  $25 \times 105 + 25(100 + x) = 50 \times 120$ 2625 + 2500 + 25x = 600025x = 6000 - 512525x = 875x = 35%114. Ans.(C)

Let the cost price of a  $\cot = x Rs$ Sale price of 18 cot = cost price of 18 cot + cost price of 3 cot

: Sale price of 18 cot = cost price of 21 cot = Rs 16800 21x = 16800x = Rs.800115. Ans.(C) Let the cost price = Rs.xBy question – Profit =  $\frac{x}{4}$ Profit = Selling price - Cost price  $\frac{x}{4} = 375 - x$  $x + \frac{x}{4} = 375$  $\frac{5x}{4} = 375$  $x = 375 \times \frac{4}{5}$  $x = 75 \times 4$ x = 300 RsSo the cost price will be Rs. 300. 116. Ans.(C) 17 balls  $\rightarrow$  720 Rs. According to Question, Loss is equal to cost price of 5 balls. (17-5) balls  $\rightarrow Rs.720$ 12 ball  $\rightarrow$  720 Rs. 1 ball =  $\frac{720}{12}$  = Rs. 60 117. Ans.(C) Selling price of bicycle = cost price  $\times \frac{(100 - \log 8\%)}{100} = 1400 \times \frac{100 - 15}{100}$  $= 1400 \times \frac{\frac{85}{100}}{100}$ = 14 \times 85 = Rs. 1190 118. Ans.(B) Cost Price = Selling price  $\times \frac{100}{(100 - \log s)}$  $= 2400 \times \frac{100}{(100-25)}$  $= 2400 \times \frac{100}{75}$ = 3200Selling Price = Cost price  $\times \frac{(100 + \text{profit})}{100}$  $= 3200 \times \frac{100 + 25}{100}$  $= 3200 \times \frac{125}{100}$ = 32 × 125 = Rs. 4000 119. Ans.(B) Cost Price of Goods =  $8000 \times \frac{100}{125} = 6400$ So profit = selling price - cost price = 8000 - 6400 = Rs.1600120. Ans.(B) Let the cost price of the item = Rs.x Difference of selling prices = Rs. 3 By question -

 $x \times \frac{106}{100} - x \times \frac{104}{100} = 3$  $\frac{2x}{100} = 3$ x = 150Required ratio =  $150 \times \frac{104}{100}$ :  $150 \times \frac{106}{100}$ = 52:53121. Ans.(D) Let cost price of the item = Rs.xLoss = 15%Selling price = Cost price  $\times \frac{(100 - loss)}{100}$  $= x \times \frac{100-15}{100}$ =  $x \times \frac{85}{100} = \frac{17x}{20}$ Cost price : Selling price  $x:\frac{17x}{20}$ 20:17 122. Ans.(D) If two items make a profit and a loss at the same percentage then it will  $\left(\frac{x^2}{100}\right)$  loss.  $\mathsf{Loss} = \left(\frac{10^2}{100}\right) = \frac{100}{100} = 1\%$ 123. Ans.(D) Profit/loss % =  $\left(\pm a \pm b \pm \frac{a \cdot b}{100}\right)$ = 20 - 20 -  $\frac{20 \times 20}{100}$ = -4% ( $\because$  - Symbol shows loss) ∴ Loss % = 4% 124. Ans.(D) If one cycle sell at 20% profit and second at 20% loss then the intended profit or loss % =  $\left(\pm a \pm b \pm \frac{a \cdot b}{100}\right)$  $+20\% - 20\% + \frac{+20\% \times -20\%}{100}$  $=\frac{-400\%}{100}$ ('- Mark loss and' '+ Sign indicates profit') There was a loss of 4%. 125. Ans.(B) Loss formula =  $a + b + \frac{ab}{100}$  $= 5 - 5 - \frac{25}{100}$ loss of 0.25% Required loss =  $1000 \times \frac{.25}{100} = Rs. 2.5$ 126. Ans.(A) According to Question, Merchant's Profit%  $= x + y + \frac{xy}{100}$ = -6 + 15 +  $\frac{-6 \times 15}{100}$  $= 9 + \frac{-90}{100}$ = 9 - 0.9 = 8.1%127. Ans.(B) Cost price of 1 pen =  $\frac{40}{8} = 5$ Selling price of pen =  $\frac{40}{6} = Rs.\frac{20}{3}$ 

:. profit % = 
$$\frac{\left(\frac{20}{3} - 5\right)}{5} \times 100 = \frac{5}{3 \times 5} \times 100$$
  
= 33.33%

### 128. Ans.(D)

Let cost price of 1 meter cloth be Rs. 1.  $\therefore$  Selling price = Rs.33 Profit = Rs.11  $\therefore$  Cost price = 33 - 11 = Rs.22  $\therefore$  Profit % =  $\frac{11}{22} \times 100 = 50\%$ 

### 129. Ans.(B)

Cost price = 80 Remaining oranges = 80 Required selling price =  $\frac{80 \times 125}{100}$  = Rs. 100 Selling price of 1 orange =  $\frac{100}{80}$  = Rs. 1.25 Ans (A)

#### 130. Ans.(A)

Let the cost price of 1 dozen chocolate = Rs. 10. Cost price of 10 dozen chocolate =  $10 \times 10 = 100$  Rs. Price of 10 dozen chocolate including fare = 100 + 50 = 150Number of chocolate in 10 dozen =  $12 \times 10 = 120$ Sale price of 1 chocolate = Rs. 2. Sale price of 120 chocolate = 120 × 2 = 240 rupees. Profit = selling price – cost price = 240 - 150 = 90 Profit % =  $\frac{\text{Profit}}{\text{cost price}} \times 100$ =  $\frac{90}{150} \times 100 = 6 \times 10 = 60\%$ Ans.(A)

# 131. Ans.(A)

Cost price of 1 apple =  $\frac{34}{8} = Rs. 4.25$ Selling price of 1 apple =  $\frac{57}{12} = Rs. 4.75$ Profit = selling price - Cost price =  $4.75 - 4.25 = Rs. 0.50 = Rs. \frac{1}{2}$ on selling 1 apple has the profit of Rs.  $\frac{1}{2}$  $\frac{1}{2}$  Rs. = 1 Apple 1 Rs. = 2 Apple 45 =  $45 \times 2 = 90$  Apple Hence to get Rs 45 profit He will have to sell 90 apples.

### 132. Ans.(B)

Cost price of  $A = \frac{300 \times 100}{125} = 240$ Selling price of  $B = \frac{300 \times 90}{100} = Rs.270$ According to Question,  $240 \times \frac{x}{100} = 270$  $x = \frac{225}{2} = 112.5\%$ 

# 08. (Discount)

1. Find the selling price when marked price is 160 and the discount is 12%?

RRB Group-D - 04/10/2018 (Shift-I)		
<b>(A)</b> 140.80	<b>(B)</b> 132.80	
(C) 160.80	<b>(D)</b> 100	

2. One shop offers 30% discount on MRP of 1 product. If MRP of product is Rs. 500, then what is selling price?

RRB	Group-D - 28/11/2018 (Shift-I)
(A) rs.500	<b>(B)</b> rs.250
(C) rs.300	<b>(D)</b> rs.350

3. Rs. 1,600 was written on a shirt. During Diwali festival offers, 10% discount is given on it. What will be selling price of shirt?

RRB Group-D - 23/11/2022 (Shift-I)

(A) rs.1,400	<b>(B)</b> rs.1,540
( <b>C)</b> rs.1,440	<b>(D)</b> rs.1,240

4. Neha bought a book at Rs. 1300 at a 30% discount and sold it at 30% profit. How much did he earn?

RRB Group-D - 26/11/2022 (Shift-III)

(A) rs.273	<b>(B)</b> rs.390
(C) rs.780	<b>(D)</b> rs.0

5. The marked price of an article is 352 and its selling price is 326. What is the discount rate (up to one full digit of decimal) given on item?

RRB Group-D - 26/10/2018 (Shift-III)

(A) 8 %	<b>(B)</b> 7.8 %
<b>(C)</b> 7.4 %	<b>(D)</b> 8.3 %

6. The current price of a computer is Rs. 32,450, which is 12% less than its previous year's price. What was the price of computer last year?

RRB Group-D - 04/12/2018 (Shift-III)(A) rs.37,424(B) rs.36,344(C) rs.28,556(D) rs.36,875

7. If the market price is 30% more than cost price and 10% discount is offered on market price, then what is profit in percentage?

RRB Group-D - 28/11/2018 (Shift-I)

(A) 17 %	( <b>B</b> ) 15 %
( <b>C)</b> 31/2 %	<b>(D)</b> 12%

8. In a factory, the sales center decided not only to get rid of old stock but to get variable costs in process. In such a case, he sold each set at minimum Rs. 399. If fixed cost is 24% of total cost, then what was the minimum cost price of each set?

RRB Group-D - 12/12/2018 (Shift-I)		
(A) rs.520	<b>(B)</b> rs.540	
( <b>C)</b> rs.525	<b>(D)</b> rs.550	

**9**. A shop sells clothes at a 60% discount on weekends. On Sunday, an additional discount of 10% is available on the discounted price. You buy a shirt on Sunday for Rs. 36, then how much money you have to pay to buy same shirt on tuesday of same month?

RRB Group-D - 05/10/2018 (Shift-III)		
(A) rs.57	<b>(B)</b> rs.50	
(C) rs.68	<b>(D)</b> rs.64	

 A publisher added 30% of production cost of book and fixed selling price of book at Rs. 260. Although, he gives a discount of 12% on the selling price for selling the book. What will be profit percentage?

	RRB Group-D - 02/11/2018 (Shift-I)	
(A) 13.7	<b>(B)</b> 12.87	
<b>(C)</b> 13.4	<b>(D)</b> 14.4	

**11**. Himanshi bought a T-shirt at a discount of 20% off its marked price. But sold it at marked price. What is the profit or loss percentage in entire transaction?

#### RRB Group-D - 19/11/2022 (Shift-I)

(A) 25 % profit	<b>(B)</b> 15 % loss
(C) 15 % profit	<b>(D)</b> 25 % loss

**12**. A shopkeeper also earns 25% profit by giving 20% discount to his customers. What will be the marked price of that item whose cost price is Rs. 600?

RRB AL	.P & Tec. (21-08-18 Shift-III)
(A) rs.937.50	<b>(B)</b> rs.937
( <b>C)</b> rs.930	<b>(D)</b> rs.1,000

 The marked price of an article is Rs. 170 and selling price is Rs. 130. Find the discount rate.
 RRB ALP & Tec. (17-08-18 Shift-I)

<b>(A)</b> 22.45 %	<b>(B)</b> 24.26 %
( <b>C)</b> 23.53 %	<b>(D)</b> 23.60 %

14. Two devices whose cost price is Rs. 15,000 and Rs. 20,000 respectively, they are given a discount of 8% and 12% respectively. Find total selling price.

RRB NTPC 05/04/2021Shift : 1

(A) rs.30,200	(B) rs.28,600
(C) rs.31,400	(D) rs.31,800

**15**. After giving 20% discount on marked price, the teenager earns a profit of 12%. How much is marked price more than cost price?

	RRB NTPC 11/08/2022Shift : 1
<b>(A)</b> 40 %	<b>(B)</b> 32 %
( <b>C)</b> 25 %	<b>(D)</b> 8 %

**16**. A shopkeeper earns 26% profit even after offering 10% discount on marked price. If cost price is Rs. 800, then find the marked price?

RRB NTPC 23/07/2022 Shift : 2

(A) rs.1120	<b>(B)</b> rs.1100
(C) rs.1000	(D) rs.1008

An item was sold for a discount of 10% for Rs. 3,600. If discount is 15%, find the selling price of article.

RRB NTPC 10/08/2022Shift : 3 (A) rs.3,600 (B) rs.4,000

( <b>A)</b> 13.0,000	( <b>D</b> ) 13.4,000
( <b>C)</b> rs.3,800	<b>(D)</b> rs.3,400

**18**. A trader sells his goods at a 50% discount by marking the cost price over 40%. Find its profit or loss.

RRB	NTPC 10/08/2022 Shift : 2
( <b>A)</b> 40 % loss	<b>(B)</b> 50 % loss
<b>C)</b> 30 % loss	<b>(D)</b> 10 % loss

**19**. A trader marks 20% more than the cost price on his goods. If he gives 5% off, then what will be percentage of last profit received?

	5 I
	RRB NTPC 10/08/2022 Shift : 1
<b>(A)</b> 12 %	<b>(B)</b> 14 %
(C) 15 %	(D) 18 %

**20**. A trader marks 25% more than the cost price on his goods and gives a discount of 8%.

What is his profit percentage?

RRB NTPC 12/08/2022Shift : 3

( <b>A)</b> 10 %	<b>(B)</b> 15 %
<b>(C)</b> 12 %	<b>(D)</b> 25 %

**21**. A shopkeeper offers two sequential discounts of 20% and 10% and gets Rs. 108 for his product. Find its actual price.

RRB NTPC 23/07/2022 Shift : 3

<b>(A)</b> rs.142	<b>(B)</b> rs.147
( <b>C)</b> rs.150	<b>(D)</b> rs.153

**22**. Find the discount (in percent), If a book of Rs. 90 marked price is sold for Rs. 76.

### RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> 14.65 %	<b>(B)</b> 15.56 %
(C) 13.45 %	<b>(D)</b> 14.75 %

**23.** Manish bought a mobile phone after 50% discount on marked price and sold it at a profit of 35% of its cost price for Rs. 8100. What was marked price?

#### RRB NTPC 11/08/2022 Shift : 1

(A) rs.8000	(B) rs.12000
(C) rs.100000	(D) rs.9000

24. What is the maximum amount of discount Sheela can give to her customers on the marked price that she has neither profit nor loss on selling her goods, If she has already marked the cost price 25% higher?

	RRB NTPC 11/08/2022	Shift : 2
<b>(A)</b> 25	<b>(B)</b> 20	
( <b>C)</b> 30	<b>(D)</b> 40	

25. Even after giving 40% discount on marked price, a jacket was sold for 20% at a profit of Rs. 600. If it is sold at marked price, then what will be percentage profit.

#### RRB NTPC 05/03/2021Shift : 2

<b>(A)</b> 50 %	<b>(B)</b> 75 %
<b>(C)</b> 100 %	<b>(D)</b> 125 %

**26**. Ram naresh buys a bag whose marked price is Rs. 400, he buys it for Rs. 160 after two consecutive discounts. If second discount is 20%, find the first discount.

### RRB NTPC 09/05/2022 Shift : 1

<b>(A)</b> 40 %	<b>(B)</b> 30 %
(C) 50 %	<b>(D)</b> 80 %

27. Mukesh bought a bike at a marked price of Rs. 20,000 after a discount of 10% and 15% respectively. 700 spent on insurance and repairs. Then he sold this bike for 20000 rupees. Find the profit percentage.

### RRB NTPC 02/02/2021Shift : 1

(A) no profit	<b>(B)</b> 25 %
( <b>C)</b> 30 %	<b>(D)</b> 35 %

**28**. Aparna marks 50% more than cost price on an item. What percent discount should be given to get about 10% profit?

RRB NTPC 02/02/2021Shift : 3

<b>(A)</b> 27 %	<b>(B)</b> 25 %
( <b>C)</b> 35 %	<b>(D)</b> 37 %

**29**. A shopkeeper marks the price of an item at Rs. 640. If even after 10% discount, he makes 20% profit on cost price, then find cost price of article?

	RRB NTPC 05/03/2021Shift : 3
(A) rs.560	<b>(B)</b> rs.480
( <b>C)</b> rs.600	<b>(D)</b> rs.700

**30**. A trader marked 50% higher price on a commodity and later gave 20% discount on it. What percentage of profit did the trader get after discounting?

RRB NTPC 05/04/2021Shift : 3 (A) 30 % (B) 125 %

- (C) 25 % (D) 20 %
- **31**. The marked price of small and big copies is Rs. 10 and Rs. 15 respectively. A student purchases 5 dozen small copies and 10 dozen big copies at a total discount of 5%. Find the discount amount.

RRB NTPC 05/03/2021 Shift : 2

( <b>A)</b> rs. 100	<b>(B)</b> rs.110
(C) rs.120	(D) rs.130

**32**. A box of 20 items was purchased for a discount of 20% for Rs. 6400. What is the price of each item?

	RRB NTPC 12/08/2022Shift : 2
(A) rs.300	<b>(B)</b> rs.350
(C) rs.400	<b>(D)</b> rs.450

**33**. A shopkeeper buys a pen drive with a marked price of Rs. 1000 sequentially after a discount of 10 percent and 15 percent respectively. If he spends Rs. 35 packing and sells it for Rs. 1,000, then find its profit percentage.

	RRB NTPC 12/08/2022Shift : 3
(A) no profit	<b>(B)</b> 25 %
( <b>C)</b> 30 %	<b>(D)</b> 35%

**34**. Shubham buys a bed after a discount of 22% for Rs. 16,725. He later finds that the same store was selling that bed online for a discount of Rs. 15,685 after a 15% discount. What is the difference between marked price

of store-bought beds and marked price of online beds? (Rounded off to nearest Rs.)

RRB NTPC 09/05/2022 Shift : 1

(A) rs.2989	<b>(B)</b> rs.2785
(C) rs.2897	(D) rs.2888

**35**. A sari is sold for a discount of 5% at Rs. 5871. Find its marked price.

	RRB NTPC 09/05/2022 Shift :	: 1
<b>(A)</b> 5577	<b>(B)</b> 6880	
(C) 6180	<b>(D)</b> 5734	

**36**. A shopkeeper buys a stereo system with a marked price of Rs. 2000 after a discount of 10% and 15% respectively. He spends Rs. 70 getting it packed and sells it for Rs. 2000. Fnd percentage profit of the shopkeeper.

	RRB NTPC 12/08/2022Shift : 2
(A) no profit	<b>(B)</b> 25 %
( <b>C)</b> 30 %	<b>(D)</b> 35 %

Find the discount rate, when the marked price is Rs. 1,880 and selling price is Rs. 1,598.
 RRB Paramedical - 21/07/2018 (Shift-II)

<b>(A)</b> 12 %	<b>(B)</b> 20 %
<b>(C)</b> 15 %	<b>(D)</b> 13 %

**38.** A shopkeeper gives his customer 10% discount on marked price of an item, Yet he gains 26%. If marked price is Rs. 560, then calculate cost price.

	<b>RRB Paramedical - 20/07/2018</b>
( <b>A)</b> rs.400	<b>(B)</b> rs.450
( <b>C)</b> rs.396	<b>(D)</b> rs.404

**39.** Even after giving a 22% discount, how much should the marked price of an item be above its cost price to get 17% profit?

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 50%	<b>(B)</b> 35%
(C) 28%	<b>(D)</b> 45%

**40.** If the selling price is Rs. 1680, So there is a loss of 16%. If even after giving 8% discount, there is a profit of 15%, then what should be marked price of the product?

-	RRB JE - 28/06/2019 (Shift-III)
(A) rs.2200	<b>(B)</b> rs.2000
<b>(C)</b> rs.2500	<b>(D)</b> rs.2600

41. A shopkeeper offers 10% off in every 4 months. If a person buys an item under this scheme in December for Rs. 25515, then what was initial price of that item in January? RRB JE - 22/05/2019 (Shift-III)

<b>(A)</b> rs.45000	<b>(B)</b> rs.35000
( <b>C)</b> rs.36000	<b>(D)</b> rs.40000

- **42.** Which one is better?
  - (1) 10% and 20% gradual discount.
  - (2) 20% and 10% gradual discount.

## RRB JE - 23/05/2019 (Shift-II)

(A) Both are similar.(B) Cannot be determined

- (C) 200/ and 100/ gradual di
- (C) 20% and 10% gradual discount.
- (D) 10% and 20% gradual discount.
- **43**. Find the selling price of an article, if the shopkeeper gives him two consecutive discounts of 5% at marked price Rs. 80.

 RRB JE - 25/05/2019 (Shift-I)

 (A) rs.72
 (B) rs.70.10

 (C) rs.72.20
 (D) rs.73

An item listed for Rs. 65 was purchased after two successive discounts for Rs. 56.16, the first of which is 10% off. Find second discount.
 RRB JE - 26/05/2019 (Shift-II)

(A) 9 %	<b>(B)</b> 6 %
(C) 2 %	(D) 4 %

**45.** The list price of an item in a showroom is Rs. 2000, and it is being sold at consecutive discounts of 20% and 10%. Find its net selling price.

	RRB JE - 30/05/2019 (Shift-I)
( <b>A)</b> rs.1520	<b>(B)</b> rs.1400
<b>C)</b> rs.1440	<b>(D)</b> rs.1700

**46**. With a 25% reduction in market price, Sita can buy 1 kg more sugar for Rs. 30. Find actual price of sugar.

RRB JE - 30/05/2019 (Shift-II)

( <b>A)</b> rs.7.50	<b>(B)</b> rs.10
(C) rs50	<b>(D)</b> rs.7.30

47. A gradual discount of 10% and 20% is displayed in a sales advertisement. If an

## **Solution**

1. Ans.(A) Selling Price (SP) = ? Marked price = Rs. 160 Discount (D) = 12 %  $\therefore$  Selling Price = Marked price ×  $\frac{(100 - Discount)}{100}$   $\therefore$  SP = 160 ×  $\frac{88}{100}$  = 8 ×  $\frac{88}{5}$ 3. additional 5% discount is given on cash payment, find the total discount available for making purchase by paying cash.

 RRB JE - 26/06/2019 (Shift-I)

 (A) 40 %
 (B) 35 %

 (C) 31.6 %
 (D) 32 %

**48**. Find actual profit percentage using the given statements.

**1.** There would have been 20% profit, without any discount.

2. However a 5% discount is offered.

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 15 %	<b>(B)</b> 12 %
(C) 14 %	<b>(D)</b> 20%

**49.** An item with a marked price of rs. 80 is sold for rs. 68. Find the discount rate.

	RRB JE - 31/05/2019 (Shift-I)
<b>(A)</b> 12 %	<b>(B)</b> 15 %
(C) 16 %	<b>(D)</b> 18 %

**50**. Goods worth Rs. 6500 were purchased with a discount of 5%. then bill included a sales tax of 4%. Find the bill amount.

	RRB JE - 31/05/2019 (Shift-III)
(A) rs.6500	<b>(B)</b> rs.6576
(C) rs.6422	<b>(D)</b> rs.6600

**51.** What is the selling price reduced due to two consecutive discounts on the label price of Rs. 6000, If a gradual discount of 10% and 20% is given.

	RRB JE - 02/06/2019 (Shift-II)
(A) rs.4230	<b>(B)</b> rs.4000
<b>(C)</b> rs.4200	<b>(D)</b> rs.4320

52. After deducting 5% commission, a television set price is Rs. 9595. Find marked price.

	11100 = 20/00/2013 (0)
(A) rs.10000	<b>(B)</b> rs.10100
(C) rs.10075	<b>(D)</b> rs.10500

SP = Rs. 140.8 **Ans.(D)** Selling price at 30% discount=  $500 \times \frac{100-30}{100}$ 

$$= 500 \times \frac{70}{100} = Rs.350$$

3. Ans.(C)

The value written on the shirt i.e. marked price = Rs. 1600

discount = 10% Selling price of shirt =Marked price ×(100- Discount%)  $= \frac{100}{100 \times (100 - 10)}$  $= \frac{\frac{100}{100}}{100}$ = Rs. 1440Ans.(B) According to Question -Cost price = Rs. 1300 Selling price =  $\frac{1300 \times 130}{100}$  = 1690 Profit = Selling price - Cost price Profit = 1690 - 1300 = Rs. 390 Ans.(C) The marked price of the article is 352 and the selling price is 326. Discount rate =  $\frac{352 - 326}{352} \times 100$  $=\frac{26}{352}\times 100 = 7.4\%$ Ans.(D) Reduction in price of previous year = 12% Last Year Computer Price =  $32450 \times \frac{100}{RR}$  $=\frac{3245000}{88}$  = *Rs*.36875 Hence, last year the price of computer was Rs. 36,875. Ans.(A) x = 30% y = 10% Profit % =  $x - y - \frac{xy}{100}$  $= 30 - 10 - \frac{30 \times 10}{100}$ = 30 - 13= 17% Profit Ans.(C) Selling price = Marked price  $\left(\frac{100 - \text{Discuont \%}}{100}\right)$ According to Question, Selling price = Rs. 399 Discount % = 24%399 = Marked price  $\frac{(100 - 24)}{100}$ Marked price =  $\frac{399 \times 100}{76}$  $= 21 \times 25 = Rs.525$ Ans.(D) Let cost of shirt = Rs. xThe selling price of the shirt on Sunday,  $= x \times \left(1 - \frac{D_1}{100}\right) \left(1 - \frac{D_2}{100}\right) = 36$  $\Rightarrow x \times \frac{40}{100} \times \frac{90}{100} = 36 \{D_1 = 60\%, D_2 = 10\%\}$ x = Rs.100

4.

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9.

So on Tuesday, additional money given = 100 - 36 = Rs.64

### 10. Ans.(D)

According to Question,

Cost price  $\times$  130 % = 260  $\text{Cost price} \times \frac{130}{100} = 260$ Cost price = Rs. 200 On 12% discount Selling price =  $260 \times \frac{88}{100} = \frac{13 \times 88}{5} = \frac{1144}{5}$ Profit % =  $\frac{\text{Selling price} - \text{Cost price}}{\text{Cost price}}$  $= \frac{\left(\frac{1144}{5} - 200\right)100}{200}$ =  $\frac{(1144 - 1000) \times 100}{1000} = 14.4$ Ans.(A) Profit =  $\frac{20}{80} \times 100$ 11. = 25% Profit 12. Ans.(A) Let marked price = Rs.x According to Question  $x \times \frac{80}{100} = 600 \times \frac{125}{100}$  $x = \frac{750 \times 10}{8} = 937.50$ Marked price x = Rs. 937.5013. Ans.(C) Discount % =  $\frac{\text{Marked price - Selling price}}{100} \times 100$ Marked price  $=\frac{170-130}{170}\times 100$  $=\frac{40}{170} \times 100$ = 23.53% (approximately) 14. Ans.(C) Cost price of first appliance = Rs.15, 000 Discount = 8%  $\left[ \text{ Selling price} = \frac{\text{Cost price} \times (100 - \text{Discount})}{100} \right]$ Selling price =  $\frac{15000 \times (100 - 8)}{100}$  $= \frac{15000 \times 92}{100} = 150 \times 92$ Selling price of first equipment = Rs.13800 Cost price of Second Equipment = Rs. 20000 Discount = 12 % Selling price =  $\frac{20000 \times (100-12)}{100}$  = 200 × 88 Sale price of Second equipment = Rs. 17600 Total selling price = 13,800 + 17,600= Rs. 31,400 15. Ans.(A)

Let the marked price be Rs. 100 selling price =  $100 \times \frac{100 - 20}{100} = 80$ Cost price of goods =  $80 \times \frac{100}{100 + 12} = 80 \times \frac{100}{112}$  $=\frac{5\times100}{7}=\frac{500}{7}$ Marked price – Cost price =  $100 - \frac{500}{7} = \frac{200}{7}$ Required % =  $\frac{\frac{200}{500}}{\frac{7}{7}} \times 100 = \frac{200}{500} \times 100 = 40\%$ Ans.(A) 16. Marked price =  $\frac{800 \times 126}{90}$  = *Rs*. 1120 17. Ans.(D) Let the selling price of the item = Rs xSelling price after 10% discount =  $x \times \frac{90}{100}$  $3600 = x \times \frac{90}{100}$ x = 4000 Rs.Selling price after  $4000 \times \frac{85}{100} = Rs.3400$ 15% discount 18. Ans.(C) %Profit/Loss = 40 - 50 -  $\frac{40 \times 50}{100}$ = -10 - 20= 30% loss 19. Ans.(B) Let the cost price is 100 Rs. then, According to Question, Sellng price =  $100 \times \left(\frac{100 + 20}{100}\right) \times \left(\frac{100 - 5}{100}\right)$  $= 100 \times \frac{120}{100} \times \frac{95}{100} = Rs.114$ Profit = S.P. - C.F= Rs. 114 – Rs. 100 = Rs. 14 Profit % =  $\left(\frac{14}{100} \times 100\right)$ % = 14% Trick: (Profit/loss % =  $\pm x \pm y \pm \frac{xy}{100}$  $= +20-5 + \frac{20 \times (-5)}{100}$ = +20 - 5 - 1Profit = 14 % **20**. Ans.(B) % Profit =  $25 - 8 - \frac{25 \times 8}{100}$ = 17 – 2 = 15% 21. Ans.(C) Let the actual price of the product = Rs xPrice of the product after sequential discount = Rs. 108  $x \times \frac{80}{100} \times \frac{90}{100} \times 108 = Rs.\,150$ 22. Ans.(B)  $Discount\% = \frac{90-76}{90} \times 100$ 

=

 $=\frac{14}{90}\times 100$  $=\frac{140}{9}=15.56\%$ 23. Ans.(B) Let the marked price of the mobile = xCost price =  $x \times \frac{50}{100} = \frac{x}{2}$   $\therefore$  Selling price =  $\left(\frac{100+35}{100}\right) \times \frac{x}{2}$  $8100 = \frac{135}{100} \times \frac{x}{2}$  $x = \frac{8100 \times 100 \times 2}{135} = Rs. 12000$ 24. Ans.(B) Let cost price = Rs. 100 ∴ Marked price = Rs. 125 According to Question,  $125 \times \frac{(100 - x)}{100} = 100$  $(100 - x) = \frac{100 \times 100}{125}$  $\Rightarrow 100 - x = 80$  $\Rightarrow x = 100 - 80$  $\Rightarrow x = 20\%$ 25. Ans.(C)  $MP \times \left(\frac{100 - discount\%}{100}\right) = SP$  $MP \times \frac{60}{100} = 600$  $MP = \frac{600 \times 100}{60}$ MP = 1000 $CP = SP \times \frac{100}{100 + 20}$  $CP = 600 \times \frac{100}{120}$ CP = 500Profit % = 1000 - 500 = 500 Profit % =  $\frac{500}{500} \times 100 = 100\%$ 26. Ans.(C) Let the first discount =  $D_1$  % By question,  $400 \times \left(\frac{100 - D_1}{100}\right) \left(\frac{100 - D_2}{100}\right) = 160$  $\Rightarrow 400 \left(\frac{100 - D_1}{100}\right) \times \left(\frac{100 - 20}{100}\right) = 160$  $\Rightarrow (100 - D_1) = \frac{160 \times 100 \times 100}{400 \times 80}$  $\Rightarrow (100 - D_1) = 50$  $D_1 = 100 - 50 = 50\%$ Hence first discount = 50% **27**. Ans.(B) Cost price of Bike

$$= 20000 \times \frac{(100 - 10)}{100} \times \frac{(100 - 15)}{100}$$

$$= 20000 \times \frac{90}{100} \times \frac{85}{100}$$

$$= 2 \times 90 \times 85$$

$$= 180 \times 85$$

$$= Rs. 15,300$$
Price of bike including insurance and repair  

$$= 15,300 + 700 = \text{Rs. } 16,000$$
And selling price = Rs.20,000  

$$\therefore \text{ Profit } \% = \frac{\text{Profit}}{\text{Cost price}} \times 100$$

$$= \frac{20000 - 16000}{16000} \times 100$$

$$= \frac{4000}{16000} \times 100$$

$$= \frac{4000}{16000} \times 100$$

$$= \frac{100}{4}$$

$$= 25\%$$
**Ans.(A)**  
Let the cost price of the item = Rs. 100  

$$\therefore \text{ Marked price = Rs. 150}$$
Sale price on 10% profit = Rs. 110  

$$\therefore \text{ Discount } \%$$

$$\Rightarrow 150 \times \frac{(100 - D)}{100} = 110$$

$$\Rightarrow (100 - D) = \frac{110 \times 100}{150}$$

$$\Rightarrow 100 - D = \frac{220}{3}$$

$$\Rightarrow D = 100 - \frac{220}{3}$$

$$\Rightarrow D = \frac{300 - 220}{3}$$

$$\Rightarrow D = \frac{80}{3} = 26.66$$

$$\Rightarrow D \approx 27\%$$
**Ans.(B)**  
Selling price of the item after 10% discount  

$$= 640 \times \frac{(100 - 10)}{100} = \frac{640 \times 90}{100} = Rs.576$$
Hence, the cost of the item for 20% profit  

$$= \frac{576}{(100 + 20)} \times 100 = \frac{576}{120} \times 100$$

$$= \frac{576}{6} \times 5 = 96 \times 5 = Rs.480$$
**Ans.(D)**  
Let the cost price of the item = Rs. 100  
Marked value = 100  $\times \frac{150}{100} = 150$   
Selling price at 20% discount  

$$= 150 \times \frac{80}{100} = 120$$
Required profit percentage  

$$= 120 - 100 = 20\%$$
**Ans.(C)**

28.

29.

30.

31.

Total price of small copy =  $5 \times 12 \times 10 = 600$ Total price of large copy =  $10 \times 12 \times 15 = 1800$  $\therefore \text{ Discount amount} = (600 + 1800) \times \frac{3}{100}$  $= 2400 \times \frac{5}{100} = Rs.120$ Ans.(C) Price of one item =  $\frac{6400}{20}$  = 320 Marked price of an item =  $\frac{320 \times 100}{80}$  = Rs.400 Ans.(B) Cost price of pen drive  $= 1000 \left(\frac{100 - 10}{100}\right) \left(\frac{100 - 15}{100}\right)$  $= 1000 \times \frac{90}{100} \times \frac{85}{100} = Rs.765$ Total cost price = 765 + 35 = Rs.800 Selling price of pen drive = Rs.1000 Profit = 1000 - 800 = Rs.200 Profit % =  $\left(\frac{200}{800} \times 100\right)$ % = 25% Ans.(A) Marked price of store purchased beds  $= 16,725 \times \frac{100}{100 - 22}$  $= 16,725 \times \frac{100}{78}$ = 21442.30 Rs. Marked price of online purchased bed  $= 15,685 \times \frac{100}{100-15}$  $= 15,685 \times \frac{100}{85}$ = 18452.94 Required difference = 21442.30 - 18452.94 = 2989.36 = 2989Ans.(C) Marked price of saree =  $5871 \times \frac{100}{100-5}$  $= 5871 \times \frac{100}{95} = Rs.6180$ Ans.(B) Cost price of Stereo system  $= \frac{2000 \times (100 - 10)}{100} \times \left(\frac{100 - 15}{100}\right)$  $= 2000 \times \frac{90}{100} \times \frac{85}{100}$ = 1530Total expense = 1530 + 70 = 1600Profit = 2000 - 1600 = 400

Profit % = 
$$\frac{\text{Profit} \times 100}{\text{Cost price}} = \frac{400 \times 100}{1600}$$
  
= 25%

37. Ans.(C)

32.

33.

34.

35.

36.

The marked price of the article is 1880 and the selling price is Rs. 1598 –

Discount rate =  $\frac{1880 - 1598}{1880} \times 100 = 15\%$ 38. Ans.(A) Selling price = Marked price  $\times \left(\frac{100 - D\%}{100}\right)$  $= 560 \times \left(\frac{100 - 10}{100}\right)$  $= 560 \times \frac{90}{100} = 504$  $\therefore \text{ Cost price} = \left(\frac{100}{100 + \text{Profit}\%}\right) \times \text{ Selling price}$ Cost price =  $\frac{100}{126} \times 504 = Rs.400$ 39. Ans.(A) Let the Cost price = 100 Given that -Discount = 22 % Profit = 17% $\frac{\text{Marked price}}{\text{Cost price}} = \frac{100 + \text{Profit \%}}{100 - \text{Discount \%}}$ Marked price =  $\frac{100 \times 117}{78}$ Marked price = 150 Profit = Marked price – Cost price = 150 - 100 = 50  $\% Profit = \frac{50 \times 100}{100} = 50\%$ Ans.(C) 40. SP = Rs.1680  $CP = 1680 \times \frac{100}{84} = Rs.2000$  $\frac{SP}{\frac{P}{\frac{MP(100-D)}{100}}} = \frac{MP(100-D)}{100}$  $2000 \times 115 = MP \times 92$  $MP = \frac{2000 \times 115}{92} = Rs.2500$ 41. Ans.(B) Let cost price of the item = Rs.xAccording to Question,  $x \times \frac{90}{100} \times \frac{90}{100} \times \frac{90}{100} = 25515$  $\Rightarrow \frac{x \times 729}{1000} = 25515$  $\Rightarrow x = \frac{25515 \times 1000}{729}$  $\Rightarrow x = 35 \times 1000$ x = Rs.350004**2**. Ans.(A) (1) A gradual total discount of 10% and 20%  $= 10 + 20 - \frac{20 \times 10}{100} = 30 - 2 = 28\%$ (2) A gradual total discount of 20% and 10%  $= 20 + 10 - \frac{20 \times 10}{100} = 30 - 2 = 28\%$ Therefore, it is clear that both are equal.

#### 43. Ans.(C)

Marked price = Rs.80 Selling price on two consecutive discounts of 5%

$$= 80 \times \frac{100 - 5}{100} \times \frac{100 - 5}{100}$$
$$= 80 \times \frac{95}{100} \times \frac{95}{100}$$
$$= \frac{722000}{10000} = Rs.72.20$$

44. Ans.(D) Markled price = 65. Selling price = 56.16First discount  $D_1 = 10\%$ . Second discount  $D_2$ = ? Formula -Marked price  $\times \left(\frac{(100-D_1)}{100} \times \frac{(100-D_2)}{100}\right) =$ Selling price  $65 \times \frac{(100 - 10)}{100} \times \frac{(100 - D_2)}{100} = 56.16$  $\frac{65 \times 90}{100} \times \frac{(100 - D_2)}{100} = 56.16$  $(100 - D_2) = \frac{56.16 \times 1000}{\frac{65 \times 9}{56.100}}$  $(100 - D_2) = \frac{56160}{585}$  $100 - D_2 = 96$  $100 - 96 = D_2$  $4 = D_2$ Hence,  $D_2 = 4\%$ 45. Ans.(C) Selling price = Marked price  $\times$  (100 -Discount) Selling Price =  $2000 \times \frac{80}{100} \times \frac{90}{100}$  $= 2000 \times \frac{4}{5} \times \frac{9}{10}$  $= 36 \times 40 = Rs. 1440$ **46**. Ans.(B) Let the actual price of sugar = xPrice after 25% reduction =  $x \times \frac{75}{100} = \frac{3x}{4}$ According to Question,  $\frac{\frac{30}{3x} - \frac{30}{x}}{4} = 1$  $\frac{\frac{120}{3x} - \frac{30}{x}}{\frac{120 - 90}{3} = x} = 1$  $\frac{30}{3} = x$ x = Rs.1047. Ans.(C) Equivalent discount for two successive

Equivalent discount for two successive discounts of 10% and 20% =

 $= -10 - 20 + \frac{-10x - 20}{100}$ -30 + 2 = -28%Again Total discount after 5% discount  $-28-5 + \frac{-28 \times -5}{100}$ -33 + 1.4 = -31.6%Therefore, there will be a discount of 31.6%. 48. Ans.(C) x = +20%, y = -5%Real profit % =  $x + y + \frac{xy}{100}$ = 20 - 5 +  $\frac{20 \times -5}{100}$ = 20 - 5 - 1 = 14%49. Ans.(B) Marked price = Rs.80 Selling price = Rs.68Marked price – Selling price Marked price × 100 =  $=\frac{80-68}{80}\times 100$  $=\frac{12}{80} \times 100 = 15\%$ 

### 50. Ans.(C)

Amount paid for goods after 5% discount =  $6500 \times \frac{95}{100} = Rs.6175$ Bill amount inclusion of 4% sales tax =  $6175 \times \frac{104}{100} = Rs.6422$ Ans.(D)  $6000 \times (\frac{100 - D_1}{100}) (\frac{100 - D_2}{100})$  $6000 \times \frac{90}{100} \times \frac{80}{100}$ 

**5**1.

$$6 \times 9 \times 80 = Rs.4320$$
**Ans.(B)**

$$SP = MP \frac{(100 - 5)}{100}$$

$$9595 = MP \times \frac{95}{100}$$

$$MP = \frac{9595 \times 20}{19} = Rs.10100$$

# 09. (Ratio & Proportion)

1. If a : b = 32: 35 and b : c = 21 : 32 , then a : c = ?

 RRB Group-D - 19/11/2022 (Shift-I)

 (A) 1 : 1
 (B) 5 : 7

 (C) 3 : 5
 (D) 5 : 3

2. Two numbers are 30% and 60% higher than third number respectively. The ratio of both numbers is.

RRB GI	'oup-D - 10/10/2018 (Shift-II
<b>(A)</b> 14 : 13	<b>(B)</b> 16 : 13
(C) 22 : 23	<b>(D)</b> 13 : 16

- If A : B = 5:8 and B : C = 18 : 25 then A : C =? **RRB NTPC - 09/2022 (Shift-I)**  (A) 8 : 5 (B) 9 : 20 (C) 5 : 8 (D) 20 : 9
- If ratio of a : b is 45 : 56 and ratio of b : c is 16 : 35 , then what will be ratio of a : c? **RRB Group-D - 01/12/2018 (Shift-II)** (A) 9 : 7
   (B) 18 : 49
   (C) 7 : 2
   (D) 7 : 9
- 5. If a : b = 2 : 3 and a : c = 10 : 21, then b : c = ? RRB Group-D - 26/10/2018 (Shift-II) (A) 5 : 7 (B) 15 : 14

(C) 14 : 15 (D) 7 : 5

- 6. If  $a: b = \frac{3}{2}: \frac{7}{3}$  and  $: c = \frac{1}{5}: \frac{1}{7}$ , then a: b: c = ? **RRB Group-D - 26/11/2022 (Shift-II)** (A) 14:9:10 (B) 4:5:7 (C) 9:14:10 (D) 10:9:14
- 8. The ratio of sand to scree in a mixture is 41: 30, while ratio of scree and cement is 6: 7. What is the ratio of sand and cement in the mixture?

 RRB Group-D - 16/10/2018 (Shift-I)

 (A) 8 : 6
 (B) 11 : 7

 (C) 77 : 48
 (D) 41 : 35

**9.** Red, green and pink tokens are placed in a bag, ratio of red and green tokens is 5 : 11 while ratio of pink and red tokens is 7 : 15. What will be ratio of green and pink tokens?

RRB Group-D - 25/11/2022 (Shift-I)		
<b>(A)</b> 77 : 75	<b>(B)</b> 11 : 7	
(C) 33 : 7	<b>(D)</b> 75 : 77	

**10.** Suraj's money is four times that of Ravi's. Ravi's money is sixteen times Aditya's money. What is the ratio of amount of Aditya and Suraj?

RRB G	roup-D - 11/12/2018 (Shift-II))
<b>A)</b> 64 : 1	<b>(B)</b> 1 : 64
<b>C)</b> 1 : 24	<b>(D)</b> 1 : 16

**11.** The sum of the arithmetical mean and the geometric mean of two positive numbers is equal to the difference of those numbers. Find the ratio of those numbers.

F	RRB Group-D - 15/11/2018 (Shift-II)
<b>(A)</b> 9: 1	<b>(B)</b> 2: 3
<b>(C)</b> 1: 4	<b>(D)</b> 1: 12

**12**. Ratio of copper and zinc in, an alloy german silver, was 21 : 16, While ratio of nickel and zinc was 7 : 24. What was the ratio of copper : zinc : nickel in the alloy?

## RRB Group-D - 28/11/2022 (Shift-II)

(A) 63 : 48 : 14	<b>(B)</b> 21 : 6 : 7
(C) 17 : 21 : 4	<b>(D)</b> 68 : 28 : 21

**13**. Ratio of copper and zinc in an alloy of german silver was 19 : 6 while ratio of nickel and zinc was 7 : 4. What was the ratio of copper, zinc and nickel in alloy?

RRB G	roup-D - 04/10/2018 (Shift-II)
<b>(A)</b> 19: 44: 4	<b>(B)</b> 19: 24: 7
( <b>C)</b> 38: 12: 21	<b>(D)</b> 133: 42: 24

**14**. Ratio of copper, zinc and nickel in german silver is 4: 3: 2. How many kilograms of zinc should be added to this metal of 54 kg so that new ratio becomes 2 : 5 : 1?

	RRB Group-D - 11/12/2018 (Shift-II)
<b>(A)</b> 50	<b>(B)</b> 48
( <b>C</b> ) 36	<b>(D)</b> 42

**15**. Ratio between two numbers is 5 : 9. If 6 is added to both numbers, then ratio between them becomes 2 : 3. What are those original numbers?

RRB Group-D - 08/10/2018 (Shift-I)(A) 25,45(B) 10,18(C) 15,27(D) 5,9

**16.** A number was divided in ratio 7 : 11. When 6 is added to each number then ratio changed to 5 : 7. What was largest number among the initial numbers?

	RRB Group-D -	19/11/2022	(Shift-III)
<b>(A)</b> 22		<b>(B)</b> 11	
( <b>C)</b> 33		<b>(D)</b> 44	

**17**. Ratio between two numbers is 11:18. If 4 is added to both the numbers then ratio between them becomes 13: 20. What is original number.

RRB	Group-D - 05/10/2018 (Shift-II)
(A) 21,36	<b>(B)</b> 26,21
<b>(C)</b> 22,36	<b>(D)</b> 32,23

18. Ratio of two numbers is 3 : 4. If 3 is added to each of them, then their ratio becomes 10 : 13. What is original numbers:

RRB	Group-D - 08/10/2018 (Shift-II)
<b>(A)</b> 9,12	<b>(B)</b> 12,16
( <b>C)</b> 20,25	<b>(D)</b> 27,36

**19**. The initial ratio of sugar and flour in a dough was 4 : 7. In 22 kg dough, Justin added more flour so that ratio of sugar and flour became 2: 5. How much flour did Justin add later?

	RRB Group-D - 22/11/2022 (Shift-III)
(A) 2 kg	<b>(B)</b> 4 kg
(C) 8 kg	<b>(D)</b> 6 kg

20. A number is divided in ratio of 9: 5. When 8 is added to each number then ratio becomes 5 :3. Which of following will be largest number?

RRB Group-D - 25/11/2022 (Shift-II)

<b>(A)</b> 80	<b>(B)</b> 72
<b>(C)</b> 69	<b>(D)</b> 81

21. Ratio of red ball and green ball in a bag is 15:26. If 12 green balls are put in bag then ratio of red ball and green ball will be 1 : 2. How many red balls are in bag?

RRB Group-D - 26/11/2022 (Shift-II)

<b>(A)</b> 60	<b>(B)</b> 30
<b>(C)</b> 45	<b>(D)</b> 15

22. An amount was divided between Ethen and Jen in a 4 : 7 ratio. If Jen gives ethen Rs. 1, then ratio changes to 7 : 12. How much is amount in question?
PPR Group-D - 27/11/2018 (Shift-I)

RRB Group-D - 27/11/2018 (Shi		
(A) rs.209	<b>(B)</b> rs.190	
( <b>C)</b> rs.198	<b>(D)</b> rs.220	

**23**. The ratio of two numbers is 17 : 28. If 6 is added to smaller number of these then ratio changes to 13 : 20. What is the value of a large number?

	RRB Group-D - 11/12/2018 (Shift-II)
(A) 112	<b>(B)</b> 140
(C) 98	<b>(D)</b> 126

24. A sum of money is divided between Shivani and Parinitha in the ratio of 5 : 7. If Parinitha gives Rs. 5 to Shivani then the ratio changes to 3 : 4. What is the amount divided?

RRB Group-D - 10/12/2018 (Shift-I)		
(A) rs.432	<b>(B)</b> rs.420	
(C) rs.396	<b>(D)</b> rs.408	

25. When a 24.6 m. long wire is divided in ratio of 12:29, what will be length of the larger piece? RRB Group-D - 08/10/2022 (Shift-I)

(A) 15.2 meter	(B) 7.7 meter
(C) 17.4 meter	(D) 18.4 meter

**26**. A person divides Rs. 10,390 between his son and daughter in ratio of 11:10. What amount did the son receive?

RRB Group-D - 24/10/2018 (Shift-III)		
(A) rs.5800.32	<b>(B)</b> rs.5442.38	
(C) rs.5390.50	(D) rs.6000.68	

 27. An amount divided between Moksha and Aryan in ratio 13 : 29. If Aryan received Rs. 551, then how much amount did Moksha get?
 RRB Group-D - 01/09/2022 (Shift-II)

KKB GIOUP-D - 01/03/2022 (3111		
(A) rs.234	<b>(B)</b> rs.273	
(C) rs.221	<b>(D)</b> rs.247	

**28**. Rs. 5,100 was distributed in ratio of 8 : 9 in A and B. How much is B's share greater than A's?

RRB	6 Group-D - 23/10/2018 (Shift-I)
(A) rs.300	<b>(B)</b> rs.200
( <b>C)</b> rs.250	<b>(D)</b> rs.350

**29**. If 350 marbles are divided between Sita and Savita in ratio of 5 : 9, then how many marbles will Savita get?

RRB Group-D - 16/10/2018 (Shift-III)

<b>(A)</b> 225	<b>(B)</b> 200
( <b>C)</b> 125	<b>(D)</b> 250

**30**. The division of 88 points was divided between Jayati and Prateek in ratio of 5 : 6. How much amount did Jayati get?

RRB Group-D - 26/11/2022 (Shift-III)

(A) rs. 40	<b>(B)</b> rs. 48
( <b>C)</b> rs. 56	<b>(D)</b> rs. 52

**31**. 77 people are present at a party, the ratio of men and women is 4 : 7. How many womens are there in the party?

	RRB Group-D - 24/10/2018 (Shift-I)
<b>(A)</b> 36	<b>(B)</b> 54
( <b>C)</b> 73	<b>(D)</b> 49

**32**. Ratio of the number of boys and girls appearing in an examination was 5 : 6. If 3,531 students took the exam, then how many of them were girls?

	RRB Group-D - 28/11/2018 (Shift-I)
A) 1936	<b>(B)</b> 1906
<b>C)</b> 1926	<b>(D)</b> 1916

**33.** Rs. 1190 is divided between two persons in ratio of 11 : 23. How many rupees did the person receiving the big portion get.

 RRB Group-D - 16/11/2018 (Shift-III)

 (A) rs.828
 (B) rs.759

 (C) rs.805
 (D) rs.782

**34**. A sum of money is divided between Ram and Shyam in ratio of 8 : 19. If Shyam received Rs. 247, then how much amount did Ram aet?

RRB G	roup-D -12/11/2018 (Shift-I)
$(\Lambda)$ re 104	<b>(B)</b> rc 112

( <b>A</b> ) 13.104	(0) 13.112
<b>(C)</b> rs.120	<b>(D)</b> rs.96

**35**. In a mixture, Ratio of salts and acids is 5 : 7. If the weight of mixture is 360gm, then what will be weight of the acid present in it?

 RRB Group-D - 12/11/2018 (Shift-III)

 (A) 260 gm
 (B) 130 gm

 (C) 150 gm
 (D) 210 gm

**36**. Ratio of boys and girls in a school is 4 : 5. If the number of students in the school is 333, then what is the number of girls in it?

RRB Group-D - 05/11/2018 (Shift-III) (A) 180 (B) 175

(A) 100	( <b>B</b> ) 175
<b>(C)</b> 185	<b>(D)</b> 190

**37**. An amount of Rs. 900 has been distributed between X, Y and Z in ratio of 4: 5: 6 respectively. What will be difference between sum of X and Z?

	RRB Group-D - 29/10/2018 (Shift-III)
<b>(A)</b> 500	<b>(B)</b> 150
<b>(C)</b> 120	<b>(D)</b> 350

**38**. Between Aman, Ashok and Alok, 315 marbles are distributed in ratio 7 : 3 : 5 respectively. How many more marbles did Aman get compared to Ashok?

	RRB Group-D - 28/11/2022 (Shift-I)
<b>(A)</b> 84	<b>(B)</b> 147
( <b>C)</b> 63	<b>(D)</b> 42

**39**. If the angles of the triangle are in ratio 5 : 6 : 7. So What is a triangle called?

RRB Group-D - 18/11/2022 (Shift-II)

(A) equilateral triangle	(B) Acute triangle
(C) Right triangle	(D) Triangle Angle

**40**. If Rs. 686 is divided into four parts, whose ratio is 1/2: 2/3: 3: 4, then what will be first part?

RRB Group-D - 18/11/2022 (Shift-I	
(A) rs.48	<b>(B)</b> rs.56
(C) rs.52	(D) rs.42

**41**. An amount of Rs. 1000 is distributed among Tara, Tamanna and Tina in ratio of 4 : 5 : 6. What is difference between Tara and Tina's amount?

RRB Gro	oup-D - 18/11/2022 (Shift-III)
(A) rs. 250	<b>(B)</b> rs. 133.33
<b>(C)</b> rs. 150	<b>(D)</b> rs. 234

**42.** Which of the following should be added to each to make four numbers 4, 8, 12, 22 proportional?

	RRB Group-D - 29/10/2018 (Shift-III)
<b>(A)</b> 4/3	<b>(B)</b> 3/4
(C) 8/3	<b>(D)</b> 5/6

**43.** If 25, 35 and p are in sequential ratio, then find the value of p.

	RRB Group-D - 19/11/2022 (Shift-II)
<b>(A)</b> 60	<b>(B)</b> 50
<b>(C)</b> 75	<b>(D)</b> 49

**44.** 3,4 and 9, find the fourth ratio.

RRB Group-D - 19/11/2022 (Shift-III)

(A) 11 (B) 12 (C) 16 (D) 10 45. If p: 18::5:3, then what is the value of p? RRB Group-D - 17/11/2022 (Shift-III) (A) 60 **(B)** 30

<b>(C)</b> 25	<b>(D)</b> 50
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- 46. If 7 : 9 :: x : 36, then x = ?RRB Group-D - 16/11/2018 (Shift-I) (A) 21 (B) 35 (C) 7 (D) 28
- 47. A bag contains 50 paise, 25 paise and 10 paise coins in ratio 5: 4: 3. If the amount of coins is Rs. 171, then what is the number of coins of each type?

RRB Group-D - 15/11/2018 (Shift-I) (A) 200,250,150 (B) 225,180,135 (C) 140,150,280 (D) 200,360,160

48. Surai has 50 paise coins of Rs. 1 and Rs 5 in ratio of 8 : 5 : 9. Suraj has a total amount of Rs. 648. How many coins does he have of 50 paise?

	RRB Group-D - 11/12/2018 (Shift-I)
<b>(A)</b> 96	<b>(B)</b> 84
( <b>C)</b> 60	<b>(D)</b> 108

49. Ramesh has coins of 50 paise, Rs. 1 and Rs. 5 in ratio of 2:3:5 respectively. He has a total amount of Rs. 116. How many coins does he have of 50 paise?

RRB Group -10 / 12 / 2018 (Shift-I) (A) 12 **(B)** 6 (D) 8 **(C)** 4

**50**. Raju has Rs 210 as coins. 20% of the coin is Rs. 5. 25% is Rs 10.15% in Rs 2 and the rest is in Rs 1 denomination. Find the number of coins of Rs. 1.

	RRB Group-D - 15/10/2018 (Shift-II)
<b>(A)</b> 24	<b>(B)</b> 22
(C) 25	<b>(D)</b> 20

51. An amount of Rs. 110 is in the form of coins of Rs. 2, Rs. 1 and 50 paise, the ratio of which is 1:2:3 respectively. how many coins are there of 50 paise in it?

> RRB Group-D - 11/10/2018 (Shift-I) (A) 20 **(B)** 40 (D) 80 (C) 60

52. Divide 1870 into three parts, so that half of the first part is equal to one third of the second part and 1/6 of the third part. What will be the three parts?

RRB Group-D - 12/11/2018 (Shift-II)

<b>(A)</b> 360,510,1000	<b>(B)</b> 340,510,1020
(C) 340,490,1040	<b>(D)</b> 360,490,1020

- 53. 1380 is divided between A. B and C in which A gets 5 times of C and 3 times of B? RRB Group-D - 01/10/2018 (Shift-III)
  - (A) A=880 ; B = 200 ; C = 300 **(B)** A=800 : B = 300 : C = 280(C) A=980 ; B = 300 ; C = 100 (D) A=900 ; B = 300 ; C = 180
- 54. Find the ratio of 3 days with 30 hours. RRB RPF Constable -19/01/2019 (Shift-II) **(B)** 12 : 5 (A) 7:6 (C) 6:7 **(D)** 5 : 12
- 55. One bag contained red, green and pink tokens. The ratio between red and green tokens was 15 : 32 while the ratio between pink and red tokens was 18 : 25. What was ratio between green and pink tokens?

	RRB RPF SI -05/01/2019 (Shift-II)
(A) 80 : 27	<b>(B)</b> 192 : 125
(C) 16 : 9	<b>(D)</b> 25 : 28

56. The ratio of the number of marbles that Tulip and Devansh had was 7:9 while Sheetal and Devansh had a ratio of the number of marbles to 7 : 15. Find the ratio of the number of marbles available to Tulip and Sheetal. PPR PPE Constable 17/01/2010 (Shift-III)

KKB KPF	Constable -17/01/2019 (Shift-III)
<b>(A)</b> 5 : 3	<b>(B)</b> 5 : 7
<b>(C)</b> 7 : 5	<b>(D)</b> 2 : 3

57. How much amount will K get by dividing Rs. 3,900 between L, K and J in a ratio of  $\frac{1}{2}$ :  $\frac{1}{2}$ :  $\frac{1}{2}$ ?

RRB RPF Con	stable -18/01/2019 (كُhift-االله)
(A) rs.1,450	<b>(B)</b> rs.300
(C) rs.1,200	<b>(D)</b> rs.900

58. Ratio of two positive integers is 3:4. Their sum is 70. How much should be added to each integer so that their ratio becomes 5 : 6?

	RRB RPF SI -12/01/2019 (Shift-III)
<b>(A)</b> 10	<b>(B)</b> 20
( <b>C)</b> 30	<b>(D)</b> 40

59. The ratio of two numbers is 3 : 5. If each number is increased by 10, then ratio becomes 5 : 7. What is small number? PPB RPF SI -11/01/2019 (Shift-I)

	RRB RPF 51-11/01/2019
( <b>A)</b> 8	<b>(B)</b> 12
<b>(C)</b> 15	<b>(D)</b> 18

**60**. The salary of Charan and Rajat is in ratio of 5 : 4. If salary of each increases by 3,000, then new ratio becomes 6 : 5. What is the salary of Charan?

RRB RPF Co	nstable -20/01/2019 (Shift-I)
(A) rs. 15,000	<b>(B)</b> rs.12,000
( <b>C)</b> rs.8,000	<b>(D)</b> rs.20,000

**61.** Ratio between the length and breadth of a rectangular board is 7 : 5. If breadth of the board is 20.5 cm., then find length of the board (in cm).

	RRB RPF SI -16/01/2019 (Shift-II)
<b>(A)</b> 19.9	<b>(B)</b> 24.3
(C) 28.7	<b>(D)</b> 14.6

62. A science book contains two volumes of physics and biological science in the ratio of 5 : 4. How many pages of biological science would it take to make a book of 540 pages?

RRB RPF Constable -24/01/2019 (Shift-I)

<b>(A)</b> 210	<b>(B)</b> 240
<b>(C)</b> 270	<b>(D)</b> 300

**63**. If the ratio of length of all sides of a triangle is 2 : 3 : 4 and its perimeter is 63 cm., then find the length of longest side.

Ū.	RRB RPF SI -13/01/2019 (Shift-II)
(A) 30 cm	<b>(B)</b> 28 cm
(C) 21 cm	<b>(D)</b> 14 cm

64. X, Y and Z together complete a task and earn Rs. 210. If ratio of the work of X, Y and Z is 4 : 6 : 5. then what is the amount Z gets?

RRB RPF Constable -25/01/2019 (Shift-I)		
(A) rs.40	<b>(B)</b> rs.70	
(0) == 4.4	(D) - 45	

- (C) rs.44 (D) rs.45
  65. If 12, x, 48 is in a consecutive ratio then find
  - the value of x? **RRB RPF Constable -19/01/2019 (Shift-III)** (A) 24 (B) 21 (C) 36 (D) 16
- 67. The first three terms of a ratio are 3,5 and 21 respectively. Find its fourth term.
  RRB RPF Constable -22/01/2019 (Shift-I)
  (A) 25 (B) 35
  (C) 30 (D) 20

**68.** Manu's Piggy Bank has a total of Rs. 221 in the form of 50 paise, 1 rupee and two rupees, whose ratio is 4: 3: 6. What is the number of 50 paise coins in piggy bank?

RRB RPF Constable -17/01/2019 (Shift-I)		
<b>(A)</b> 52	<b>(B)</b> 13	
<b>(C)</b> 104	<b>(D)</b> 26	

**69**. A boy has a total Rs. 60, which includes one rupee, 50 paise and 25 paise coins in ratio of 5 : 6 : 8. Find the number of 25 paise coins.

	RRB RPF SI -12/01/2019 (Shift-II)
<b>(A)</b> 30	<b>(B)</b> 48
( <b>C)</b> 32	<b>(D)</b> 42

**70.** Divide Rs. 305 into three parts in this way, 3/7 of the first, 2/3 of the second and 4/5 of the third are equal. Find the third part.

	RRB RPF SI -16/01/2019 (Shift-II)
(A) rs.62	<b>(B)</b> rs.72
(C) rs.75	<b>(D)</b> rs.40

**71.** How can a ratio of 1: 5 be expressed in decimal?

	RRB ALP & Tec. (14-08-18 Shift-III)
<b>(A)</b> 0.5	<b>(B)</b> 0.2
(C) 0.02	<b>(D)</b> 0.1

**72.** Ratio of Joi and Minit's marbles is 5 : 8 whereas the ratio of marbles of Jacob and Minit is 7 : 12. What is the ratio of Joi and Jacob's marbles?

	RRB ALP & Tec. (20-08-18 Shift-II)
<b>(A)</b> 7 : 5	<b>(B)</b> 2 : 3
(C) 15 : 14	<b>(D)</b> 5 : 7

**73.** Ratio of sand and gravel in a mixture is 7: 8 while ratio of gravel and cement is 6: 7. What is the ratio of sand and cement in mixture?

RRB /	ALP & Tec. (14-08-18 Shift-II)
<b>(A)</b> 49 : 48	<b>(B)</b> 7 : 7
(C) 8 : 6	<b>(D)</b> 3 : 4

**74.** In bags with red, green and pink tokens, the ratio of red tokens with green tokens is 5: 12 while pink tokens had a ratio of 7: 15 with red tokens. What was the ratio of green tokens to pink tokens?

RR	B ALP & Tec. (13-08-18 Shift-I)
<b>(A)</b> 25 : 28	<b>(B)</b> 36 : 7
<b>(C)</b> 28 : 25	<b>(D)</b> 12 : 7

**75.** The ratio of gravel with sand in the mixture is 17 : 8 while the ratio of gravel and cement is 6 : 17. What is the ratio of sand and cement in mixture?

#### RRB ALP & Tec. (09-08-18 Shift-III)

<b>(A)</b> 6 : 17	<b>(B)</b> 289 : 48
(C) 8 : 6	<b>(D)</b> 3 : 4

76. Ratio of copper to zinc in a mixed metal of german silver was 17: 7 while the ratio of nickel to zinc was 4: 3. What was respective ratio of copper to zinc nickel in mixed metal?
PPR ALP & Tec. (10-08-18 Shift-II)

	& Iec. (10-08-18 Shift-
<b>(A)</b> 17 : 21 : 4	(B) 51 : 21 : 28
(C) 68 : 28 : 21	<b>(D)</b> 17 : 28 : 3

77. A number is divided in ratio of 3 : 2. When 8 is added to each number then ratio changes to 7 : 5. Which of two numbers will be largest?

	RRB ALP & Tec. (20-08-18 Shift-I)
<b>(A)</b> 42	<b>(B)</b> 48
(C) 27	<b>(D)</b> 69

**78.** Ratio of red and green balls in a bag is 4: 9. If 7 more red balls are included in bag, then new ratio of red and green balls becomes 5: 6. How many green balls are in bag?

	RRB ALP & Tec. (14-08-18 Shift-III)
<b>(A)</b> 9	<b>(B)</b> 18
<b>(C)</b> 12	<b>(D)</b> 27

**79.** The initial ratio of sugar and flour in 9 kg of dough is 2: 7. If john adds more sugar So the ratio of the mixture becomes 2: 5. How much sugar does John add later?

 RRB ALP & Tec. (13-08-18 Shift-II)

 (A) 750 g
 (B) 1.2 kg

 (C) 1 kg
 (D) 800

**80**. An 84 meter long rope should be divided in ratio of 7 : 5, then what is the length (in meters) of long piece?

	RRB ALP & Tec. (30-08-18 Shift-III)
<b>(A)</b> 42	<b>(B)</b> 50
<b>(C)</b> 45	<b>(D)</b> 49

- 81. Ratio of boys and girls in a club is 3: 2. What is the total number of people present there?
  RRB ALP & Tec. (29-08-18 Shift-I)
  (A) 18 (B) 25
  (C) 16 (D) 24
- 82. If Rs. 87 is divided between James and Radha in ratio 1: 2, then how much money will Radha get?

	RRB ALP & Tec. (17-08-18 Shift-I)
(A) rs.29	<b>(B)</b> rs.57

(C) rs.59 (D) rs.58

**83**. The amount of Rs. 69 is divided into 1 : 2 between Jason and Rouhana. How much amount did Ruhana receive?

 RRB ALP & Tec. (14-08-18 Shift-III)

 (A) rs.23
 (B) rs.46

 (C) rs.40
 (D) rs.45

84. Ratio of length of Naini and leelu is 4 : 3. If length of the leelu is 1.2 m, then what is the length of Naini?
 PBR AL P & Toc. (10-08-18 Shift-III)

	& Iec. (10-08-18 Shift-III)
(A) 1.8 meter	(B) 0.9 meter
(C) 2 meter	(D) 1.6 meter

- 85. What is the ratio between 0.16 and 0.64? **RRB ALP & Tec. (29-08-18 Shift-III)**  (A) 0.27 (B) 0.48 (C) 0.40 (D) 0.32
- 86. Find the ratio between 2 and 98. **RRB ALP & Tec. (10-08-18 Shift-II)**  (A) 13 (B) 14.5 (C) 16 (D) 14
- 87. Ratio of the number of red and blue balls in a bag is constant. When it contained 44 red balls, number of blue balls was 36. If number of blue balls is 54, what will be number of red balls in the bag?

 RRB ALP & Tec. (09-08-18 Shift-I)

 (A) 66
 (B) 62

 (C) 64
 (D) 68

**88**. An amount of one rupee, 50 paise and 25 paise coins is Rs. 93.75 and the ratio of their number is 3 : 4 : 5. Find the number of coins of each type.

RRB A	ALP & Tec. (17-08-18 Shift-II)
<b>(A)</b> 42,56,70	<b>(B)</b> 45,60,75
<b>(C)</b> 40,70,75	<b>(D)</b> 46,58,75

89. A bag contains coins of Rs. 1, Rs. 5 and Rs. 10. Assuming that the coins of Rs. 1, Rs. 5 and Rs. 10 are in equal numbers, so if total money in the bag is Rs. 368, then what is total number of coins in the bag?

	RRB ALP & Tec. (14-08-18 Shift-III)
<b>(A)</b> 69	<b>(B)</b> 96
( <b>C</b> ) 56	<b>(D)</b> 65

<b>90</b> .	If L : M = 3	: 5 and M : N = 2: 3 , then N : L = ?	
	RRB NTPC 11/08/2022Shift : 3		
	(A) 2 : 1	<b>(B)</b> 5 : 2	

(C) 3 : 2 (D) 1 : 2

**91.** If A : B = 2 : 5 and B : C = 3 : 4, then A : C = ?

2

<b>A)</b> 1 : 2	<b>(B)</b> 3 : 10
<b>C)</b> 2 : 3	<b>(D)</b> 5 : 4

92. If A : B = 3 : 4 and B : C = 6 : 5 , then A : (A + C) = ? RRB NTPC 09/05/2022 Shift : 3

<b>(A)</b> 9 : 11	<b>(B)</b> 9 : 10
<b>(C)</b> 9 : 19	<b>(D)</b> 6 : 7

- 93.
   If a/ b = 1/4, b/c = 1/8 and a = 2, then c =?

   RRB NTPC 12/08/2022Shift : 3

   (A) 8
   (B) 16

   (C) 32
   (D) 64

<b>(A)</b> 12 : 36	<b>(B)</b> 12 : 15
<b>(C)</b> 1 : 3	<b>(D)</b> 11 : 36

- 95.
   Which of the following ratios is largest? RRB JE - 02/06/2019 (Shift-II) (A) 5 : 7 (B) 2 : 3 (C) 3 : 4 (D) 3 : 5
- **96.** Two numbers are more than a third number 40% and 60% respectively. What is the ratio of first number to second number?

 RRB NTPC 02/02/2021Shift: 3

 (A) 7: 9
 (B) 8: 9

 (C) 8: 7
 (D) 7: 8

97. If a = 2b/3, b = 2c/3, and c = 2d/3, then find the ratio of b and d –

RRB NTPC 11/08/2022 Shift : 2

<b>(A)</b> 8/9	<b>(B)</b> 4/9
(C) 4/3	<b>(D)</b> 5/27

**98.** Ratio of marks obtained by a student in 3 subjects is 1: 2: 3. The school has decided to give 5% grace marks for each subject. Find new student ratio.

 RRB NTPC 05/03/2021 Shift : 1

 (A) 1 : 2 : 3
 (B) 2 : 3 : 4

 (C) 2 : 3 : 1
 (D) 3 : 2 : 1

**99**. Divide Rs. 169 in ratio 2 : 5 : 6. What will be their share in rupees according to above ratio?

RRB NTPC 19.01.2017 Shift : 3(A) 26,66,77(B) 26,65,78(C) 25,67,78(D) 26,70,73

- 100. The ratio of two numbers is 2: 3. If 12 is subtracted from both numbers then ratio becomes 5 : 8. Find the numbers-RRB NTPC 10/08/2022 Shift : 1
  (A) 16 and 24
  (B) 35 and 56
  (C) 72 and 108
  (D) 20 and 48
- **101**. The ratio of two numbers is 7 : 12. If 7 is added to both the numbers then the ratio becomes 7 : 11. Find the smaller number.

	RRB NTPC 11/08/2022Shift : 2
<b>(A)</b> 7	<b>(B)</b> 28
<b>(C)</b> 35	<b>(D)</b> 12

**102**. Ratio of boys and girls in a class is 4 : 5. If 4 new boys join the class then number of boys increases by 20%. What will be number of girls in class?

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 30	<b>(B)</b> 35
<b>(C)</b> 20	<b>(D)</b> 25

**103.** In a mixture of 25 liters, the ratio of milk and water is 4: 1. How much liter of milk should be added and the ratio becomes 16: 1.

	RRB NIPC 11/08/2022 Shift : 2
<b>(A)</b> 21	<b>(B)</b> 25
(C) 60	<b>(D)</b> 36

**104.** The ratio of two numbers is 5: 6. If 6 is added to both numbers then ratio becomes 7 : 8, then what are the numbers?

	RRB NTPC 05/03/2021Shift : 1
<b>(A)</b> 10,12	<b>(B)</b> 20,24
<b>(C)</b> 15,18	<b>(D)</b> 5,6

**105.** The ratio of girls and boys among the 504 students of a school is 11: 13. If 12 more girls are admitted, then what will be new ratio? **RRB NTPC 05/03/2021Shift : 2** 

	RRB NTPC 05/03/2021Shift :
<b>(A)</b> 31: 51	<b>(B)</b> 91: 81
<b>(C)</b> 81: 91	<b>(D)</b> 51: 31

106. 4 years ago, the ratio of Vikas and Rahul's age was 3: 5. After 6 years, this ratio will become 4: 5. Find the present age of Rahul. RRB NTPC 02/02/2021Shift : 3

	RRB NTPC 02/02/2021Shift :
<b>(A)</b> 10	<b>(B)</b> 15
<b>(C)</b> 14	<b>(D)</b> 17

**107.** Ratio of two numbers is 4 : 5. If 5 is subtracted from both then new ratio becomes 3: 4. Find larger number.

RRB NTPC 05/04/2021Shift : 1

<b>(A)</b> 30	<b>(B)</b> 25
<b>(C)</b> 20	<b>(D)</b> 15

**108.** Ratio of two numbers is 3: 4. If 3 is subtracted from both numbers then ratio becomes 2: 3. Find the sum of numbers.

	RRB NTPC 12/08/2022Shift : 3
<b>(A)</b> 16	<b>(B)</b> 20
(C) 21	<b>(D)</b> 22

**109**. Ratio of weight of gold and silver in an alloy is 17 : 3. If weight of silver in alloy is 2.7 grams, then find the weight of gold in alloy?

	RRB NTPC 11/08/2022Shift : 1
(A) 12.6 gram	<b>(B)</b> 15.3 gram
(C) 18 gram	<b>(D)</b> 21.2 gram

**110**. One of the 27 nurses in a nursing home has resigned. If the staff nurse is 1 : 6 in proportion to the patient, then how many maximum patients can be admitted?

	RRB NTPC 10/08/2022Shift-1
<b>(A)</b> 156	<b>(B)</b> 162
<b>(C)</b> 150	<b>(D)</b> 168

**111**. Ratio of science and arts students is 5 : 3. If their total number is 1,528, then find out the number of art students.

	RRB NTPC 10/08/2022Shift-1
<b>(A)</b> 830	<b>(B)</b> 664
<b>(C)</b> 498	<b>(D)</b> 573

112. A certain number of men and their dogs are traveling by train. Ratio of man and dogs is 5 :2. Train has a total of 54 legs. Find the total number of dogs.

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 30	<b>(B)</b> 12
( <b>C)</b> 15	<b>(D)</b> 6

**113**. Difference between two positive numbers is 160 and ratio of both of them is 5 : 3. What will be product of both numbers.

RRB NTPC 10/08/2022 Shift : 3(A) 96000(B) 48000(C) 144000(D) 72000

**114**. Ratio of two supplementary angles is 4 : 5 , find ratio of the sum of two angles to their difference.

RRB NTPC 05/03/2021Shift : 3

(A) 1 : 9	<b>(B)</b> 2 : 7
(C) 4 : 9	<b>(D)</b> 7 : 11

**115**. Rs. 156 should be divided in ratio 1 : 2 : 4 : 5, then rupee will be in their respective ratio-

RRB NTPC 22.04.2016 Shift : 2

<b>(A)</b> 13,26,53,64	<b>(B)</b> 13,26,51,66
(C) 13,26,52,65	<b>(D)</b> 13,25,53,65

**116**. Rs. 130 is divided in the ratio of 3 : 6 : 8 : 9. The amount given to each is. What is the amount given to each.

## RRB NTPC 23/07/2022 Shift-3

<b>(A)</b> 15,30,41,44	<b>(B)</b> 15,30,40,45
<b>(C)</b> 15,30,39,46	<b>(D)</b> 15,31,39,45

 117. If ratio of angles of a quadrilateral is 3 : 5 : 9 : 13. Then what is the largest angle?
 RRB NTPC 11/08/2022Shift : 1

<b>(A)</b> 165°	<b>(B)</b> 180°
<b>(C)</b> 156°	<b>(D)</b> 190°

**118.** If ratio of the angles of a triangle is 2 : 3 : 7. Find the ratio of largest angle to smallest angle.

	RRB NTPC 05/03/2021Shift : 1
<b>(A)</b> 7 : 2	<b>(B)</b> 2 : 3
(C) 7 : 1	<b>(D)</b> 3 : 5

**119**. If the ratio of angles of a triangle is 1 : 2 : 3. Then what is the smallest angle?

### RRB NTPC 05/03/2021Shift : 3

<b>(A)</b> 30°	<b>(B)</b> 60°
<b>(C)</b> 70°	<b>(B)</b> 45°

**120**. If ratio of the angles of a triangle is 1 : 4 : 7, find the ratio of largest angle to smallest angle.

### RRB NTPC 02/02/2021Shift : 3

<b>(A)</b> 7 : 2	<b>(B)</b> 2 : 3
(C) 7 : 1	<b>(D)</b> 3 : 5

**121**. Rs. 176 should be divided in ratio 2 : 5 : 6 : 9, then rupee will be in their respective ratio-

## RRB NTPC 11/08/2022Shift : 1

- (A) 16,40,49 and 71
  (B) 16,40,47 and 73
  (C) 16,40,48 and 72
  (D) 16,41,47 and 72
- **122**. A certain prize money is to be given to P, Q and R in ratio of 3 : 5 : 7. If R got Rs. 1000 more than P, then what is the share of Q?

## RRB NTPC 10/08/2022Shift-1

( <b>A)</b> rs.750	<b>(B)</b> rs.1250
(C) rs.1750	(D) rs.1500

**123**. If three numbers are in ratio 2 : 5 : 7 and their sum is half of 280, then what is the square of smallest number among the three?

RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> 400	<b>(B)</b> 900
(C) 2500	<b>(D)</b> 6400

**124**. If the three numbers are in ratio 4 : 5 : 7, and their sum is 320. Find the sum of smallest and largest number among them.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 140	<b>(B)</b> 220
(C) 240	<b>(D)</b> 180

**125.** If three numbers are in ratio 1 : 3 : 5 and their sum is 10,800, find the largest number among three.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 1200	<b>(B)</b> 3600
<b>(C)</b> 6000	<b>(D)</b> 5400

**126**. Ritesh, Gaurav and Jugnu invest in ratio of 2 : 5 : 7. Ratio of income after return of their investment is 5 : 3 : 2. If Gaurav earns more than Rs. 150 from Ritesh, then find the total income.

	RRB NTPC 22.04.2016 Shift : 1
(A) rs.1170	<b>(B)</b> rs.1050
(C) rs.1240	<b>(D)</b> rs.1370

127. Mother distributed some amount to her children Arvind, Beenu and Chitra in ratio 2: 3:4. If Beenu received Rs. 51, then what was amount received by Chitra and Arvind respectively?

	RRB NTPC 09/05/2022	Shift: 3
<b>(A)</b> 34,102	<b>(B)</b> 85,34	
<b>(C)</b> 68,34	<b>(D)</b> 68,136	
Find the fou	rth ratio number after 2.4.8	8:-

- 128.
   Find the fourth ratio number after 2,4,8 : 

   RRB NTPC 23/07/2022 Shift-3

   (A) 15
   (B) 14

   (C) 16
   (D) 18
- 129. Find the value of k in  $\frac{26}{21}$ :  $\frac{24}{9}$ : k:  $\frac{14}{13}$ : RRB NTPC 02/02/2021Shift : 1 (A) 1/3 (B) 2 (C) 1/2 (D) 3
- 130. Three numbers 2.6, 1.3 and X are in a fixed ratio. Then find the value of x. **RRB NTPC 02/02/2021Shift : 2** (A) 1.95
   (B) 1.83
   (C) 3.9
   (D) 0.65
   (D) 0.65

**131.** The four terms are in mutual proportion. First, second and fourth terms are 4, 22 and 33. Find third term-

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 8	<b>(B)</b> 6
<b>(C)</b> 11	<b>(D)</b> 3

- 132.
   Find the quadrant of 9, 17, and 27.

   RRB NTPC 05/03/2021 Shift : 1

   (A) 57
   (B) 48

   (C) 51
   (D) 53
- **133.** What is the fourth proportional number of 14, 28 and 21?

	RRB NTPC 19.01.2017 Shift : 1
<b>(A)</b> 41	<b>(B)</b> 42
<b>(C)</b> 14	<b>(D)</b> 40

- 134.
   What is the quartile ratio of 15,12,20?

   RRB NTPC 19.01.2017 Shift : 2

   (A) 14
   (B) 12

   (C) 18
   (D) 16
- **135.** If 14, x, 56 is in a consecutive ratio, find the value of x.

	RRB NTPC 23/07/2022 Shift : 1
<b>(A)</b> 28	<b>(B)</b> 21
(C) 8	<b>(D)</b> 42

**136**. In a bag, notes of Rs. 10, Rs. 20 and Rs. 50 are kept in ratio of 1: 3: 5. If the total amount kept in the bag is Rs. 1920. What is the total number of 20 rupee notes?

<b>(A)</b> 6	<b>(B)</b> 30
<b>(C)</b> 18	<b>(D)</b> 12

**137.** A bag contains 25 paise, 10 paise and 5 paise coins in ratio of 1 : 2 : 3. If their total amount is 180 rupees, then how many coins of 10 paise will be in it?

## RRB NTPC 05/04/2021Shift : 3

1

<b>(A)</b> 300	<b>(B)</b> 400
<b>(C)</b> 600	<b>(D)</b> 900

**138**. 13,680 is divided into 3 parts such that the first part is 3/5 of the third part and the ratio of the second and third part is 4 : 7. Then what will be the first part?

	RRB NTPC 11/08/2022Shift :
<b>(A)</b> 3780	<b>(B)</b> 6300
<b>(C)</b> 1600	<b>(D)</b> 4800

139. Ratio of soil and gravel in a mixture is 11:8, While ratio of gravel and cement is 6 : 7. What is the ratio of soil and cement in mixture?

RRB Pa	ramedical - 20/07/2018 (Shift-I)
<b>(A)</b> 77: 48	<b>(B)</b> 33: 28
(C) 8: 6	<b>(D)</b> 11: 7

- 140. If 5 : 9 :: x : 27, then x = ?RRB Paramedical - 21/07/2018 (Shift-II) (A) 6 **(B)** 3 (C) 18 (D) 15
- 141. If the first number and the second number are 25% and 50% more than the third number respectively, find the ratio between the first and second number.

	RRB JE - 27/05/2019 (Shift-I)
<b>(A)</b> 5:6	<b>(B)</b> 2:1
(C) 6:5	<b>(D)</b> 1:2

142. The abilities of two workers P and Q are in ratio 3 : 2. What amount should be given to P out of the daily wages of Rs. 400?

	RRB JE - 28/05/2019 (Shift-II)
(A) rs.240	<b>(B)</b> rs.260
( <b>C)</b> rs.250	<b>(D)</b> rs.160

143. Ratio of working abilities is 2:3:5:4 of P, Q, R and S in doing a work. The remuneration paid for a work is Rs. 4200. Who received highest amount and how much?

RRB JE - 25/05/2019 (Shift-I)

(A) P, rs.2000	<b>(B)</b> Q, rs.2000
<b>(C)</b> S, rs.1600	<b>(D)</b> R, rs.1500

- 144. If Rs. 750 is divided into three parts x, y and z such that (x - 5) : (y - 10) : (z - 15) = 5 : 4 : 3. Then find the share of x, y and z respectively. RRB JE - 30/05/2019 (Shift-III) (A) rs.250, rs.200, rs.150 (B) rs.305, rs.250, rs.195 (C) rs.310, rs.170, rs.240 (D) rs.300, rs.240, rs.180
- 145. The amount of Rs. 117 was accidentally divided into a 2:3:4 ratio between P, Q and R instead of 1/2: 1/3: 1/4 ratio. Who gets highest amount and how much in this partition?

	RRB JE - 31/05/2019 (Shift-III)
(A) P, rs.28	(B) R, rs.27
(C) R, rs.25	<b>(D)</b> Q, rs.35

146. A bag contains 25 paise 10 paise and 5 paise coins in ratio of 1: 2: 3. If total in the bag is Rs. 30, how many coins are there for 5 paise? RRB JE - 22/05/2019 (Shift-I)

<b>(A)</b> 100	<b>(B)</b> 200
<b>(C)</b> 150	<b>(D)</b> 50

Therefore A: C = 9: 20

Ans.(B)

## Solution

1.	Ans.(C)	
	a 32 (1)	4
	$\overline{b} = \overline{35} \dots (l)$	
	$\tilde{b}$ $\tilde{21}$	
	$\frac{1}{c} = \frac{1}{32} \dots (u)$	
	From equation (i) and (ii) –	
	a b 32 21	
	$\overline{b} \times \overline{c} = \overline{35} \times \overline{32}$	
	a 3	
	$\frac{1}{c} = \frac{1}{5}$	
2.	Ăns.(Ď)	5
	Let the third number = 100	
	First number and second number = 130, 160	
	Hence the required ratio $\frac{130}{1} = 13$ : 16	
3	Ans (B)	
J.	Given that	
	A = 5 = B = 18	
	$\frac{\pi}{2} = \frac{3}{2}$ and $\frac{\pi}{2} = \frac{10}{25}$	6
	B = B = C = 25 A = (A = B)	Ŭ
	Then $\frac{A}{C} = \left(\frac{A}{D} \times \frac{D}{C}\right)$	
	(5 18) 90	
	$=\left(\frac{3}{6}\times\frac{10}{25}\right)=\frac{30}{200}$	
	\8 25/ 200	

a : b = 45 : 56 b : c = 16 : 35  $\therefore a: c = \frac{a}{c} = \frac{a}{b} \times \frac{b}{c}$  $= \frac{45}{56} \times \frac{16}{35}$  $= \frac{18}{49} = 18:49$ Ans.(A) Given that,  $\frac{a}{b} = \frac{2}{3}, \frac{a}{c} = \frac{10}{21}$   $\frac{c}{b} = \frac{a}{b} \times \frac{c}{a} = \frac{2}{3} \times \frac{21}{10}$  c:b = 7:5c:b = 7:5b:c = 5:7 **Ans.(C)**  $a:b = \frac{3}{2}:\frac{7}{3} = 9:14$ b:c =  $\frac{1}{5}:\frac{1}{7} = (7:5) \times 2$ = 14:10

6.

= 14 : 10 a:b:c=9:14:10 7. Ans.(D) a:b=7:9b:c=5:11Therefore a : b : c = 35 : 45 : 99 8. Ans.(D)  $\frac{\text{Sand}}{\text{scree}} = \frac{41}{30}$ and  $\frac{\text{Cement}}{\text{scree}} = \frac{7}{6} = \frac{7 \times 5}{6 \times 5} = \frac{35}{30}$ scree 30  $\frac{\frac{1}{2}}{\frac{1}{2}} \frac{\frac{1}{2}}{\frac{1}{2}} \times \frac{\frac{1}{2}}{\frac{1}{2}} = \frac{\frac{1}{2}}{\frac{1}{30}} \times \frac{\frac{30}{35}}{\frac{1}{35}}$ Therefore sand cement = 41  $=\frac{1}{35}$ = 41 : 35 9. Ans.(C) Pink : Red = 7 : 15 Red : Green = 5 : 11 So, Pink : Red : Green = 7 × 5 : 5 × 15 : 15 × 11 = 35:75:165Green : Pink = 165 : 35 = 33:7Ans.(B) 10. As per the question, Aditya's money = Rs. x And Ravi's money = Rs. 16x Suraj's amount = Rs. 64x Ratio of funds of Aditya, Ravi and Suraj = x: 16 x: 64 x Ratio of funds of Aditya and Suraj = x: 64 x = 1: 6411. Ans.(A) Let the number be a and b. Airthmetic mean of two positive numbers = (a + b) / 2Geometric mean =  $\sqrt{ab}$  $\frac{a+b}{2} + \sqrt{ab} = b - a$  $a + b + 2\sqrt{ab} = 2(b - a)$  $(\sqrt{a})^2 + (\sqrt{b})^2 + 2\sqrt{a \cdot b} = 2[(\sqrt{b})^2 - (\sqrt{a})^2]$  $(\sqrt{a} + \sqrt{b})^2 = 2(\sqrt{b} - \sqrt{a})(\sqrt{b} + \sqrt{a})$  $\sqrt{a} + \sqrt{b} = 2\sqrt{b} - 2\sqrt{a}$  $3\sqrt{a} = \sqrt{b}$  $\frac{\sqrt{a}}{\sqrt{b}} = \frac{1}{3}$ Squaring both sides  $\frac{a}{b} = \frac{1}{9}$ Hence, ratio of numbers = 9: 1 12. Ans.(A) Copper : zinc = 21: 16 Nickel: Zinc = 7: 24 Copper : Zinc : nickel =  $21 \times 24$ :  $16 \times 24$ : 7 ×16 = 3 × 21: 3 × 16: 2 × 7 = 63 : 48 : 14 13. Ans.(C) Copper: zinc = 19:6 Nickel: zinc = 7 : 4

Copper : zinc : nickel = 19 : 6 4: Ż = 76:24:42= 38: 12: 21 14. Ans.(D) Copper : zinc : nickel = 4:3:2Suppose the quantities are 4 x, 3 x and 2 x kg respectively. According to Question, 4x + 3x + 2x = 549 x = 54x = 6 $\therefore$  Copper = 4  $\times$  6 = 24 kg  $Zinc = 3 \times 6 = 18 \text{ kg}$ nickel = 2 times 6 = 12 kg Let adding y kg of zinc new ratio will be 2: 5: 1. 24 2 - = 5 18 + y120 = 36 + 2 v84 = 2 yy = 42 kgHence zinc added to the metal = 42 kg 15. Ans.(B) Let both numbers be 5x and 9x respectively. According to Question, 5x + 62  $\frac{1}{9x + 6} =$ 3 15 x + 18 = 18 x + 126 = 3 xx = 2Basic numbers =  $5 \times 2$  and  $9 \times 2$ = 10 and 18 16. Ans.(A) Let the numbers be 7x and 11x respectively. Then – 7x + 65  $\frac{1}{11x + 6} = \frac{3}{7}$ 49x + 42 = 55x + 3042 - 30 = 55x - 49x $12 = 6x \Rightarrow x = \frac{12}{6} = 2$ x = 2Therefore numbers  $7 x = 7 \times 2 = 14$  $11 \text{ x} = 11 \times 2 = 22$ Hence, larger number = 2217. Ans.(C) Let two numbers are 11x and 18x. Then. 11x + 413  $\frac{1}{18x + 4} = \frac{1}{20}$ 220x + 80 = 234x + 5228 = 14xx = 2Hence, numbers will be 22 and 36.

18. Ans.(D) Let the number be = 3x, and 4x. According to Question - $\frac{3x+3}{4x+3} = \frac{10}{13}$ 39x + 39 = 40x + 30x = 9Original numbers = 3x, 4x = 27, 36 19. Ans.(D) The quantity of flour in the dough of 22 kg =  $22 \times \frac{7}{11} = 14kg$ Quantity of sugar = 22 - 14 = 8 kg Let the added quantity of flour = x kgAccording to Question - $\frac{8}{14+x} = \frac{2}{5}$ 40 = 28 + 2x2x = 12x = 6Thus, the quantity of flour mixed = 6 kg20. Ans.(B) Let the number be 9x, 5x. According to Question -9x + 8 $\frac{9x + 8}{5x + 8} = \frac{5}{3}$ 5 27 x + 24 = 25 x + 402 x = 40 - 242 x = 16X = 8 Hence, larger number =  $9 \times 8 = 72$ 21. Ans.(C) Let red ball be 15x and green ball be 26x. Adding more 12 green balls 15*x* 1  $\frac{15x}{26x + 12} = \frac{1}{2}$ 30 x = 26 x + 12 4 x = 12x = 3Red ball in the bag =  $15 \times 3 = 45$ 22. Ans.(A) Let the amount of Ethane and Zain = 4x, 7xRatio after giving rupee 1 to ethane = 4x + 1: 7 x - 1 = 7 : 12 $\Rightarrow$  48 x + 12 = 49 x - 7  $\Rightarrow x = 19$ Ethane have money=  $4x = 4 \times 19 = Rs. 76$ Zain have money =  $7 x = 7 \times 19 = \text{Rs.}133$ Total money = 76 + 133 = Rs. 209 23. Ans.(B) Let the first number = 17 xSecond number = 28 x According to Question,

 $\frac{17x + 6}{28x} = \frac{13}{20}$ 20  $\frac{17x + 6}{7x} = \frac{13}{5}$ 85 x + 30 = 91 x6 x = 30x = 5Hence, larger number =  $28 \times 28 \times 5 = 140$ 24. Ans.(B) Let amount divided between Shivani and Parineeta = 5x and 7xThen, according to the question,  $\frac{1}{7x-5} = \frac{7x-5}{3} = \frac{1}{20}$ 3 4  $\Rightarrow 20x + 20 = 21x - 15$ x = 35Total amount = 5x + 7x = 12x $= 12 \times 35 = \text{Rs.}420$ 25. Ans.(C) Length of wire = 24.6 mRatio = 12 : 29 Large piece length  $=\frac{24.6\times29}{41}$ = 0.6 × 29 = 17.4 meter **26**. Ans.(B) According to Question, Son received money =  $\frac{11}{11+10} \times 10390$  $=\frac{11}{21} \times 10390$  $= \frac{114290}{21} = Rs.5442.38$ 27. Ans.(D) Suppose the amount received by Moksha and Aryan is Rs. 13x and Rs. 29x. According to Question, 29 x = 551x = 19 $\therefore$  Moksha received money = 13  $\times$  19 = Rs. 247 28. Ans.(A) According to Question, Ratio of A and B = 8 : 9 Part of A =  $\frac{5100 \times 8}{17}$  = 2400 Part of B =  $\frac{5100 \times 9}{17}$  = 2700 Part of B = Rs. 2700 And part of A = Rs. 2400 B - A = 2700 - 2400B - A = 300**29**. Ans.(A) Let Sita get marbles = 5xSavita gets marbles = 9x 9 x + 5 x = 350

 $x = \frac{350}{14} = 25$ Number of marbles that Savita got  $= 9 \times 25 = 225$ 30. Ans.(A) Let the amount received by Jayati = 5x Prateek received = 6xAccording to Question -6x + 5x = 88x = 8 Hence amount received by Jayati  $= 5 x = 5 \times 8 = Rs. 40$ 31. Ans.(D) Suppose the number of people present in the party is 4x and female is 7x. The sum of women and men in the party, 4 x + 7 x = 7711 x = 77x = 7Number of women =  $7x = 7 \times 7 = 49$ 32. Ans.(C) According to the question, Number of boys = 5xAnd number of girls = 6x5 x + 6 x = 353111x = 3531 $x = \frac{3531}{11} = 321$ Total girls = 6 $x = 6 \times 321 = 1926$ 33. Ans.(C) Ratio of money distributed between the two persons = 11: 23The person with the larger division gets =  $\frac{\frac{23}{11+23}}{=\frac{23}{34}} \times 1190$  $= 23 \times 35 = Rs.805$ 34. Ans.(A) Let the amount of Ram and Shyam are 8x, 19x respectively. By question -19 x = Rs. 247 x = 13 Ram's amount = 8x = 8 × 13 = Rs.104 35. Ans.(D) Salt: Acid = 5: 7, Weight of mixture =360 gm Weight of Acid =  $\frac{7}{(5+7)} \times 360 = \frac{7}{12} \times 360$  $= 7 \times 30$ = 210 gm36. Ans.(C) Let the number of boys = 4xAnd number of girls = 5x

Number of students = 333 5x + 4x = 3339 x = 333x = 37Number of girls = 5x $= 37 \times 5 = 185$ Ans.(C) X : Y : Z = 4 : 5 : 6Amount disbursed = Rs. 900 Difference between X and Z =  $\frac{6-4}{15} \times 900$  $=\frac{2}{15} \times 900 = 60 \times 2 = Rs.120$ Ans.(A) Number of marbles of Aman  $=\frac{7}{15} \times 315 = 147$ Number of marbles of Ashok  $=\frac{3}{15} \times 315$  $= 21 \times 3 = 63$ Number of marbles of Alok  $=\frac{5}{15} \times 315$ = 105 So, Difference of marbles of Aman and Ashoka = 147 - 63 = 84 Ans.(B) Let the angles of the triangle be 5x, 6x, 7x. By the law of the triangle, Sum of the three angles of  $\Delta = 180^{\circ}$  $5x + 6x + 7x = 180^{\circ}$  $18x = 180^{\circ}$  $x = \frac{180^{\circ}}{18} = 10^{0}$ So the angle of  $\Delta$  $5x = 50^{\circ}$  $6x = 60^{\circ}$  $7x = 70^{\circ}$ Therefore, it is clear from all the three angles of the triangle that all these angles are less than 90°, so it indicate the tendency of the acute triangle. Ans.(D) Required ratio  $= \frac{1}{2}:\frac{2}{3}:3:4 = 3:4:18:24$ First part  $= \frac{686\times3}{3+4+18+24} = \frac{2058}{49} = Rs.42$ Ans.(B) Let, the amount received by Tara, Tamanna and Tina is Rs.4 x, Rs.5 x and Rs.6 x respectively.  $\therefore 4x + 5x + 6x = 1000$ 15x = 1000200  $x = \frac{-1}{3}$ Thus, the difference between amount of Tara and Tina =  $x \times (6 - 4) = 2x$ 

37.

38.

39.

**40**.

41.

 $=\frac{2\times 200}{3}$  = Rs. 133.33 42. Ans.(A) Let that number be k. Then. 4 + k:8 + k:: 12 + k:22 + k $\frac{4+k}{8+k} = \frac{12+k}{22+k}$  $88 + 4k + 22k + k^2 = 96 + 12k + 8k + k^2$ 88 + 26k = 96 + 20k6k = 8 $k = \frac{8}{6} = \frac{4}{3}$ Hence k = 4/3 must be added to each number. 43. Ans.(D) 25; 35 and P is in sequential ratio -Therefore,  $\frac{25}{35} = \frac{35}{P}$  $P = \frac{35 \times 35}{25}$  $P = 7 \times 7 = 49$ 44. Ans.(B) Let the fourth ratio be x. Then -3:4:9:x  $\frac{3}{4} = \frac{9}{x}$  $3x = 9 \times 4$  $x = \frac{9 \times 4}{3}$ x = 1245. Ans.(B) Proportion p:18:5:3  $\therefore p \times 3 = 18 \times 5$  $p = \frac{18 \times 5}{3}$  $p = 6 \times 5$ p = 3046. Ans.(D) 7:9::x:36  $9x = 36 \times 7$ 9x = 252x = 2847. Ans.(B) Let, the number of 50 paise, 25 paise and 10 paise coins in the bag is 5x, 4x, 3x respectively. Value of coins =  $\frac{5x}{2}:\frac{4x}{4}:\frac{3x}{10}$ According to Question - $\Rightarrow \frac{5x}{2} + \frac{4x}{4} + \frac{3x}{10} = 171$  $\Rightarrow 50x + 20x + 6x = 3420$  $\Rightarrow$  76x = 3420 $\Rightarrow x = 45$ 

Hence the number of coins  $= 5x = 5 \times 45 = 225$  $= 4x = 4 \times 45 = 180$  $= 3x = 3 \times 45 = 135$ I.e., coins of 50 paise, 25 paise and 10 paise are 225, 180,135 respectively. Ans.(A) Let, the number of 50 paise, 1 rupee and Rs. 5 coins is 8x, 5x, 9x respectively. Then, their total value  $= Rs.\left(\frac{8x}{2} + 5x \times 1 + 9x \times 5\right)$ = Rs.(4x + 5x + 45x)= Rs.54x  $\therefore 54 \text{ x} = 648$ x = 12 Number of 50 paise coins =  $8x = 8 \times 12 = 96$ Ans.(D) Let, the number of 50 paise, 1 rupee and Rs. 5 coins is 2x, 3x, 5x respectively. Then their total value  $=\frac{1}{2} \times 2x + 1 \times 3x + 5 \times 5x$ According to Question, x + 3 x + 25 x = 11629 x = 116 x = 4So the number of 50 paise coins  $= 2x = 2 \times 4 = 8$  coins Ans.(D) Raju has a total of Rs.210 in coin form. The total proportion of the number of Raju's coins considered 100%. Rs.5 Rs.10 Rs.2 Rs.1 20% 25% 15% 40% Let the number of coins = 4x, 5x, 3x, 8xValue of total number of coins =  $4x \times 5 + 5x \times 10 + 3x \times 2 + 8x \times 1 = 210$ 20x + 50x + 6x + 8x = 21084x = 210

48.

49.

**50**.

 $x = \frac{210}{84} = \frac{10}{4}$ Hence, the number of coins of Rs.1 = 8x $= 8 \times \frac{10}{4} = 20$ 

#### 51. Ans.(C)

Let number of Rs.2, Rs. 1 and 50 paise coins are x, 2x, and 3x respectively. Total Amount = Rs. 110 According to Question,  $(x \times 2) + (2x \times 1) + (3x \times 0.50) = 110$  $\Rightarrow 2x + 2x + 1.5x = 110$  $\Rightarrow 5.5x = 110$  $\Rightarrow x = \frac{110}{5.5} = 20$  $\Rightarrow x = 20$ Number of 50 paise coins =  $3x = 3 \times 20 = 60$ 

52. Ans.(B) According to Question, Half of first part = one third of second part = third part x 1/6  $\frac{I}{2} = \frac{II}{3} = \frac{III}{6}$ | : || : III = 2:3:6I part =  $1870 \times \frac{2}{11} = 340$ II part =  $1870 \times \frac{3}{11} = 510$ III part =  $1870 \times \frac{b}{11} = 1020$ Hence, all three parts are 340, 510 and 1020 respectively. Ans.(D) 53. According to Question, A = 5 C, A = 3B $\Rightarrow A = 3B = 5C$  $\Rightarrow \frac{A}{15} = \frac{B}{5} = \frac{C}{3}$ A:B:C = 15:5:3 $A = \frac{1380 \times 15}{23} = Rs.900$  $B = \frac{1380 \times 5}{23} = Rs.300$  $C = \frac{1380 \times 3}{23} = Rs.180$ 54. Ans.(B)  $\therefore$  One day = 24 hours  $\therefore$  3 days = 24 x 3 = 72 hours Ratio = 72 : 30 = 12 : 5 55. Ans.(A) Green : Red = 32 : 15 Red : Pink = 25 : 18 Green : Red : Pink = 800 : 375 : 270 So Green: Pink = 800: 270 = 80: 27 56. Ans.(A) Tulip  $\frac{\text{Tup}}{\text{Devansh}} = \frac{7}{9}$ and  $\frac{\text{Sheetal}}{\text{Devansh}} = \frac{7}{15}$ Therefore  $\frac{\text{Tulip}}{\text{Sheetal}} = \frac{7}{9} \times \frac{15}{7} = \frac{5}{3}$ 57. Ans.(C) Ratio between L, K and J =  $\frac{1}{2}$ :  $\frac{1}{4}$ :  $\frac{1}{4}$ = 6 : 4 : 3 Hence K received =  $3900 \times \frac{4}{13} = Rs. 1200$ 58. Ans.(B) First integers =  $\frac{3}{7} \times 70 = 30$ Second integers =  $\frac{4}{7} \times 70 = 40$ 

Let after adding x in each integers their ratio will be 5 : 6. So,  $\frac{30 + x}{40 + x} =$ 5 6  $\Rightarrow$  180 + 6x = 200 + 5x  $\Rightarrow 6x - 5x = 200 - 180 \Rightarrow x = 20$ 59. Ans.(C) Let the numbers be 3 x and 5 x. 3x + 10 $\therefore \frac{5x + 10}{5x + 10} = \frac{1}{7}$ 21 x + 70 = 25 x + 50 4 x = 20 or x = 5Small number =  $3x = 3 \times 5 = 15$ **60**. Ans.(A) Charan : Rajat 5x : 4xAccording to Question – 5x + 30006  $\frac{1}{4x + 3000} =$ 5 25 x + 15000 = 24 x + 18000 25 x - 24 x = 18000 - 15000x = 3000Salary of Charan = 5 x = 5 × 3000 = Rs.15000 61. Ans.(C) Let the length and width of the board be 7 x and 5 x respectively. According to Question -5 x = 20.5x = 4.1Length =  $7x = 7 \times 4.1 = 28.7$  cm. **62**. Ans.(B) Physics: Biological Science = 5: 4 Total number of pages = 540 Number of biological science pages  $= 540 \times \frac{4}{9} = 60 \times 4 = 240$ **63**. Ans.(B) Let sides of the triangle be 2x, 3x and 4 x. ∴ By question – 2x + 3x + 4x = 69x = 63x = 7 $\therefore$  The largest side of  $\Delta = 4x$  $= 4 \times 7 = 28$  cm 64. Ans.(B) The amount Z received for work  $= \frac{5}{4+6+5} \times 210 = \frac{5}{15} \times 210 = Rs.70$ 65. Ans.(A)  $\therefore$  12, x and 48 are in consecutive ratio – ∴ 12 : x :: x : 48  $\Rightarrow \frac{12}{x} = \frac{x}{48}$
$$x^{2} = 12 \times 48$$

$$x^{2} = 2 \times 2 \times 3 \times 2 \times 2 \times 2 \times 3 = 24$$
66. Ans.(B)  

$$x:\frac{1}{15}:\frac{2}{5}:\frac{5}{9}$$

$$x \times \frac{5}{9} = \frac{1}{18} \times \frac{3}{5}$$
Therefore,  $x = \frac{3}{50}$ 
67. Ans.(B)  
The three terms of the ratio are 3,5,21  
respectively.  
Let the fourth term be x.  
3:5:21:x  

$$\frac{3}{5} = \frac{21}{x}$$

$$3x = 21 \times 5$$

$$x = \frac{21 \times 5}{3} = 7 \times 5 = 35$$
68. Ans.(A)  
Let, the number of 50 paise, 1 rupee and 2  
rupee coins are 4x, 3x and 6x respectively.  
According to Question,  

$$\frac{4x}{2} + 3x + 2 \times 6x = 221$$

$$17x = 221$$

$$x = 13$$
Number of 50 paise coins = 4x = 4 \times 13 = 52
69. Ans.(B)  
number of 50 paise coins = 4x = 4 \times 13 = 52
69. Ans.(C)  
Total value of coins = Rs. 60 (Given)  

$$\Rightarrow Rs.(\frac{5x}{1} + \frac{6x}{2} + \frac{8x}{4}) = Rs.60$$

$$\Rightarrow Rs.(5x + 3x + 2x) = Rs.60$$

$$10x = Rs.60$$
Thus, number of 25 paise coins = 8 × 6 = 48  
70. Ans.(C)  
Let, three parts be x, y and z respectively.  

$$\therefore \frac{3}{7}x = \frac{2}{3}y = \frac{4}{5}z = k(Let)$$

$$\therefore x = \frac{7k}{3} \cdot y = \frac{3k}{2}, z = \frac{5k}{4}$$

$$x: y: z = \frac{7k}{3} \cdot \frac{3k}{2} \cdot \frac{5k}{4}$$

$$= 28: 18: 15$$
Third part (z) = 305  $\times \frac{15}{(28 + 18 + 15)}$ 

$$= 305 \times \frac{15}{61} = Rs.75$$
71. Ans.(B)  
1: 5 =  $\frac{1}{5} = 0.2$ 

72. Ans.(C) Ratio of Joi and Mint's marbles = 5 : 8 = 15:24Ratio of Mint and Jacob's marbles = 12 : 7 = 24 : 14Ratio of Joi, Mint and Jacob's marbles = 15:24:14Hence ratio of Joi and Jacob's marbles = 15:1473. Ans.(D)  $\frac{\text{Sand}}{\text{Gravel}} = \frac{7}{8} \text{ and } \frac{\text{Gravel}}{\text{Cement}} = \frac{6}{7}$ Sand Sand Gravel = Gravel × Cement Cement  $= \frac{7}{8} \times \frac{6}{7} = \frac{6}{8} = 3:4$ 74. Ans.(B) Given that -Green tokens : Red tokens = 12: 5 Red tokens : Pink tokens = 15: 7 Then. green tokens : Red tokens : Pink tokens = 12  $\times$  15 : 15  $\times$  5 : 7  $\times$  5 = 180 : 75 : 35 Green tokens : Pink tokens = 180 : 35 = 36 : 7 75. Ans.(D) S: G = 17: 8 = 102: 48 G: C = 6: 17 = 48: 136 So, S : G : C = 102 : 48 : 136 Then, ratio of mixture of sand and cement = 102 : 136 = 3 : 4 **76**. Ans.(B) T : Z = 17: 7, N : Z = 4 : 3 T : Z : N = 51 : 21 : 28 77. Ans.(B) Let the numbers be 3 x, 2 x. According to Question, 3x + 87  $\frac{1}{2x+8} = \frac{1}{5}$ 15 x + 40 = 14 x + 56x = 16 Now numbers =  $3 \times 16, 2 \times 16$ = 48, 32 Hence, largest number = 48 78. Ans.(B) Let, number of red balls in the bag = 4xAnd number of green balls = 9xIf the bag contains 7 more red balls, the ratio becomes 5: 6.  $\therefore \frac{4x+7}{9x} = \frac{5}{6}$ 24 x + 42 = 45 x21 x = 42X = 2The number of green balls in the bag will be

 $= 9 x = 9 \times 2 = 18.$ 79. Ans.(D) The ratio of sugar and flour in 9 kg of kneaded flour = 2:7Then, the sum of the proportional parts = 2 + 7 = 9Thus, quantity of sugar =  $\frac{2 \times 9}{9} = 2 kg$ Quantity of flour =  $\frac{7 \times 9}{9} = 7$  kg Suppose the quantity of sugar added later by John is 'x' kg.  $\frac{2+x}{7} = \frac{2}{5}$ or, 10 + 5 x = 14 5x = 4 $x = \frac{4}{5} = 0.8 \text{ or } 0.8 \times 1000 = 800 \text{ gm}$ Ans.(D) 80. Let the length of the piece be 7x and 5x.  $\therefore 7x + 5x = 84$ 12x = 84x = 7Long piece length =  $7 \times 7 = 49$  m. 81. Ans.(B) Ratio of boys and girls in the club = 3:2Thus, total possible number = 3 + 2 = 5Hence the total number will be 25 as per the option. 82. Ans.(D) Money received by Radha  $=\frac{2}{1+2} \times 87 = \frac{2}{3} \times 87 = Rs.58$ 83. Ans.(B) Suppose Jason gets Rs.(x) and Ruhana gets Rs.(2x). According to Question, x + 2x = 693x = 69x = 23Ruhana's amount =  $2x = 2 \times 23 = Rs. 46$ 84. Ans.(D) Suppose Naini and Leeloo are 4x and 3x in length. According to Question, 3 x = 1.2 $\Rightarrow x = \frac{1.2}{3}$ Since nanny length  $4x = 4 \times \frac{1.2}{3}$  $\therefore$  Nanny's Length  $=\frac{4.8}{3}=1.6$  m 85. Ans.(D) Mean proportional of 0.16 and 0.64  $= \sqrt{0.16 \times 0.64} = 0.32$ 86. Ans.(D) Mean proportional of 2 and 98

 $=\sqrt{2 \times 98}$  $=\sqrt{2\times7\times14}$  $=\sqrt{14 \times 14} = 14$ Ans.(A) Let number of red balls = xAccording to Question -44 x  $\frac{1}{36} = \frac{x}{54}$  $x = \frac{44 \times 54}{36}$ x = 66Therefore, the number of red balls in the bag will be 66. Ans.(B) Let number of Re.1, 50 paise and 25 paise coins are 3x, 4x and 5x respectively. According to Question - $3x + \frac{4x}{2} + \frac{5x}{4} = 93.75$  $\Rightarrow \frac{12x + 8x + 5x}{4} = 93.75$  $25x = 93.75 \times 4$  $x = \frac{375}{25} \Rightarrow x = 15$ Number of coins of Rs.1 =  $3 \times 15 = 45$ Number of 50 paise coins =  $4 \times 15 = 60$ Number of 25 paise coins =  $5 \times 15 = 75$ Ans.(A) Suppose all three types of coins are in the same number (x) According to Question x + 5x + 10x = 36816 x = 368x = 23Number of total coins =  $3x = 3 \times 23 = 69$ Ans.(B) L: M = 3 : 5 = 6 : 10 M: N = 2: 3 = 10: 15  $\therefore$  L : M : N = 6 : 10 : 15 Therefore N : L = 15 : 6 = 5 : 2 Ans.(B) A : B = 2 : 5 = 6 : 15 B : C = 3 : 4 = 15 : 20 So, A : B : C = 6 : 15 : 20 Therefore A : C = 6 : 20A : C = 3 : 10 Ans.(C) A : B С . 4 ⇒ 18: 24: 20 ⇒ 9: 12: 10

87.

88.

89.

**90**.

91.

92.

therefore  $\frac{A}{A + C} = \frac{9}{9 + 10} = \frac{9}{19}$ 93. Ans.(D)  $\frac{a}{b} = \frac{1}{4} \Rightarrow \frac{2}{b} = \frac{1}{4} (\because a = 2)$  $b = 2 \times 4$ b = 8and  $\frac{b}{c} = \frac{1}{8} \Rightarrow \frac{8}{c} = \frac{1}{8}$  $c = 8 \times 8 \Rightarrow c = 64$ 94. Ans.(C) a : b = 3 : 5, c : b = 3 : 2, c : d = 5: 6  $\Rightarrow$  b : c = 2 : 3  $\therefore a: d = \frac{a}{b} \times \frac{b}{c} \times \frac{c}{d}$  $=\frac{3}{5}\times\frac{2}{3}\times\frac{5}{6}=\frac{1}{3}$ Ans.(C) 95. The largest ratio is. (a) 5/7 = 0.714(b) 2/3 = 0.666(c) 3/4 = 0.75(d) 3/5 = 0.6Hence option (c) is the largest. 96. Ans.(D) Let the third number = 100 Ι -140 II -160 III 100  $\Rightarrow \frac{I_{num}}{II_{num}} = \frac{140}{160} = 7:8$ 97. Ans.(B) Given that  $a = \frac{2b}{3}, b = \frac{2c}{3}, c = \frac{2d}{3}$   $\Rightarrow \frac{a}{b} = \frac{2}{3}, \frac{b}{c} = \frac{2}{3}, \frac{c}{d} = \frac{2}{3}$   $\Rightarrow \frac{a}{b} = \frac{8}{12}, \frac{b}{c} = \frac{12}{18}, \frac{c}{d} = \frac{18}{27}$   $\Rightarrow a: b: c: d = 8: 12: 18: 27$  $\therefore \frac{b}{d} = \frac{12}{27} \Rightarrow \frac{b}{d} = \frac{4}{9}$ 98. Ans.(A) Let the marks obtained by the student in 3 subjects be x, 2x and 3x respectively. According to Question  $x \times \frac{100 + 5}{100}$ :  $2x \times \frac{100 + 5}{100}$ :  $3x \times \frac{100 + 5}{100}$ = x : 2 x : 3 x= 1 : 2 : 3 **99**. Ans.(B)  $\frac{169 \times 2}{13} = 26$ 

 $\frac{169 \times 5}{13} = 65$  $\frac{169\times 6}{13} = 78$ Shares = 26, 65, 78 100. Ans.(C) Let the numbers be 2x and 3x. 2*x* – 12 5  $\frac{1}{3x - 12} = \frac{1}{8}$ 16 x - 96 = 15 x - 60 X = 36: The numbers will be 72 and 108. 101. Ans.(B) Let small number and big number be 7x and 12x respectively. By question - $\frac{7x+7}{12x+7} = \frac{7}{11}$  $\Rightarrow 77x + 77 = 84x + 49$  $7x = 28 \Rightarrow x = 4$  $\therefore$  Small number = 7 x = 7  $\times$  4 = 28 102. Ans.(D) Let the number of boys = 4 xAnd number of girls = 5 xAccording to Question,  $\Rightarrow 4x + 4 = 4x \times \frac{120}{100}$  $\Rightarrow 4x + 4 = \frac{24x}{5}$ 20 x + 20 = 24 x20 = 4x x = 5Number of girls =  $5x = 5 \times 5 = 25$ 103. Ans.(C) The amount of milk in the 25 liter mixture =  $25 \times \frac{4}{5} = 20$  litre Suppose the amount of milk added is x liters. According to Question,  $\frac{20 + x}{5} = \frac{16}{1} \Rightarrow 20 + x = 16 \times 5$  $\Rightarrow x = 80 - 20 \Rightarrow x = 60$  litre. 104. Ans.(C) Let the numbers be 5x and 6x respectively. According to Question -5x + 67  $\overline{6x+6} = \overline{8}$ 40 x + 48 = 42 x + 422x = 6 x = 3 $\therefore$  Both numbers = 5x, 6x  $= 5 \times 3$  and  $6 \times 3 = 15$  and 18 105. Ans.(C) Total students = 504 Ratio = 11: 13 Girls =  $\frac{11}{24} \times 504$ Boys = 504 - 231 = 273

Adding 12 more girls -231 + 12 = 243Required ratio = 243 : 273 = 81 : 91 106. Ans.(C) Let the present age of Vikas and Rahul are x and v respectively. By question, *x* – 4  $\frac{1}{y-4} = \frac{5}{5}$  $\Rightarrow$  5x - 20 = 3 y - 12  $\Rightarrow$  5x - 3 y = 8 .....(i) Again,  $\frac{x+6}{y+6} =$ 4 5  $\Rightarrow$  5x + 30 = 4 y + 24  $\Rightarrow 5x - 4y = -6$ Now from equation (i) - (ii), 5 x - 3 y - (5 x - 4 y) = 8 - (-6) $\Rightarrow 5x - 3y - 5x + 4y = 8 + 6$  $\Rightarrow v = 14$ Hence, Rahul's present age = 14 years 107. Ans.(B) Let the numbers be 4x and 5 x. After subtracting 5 from both, 4x - 5 = 3 $\frac{1}{5x-5} = \frac{1}{4}$  $\Rightarrow$  16 x - 20 = 15 x - 15  $\Rightarrow$  16 x - 15 x = - 15 + 20 x = 5Big number = 5 x $= 5 \times 5 = 25$ 108. Ans.(C) Let the numbers be 3 x and 4 x. According to Question, 3x - 32  $\frac{1}{4x-3} = \frac{2}{3}$  $\Rightarrow$  9 x - 9 = 8 x - 6  $\Rightarrow$  9 x - 8 x = 9 - 6 x = 3 $\therefore$  Sum of the numbers = 3 x + 4 x  $= 7x = 7 \times 3 = 21$ **109**. Ans.(B) Ratio of gold and silver in alloy = 17: 3 Weight of silver = 2.7 grams Weight of gold in alloy =  $\frac{17}{3} \times 2.7 = 15.3$ gm Ans.(A) 110. Number of nurses = 27Number of nurses after resignation = 27 - 1 = 26·· Nurse: Patient = 1: 6 Hence it is clear that 1 nurse = 6 patients  $\therefore$  26 nurse = 26 x 6 = 156 patient 111. Ans.(D) Total number of students = 1528 Ratio of science and arts students = 5: 3

Hence the number of art students  $=\frac{3}{8} \times 1528 = 3 \times 191 = 573$ 112. Ans.(D) Let number of men and dogs is 5x and 2x respectively By question - $5x \times 2 + 2x \times 4 = 54$ 10x + 8x = 5418x = 54x = 3Hence the number of dogs =  $2x = 2 \times 3 = 6$ 113. Ans.(A) Let both positive numbers be 5x and 3x respectively.  $\therefore 5x - 3x = 160$  $2x = 160 \Rightarrow x = 80$ First number =  $5x = 5 \times 80 = 400$ Second number =  $3x = 3 \times 80 = 240$ First number × Second number  $= 400 \times 240 = 96000$ 114. Ans.(A) Let the supplementary angles be 4x and 5x respectively. Sum of both = 4x + 5x = 9xDifference of both = 5x - 4x = x $\therefore$  Ratio = x : 9x = 1 : 9115. Ans.(C) The ratio of rupees respectively - $\Rightarrow \frac{1}{1+2+4+5} \times 156 = \frac{1}{12} \times 156 = 13$  $\Rightarrow \frac{2}{12} \times 156 = 26$  $\Rightarrow \frac{4}{12} \times 156 = 52$  $\Rightarrow \frac{5}{12} \times 156 = 65$ Required answer  $\Rightarrow$  13,26,52,65 116. Ans.(B) Proportional addition = 3 + 6 + 8 + 9 = 26First part =  $\frac{3}{26} \times 130 = 15$ Second part =  $\frac{6}{26} \times 130 = 30$ Third part =  $\frac{8}{26} \times 130 = 40$ Fourth part =  $\frac{9}{26} \times 130 = 45$ 117. Ans.(C) Ratio of quadrilateral angles = 3: 5: 9: 13 Let the angles of the quadrilateral be 3x, 5x, 9x and 13x respectively. ·· Sum of all four angles of quadrilateral  $= 360^{\circ}$  $\therefore 3x + 5x + 9x + 13x = 360^{\circ}$  $30x = 360^{\circ}$  या  $x = 12^{\circ}$ 

Largest angle of quadrilateral = 13x $= 13 \times 12 = 156^{\circ}$ 118. Ans.(A) Let the angles of the triangle be 2x, 3x and 7x respectively.  $\therefore 2x + 3x + 7x = 180^{\circ}$  $12x = 180^{\circ}$  $\Rightarrow x = \frac{180^{\circ}}{12}x = 15^{\circ}$ Hence the largest angle = 7x $= 7 \times 15^{\circ} = 105^{\circ}$ Smallest angle = 2x  $= 2 \times 15^{\circ} = 30^{\circ}$ Ratio = 105: 30 = 7: 2 **119**. Ans.(A) The angles of the triangle are x, 2x and 3x respectively. According to Question,  $x + 2x + 3x = 180^{\circ}$  (The sum of the three angles of  $\Delta$  is 180°  $\Rightarrow 6x = 180^{\circ}$  $\Rightarrow x = 30^{\circ}$ Hence the smallest angle =  $x = 30^{\circ}$ **120**. Ans.(C) The sum of the three angles of a triangle is 180° : Smallest angle =  $\frac{1}{1+4+7} \times 180 = \frac{1}{12} \times 180$ = 15° Biggest angle =  $\frac{7}{1+4+7} \times 180^\circ = \frac{7}{12} \times 180^\circ$ = 105° Required ratio = 105: 15 = 7: 1 121. Ans.(C) Let ratio = 2x : 5x : 6x : 9x $\Rightarrow 2x + 5x + 6x + 9x = 176$ 22x = 176176  $x = \frac{1}{22}$ x = 8First part =  $2 \times 8 = 16$ Second part =  $5 \times 8 = 40$ Third part =  $6 \times 8 = 48$ Fourth part =  $9 \times 8 = 72$ 122. Ans.(B) Let the prize money given to P, Q and R are 3x, 5x and 7x respectively. According to Question -7x - 3x = 1000 $\Rightarrow 4x = 1000$  $\Rightarrow x = 1000/4 = 250$  $\therefore Q's \ share = 5x = 5 \times 250 = Rs. 1250$ 123. Ans.(A) Let the three numbers be 2x, 5x and 7x respectively. According to Question,

 $2x + 5x + 7x = \frac{280}{2}$  $14x = 140, \sqrt{x} = 10$ number =  $(2x)^2$  = Square of smallest  $(2 \times 10)^2 = (20)^2 = 400$ 124. Ans (b) Let the numbers be 4x, 5x and 7x.  $\therefore 4x + 5x + 7x = 320$ 16x = 320x = 20 $\therefore$  Required sum = 4x + 7x = 11x  $= 11 \times 20 = 220$ 125. Ans.(C) First number =  $\frac{1}{1+3+5} \times 10,800$  $=\frac{1}{0} \times 10,800 = 1200$ Second number  $=\frac{3}{9} \times 10,800 = 3600$ Third number  $=\frac{5}{9} \times 10800$  $= 5 \times 1200 = 6000$ Hence the largest number = 6000 126. Ans.(A) Let, investment of Ritesh, Gaurav and Jugnu are 2x, 5x and 7x respectively. Ratio to return on investment  $\frac{2x \times 5}{100} : \frac{5x \times 3}{100} : \frac{7x \times 2}{100}$ 10x 15x 14x 100 100 100 According to Question -15*x* 10*x*  $\frac{100}{100} - \frac{100}{100} = 150$  $\Rightarrow \frac{5x}{100} = 150$  $\Rightarrow x = 3000$  $\overrightarrow{x} = 3000$ Total income =  $\frac{10 \times 3000}{100} + \frac{15 \times 3000}{100} + \frac{14 \times 3000}{100}$ = 300 + 450 + 420 = Rs.1170 127. Ans.(C) The funds of Arvind, Binu and Chitra are 2x, 3x and 4x respectively.  $\therefore$  3x (amount of Binu) = 51 x = Rs. 17 : Funds received by Chitra and Arvind respectively = 4x and 2x= 4 × 17 and 2 × 17 = 68 and 34 128. Ans.(C) Let the fourth proportional number = xSo, 2:4::8:x  $2 \times x = 4 \times 8$  (By the rule of proportion)  $x = \frac{4 \times 8}{2} \Rightarrow x = 16$ 129. Ans.(C)

$$\frac{26}{21} \cdot \frac{24}{9} :: k \cdot \frac{14}{13} = \frac{24}{9} \times K$$

$$\Rightarrow K = \frac{26 \times 14 \times 9}{21 \times 13 \times 24}$$

$$\Rightarrow K = \frac{1}{2}$$
**130. Ans.(D)**

$$2.6 :: 1.3 :: 1.3 :: x$$

$$\frac{2.6}{1.3} = \frac{1.3}{x}$$

$$x = \frac{1.3 \times 1.3}{2.6}$$

$$x = 0.65$$
**131. Ans.(B)**
Let the third term = P
$$\Rightarrow 4:22 :: P:33$$

$$\Rightarrow 4 \times 33 = 22 \times P$$

$$P = \frac{4 \times 33}{22} = 6$$
Third term = 6
**132. Ans.(C)**
Let fourth proportional of 9,17 and 27 = x
$$: 9:17 :: 27: x$$

$$9 \times x = 17 \times 27 \Rightarrow x = \frac{17 \times 27}{9}$$

$$\Rightarrow x = 17 \times 3 = 51$$
**133. Ans.(B)**
Let fourth proportional (x) = \frac{28 \times 21}{9}
$$\Rightarrow 15 : 21 : x$$
Fourth proportional (x) =  $\frac{28 \times 21}{14} = 42$ 
**134. Ans.(D)**
Let fourth proportional = P
$$\Rightarrow 15:12 :: 20: P$$

$$\Rightarrow \frac{15}{12} = \frac{20}{P}$$

$$\Rightarrow 15 : 4 \times 356$$

$$x^{2} = \sqrt{14 \times 56}$$

$$x^{2} = \sqrt{14 \times 56}$$

$$x^{2} = \sqrt{14 \times 56}$$

$$x^{2} = \sqrt{14 \times 56}$$
Let the number of notes of Rs 10, Rs 20, Rs 50 = x, 3x, 5x
According to Question -
Total value = 10 × x + 20 × 3x + 50 × 5 x = 1920
$$\Rightarrow 320x = 1920$$

$$\Rightarrow x = 6$$
**137. Ans.(C)**

Let the ratio of 25 paise, 10 paise and 5 paise coins be x, 2x and 3x. 25 paisa =  $Rs.\frac{1}{4}$ 10 paisa =  $Rs.\frac{1}{10}$ 5 paisa =  $Rs.\frac{1}{20}$  $\frac{1}{4}x + \frac{2}{10}x + \frac{3}{20}x = 180$  $\frac{5x + 4x + 3x}{20} = 180$  $12x = 180 \times 20$  $x = \frac{180 \times 20}{12}$  $x = 15 \times 20 \text{ or } x = 300$ Number of 10 paisa coins  $2x = 300 \times 2 = 600$ 138. Ans.(A) Let first, second and third part be x, y and z respectively.  $\therefore x = \frac{3}{5}z \Rightarrow x:z = 3:5 = 21:35$  $y: z = 4: 7 \Rightarrow z: y = 7: 4 = 35: 20$ So, x:y:z = 21:35:20 First term  $= \frac{21}{76} \times 13680 = 3780$ 139. Ans.(B) S:G=11:8=66:48 G:C=6:7=48:56 S:G:C=66:48:56 Soil : Cement = 66 : 56 soil : Cement = 33 : 28 140. Ans.(D) 5:9:x:27 5 x  $\frac{3}{9} = \frac{x}{27}$ x = 15 141. Ans.(A) Let the third number = 100Then first number = 125 and second number = 150 First number: second number = 125: 150 = 5:6142. Ans.(A) Capacity P: Q3:2 The ratio of efficiency is equal to the ratio of wages. Let the wages of P = Rs.3 xWage of Q = Rs. 2xP + Q wages = Rs. 400 3x + 2x = Rs.4005 x = Rs.400x = Rs.80

P received amount =  $3x = 3 \times 80 = Rs.240$  **145. Ans.(C)** 

143. Ans.(D)

Total wages = Rs.4200  
Part of P = 
$$\frac{4200 \times 2}{2 + 3 + 5 + 4} = \frac{4200 \times 2}{14}$$
  
= Rs.600  
Part of Q =  $\frac{4200 \times 3}{14} = Rs.900$   
Part of R =  $\frac{4200 \times 5}{14} = Rs.1500$   
Part of S =  $\frac{4200 \times 4}{14} = Rs.1200$   
Hence, the highest amount is Rs. 1500 paid to R.

144. Ans.(B)

$$(x-5): (y-10): (z-15) = 5:4:3 = K$$
  

$$x-5 = 5K \Rightarrow x = 5K + 5 \dots \dots (i)$$
  

$$y-10 = 4k \Rightarrow y = 4K + 10 \dots \dots$$
  

$$z-15 = 3k \Rightarrow z = 3K + 15 \dots \dots$$
  
Adding the three equations  

$$(x + y + z) = 12K + 30$$
  

$$750 - 30 = 12K$$
  

$$K = \frac{720}{12}$$
  

$$K = 60$$
  
part of x = 5K + 5 = 60 × 5 + 5 = 305  
part of y = 4K + 10 = 4 × 60 + 10 = 250  
part of z = 3K + 15 = 3 × 60 + 15 = 195

P : 9 : R  

$$\frac{1}{2}$$
 :  $\frac{1}{3}$  :  $\frac{1}{4}$   
=> 6 : 4 : 3  
P =  $\frac{117}{6+4+3} \times 6 = 54$   
Q = 9 × 4 = 36  
R = 9 × 3 = 27  
But Divided => 2 : 3 : 4  
P =  $\frac{117}{9} \times 2 = 26$   
Q =  $\frac{117}{9} \times 3 = 39$   
R =  $\frac{117}{9} \times 4 = 52$   
R get 52 - 27 = 25  
**146.** Ans.(C)  
Ratio of 25 paise, 10 paise and 5 paise coins  
= 1: 2: 3  
Total rupees = 30  
Let the number of coins of 25 paise, 10 paise  
and 5 paise are x, 2x and 3x respectively.  
25 × x + 10 × 2x + 5 × 3x = 3000  
25x + 20x + 15x = 3000  
60x = 3000  
x = 50  
Hence the number of 5 paise coins  
= 3 x = 3 × 50 = 150

# 10. (Partnership)

8.

9.

1. X and Y started a business. X invested Rs. 8,000 and Y invested Rs. 10,000. After 6 months, Z also joined the business with an investment of Rs. 6,000. If there is a profit of Rs. 9,660 in 3 years, then what is Z's share?

RRB Group-D - 15/10/2018 (Shift-III)

(A) rs.1,500	(B) rs.2,100
<b>(C)</b> rs.1,900	<b>(D)</b> rs.1,200

 X, Y and Z take a field at an annual rental of Rs. 415. If X feeds 25 cows in that field for 6 months, Y 40 cows for 8 months and Z 30 cows for the whole year, then what is the share of Y in the rent given?

RR	B Group-D - 22/10/2018 (Shift-II)
(A) rs.120	<b>(B)</b> rs.154
(C) rs.150	<b>(D)</b> rs.160

**3**. A and B start a business in partnership by investing Rs. 12,000 and Rs. 6,000 respectively. After 8 months, C also joins the business with a amount of Rs. 15,000. What will be C's share in the profit of Rs. 33,600 after 2 years?

RRB Group-D - 23/10/2018 (Shift-II)(A) rs.15,000(B) rs.12,000(C) rs.10,000(D) rs.22,000

**4.** A, B and C invested amount in ratio 2 : 3 : 5, ratio of their investment 'time' is 4 : 5 : 6. What will be ratio of profit of all three?

**RRB Group-D - 23/10/2018 (Shift-III)** 

(A) 00.15.20	( <b>b</b> ) 05 . 15 . 50
(C) 08 : 15 : 30	<b>(D)</b> 07 : 15 : 30

5. Urmi and Lokesh started a partnership with investments of Rs. 11,250 and Rs. 13,125 respectively, But due to financial crisis one of these had to withdraw his investment 8 months after his investment. In what ratio should the profit of first 12 months be divided between the two?

RRB Group-D - 02/11/2018 (Shift-II)

(A) 7:9	(B) 9: 7
<b>(C)</b> 7: 6	<b>(D)</b> 6: 7

6. Tarun and Tapan start partnership with investments of Rs. 13,000 and Rs. 19,500 respectively, But due to some financial emergency Tapan had to withdraw his investment after 8 months. In what proportion should the profit of the first 12 months be shared in both.

	RRB Group-D - 28/11/2022 (Shift-I)	
(A) 1 : 2	<b>(B)</b> 3 : 2	
(C) 1 : 1	<b>(D)</b> 2 : 3	

Mr. A starts the business by investing Rs. 28,000. Mr. B joins this business after 5 months. The next two months after that Mr. C also joins it. If after one year their profit ratio is 4: 2: 3, then what was the amount invested by Mr. B and Mr. C?

RRB Group-D - 19/11/2022 (Shift-II)

- (A) rs.24000, rs.50,400
  (B) rs.20,000, rs.30,000
  (C) rs.12,000, rs.25,200
  (D) rs.50,000, rs.20,000
- 5 years ago a company lost 60% of its amount investment. In the following years, he recovered money loss in 2 phases. In Phase 1, he received Rs. 1,00,000 and in Phase 2, he received Rs. 80,000. What was his initial amount investment?

RRB Group-D - 30/10/2018 (Shift-I)		
(A) rs.3,60,000	<b>(B)</b> rs.3,00,000	
(C) rs.2,40,000	<b>(D)</b> rs.1,60,000	

Divide Rs 6,600 into two parts so that the simple interest received on the first part at the rate of 10% per annum for 3 years is equal to the simple interest received on the second part at the rate of 9% per annum for 4 years.

RRB Group	-D - 31/10/2018 (Shift-II)
(A) 3600,3000 rs.	<b>(B)</b> 4000,2600 rs.
(C) 5000,1600 rs.	(D) 6000,600 rs.

**10**. A sports accessories shop organizes a race competition with an entry fee of Rs. 200 for instant registration. They were expecting 300 entries and only 200 joined on the day of the

competition. How much money did they get in admission compared to their initial expectations of 300 entries?

RRB Group-D - 20/09/2022 (Shift-II)

(A) rs.5,000	<b>(B)</b> rs.15,000
(C) rs.12,000	(D) rs.20,000

**11**. Rabina and Suniti have a total Rs. 127, Suniti and Avinash have Rs. 153, while Avinash and Raveena have Rs. 160. How much money does Raveena have?

RRB G	roup-D - 29/10/2018 (Shift-III)
<b>(A)</b> rs.93	<b>(B)</b> rs.60
<b>(C)</b> rs.67	<b>(D)</b> rs.70

**12**. Tejal has a 40% stake in a partnership firm and Ashank has a 60% stake. On average, if Tejal earns a profit of Rs. 10,00,000 annually, then how much profit will Ashank earn?

RRB Group-D - 22/11/2022 (Shift-III) (A) rs.24 lakh (B) rs.25 lakh

- (C) rs.30 lakh (D) rs.15 lakh
- **13**. Poorva invested Rs. 8,000 for 7 months in an enterprise and Durba invested Rs. 7000 for 8 months. The ratio of profit received by them will be-

#### RRB Group-D - 19/11/2022 (Shift-III)

<b>(A)</b> 64 : 49	<b>(B)</b> 8 : 7
<b>(C)</b> 1 : 1	<b>(D)</b> 7 : 8

14. Surbhi invested Rs. 6000 for 5 months and Urba invested Rs. 5000 for 6 months in an industry. What will be ratio of both in profit?

 RRB ALP & Tec. (21-08-18 Shift-III)

 (A) 36 : 25
 (B) 6 : 5

 (C) 5 : 6
 (D) 1 : 1

**15**. Omar and Avinash start partnership with investments of Rs. 10,000 and Rs. 15,000 respectively, But due to financial problem, Avinash withdrew his investment after 8 months. In what ratio should the benefit of the first twelve months be divided between the two?

 RRB ALP & Tec. (09-08-18 Shift-I)

 (A) 3: 2
 (B) 2: 3

 (C) 1: 1
 (D) 1: 2

**16**. Ramdas invested Rs. 90000 in a cosmetic business. A few months later, Shyamdas became a partner in the business by investing Rs. 30000. At the end of the year the total profit was divided between them in the ratio of

4: 1. After how many months did Shyamdas join the business-

	RRB NTPC 11/08/2022 Shift : 1
<b>(A)</b> 4	<b>(B)</b> 3
( <b>C)</b> 1	<b>(D)</b> 6

**17**. N has p more money than K. The total amount of money of both N and K is q. How much money does K have?

#### RRB NTPC 23/07/2022 Shift-2

(A) $\frac{q}{2} + p$	<b>(B)</b> 2(p+q)
(C) $\frac{\tilde{(p+q)}}{2}$	(D) $\frac{(q-p)}{2}$

18. Suman, Sakshi and Mayank form a partnership. Suman invests 5 times Sakshi and Sakshi invests 3/5 of Mayank's investment. Total profit earned at end of the year was Rs. 23000. Find the part of the Sakshi.

#### RRB NTPC 05/03/2021Shift : 2

(A) rs.5000	(B) rs.3000
(C) rs.4000	<b>(D)</b> rs.4500

**19**. Mohan invested Rs. 100,000 in the textile business. After a few months, Sohan becomes his partner by investing Rs. 40,000. At the end of the year the total profit is distributed in ratio of 3 : 1. After how many months did Sohan start a partnership in the business?

	RRB NTPC 09/05/2022 Shift : 1
(A) 3	<b>(B)</b> 2
( <b>C</b> ) 4	<b>(D)</b> 5

**20**. XYZ Company distributes its profit or loss to its partners X, Y and Z in the ratio of 1/3, 1/2, 1/6 respectively. If Z gets Rs. 1,76,802 as his share then find the amount received by Y.

#### RRB NTPC 09/05/2022 Shift : 1

(A) rs.5,30,406	(B) rs.88,401
(C) rs.3,53,604	(D) rs.2,65,203

**21**. Divide 1600 into three parts so that the seventh part of the first part is equal to the fifth to the second part and the fourth to the third part –

#### RRB NTPC 10/08/2022 Shift : 3

(A) 900,500,300	<b>(B)</b> 700,500,400
(C) 700,600,300	<b>(D)</b> 800,500,400

**22**. Divide 3740 into three parts in such a way that half of the first, one third of the second and sixth part of the third are equal.

RRB NTPC 10/08/2022 Shift : 2

(A) 700,1000,2040	(B) 340,1360,2040
(C) 680,1020,2040	<b>(D)</b> 500,1200,2040

**23**. P, Q and R enter into a partnership by investing Rs. 35000, Rs. 45000 and Rs. 5000. Find their corresponding share in the annual profit of Rs. 40500.

**RRB Paramedical - 20/07/2018 (Shift-II)** (A) rs.10500, rs.13500,rs. 19500 (B) rs.10500, rs.13500, rs.18500 (C) rs.10500, rs.13500, rs.17500 (D) rs.10500, rs.13500, rs.16500

24. P invests Rs. 3500 in a business. After 5 months Q joins it with some investment. If Q's profit is 50% more than P's profit, then find the investment of Q.

	RRB JE - 26/05/2019 (Shift-III)
(A) rs.7000	<b>(B)</b> rs.5000
(C) rs. 9000	<b>(D)</b> rs. 6500

**25**. In a business, P invests half of Q and Q invests half of R. Rs. 7000 monthly profit if shared between them, then what will be R's share?

	RRB JE - 29/05/2019 (Shift-III)
<b>A)</b> rs.2000	<b>(B)</b> rs.3000
<b>C)</b> rs.1000	<b>(D)</b> rs.4000

- P and Q invested in a business in ratio of 5 :13. Q withdrew his amount after 6 months. If
- 1. Ans.(B) Ratio of investment of X, Y and Z = 8000 ×3: 10000 ×3: 6000 ×2.5 24000: 30000: 15000 8: 10: 5 Profit = Rs.9660 part of  $z = \frac{5}{8 + 10 + 5} \times 9660$   $= \frac{5}{23} \times 9660$  = Rs.21002. Ans.(D) Ratio of share of X, Y and Z  $= 26 \times 6 : 40 \times 8 : 30 \times 12$ = 15 : 32 : 36

∴ Total rent = Rs.415

they shared their profit in ratio 25 : 26, then how long was the amount of P used?

RRB JE - 24/05/2019 (Shift-III)

(A) 8 months	(B) 15 months
(C) 18 months	(D) 12 months

27. A and B enter into a partnership by investing Rs. 50000 and Rs. 60000 respectively. After 'x' months C also joins them by investing Rs. 70000, B exits this partnership 'x' months before end of the year. If they share the profit in ratio of 20 : 18 : 21, find the value of 'x'.

	RRB JE - 28/05/2019 (Shift-II)
<b>(A)</b> 4	<b>(B)</b> 6
( <b>C)</b> 5	<b>(D)</b> 3

**28.** P and Q enter into a partnership with an investment of Rs. 1400 and Rs. 1800 respectively. They keep half of the profits for operating the business and divide the remaining portion in proportion to their investment. If their difference in profit is Rs. 47, then find the total profit.

	RRB JE - 22/05/2019 (Shift-III)
<b>(A)</b> rs.752	<b>(B)</b> rs.804
<b>(C)</b> rs.954	<b>(D)</b> rs.504

**29.** 26000 is divided into two amounts in such a way that 5 years simple interest at the rate of 10% on one part is equal to 6 years simple interest at 9% rate on the other part. Find the amount invested for 5 years at the rate of 10%.

	RRB JE - 24/05/2019 (Shift-II)
15000 rs.	<b>(B)</b> 12500 rs.
13500 rs.	<b>(D)</b> 14000 rs.

# Solution

3.

4.

(A)

(C)

:. Rent of  $y = \frac{32}{15+32+36} \times 415$ =  $32 \times 5 = Rs.160$  **Ans.(B)**: Ratio of profit of A, B and C =  $12000 \times 24:6000 \times 24:15000 \times (24-8)$ =  $12 \times 24: 6 \times 24: 15 \times 16$ = 6: 3: 5Hence C's share in profit =  $\frac{5}{6+3+5} \times 33,600$ =  $\frac{5}{14} \times 33,600$ = Rs.12,000 **Ans.(C)** Capital Investment Ratio = A: B: C = 2: 3: 5Ratio of time invested = 4: 5: 6

So the ratio of profit = capital investment x time invested  $= 2 \times 4$ ;  $3 \times 5$ ;  $5 \times 6$ = 8 : 15 : 305. Ans.(B) Ratio of profit of both = Ratio of investment amount x ratio of time Urmi : Lokesh = 11250 ×12: 13125 × 8 = 2250 ×12 : 2625 ×8 = 450 ×12 : 525 ×8 = 18 ×12 : 21 ×8  $= 6 \times 3 : 7 \times 2$ = 9:7 6. Ans.(C) Profit ratio of first 12 months  $= (13,000 \times 12) : (19,500 \times 8)$ = 1,56,000 : 1,56,000= 1:17. Ans.(A) By the rule of partnership -A ×12: B ×7: C ×5 = 4: 2: 3 28000×12: B ×7: C ×5 = 4x: 2x: 3x (let) When compared.  $28000 \times 12 = 4x$ x = 840007 B = 2x $7 B = 2 \times 84000$ And 5 C =  $3 \times 84000$ C = 50400Hence Mr. B's wealth = Rs. 24000 Hence Mr. C's wealth = Rs. 50400 8. Ans.(B) Let the initial total capital = x Rs. Recovery of money loss in the first and second phase = 100000 + 80000 = Rs. 180000 According to Question  $x \times 60 \% = 180000$  $180000 \times 100$ x =60 x = Rs. 300000 Thus, initial capital = Rs. 300000 9. Ans.(A) Suppose First part of Rs.6600 is x. Then second part = (6600 - x)According to Question  $x \times \frac{3 \times 10}{100} = (6600 - x) \times \frac{4 \times 9}{100}$ 5x = 39600 - 6x11x = 39600First part, x = 3600Second part, 6600 - 3600 = 300010. Ans.(D) Entry fee for registration = Rs. 200, 300 Total fee for entries =  $300 \times 200 = \text{Rs.} 60,000$ 

Total fee for 200 entries =  $200 \times 200$ = Rs. 40,000 Difference = 60,000 - 40,000 = Rs. 20,000 Hence he got Rs. 20,000 less in admission than the initial expectations of the entries. 11 Ans.(C) Raveena + Suniti = 127 ..... (i) Suniti + Avinash = 153 ..... (ii) Avinash + Raveena = 160 ..... (iii) From equation (ii) and equation (i), Avinash – Raveena = 153 – 127 = 26 .. (iv) Equation (iii) + Equation (iv)  $2 \times \text{Avinash} = 160 + 26 = 186$ Avinash = 93Raveena = 160 - 93 = Rs.67 12. Ans.(D) : Ratio of profit of Tejal and Asank = Ratio of their share = 40:60 = 2:3 = 2x:3x (Let) According to Question, Profit of Tejal = 2 x = 10,00,000x = 500000 $\therefore$  Profit of Asank = 3 x = 3  $\times$  500000 = 1500000 = Rs. 15 Lakh 13. Ans.(C): Profit = Capital × Time Poorva: Durba  $8000 \times 7:7000 \times 8$ ⇒ 56000 : 56000 1:114. Ans :(d) Total capital invested by Surabhi in the industry =  $5 \times 6000 = 30000$ Total capital invested by Urva in the industry  $= 6 \times 5000 = 30000$ : The capital put into the industry by Surbhi and Urva is equal. : Profit ratio of both = 30000 : 30000 = 1: 1 15. Ans.(C) : Ratio of capital invested = ratio of profit . Profir ratio of Umar and Avinash = 10000 ×12 : 15000 × 8 Profi of Umar : Profi of Avinash = 120 : 120 = 1 : 1 16. Ans.(B) Let Shyamdas joined business after x months. The ratio of share of both in the trade = 90000 × 12: 30000 x (12 - x) = 36 : (12 - x)36 4 1 12 - xor, 12 - x = 9or. x = 317. Ans :(d)  $N = K + p \dots (i)$ 

N + K = qPutting the value of N from equation (i) K + p + K = q2 K = q - p, Therefore  $K = \frac{q-p}{2}$ 18. Ans.(B) Let the investment of sakshi = Rs. x Then Suman's investment = Rs.5 x Mayank  $\times \frac{3}{5} = x$  $\Rightarrow$  Mayank  $=\frac{5x}{3}$ Ratio of profit of Sakshi, Suman and Mayank  $= x: 5x: \frac{5x}{2}$ = 3 : 15 : 5 Profit share of Sakshi =  $\frac{3}{23} \times 23000$  = Rs. 3000 19. Ans.(B) Suppose Sohan partnered in business after x months ∴ By guestion,  $\frac{100000 \times 12}{40000 \times (12 - x)} = \frac{3}{1}$  $\Rightarrow 1200000 = 120000 \times (12 - x)$  $\Rightarrow 10 = 12 - x$  $\Rightarrow x = 12 - 10 = 2$ 20. Ans.(A) Ratio of share of X, Y and  $Z = \frac{1}{2}:\frac{1}{2}:\frac{1}{6}$ : Part of z = Rs.1,76,802 : Amount received by  $Y = \frac{3}{4} \times 176802$ = Rs. 5,30,406 21. Ans.(B) Suppose first part, second part and third part are x, y and z respectively. According to Question,  $\frac{x}{7} = \frac{y}{5} = \frac{z}{4} = k$  (Let) x = 7ky = 5k, z = 4kFirst part =  $1600 \times \frac{7k}{16k}$  $= 1600 \times \frac{7}{16} = 700$ Second part y =  $1600 \times \frac{5k}{16k}$  $= 1600 \times \frac{5}{16} = 500$ Third part z =  $1600 \times \frac{4k}{16k}$  $= 1600 \times \frac{4}{16} = 400$ Ans.(C) 22. Let the number be x, y and z. Then,  $\frac{x}{2} = \frac{y}{3} = \frac{z}{6} \Rightarrow x: y: z = 2:3:6$ 

Therefore, 2 a + 3 a + 6 a = 3740 11 a = 3740a = 340First number =  $2 a = 2 \times 340 = 680$ Second number =  $a = 3 \times 340 = 1020$ Third number =  $6 a = 6 \times 340 = 2040$ 23. Ans.(D) Ratio of profit between P, Q and R = 35000 ×1: 45000 ×1: 55000 ×1 = 7: 9: 11 Total profit = Rs. 40500 Hence part of P =  $\frac{40500 \times 7}{7+9+11} = \frac{40500 \times 7}{27}$ = Rs. 10500 Part of Q =  $\frac{40500 \times 9}{27}$  = Rs. 13500 Part of R =  $\frac{40500 \times 11}{27}$  = Rs. 16500 Hence, the corresponding profit of P, Q and R are Rs.10500, Rs.13500 and Rs.16500 respectively. 24. Ans.(C) Let the investment of Q = xRatio of profit of P and Q  $= (3500 \times 12): \times \times 7)$ = 6000 : x  $x = 6000 \times \frac{150}{100} = 9000$ 25. Ans.(D) Let the amount invested by R = Rs xAmount invested by Q = x / 2Amount invested by P = x / 4(Ratio of profit)  $R:Q:P = x:\frac{x}{2}:\frac{x}{4}$ = 4 x: 2 x: x Part of  $R = 7000 \times \frac{4x}{7x} = Rs.4000$ 26. Ans.(B) Suppose P invested for x months, Q invested 6 months. According to Question,  $5 \times x$ 25 =  $13 \times 6$ 26 х  $\frac{\pi}{3} = 5$ x = 15 months 27. Ans.(D) Profit = Capital × Time  $P_A: P_B: P_C = C_A t_A: C_B t_B: C_C t_C$ 20: 18: 21 = 50000 × 12: 60000 × (12 - x): 70000x (12 - x)20:18:21 = 60:6(12 - x):7(12 - x)\_\_\_\_\_60 20  $\frac{1}{18} = \frac{1}{6(12-x)}$ x = 328. Ans.(A)

Profit = Capital x Time Ratio of P and Q's capital = 1400: 1800 = 7: 9 Let x be the total profit.  $\therefore$  Half of the profits are divided according to their capital  $\therefore$  Profit ratio of P and Q =  $\frac{7x}{2}:\frac{9x}{2}$ According to Question -  $\frac{9x}{2} - \frac{7x}{2} = 47$   $2x = 47 \times 2$  x = 47  $\therefore$  Total profit of P and Q =  $(7 \times + 9 \times) = 16 \times = 16 \times 47 = \text{Rs.752}$  **Ans.(C)** Let the first amount = x

29.

Time = 5 years, rate 10% And second amount = (26000 - x) Time = 6 years Rate = 9% According to Question Simple interest of first amount = Simple interest of second amount  $\frac{x \times 5 \times 10}{100} = \frac{(26000 - x) \times 9 \times 6}{100}$   $50x = 26000 \times 54 - 54x$   $104x = 26000 \times 54$   $x = \frac{26000 \times 54}{104} = 13500 Rs.$ Hence the sum invested for 5 years at the rate of 10% = 13500

# 11. Work and time

1. A works four times faster than B, so he can complete a work 60 days earlier than B. In how many days they can complete the work if they work together?

RRB	Group-D - 01/10/2018 (Shift-I)
<b>(A)</b> 21 days	<b>(B)</b> 22.5 days
<b>(C)</b> 16 days	<b>(D)</b> 25 days

2. The brij alone can paint a wall in 7.2 days while Madhu takes 10.8 days to do the same thing. How many days will it take to paint a 5/6 part of the wall when working together?

	RRB Group-D - 26/11/2022 (Shift-I)
<b>(A)</b> 4.2	<b>(B)</b> 3.6
<b>(C)</b> 3.9	<b>(D)</b> 4.8

**3.** Medini can paint the entire wall alone in 16 days, while Yuki takes three times longer than this. In how many days will they paint half the wall if they work together?

	RRB Group-D - 11/10/2018 (Shift-II)
<b>(A)</b> 12	<b>(B)</b> 3
( <b>C)</b> 6	<b>(D)</b> 9

4. A can finish a work in 5 days, while B takes 10 days to do the same work. They start working together but A has to leave the work 4 days before the work is over. How many days did A work?

	RRB Group-D - 10/10/2018 (Shift-III)
<b>(A)</b> 1	<b>(B)</b> 1.5
( <b>C)</b> 2	<b>(D)</b> 2.5

5. A and B take 25 and 45 days respectively to complete a work. A started working alone and after a few days B started working together. The work took a total of 20 days to complete. After how many days B started working?

RRB Group D-30 / 10 / 2018 (Shift-III)

<b>(A)</b> 10	<b>(B)</b> 11
<b>(C)</b> 12	<b>(D)</b> 9

6. A can do a work in 15 days and B can do it in 25 days. A and B started working together but B left the work 7 days before the work was completed. How many days they worked together?

RRB Group-D - 07/12/2018 (Shift-III)

<b>(A)</b> 6	<b>(B)</b> 5
(C) 8	<b>(D)</b> 9

7. Kirti and Malati together can complete a work in 12 days, while Malati can complete it in 30 days. In how many days can Keerthi alone complete this work?

 RRB Group-D - 18/11/2022 (Shift-II)

 (A) 40 days
 (B) 10 days

 (C) 20 days
 (D) 30 days

8.

Rita and Meena together can complete a work in 10 days, while Rita alone can complete the same work in 15 days. In how many days will Meena complete this work alone?

RRB Gr	oup-D - 30/10/2018 (Shift-II)
(A) 38 days	<b>(B)</b> 32 days
(C) 28 days	<b>(D)</b> 30 days

**9.** Rohan and Rohit together can finish a work in 10 days, while Rohan can do the same work in 15 days alone. In how many days will Rohit alone can complete the same?

RRB G	roup-D - 17/11/2022 (Shift-I)
(A) 32 days	<b>(B)</b> 30 days
<b>(C)</b> 25 days	<b>(D)</b> 35 days

**10.** P and Q together can finish a work in 6 days. Q alone can finish the same work in 10 days. In how many days can P alone complete the same?

RRB G	roup-D - 23/11/2022 (Shift-I)
(A) 15 days	<b>(B)</b> 11 days
(C) 14 days	<b>(D)</b> 12 days

11. Working together, Sandra and Mayuri can complete a task in 45 days. However, Mayuri works alone and goes away on completion of one third of the work and then Sandra finishes the remaining work on her own. As a result, both are able to complete the work in 104 days. If Mayuri acted faster than her. So how many days will Sandra alone be able to complete the work?

	RRB Group-D - 28/11/2022 (Shift-III)
<b>(A)</b> 72	<b>(B)</b> 60
(C) 240	<b>(D)</b> 120

**12.** Arjuna alone can do a work in 12 days and Bhima alone can do the same work in 15 days. With the help of Chetan, they together complete that work in 5 days. In how many days will Chetan alone can do that work?

RRB Group-D - 28/11/2018 (Shift-I)

(A) 20 days	<b>(B)</b> 24 days
<b>(C)</b> 15 days	<b>(D)</b> 16 days

**13.** Tom and Jerry work together to build a wall in 4 days. Tom alone takes 6 days to complete the work. How long will it take Jerry to complete this task alone?

**RRB Group-D - 16/11/2018 (Shift-III)** (A) 13 days (B) 12 days

<b>(C)</b> 16 days	<b>(D)</b> 10 days

**14.** A can finish a work in 30 days and B can finish the same work in 20 days. A and B do the work together for 6 days, and after that A leaves the work. In how many days will B finish the remaining work?

RRB Group-D - 08/10/2018 (Shift-I)

(A) 15 days	<b>(B)</b> 16 days	
<b>(C)</b> 10 days	<b>(D)</b> 18 days	

**15.** A alone can finish a work in 3 days. B alone can finish this work in 7 days. If A and B work together for 2 days, then what part of work will remain undone?

 RRB Group-D -20 / 09 / 2018 (Shift-II)

 (A) 1/7
 (B) 4/21

 (C) 2/21
 (D) 1/21

**16.** Working alone, Rakesh and Ranjith can complete a work in 4 and 6 days respectively. Ranjith started work alone and Rakesh joined it after 2 days. How many days will they need to complete the remaining work?

 RRB Group-D -22 / 09 / 2018 (Shift-I)

 (A) 1.6
 (B) 2

 (C) 0.8
 (D) 1.2

**17.** 18 people can complete a work in 12 days. After 4 days of work, 2 workers left work. In how many days will the remaining work be completed after the workers leave the work?

RRB Group-D - 08/10/2018 (Shift-II)

<b>(A)</b> 8	<b>(B)</b> 6
( <b>C)</b> 9	<b>(D)</b> 10

**18.** 800 men complete a work in 30 days. 80 men leave work after working 12 days. In how many days the remaining work be completed by the remaining people?

RRB Group-D -15 / 10 / 2018 (Shift-I)

<b>(A)</b> 22	<b>(B)</b> 20
<b>(C)</b> 28	<b>(D)</b> 24

**19.** Ranjit can complete a work in 25 days while Anji can finish it in 20 days. They work together for 5 days and then Ranjit leaves. How many days will Anji take to finish the remaining work?

RRB Group-D-17 / 09 / 2018 (Shift-II)

<b>(A)</b> 10 days	<b>(B)</b> 9 days
<b>(C)</b> 11 days	<b>(D)</b> 15 days

**20.** Sandra and Mayuri can work together and complete a work in 60 days. However, Mayuri works alone and leaves after completing one third of the work, and Sandra then finishes the remaining work alone. Thus, both of them completed the work in 150 days. If Mayuri acted faster than Sandra, in how many days Sandra could do that work alone?

	RRB Group-D - 06/12/2018 (Shift-I)	
<b>(A)</b> 240	<b>(B)</b> 180	
(C) 165	<b>(D)</b> 225	

**21.** 280 men complete a work in 30 days. After 4 days of work, 80 men left work. How many days will it take to complete the remaining work?

**RRB Group-D - 15/10/2018 (Shift-III)** (A)  $27\frac{2}{r}$  (B)  $34\frac{2}{r}$ 

<b>(, , 2</b> ) <sub>5</sub>	(2) 01 5
(C) $33\frac{2}{5}$	<b>(D)</b> $36\frac{2}{5}$

22. Amod and Pramod working alone can paint a wall in 15 and 24 days respectively. They start working together, but Amod leaves 11 days before the work is complete. How many days did it take to complete this work?

	RRB Group-D - 05/10/2018 (Shift-II)
<b>(A)</b> 16	<b>(B)</b> 17
<b>(C)</b> 15	<b>(D)</b> 18

**23.** 15 persons took up the task of digging a pond in 20 days. After 10 days, 5 people left work. In the next 5 days, 5 more people left work. How long will it take to complete the work?

RRB Group-D - 10/10/2018 (Shift-II)

<b>(A)</b> 45	(B) 25	•
<b>(C)</b> 55	<b>(D)</b> 35	

24. The pavitra can do a work in 8 days, Dinu can do the same work in 10 days and Naba can do it in 12 days. They started working together, but Pavitra left work after 2 days and the remaining work was done by Dinu and Naba. How long did it take to complete all the work?

<b>(A)</b> 67/11 days	<b>(B)</b> 45/11 days
(C) 23/11 days	<b>(D)</b> 50/11 days

**25.** 48 people can do a work in 17 days. After 6 days, 4 workers leave work. After that how many days will it take to complete the work?

	RRB Group-D - 17/11/2022 (Shift-II)	
<b>(A)</b> 16	<b>(B)</b> 15	
<b>(C)</b> 12	<b>(D)</b> 13	

**26.** A and B can do a work in 45 hours. If A works alone and completes 3/8 of the work, then leaves the remaining work for B. It takes a total of 102 days to complete the work. In how many days A will complete the work, which is more efficient between the two to complete the work alone?

RRB Gro	oup-D -0 5/ 1 2 / 2 0 1 8(Shift-II)
<b>(A)</b> 170	<b>(B)</b> 96
(C) 72	<b>(D)</b> 120

**27.** 36 men can do a work in 24 days. 4 workers left work after 8 days. Since then how many days will it take to complete the work?

 RRB Group-D-05 / 12 / 2018 (Shift-II)

 (A) 18
 (B) 16

<b>(C)</b> 12	<b>(D)</b> 20

**28.** A and B complete a work in 12 and 16 days respectively. The two work together for 3 days, then A leaves. In how many days B alone will complete the remaining work?

	RRB Group-D - 05/11/2018 (Shift-I)
<b>(A)</b> 12	<b>(B)</b> 18
( <b>C</b> ) 9	<b>(D)</b> 10

**29.** A and B can complete a work in 12 days. Although A completed 1/5 of the work working alone and left the job. Then B started working alone and completed the remaining work. The work took a total of 22 days to complete. If B is more efficient than A, then how many days did B have to take to complete this alone?

RRB G	roup-D - 12/11/2018 (Shift-II)
(A) 16.5	<b>(B)</b> 16.5 or 20
(C) 30 or 44	<b>(D)</b> 20

**30.** A can do a work in 8 days, while B takes 10 days to complete the same work. They started working together but A left the work 1 day before the work was over. How many days did A work?

RRB Group-D - 23/10/2018 (Shift-II)

<b>(A)</b> 3.5	<b>(B)</b> 4
<b>(C)</b> 2	<b>(D)</b> 3

**31.** 28 days of food items are available for 1200 soldiers posted in a fort. After 4 days some soldiers leave the fort. Due to which the available food item lasts for 32 days. How many soldiers left the fort?

RRB Group-D - 11/10/2018 (Shift-I)	
<b>(A)</b> 300	<b>(B)</b> 280
(C) 320	<b>(D)</b> 290

**32.** Sunita embroides a saree in 15 days. While her sister Neha can complete the same in 10 days. The two begin embroidery together, but after two days Neha leaves work. After that how many days will Sunita take to complete the embroidery alone?

	RRB NTPC - 09/2022 (Shift-II)
<b>A)</b> 10 days	<b>(B)</b> 20 days
<b>C)</b> 16 days	(D) 12 days

**33**. A and B can complete a work in 50 days, B and C can complete it in 37.5 days while C and A together can complete the same work in 30 days. In how many days can each of A, B and C individually complete the same work?

#### RRB Group-D -26/11/2022 (Shift-II)

(A) 50,150 and 75	<b>(B)</b> 40,60 and 120
(C) 60,120 and 40	(D) 75,150 and 50

**34**. A, B and C together can do a work in 81 days. A and B together can complete the same work in 97.2 days. B and C together can complete the same work in 162 days. In how many days B can complete it alone?

#### RRB Group-D - 27/11/2022 (Shift-I)

<b>(A)</b> 243	<b>(B)</b> 234
(C) 261	<b>(D)</b> 225

**35.** A can do a work alone in 11 days while B takes 16.5 days to do it alone. It takes 5.5 days for them to complete the work together with C. If C and D can complete work together in 22 days, then how many days will D need to complete the work alone?

	RRB Group-D - 06/12/2018 (Shift-II)
<b>(A)</b> 44	<b>(B)</b> 55
(C) 77	<b>(D)</b> 66

**36.** A and B can do a work in 40 days, B and C can do the same work in 56 days, while C and A can do it in 70 days. How many days will C take to complete the work alone?

RRB Group-D -01/09/2022 (Shift-I)

<b>(A)</b> 210	<b>(B)</b> 175
<b>(C)</b> 245	<b>(D)</b> 280

**37.** A takes twice as much time as B and C together to do a task, C takes three times the time A and B take together. If A, B and C working together take 6 days to complete the work, in how many days will A alone complete the same work?

RRB G	roup-D -02/11/2018 (Shift-I)
A) 20 days	<b>(B)</b> 18 days
<b>C)</b> 24 days	<b>(D)</b> 15 days

**38.** Rajan can complete a certain task in 6 days. Bhavesh takes 8 days to complete the same task. Charan takes the same amount of time as Rajan and Bhavesh to work together. How long will it take for Bhavesh and Charan to complete the work together?

RRB Group-D -15/10/2018 (Shift-II)

<b>(A)</b> 2 <sup>2</sup> / <sub>5</sub> days	<b>(B)</b> 2 $\frac{3}{5}$ days
( <b>C)</b> 2 $\frac{7}{5}$ days	( <b>D</b> ) $2\frac{4}{5}$ days

**39.** Panu, Jiban and Jalil can do any work separately in 30, 20 and 60 days respectively. Jiban starts the work and every third day Panu and Jalil agree to help him. How long will it take to complete that work?

 RRB Group-D - 11/10/2018 (Shift-I)

 (A) 14
 (B) 13

 (C) 15
 (D) 12

**40**. If x and y can do a work in 20 days, y and z can do the same work in 12 days. While z and x take 15 days to complete the same work.In how many days will x, y and z together complete that work?

 RRB Group-D - 08/10/2018 (Shift-III)

 (A) 5
 (B) 10

 (C) 8
 (D) 12

**41**. A can do a work in 6 days. B takes 8 days to complete the work. C takes time equal to the time taken by A and B to work together to complete the work. If B and C work together, how long will it take to complete the work?

RRB Group – D - 01/10/2018 (Shif –II)

(A) $\frac{14}{5}$ days	(B) $rac{13}{5}$ days
(C) $\frac{11}{5}$ days	( <b>D</b> ) $\frac{12}{5}$ days

**42**. Ashok and Kiran complete a work in 10 hours. Kiran and Rohan complete the same work in 15 hours, while Ashok and Rohan complete it in 12 hours. How many hours will it take for Kiran to complete this work alone?

RRB Group-D - 15/11/2018 (Shift-II)

(A) 26 Hours	(B) 15 Hours
(C) 24 Hours	(D) 30 Hours

**43**. A, B and C can finish a work alone in 8, 9 and 12 days respectively. C starts working alone and after a day B joins him. A also joins them after three days of work begins. In how many days the entire work will be finished.

	RRB Group-D - 25/10/2018 (Shift-II)
(A) 3 <sup>7</sup> / <sub>29</sub>	<b>(B)</b> 3 <sup>23</sup> / <sub>29</sub>
(C) $4\frac{15}{23}$	<b>(D)</b> $1\frac{6}{23}$

44. A, B and C together can complete a work in 10 days. A alone can complete the work in 20 days and B alone in 30 days. How many days will C take to complete that work alone?

RRB Group-D - 25/10/2018	3 (Shift-II)
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(A) 30 days	<b>(B)</b> 20 days
(C) 10 days	<b>(D)</b> 60 days

**45**. A and B can complete a work in 28 days, B and C can complete the same work in 35 days while C and A can complete the same work in 42 days. How many days will C take to complete this work alone?

 RRB Group-D - 12/10/2018 (Shift-I)

 (A) 125
 (B) 120

 (C) 124
 (D) 122

**46**. A, B and C together can complete a work in 45 days. If only A and B worked, then they had to take 54 days to complete the work and if only B and C worked they would have taken 90 days to complete the work. If B worked alone then how many days did he take to complete the work?

	RRB Group-D - 01/10/2018 (Shift-I)
<b>A)</b> 145	<b>(B)</b> 125
<b>C)</b> 135	<b>(D)</b> 130

**47**. Rathin and Brittin together can do a work in 12 days. They start working together but Rathin has to leave work 5 days before the work ends. As a result, it took a total of 15 days to finish the work. If Brittin does the work alone, how many days will it take to finish the work?

	RRB Group-D - 01/10/2018 (Shift-III)
<b>(A)</b> 30	<b>(B)</b> 28

(C) 20 (D) 24

**48.** Charlie and Lola can do a piece of work in 20 days. They worked for 15 days, then Lola left work. Charlie finished the remaining work in 12 days. Find out how many days Charlie will take to complete that alone?

	RRB Group-D - 05/11/2018 (Shift-II)
<b>(A)</b> 32	<b>(B)</b> 5
	<b>1</b> • • • •

<b>(C)</b> 48	<b>(D)</b> 17

**49.** 34 men can do a task in 12 days. How many days will 51 men take to do this?

 RRB Group-D - 04/10/2018 (Shift-II)

 (A) 10
 (B) 5

 (C) 8
 (D) 6

**50.** 69 people can complete a work in 6 days. How long will it take 23 people to complete the same task?

 RRB Group-D-05 / 10 / 2018 (Shift-I)

 (A) 15
 (B) 10

 (C) 16
 (D) 18

51. 63 people can dig a pond in 126 days. In how many days can 98 people dig it? RRB Group-D - 11/12/2018 (Shift-II)

( <b>A)</b> 77	<b>(B)</b> 80	
<b>(C)</b> 81	<b>(D)</b> 90	

**52**. If 20 people can complete a work in 25 days, then how many people will finish that work in 10 days?

-	RRB Group-D -24/10/2018 (Shift-III)
<b>(A)</b> 45	<b>(B)</b> 6
(C) 100	<b>(D)</b> 50

**53**. 30 people can complete a work in 12 days. How long will it take 40 people to complete the same?

> RRB Group-D - 19/11/2022 (Shift-III) (B) 9

(A) 10	(в) 9
( <b>C)</b> 6	<b>(D)</b> 8

54. If 15 boys earn Rs. 750 in 5 days, then how much money will 25 boys earn in 6 days?

RRB Group-D -18/11/2022(Shift-I)

<b>(A)</b> rs. 1,500	<b>(B)</b> rs. 960
<b>(C)</b> rs. 1,200	<b>(D)</b> rs. 900

55. 45 people can make 40,000 bulbs in 12 days. How many additional people would be required to make 100000 bulbs in 9 days? BRB Group-D = 16/10/2018 (Shift-I)

	10/10/2010 (Sint-
(A) 100	<b>(B)</b> 105

<b>\</b>	
<b>(C)</b> 110	<b>(D)</b> 120

**56.** In a company, 12 employees can make 111 candles in a given time. How many people will have to be employed to make 148 candles at the same time?

RRB Group-D -31 / 10 / 2018 (Shift-II)

(A) 18 people	<b>(B)</b> 12 people
(C) 16 people	<b>(D)</b> 10 people

**57**. If 8 typists typing 6 hours a day take 15 days to type a manuscript of a book, then how many days will 9 typists typing 8 hours per day take to complete the same work?

	RRB Group- D- 23 /10/2018 (Shift-II)
<b>(A)</b> 10	<b>(B)</b> 9
(C) 11	<b>(D)</b> 7

**58**. A hostel has a stock of 6,190.80 kg of wheat for 105 students for 22 days. After five days, 14 more students come to the hostel. If all the students eat the same amount of food, for how much days remaining wheat will be enough for the students?

#### RRB Group-D - 04/10/2018 (Shift-I)

(A) 15 days	<b>(B)</b> 11 days
(C) 1 days	<b>(D)</b> 17 days

**59**. If 2 men or 3 women can complete a work in 30 days, then in how many days will 6 men and 1 woman be able to complete the same work?

RRB Group-D - 18/11/2022 (Shift-III)

(A) 4 days	<b>(B)</b> 6 days
(C) 5 days	<b>(D)</b> 9 days

60. In a village under Mission Kakatiya, 38 men working 6 hours a day can do a piece of work in 12 days. Find the days in which 57 men working 8 hours a day can do twice as much work. Suppose 2 men in the first group do the same work in 1 hour as do 3 men in the second group in  $1\frac{1}{2}$  hours.

 RRB Group-D - 12/10/2018 (Shift-III)

 (A) 27 days
 (B) 28 days

 (C) 24 days
 (D) 32 days

61. Amit packs 20 chocolates in 40 min. Guneet packs 30 chocolates in 45 min. How many chocolates can both pack together in 1 hour? RRB Group-D - 11/10/2018 (Shift-III)

	RRB Group-D - 11/10/2018 (Sh
<b>(A)</b> 60	<b>(B)</b> 80
<b>(C)</b> 90	<b>(D)</b> 70

**62.** A can do a work in 10 days and B can do the same work in 20 days. If both of them work

together for 5 days, then what part of the work will be finished?

	RRB RPF SI - 05/01/2019 (Shift-III)
<b>(A)</b> 3/4	<b>(B)</b> 1/2
(C) 1/3	<b>(D)</b> 1/4

**63.** D can do a work in 18 days and E can do the same work in half the time. If both work together then how much time will they take to finish the work?

RRB	RPF Constable -22 / 01 / 2019 (Shift-II)
<b>(A)</b> 5	<b>(B)</b> 4
(C) 7	<b>(D)</b> 6

64. Janaki and Mansi, working separately, can paint the wall in 45 and 72 days respectively. They decided to work together but Janaki left work 33 days before the work was completed. How many days did it take to complete the work in total?

	RRB RPF SI - 16/01/2019 (Shift-III)
<b>(A)</b> 49	<b>(B)</b> 48
<b>(C)</b> 46	<b>(D)</b> 47

**65.** Sunny and Paula together can complete a work in 12 hours. While Paula can complete the same work in 18 hours alone. Another person Jane takes 45 hours to complete the same alone. How many hours will Sunny and Jane take to complete the same?

RRB RPF Constable - 25/01/2019 (Shift-III)(A) 15(B) 16(C) 18(D) 20

**66.** X and Y can finish a work in 6 days. If X alone can finish the same work in 9 days, then how many days will Y alone take to finish the same work?

 RRB RPF Constable - 20/01/2019 (Shift-II)

 (A) 15
 (B) 12

 (C) 18
 (D) 21

**67.** Mahesh takes 18 days to complete a work alone, while a kishore takes 36 days to complete the same. If they work together for 6 days, then what percentage of total work will remain undone?

 RRB RPF Constable - 24/01/2019 (Shift-III)

 (A) 50%
 (B) 30%

 (C) 40%
 (D) 60%

**68.** Lohit, as an airman, is twice as capable as Aayush and together they finish a work in 17 days. In how many days does Ayush alone finish the same?

RRB RPF SI - 13/01/2019 (Shift-II)

<b>(A)</b> 34	<b>(B)</b> 51
<b>(C)</b> 68	<b>(D)</b> 40

- 69. X works equal to half of Y in 1/6 time. If together they can complete a work in 10 days, then how many days will Y take to complete the same work alone?
  RRB RPF Constable 17/01/2019 (Shift-III) (A) 24 days (B) 30 days (C) 40 days (D) 35 days
- **70.** A and B together can complete a work in 35 days. If A works alone and completes 1/4 of that work, leaving the remaining work for B. Thus if the work takes 114 days to complete. So, in how many days will A who is more efficient in both, complete the work alone?

	RRB RPF SI - 10/01/2019 (Shift-III)
<b>(A)</b> 45	<b>(B)</b> 42
<b>(C)</b> 48	<b>(D)</b> 40

71. A and B together can complete a task in 1.2 days. However, if A leaves half the work alone, then B alone completes the remaining half of the work. Thus it takes 2.5 days to complete the work. If B is 50% more efficient than A and B alone finishes the work from start to end, then how many days will it take? RRB RPF Constable - 19/01/2019 (Shift-III)

<b>(A)</b> 1.5	<b>(B)</b> 2.2	
<b>(C)</b> 2.0	<b>(D)</b> 1.8	

**72.** Arun and Amit can do a work in 9 and 12 days respectively. If they work alternate and Amit starts, then in how many days will 35/36 part of the work be finished?

RRB RPF Cons	stable - 20/01/2019 (Shift-III)
<b>(A)</b> 10 days	<b>(B)</b> 12 days
<b>(C)</b> 5 days	<b>(D)</b> 8 days

**73.** A and B can complete a part of the work in 15 days and B alone can do it in 18.75 days. They start working together but B leaves 7.5 days before the work is done. How many days did the two work together?

	RRB RPF SI - 06/01/2019 (Shift-III)
(A) 13.75	<b>(B)</b> 11.25
(C) 13.5	<b>(D)</b> 12.5

**74.** A and B together can complete a work in 15 days, while A alone can complete the work in 18.75 days. They start working together but A leaves work 12.5 days before the work is completed. How long did A and B work together?

#### RRB RPF SI - 12/01/2019 (Shift-III)

<b>(A)</b> 10	<b>(B)</b> 13.75
<b>(C)</b> 11.25	<b>(D)</b> 12.5

**75.** A and B together can complete a work in 10 days, B and C together in 12 days and C and A together in 15 days. How much time A will take to complete it alone?

 RRB RPF Constable - 18/01/2019 (Shift-I)

 (A) 34 days
 (B) 24 days

 (C) 20 days
 (D) 30 days

**76.** A, B and C can complete a work in 81 days. A and B together can complete the same work in 97.2 days. B and C together can complete the same work in 162 days. In how many days B alone can complete the work?

	RRB RPF 51 - 10/01/2019 (Shift-III)
<b>(A)</b> 225	<b>(B)</b> 234
<b>(C)</b> 243	<b>(D)</b> 261

**77.** If 12 men and 6 boys can do a work in 4 days and 4 men and 14 boys can do the same work in 8 days, then find the ratio of the capacity of a man and a boy.

<b>RRB RPF</b>	Constable - 24/01/2019 (Shift-III)
<b>(A)</b> 2: 11	<b>(B)</b> 11:2
<b>(C)</b> 3: 7	<b>(D)</b> 2: 5

**78.** 2/5 of a set of notebooks is sold on the first day. The remaining 3/4 parts were sold on the second day. If there are still 75 notebooks left, how many notebooks were kept for sale?

	RRB RPF SI- 16/01/2019 (Shift - II)
<b>(A)</b> 1000	<b>(B)</b> 500
<b>(C)</b> 250	<b>(D)</b> 750

**79.** 6 boys or 10 girls can do a job in 25 days. How many days will 12 boys and 30 girls take to do the same work?

	RRB RPF SI - 11/01/2019 (Shift-II)
<b>(A)</b> 10	<b>(B)</b> 5
<b>(C)</b> 15	<b>(D)</b> 20

**80**. If 200 men can build a building in 1024 days, then how many men will be required to construct the same building in 256 days?

	RRB RPF C 22/01/2019 (Shift-ii)
<b>A)</b> 650	<b>(B)</b> 1200
<b>C)</b> 800	<b>(D)</b> 1400

**81.** A and B together can complete a work in 35 days. A works alone and completes the 5/7 work and then leaves. B does the rest of the work alone. It takes a total of 90 days to complete the work. How many days A, who is more skilled, will take to complete it alone.

	RRB ALP & Tec. (29-08-18 Shift-III)
<b>(A)</b> 40	<b>(B)</b> 45
<b>(C)</b> 48	<b>(D)</b> 42

82. A and B together can complete the work in 12 days while A alone can do it in 15 days. They start working together but A leave it 10 days before the task is completed. How many days did A and B work together?

	RRB ALP & Tec. (29-08-18 Shift-III)
<b>(A)</b> 9	<b>(B)</b> 11
( <b>C)</b> 8	<b>(D)</b> 10

**83.** 10 men can complete a work in 8 days. Two workers leave work after 4 days. After that how many days will it take to complete the work?

 RRB ALP & Tec. (20-08-18 Shift-III)

 (A) 7
 (B) 8

 (C) 6
 (D) 5

84. A and B together can complete a work in 12 days. If A completed half the work by working alone, and then leaves and after that B workd alone then completed the remaining work. It takes 25 days to complete this work. If B is more efficient than A, then how many days will it take for B to work on his own?

	RRB ALP & Tec. (13-08-18 Shift-I)
<b>(A)</b> 18	<b>(B)</b> 22
<b>(C)</b> 20	<b>(D)</b> 15

**85**. A and B can finish a work in 20 days, B and C together in 30 days while C and A together finish in 24 days. In how many days will B and C each finish the work separately?

RRB ALI	P & Tec. (20-08-18 Shift-II)
(A) 48 and 80	(B) 56 and 65
( <b>C)</b> 54 and 72	<b>(D)</b> 50 and 54

**86**. A and B can complete a work in 40 days, B and C can complete it in 30 days, while C and A can complete the same work in 24 days. In how many days A, B and C each can complete this work separately?

RRB ALP 8	& Tec. (29-08-18 shift- 1)
(A) 48,96 and 32	(B) 32,48 and 96
(C) 60,120 and 40	(D) 40,120 and 60

87. A, B and C together can finish a work in 10 days. A and B together can finish this work in 12 days, while B and C together can complete the same work in 20 days. If B alone does this work, how many days will it take to complete the work?

RRB ALP & Tec. (14-08-18 Shift-II)

<b>(A)</b> 30	<b>(B)</b> 22
<b>(C)</b> 45	<b>(D)</b> 20

88. 16 men can finish a task by working 12 hours per day in 8 days. How many men would be required to finish another task three times more than the same task by working 8 hours per day in 24 days?

RRB /	ALP & Tec. (17-08-18 Shift-I)
( <b>A)</b> 22 men	<b>(B)</b> 23 men
( <b>C)</b> 25 men	<b>(D)</b> 24 men

89. Type 1 workers are 2.5 times more skilled than type 2 workers. 12 workers of Type 1 can complete a job in 10 days. How many days will it take to complete the same work with 4 workers of type 1 and 15 workers of type 2?

	RRB ALP & Tec. (21-08-18 Shift-III)
(A) 13	<b>(B)</b> 10

	<b>\ /</b>
<b>(C)</b> 12	<b>(D)</b> 11

90. M can do a work in 12 days. N takes half the time of M to finish the same work. If they both work together, how much work will they do in a day?

	RRB NTPC 10/08/2022Shift : 2
<b>(A)</b> 1/3	<b>(B)</b> 1/2

<b>\ /</b> / -	
(0) 1 / 1	
(L)   /4	(D) 1/5

91. A alone can do a work in 15 days and B can do the same work in 18 days. If both work together, how much time will they take to complete the same work?

R	<b>RB NTPC 10/08/2022 Shift : 3</b>
<b>(A)</b> 10/3 days	<b>(B)</b> 36/5 days
<b>(C)</b> 5/36 days	<b>(D)</b> 90/11 days

92. L and M can complete a work in 30 and 90 days respectively. If they work together, in how many days will they complete that work? RRR NTPC 12/08/2022Shift : 1

<b>(A)</b> 60	<b>(B)</b> 45
<b>(C)</b> 70	<b>(D)</b> $22\frac{1}{2}$

93. P can do a work in 10 days, Q can do the same work in 15 days. If they work together for 5 days, how much part of that work will they complete?

	RRB NTPC 30.03.2016 Shift : 1
1/2	<b>(B)</b> 2/3
1/3	<b>(D)</b> 5/6

94. A can do a work in 10 days and B can do the same work in 20 days. If both of them work

(A) (C) together for 2 days, then what part of the work will be finished?

2

	RRB NTPC 23/07/2022 Shift:
<b>(A)</b> 3/10	<b>(B)</b> 3/8
<b>(C)</b> 1/3	<b>(D)</b> 1/4

95. Ishaan is twice as good as Kamal and together they finish a work in 29 days. In how many days will Kamal do this alone?

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 58	<b>(B)</b> 70	
<b>(C)</b> 87	<b>(D)</b> 116	

96. G and H can do a work in 30 days. If H alone can do it in 50 days. Then G alone can do it in ..... days.

-	RRB NTPC 17.01,2017 Shift- 2
<b>(A)</b> 75	<b>(B)</b> 70
(C) 60	<b>(D)</b> 65

97. Amrit has twice the capacity of painting than Kushal. Together they complete a work in 6 days. In how many days Kushal will complete that work alone?

	RRB NTPC 23/07/2022	Shift-3
<b>(A)</b> 10	<b>(B)</b> 12	
<b>(C)</b> 24	<b>(D)</b> 18	

98. M can do a work in 5 days. R can do the same work in 20 days. In how many days will both of them finish the same work?

#### RRB NTPC 10/08/2022Shift-1

A) 4 days	<b>(B)</b> 3 days
<b>C)</b> 2 days	<b>(D)</b> 1 days

99. E and F together can do a work in 10 days. If E alone can do the same work in 30 days, then in how many days F alone can do the same work?

	RRB NTPC 10/08/2022Shift : 3
( <b>A)</b> 15	<b>(B)</b> 20
( <b>C)</b> 25	<b>(D)</b> 18

100. P and Q together can complete a work in 12 davs. P alone does the same work in 30 davs. In how much time will Q alone complete the same work?

## RRB NTPC 10/08/2022 Shift : 3

(A) 20 days	<b>(B)</b> 30 days
( <b>C)</b> 25 days	<b>(D)</b> 35 days

101. Sanju finishes a work in 16 days. If she worked with her friend Jenny, the work would have ended in 12 days. How many days will it take Jenny to finish the same alone.

RRB NTPC 10	/08/2022	Shift :2
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<b>(A)</b> 48	<b>(B)</b> 32
(C) 36	<b>(D)</b> 24

**102**. P is twice as capable of doing work as Q. Together they complete a work in 22 days. How much time Q will take to complete this alone?

RRB NTPC 10/08/2022 Shift : 1

(A) 33 days	<b>(B)</b> 22 days
(C) 66 days	(D) 99 days

**103**. Manoj is twice efficient fisherman than Anurag and together they finish a work in 22 days. In how many days will Anurag alone complete the same work?

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 44	<b>(B)</b> 66
(C) 88	<b>(D)</b> 60

**104**. Ullas has double the working capacity of Tejas. If they can finish a work together in 18 days, then in how many days will Tejas complete the same work alone?

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 36	<b>(B)</b> 54
(C) 29	<b>(D)</b> 72

**105**. Yash is twice as capable as Vivek and they finish a work together in 23 days. In how many days will Vivek alone complete the same work?

	RRB NTPC 11/08/2022Shift: 2
<b>(A)</b> 46	<b>(B)</b> 69
(C) 92	<b>(D)</b> 60

**106**. Himanshu is twice as capable as Ankit as a woodcutter and together they finish a work in 16 days. In how many days will Ankit alone complete the same work?

	RRB NTPC 26.04.2016 Shift : 3
<b>(A)</b> 32	<b>(B)</b> 48
(C) 64	<b>(D)</b> 40

**107**. X does 25% of a work in 20 days. Y joins up with X and they together do the remaining work in 15 days. So in how many days can Y alone do the same work?

	RRB NTPC 12/08/2022Shift : 2
<b>(A)</b> 30 days	<b>(B)</b> 25 $\frac{1}{2}$ days
( <b>C</b> ) $26\frac{2}{3}$ days	<b>(D)</b> 26 $\frac{1}{3}$ days

**108.** As a sailor, Anirudh is twice as fast as Ashwin and together they finish a work in 14 days. In how many days Ashwin alone can complete the work?

	RRB NTPC 23/07/2022 Shift : 3
<b>(A)</b> 28	<b>(B)</b> 42
<b>(C)</b> 56	<b>(D)</b> 35

**109.** S and T can complete a work in 50 days. They worked together for 20 days and left after that. Tell how much work remains unfinished?

	RRB NTPC 30.03.2016 Shift : 1
<b>(A)</b> 3/5	<b>(B)</b> /3
<b>(C)</b> 1/2	<b>(D)</b> 2 / 5

**110.** X can copy 60 pages in 4 min, X and Y together can copy 750 pages in 30 min. In how many min can Y copy 100 pages?

	RRB NTPC 11/08/2022 Shift : 3
<b>(A)</b> 8	<b>(B)</b> 16
<b>(C)</b> 10	<b>(D)</b> 5

**111.** A completes 2/5 of a work in X days. He then calls B and they together finish the remaining work in 6 days. If B alone takes 100/6 days, find the value of X.

RRB NTPC	18.04.2016	Shift	: 2
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<b>(A)</b> 10 days	<b>(B)</b> 50/3 days
<b>(C)</b> 20 days	<b>(D)</b> 40 days

**112.** P and Q can complete a work in 12 days, Q and R in 15 days, R and P in 20 days. In how many days they can do this work together?

# RRB NTPC 02/02/2021Shift :1

<b>(A)</b> 10	<b>(B)</b> 12
<b>(C)</b> 5	<b>(D)</b> 14

**113.** In a camp, 180 students have food for 20 days. If the food is to be usable for 25 days, how many students should leave the camp?

RRB NTPC 11/08/2022Shift : 1 (A) 36 (B) 24

- (C) 28 (D) 40
- **114.** Smita can finish a work in 12 days and Sam can finish the same work in 9 days. Both leave work after working together for 4 days. How much work is left?

	RRB NTPC 11/08/2022Shift : 1
<b>(A)</b> 1 / 2	<b>(B)</b> 7 / 9
<b>(C)</b> 2 / 9	<b>(D)</b> 1 / 4

**115.** Vikram and Vivek can complete a work in 50 days. Both worked together for 20 days and then left the work. What part of work is done by them?

	RRB NTPC 11/08/2022Shift : 3
(A) 3/5	<b>(B)</b> 1 / 3

(-)	(-) · · ·
<b>(C)</b> 1 / 2	<b>(D)</b> 2 / 5

**116.** 30 people can do a work in 20 days. After 6 days, how many people should leave this job so that the entire work is done in 26 days? **RRB NTPC 11/08/2022 Shift : 1** 

	RRB NTPC 11/08/2022 Shift :
<b>(A)</b> 9	<b>(B)</b> 12
( <b>C)</b> 8	<b>(D)</b> 7

**117.** Anil can do a work in 14 days and Rohit can do the same work in 21 days. The two work together for a few days and after that Anil leaves. If Rohit has worked alone for 3 days, then the total number of days to finish this work is:

	RRB NTPC 09/05/2022 Shift : 3
<b>(A)</b> 31/5	<b>(B)</b> 51/5
<b>(C)</b> 2/15	<b>(D)</b> 13/5

**118.** A cleaning company employs 42 sweepers to clean a building in 25 days. 10 days later, 12 sweepers left the job. If the cleaning work is to be finished in 10 days, how many more cleaning workers need to be hired?

 RRB NTPC 09/05/2022 Shift : 1

 (A) 30
 (B) 32

 (C) 33
 (D) 21

**119**. Ravi, Rohan and Rajesh can complete a work alone in 10, 12 and 15 days respectively. If they all work together, then in how many days will this work be completed?

	RRB NTPC 12/08/2022Shift : 3
(A) 4 days	<b>(B)</b> 5 days
( <b>C)</b> 3 days	<b>(D)</b> 8 days

**120.** A can do a work in 10 days, B in 15 days and C in 20 days. A and B worked together for 4 days and then C replaced A. In how many days the entire work was finished?

R	RB NTPC 09/05/2022 Shift : 2
<b>(A)</b> 16 days	<b>(B)</b> 48/7 days
<b>(C)</b> 42/7 days	<b>(D)</b> 18/7 days

121. P, Q and R together can do a work in 4 days. P and Q alone can do the same work in 8 and 12 days respectively. Explain how many days R alone will take to complete the same work? RRB NTPC 10/08/2022Shift : 2

<b>(A)</b> 18 days	<b>(B)</b> 20 days
(C) 22 days	(D) 24 days

**122**. A can do a work in 10 days and B can do the same work in 20 days. With the help of C, they finish the same work in 5 days. In how many days C alone will do the same work?

#### RRB NTPC 10/08/2022 Shift : 3

(A) 30 days	<b>(B)</b> 20 days
(C) 25 days	(D) 18 days

**123.** A and B can finish a work in 10 days, B and C in 15 days and A and C in 20 days. In how many days B alone can finish this work?

#### RRB NTPC 02/02/2021Shift : 1

(A) $\frac{20}{7}$	(B) $\frac{24}{7}$
(C) $\frac{120}{7}$	( <b>D</b> ) $\frac{60}{7}$

**124**. 16 men make a model in 35 days. How long will it take for 25 men to make this model?

#### RRB NTPC 23/07/2022 Shift-3

(A) 22.2	<b>(B)</b> 22.1
(C) 22	<b>(D)</b> 22.4

125. If 5 men can do a work in 9 days, then in how many days will 3 men finish the same work? RRB NTPC 10/08/2022Shift-1

<b>(A)</b> 12	<b>(B)</b> 15
(C) 13	<b>(D)</b> 18

**126**. 30 men can complete a work in 16 days by working 5 hours per day. In how many days 40 men will complete the same work by working 6 hours per day?

### RRB NTPC 10/08/2022 Shift : 2

(A) 12 days	<b>(B)</b> 10 days
(C) 15 days	<b>(D)</b> 18 days

**127**. 10 men and 5 women complete a work in 60 days. If a man can do the work of two women, then how much time will 5 men and 20 women take to complete half of that work?

	RRB NTPC 18.01.2017 Shift : 1
<b>(A)</b> 25	<b>(B)</b> 36
(C) 27	<b>(D)</b> 50

**128**. Girish can paint a picture in 4 days, if he can work 8 hours per day. Due to illness, he can work only for 6 hours a day and he has to complete 7 other such pictures. How many days will Girish take to complete the work?

RRB NTPC 18.01.2017 Shift : 2

<b>(A)</b> 28	<b>(B)</b> 37 <sup>1</sup> / <sub>3</sub>
(C) $39\frac{2}{5}$	<b>(D)</b> 32

**129**. In a factory, 60 workers can sew 120 meters of clothes in 7 days, how many long clothes will be stitched in 5 days by 70 workers?

RRB NTPC 11/08/2022 Shift :2

<b>(A)</b> 100 m	<b>(B)</b> 90 m
( <b>C)</b> 85 m	<b>(D)</b> 110 m

**130**. 12 people can complete a job in X days, now 8 additional people are employed. The entire work was completed in 60 days. Find the value of x.

	RRB NTPC 18.04.2016 Shift : 3
<b>(A)</b> 80	<b>(B)</b> 100
(C) 55	<b>(D)</b> 45

**131**. In a project, a team of 54 members can do a work in 35 hours. In how many hours can 18 members do the same work?

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 90	<b>(B)</b> 120
(C) 105	<b>(D)</b> 110

**132**. If 18 men build a model of a ship in 7 days, then how much time will it take to prepare this model by 15 men?

	RRB NTPC 19.01.2017 Shift: 3
<b>(A)</b> 8.7	<b>(B)</b> 8.5
<b>(C)</b> 8.4	<b>(D)</b> 43/5

**133.** The working efficiency ratio of P and Q is 5: 7. Find the ratio of days taken by them to finish a work.

	RRB NTPC 06.04.2016 Shift : 2
<b>(A)</b> 7: 5	<b>(B)</b> 3: 4
<b>(C)</b> 4: 3	<b>(D)</b> 5: 7

**134.** Adil and Viren together can complete a work in 20 days. Viren and Chirag together can complete the same work in 50 days. Adil and Chirag together can complete the same work in 40 days. If the same work was to be done by them alone, then what will be the ratio of the time taken by Viren to the time taken by Adil?

	RRB NTPC 09/05/2022 Shift : 2
<b>(A)</b> 11:9	<b>(B)</b> 11:3
<b>(C)</b> 7:9	<b>(D)</b> 9:11

**135.** A and B together can do a work in 40 days. The ratio of their working rate is 8: 5. In how many days will A alone complete the same work?

	RRB NIPC 12/08/2022Shift
<b>A)</b> 65 days	<b>(B)</b> 40 days
<b>C)</b> 72 days	<b>(D)</b> 104 days

**136.** P can finish a work in 60 days and Q can finish the same work in 50 days. Find the ratio of work efficiency of P and Q.

	RRB NTPC 11/08/2022 Shift :2
<b>(A)</b> 1/3	<b>(B)</b> 6/5
<b>(C)</b> 5/6	<b>(D)</b> 4/5

**137.** 5 women can do a work in 36 days. If the ratio of the working capacity of a man and a woman is 3: 1, then how many days will it take for 5 men to finish the same work.

	RRB NTPC 18.04.2016 Shift : 1
(A) 12 days	<b>(B)</b> 15 days
(C) 18 days	<b>(D)</b> 108 days

**138.** If carpenters A and B work together, they can complete a work in 10 days. Carpenter A is twice faster than Carpenter B. If Carpenter B works alone, how long will he take to complete this work?

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 30	<b>(B)</b> 15
<b>(C)</b> 20	<b>(D)</b> 10

**139.** Rahul and Raghav together can pluck 260 flowers in 1 hour. Their pluck abilities are in the ratio 8: 5. Find the number of flowers to be plucked by Raghav.

	RRB NTPC 23/07/2022 Shift : 1
<b>(A)</b> 100	<b>(B)</b> 130
<b>(C)</b> 78	<b>(D)</b> 80

**140.** Internet download bill of 2 min 30 seconds is Rs 18, so how much will the bill of 3 min 20 seconds be? (Up to one decimal place)

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 24	<b>(B)</b> 24.1
<b>(C)</b> 24.2	<b>(D)</b> 23.9

141. A satellite airtime bill for 2 min 30 seconds is Rs 25, so what will be the price of 3 min 20 seconds in rupees? (Up to one decimal place) RRB NTPC 11/08/2022Shift : 1

<b>(A)</b> 33.3	<b>(B)</b> 33.2
(C) 33.4	<b>(D)</b> 33.1

**142**. The fax bill for 3 min 40 seconds is Rs 15. What will be the bill for 2 min 10 seconds? (Up to one decimal place)

	RRB NTPC 11/08/2022Shift : 2
<b>(A)</b> 8.9	<b>(B)</b> 8.7
(C) 8.6	<b>(D)</b> 8.8

**143**. The bill for telephonic talk of 3 min 20 seconds is Rs 35.50. What is the bill for a call of 5 min and 30 seconds? (Up to one decimal place)

	RRB NTPC 19.01.2017 Shift : 3
<b>(A)</b> 58.6	<b>(B)</b> 58.7
(C) 58.5	<b>(D)</b> 58.8

**144**. The bill is Rs 13 for 5 min 40 sec of satellite airtime. How much is the bill for 2 min 40 seconds? (To one decimal place)

	RRB NTPC 26.04.2016 Shift : 2
<b>(A)</b> 6.1	<b>(B)</b> 6
(C) 6.2	<b>(D)</b> 6.3

**145**. A school canteen buys 3200 kg of pulses which will be sufficient to provide nutrition to 1200 children for 20 days. 6 days later 180 children went on a month-long journey. How many more days of lentils will be enough for the rest of the children?

#### RRB NTPC 09/05/2022 Shift : 1

<b>(A)</b> 14	<b>(B)</b> 16.5
<b>(C)</b> 12.6	<b>(D)</b> 17.2

**146**. Rekha reads 15 letters in 25 min. How many letters will she read in 45 min?

	RRB NTPC 19.01.2017 Shift: 2
<b>(A)</b> 30	<b>(B)</b> 27
( <b>C)</b> 25	<b>(D)</b> 35

**147.** A can finish a work in 5 days and B can finish the same work in 8 days. If both work together and earn Rs 6760. Find the share of A?

RRB Parame	dical - 20/07/2018 (Shift-II)
<b>A)</b> Rs. 4,160	<b>(B)</b> Rs. 3,600
<b>C)</b> Rs. 5,070	<b>(D)</b> Rs. 4, 056

**148.** P and Q can do a work in 12 days and 16 days respectively. P started work alone. After how many days should Q work with P, so that the work is finished in 9 days?

	RRB JE - 27/05/2019 (Shift-I)
<b>(A)</b> 4	<b>(B)</b> 3
<b>(C)</b> 2	<b>(D)</b> 5

**149.** P can do a work in 10 days. After working 4 days, P quits work and Q completes the remaining work in 9 days. If they had worked together from the beginning, how many days would be taken to complete the work?

	RRB JE - 27/05/2019 (Shift-III)
<b>(A)</b> 9 days	<b>(B)</b> 7 days
<b>(C)</b> 6 days	<b>(D)</b> 8 days

**150.** P alone can complete a work in 18 days. P and Q working together can complete it in 15 days. They started working together. Q left after 10 days, and P alone had to complete that work. How many days will P take to complete the remaining work?

	RRB JE - 22/05/2019 (Shift-III)
<b>(A)</b> 5 days	<b>(B)</b> 7 days
<b>(C)</b> 6 days	<b>(D)</b> 8 days

**151.** P can do any work in 4 hours. Q and R together can complete the same work in 3 hours while P and R can complete it in 2 hours. If Q alone does this work, how much time will it take to complete?

	RRB JE - 23/05/2019 (Shift-II)
(A) 12 hours	(B) 8 hours
<b>(C)</b> 10 hours	<b>(D)</b> 15 hours

**152.** P is 30% more efficient than Q. If P alone can do a work in 20 days, then in how many days Q alone can complete the same?

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 18 days	<b>(B)</b> 30 days
<b>(C)</b> 26 days	<b>(D)</b> 28 days

**153.** Srinivas can complete a work in 15 days and Ramesh can do the same work in 9 days. With Ravi's help, they completed the work in 3 days. In how many days Ravi can complete same work alone?

## RRB JE - 29/05/2019 (Shift-III)

( <b>A)</b> 6 <sup>3</sup> / <sub>7</sub> days	<b>(B)</b> 10 days
( <b>C</b> ) $6\frac{2}{5}$ days	<b>(D)</b> $6\frac{2}{5}$ days

**154.** P and Q together can do a work in 7 days. P is twice as efficient as Q. In how many days can P alone do that work?

	RRB JE - 31/05/2019 (Shift-I)
<b>(A)</b> 21 days	<b>(B)</b> 15 days
<b>(C)</b> 10.5 days	<b>(D)</b> 12 days

**155.** P takes 50% more time than Q. If they work together, the work will be completed in 18 days. In how many days will Q alone complete the work?

	RRB JE - 31/05/2019 (Shift-II)
(A) 30 days	<b>(B)</b> 22 days
(C) 24 days	<b>(D)</b> 25 days

**156.** P and Q can complete a work in 12 days and 16 days respectively. They work together for 4 days. How much of the work is left?

	RRB JE - 27/05/2019 (Shift-I)
<b>(A)</b> 3/4	<b>(B)</b> 7/12
(C) 5/12	<b>(D)</b> 6/7

**157.** Ajay and Vijay can do a work in 70 and 60 days respectively. They start working together and after some time, Ajay leaves. Vijay completed the remaining work in 47 days. When did Ajay quit work?

RRB J	IE - 26/06/2019 (Shift-III)
(A) 7 days later	(B) 14 days later
(C) 10 days later	(D) 8 days later

**158.** P, Q and R can do a work separately in 10, 12 and 15 days respectively. They start working together and after 2 days P quits working. Q quit working 3 days before the task was completed. In how many days will the work be completed?

	RRB JE - 29/05/2019 (Shift-II)
<b>(A)</b> 6	<b>(B)</b> 7
( <b>C)</b> 5	<b>(D)</b> 8

**159.** P and Q separately can complete a work in 6 and 8 days respectively. They both complete the work in 3 days with the help of R. If the total wage is Rs. 3200, then how much is to be given to R?

C	RRB JE - 23/05/2019 (Shift-III)
( <b>A)</b> 320 Rs.	<b>(B)</b> 1200 Rs.
<b>C)</b> 400 Rs.	<b>(D)</b> 375 Rs.

**160.** If P and Q together can complete a work in 15 days, Q and R together can do the same work in 12 days and P and R together can do it in 20 days, then in how many days all three together will complete same work.

	RRB JE - 26/05/2019 (Shift-I)
(A) 10 days	<b>(B)</b> 14 days
(C) 4 days	<b>(D)</b> 6 days

**161.** If P and Q together can complete a work in 8 days, Q and R can complete the same work in 12 days. P, Q and R together can complete it in 6 days. In how many days P and R together will complete the same?

	RRB JE - 26/05/2019 (Shift-II)
<b>(A)</b> 6 days	<b>(B)</b> 8 days
<b>(C)</b> 5 days	<b>(D)</b> 4 days

**162.** P and Q together can complete a work in 30 days. Q and R together can do the same work in 24 days. R and P together will take 20 days

to complete the same work. How many days will it take to complete the same work by all of them together?

	RRB JE - 24/05/2019 (Shift-III)
<b>(A)</b> 25	<b>(B)</b> 8
<b>(C)</b> 16	<b>(D)</b> 15

**163.** P, Q, R and S can complete a work in 20 days. If P and Q together can complete it in 50 days and R alone can complete it in 60 days, then in how many days can S alone complete it?

	RRB JE - 24/05/2019 (Shift-III)
<b>(A)</b> 65	<b>(B)</b> 60
<b>(C)</b> 90	<b>(D)</b> 75

**164.** P, Q and R together complete a work in 1 day. P and Q finish 70% of the work, while Q and R finish 50% of the work. If they work alone, then who will complete the work first?

RRB JE - 26/05/2019 (Shift-III)

**(A)** R **(B)** P

(C) Cannot be determined (D) Q

**165**. If 200 men, working 8 hours a day, can dig a canal in 6 days, then how long will it take for 300 men to dig the canal by working 6 hours per day?

RRB JE - 23/05/2019 (Shift-I)

<b>(A)</b> 7 days	<b>(B)</b> $4\frac{2}{3}$ days
( <b>C</b> ) $5\frac{1}{3}$ days	<b>(D)</b> 6 days

**166**. Adequate food supplies were arranged for 250 soldiers for 30 days. If 50 soldiers did not participate in the camp, then for how many more days food is sufficient?

	RRB JE - 24/05/2019 (Shift-I)
<b>(A)</b> 10 days	<b>(B)</b> 9 days
<b>(C)</b> 12 days	<b>(D)</b> 7.5 days

**167**. Sixteen women complete a job in 7 days, working 7 hours per day. How many women will be required to complete the same job in 32 days, working 12 hours per day?

RRB JE - 25/05/2019 (Shift-II)

<b>(A)</b> 12	<b>(B)</b> 17
<b>(C)</b> 14	<b>(D)</b> 10

**168**. If 36 men can do a work in 25 days, then in how many days will 15 men do the same work?

RRB JE - 26/05/2019 (Shift-II)

<b>(A)</b> 60 days	<b>(B)</b> 50 days
<b>(C)</b> 56 days	<b>(D)</b> 54 days

**169**. If 9 men and 12 boys can complete a work in 4 days and 4 men and 16 boys can complete the same work in 6 days, then how much time will it take for 6 men and 24 boys to complete the same work?

	RRB JE - 27/05/2019 (Shift-II)
(A) 6 days	<b>(B)</b> 7 days
<b>(C)</b> 4 days	<b>(D)</b> 5 days

**170.** P and Q can do any work separately in 8 and 16 days respectively. They worked together and got the job done. When the work is done, what is the ratio of the work done by them?

	RRB JE - 23/05/2019 (Shift-II)
<b>(A)</b> 2:5	<b>(B)</b> 3:2
(C) 2:1	<b>(D)</b> 2:3

**171.** A task that 20 women can do in 16 days is completed by 16 men in 15 days. Find the ratio of capacity of a man to a woman.

	RRB JE - 26/05/2019 (Shift-III)
<b>(A)</b> 5:6	<b>(B)</b> 3:4
<b>(C)</b> 6:7	<b>(D)</b> 4:3

**172.** 6 men and 2 boys can do five times more work than a man and a boy. Find the ratio of work capacity of a man to a boy.

	RRB JE - 27/05/2019 (Shift-I)
<b>(A)</b> 3: 1	<b>(B)</b> 4: 1
<b>(C)</b> 1: 3	<b>(D)</b> 3: 2

**173.** If 4 boys and 6 girls can do a piece of work in 8 days, and 3 boys and 7 girls can complete it in 10 days. Find the ratio of work capacity of a boy to a girl.

	RRB JE - 27/05/2019 (Shift-III)
<b>(A)</b> 5:12	<b>(B)</b> 11:1
(C) 12:5	<b>(D)</b> 1:11

**174.** If 6 men and 8 boys can complete a work in 10 days and 26 men and 48 boys can do it in 2 days, then find the ratio of the capacity of a man to the capacity of a boy.

	RRB JE - 28/05/2019 (Shift-II)
4:3	<b>(B)</b> 2:1

<b>(A)</b> 4:3	<b>(B)</b> 2:1
<b>(C)</b> 6:5	<b>(D)</b> 3:2

**175.** P can do 2/5 of a work in 10 days. If P and Q can do 1/3 of the same work in 5 days, find the ratio of their performance.

	RRB JE - 27/06/2019 (Shift-III)
<b>(A)</b> 3:4	<b>(B)</b> 4:3
<b>(C)</b> 3:2	<b>(D)</b> 2:3

# Solution

### 1. Ans.(C)

Suppose B does a work in x days and A does the same work in (x - 60) days then on the basis of work efficiency

$$x = (x - 60)4$$

 $\begin{array}{rcl} x &=& 4x - 240 \\ 3x &=& 240 \end{array}$ 

$$x = 80 \text{ days}$$

I.e., if B does a work in 80 days, then A will do the same work in 20 days on the basis of work efficiency.

$$(A + B)$$
 one day's work  $=$   $\frac{1}{80} + \frac{1}{20}$   
1 + 4 5 1

$$=\frac{1}{80} = \frac{3}{80} = \frac{1}{16}$$
 part

Therefore, if A and B work together, they can complete the work in 16 days.

# 2. Ans.(B)

Let, It will take t days to paint 5/6 part of the wall.

According to Question –

$$\Rightarrow \frac{t}{7.2} + \frac{t}{10.8} = \frac{5}{6}$$

$$\Rightarrow \frac{10t}{72} + \frac{10t}{108} = \frac{5}{6}$$

$$\Rightarrow \frac{30t + 20t}{216} = \frac{5}{6}$$

$$\Rightarrow \frac{50t}{216} = \frac{5}{6}$$

$$\Rightarrow t = \frac{5 \times 216}{6 \times 50}$$

$$\Rightarrow t = \frac{36}{10}$$

$$t = 3.6 \text{ days}$$
Ans.(C)



 $=\frac{3+1}{48}=\frac{4}{48}=\frac{1}{12}$ Time taken to complete work by both = 12 So, the time taken to do half the work =  $\frac{12}{2}$ = 6 days 4. Ans.(C) One day's work of A =  $\frac{1}{5}$ One day work of B =  $\frac{1}{10}$ Let B work for x days : Work done by A = (x - 4) days According to Question,  $\frac{(x-4)}{5} + \frac{x}{10} = 1$  $\frac{2(x-4) + x}{10} = 1$ 2x - 8 + x = 10 3x - 8 = 103x = 18x = 6Time taken by A to work = (x - 4) = 2 days 5. Ans.(B) Let B start working after x days.  $\frac{20}{25} + \frac{20 - x}{45} = 1$  $\frac{\frac{23}{5} + \frac{20 - x}{45}}{\frac{20 - x}{45}} = 1$  $\frac{\frac{20 - x}{45}}{\frac{20 - x}{45}} = 1 - \frac{4}{5}$  $\frac{20 - x}{45} = \frac{1}{5}$ 20 - x = 9x = 20 - 9x = 11 days6. Ans.(B) One day's work of A = 1/15One day's work of B = 1/25 (A + B) One day work  $= \left(\frac{1}{15} + \frac{1}{25}\right) = \frac{8}{75}$ B leaves work 7 days before. Then A's 7 day's work =  $7 \times \frac{1}{15} = \frac{7}{15}$ , Remaining work =  $\left(1 - \frac{7}{15}\right) = \frac{8}{15}$ to work  $\frac{8}{15}$ , (A + B) takes  $= \frac{8}{15} \times \frac{75}{8} = 5$  days Hence (A + B) both worked together for 5 days. 7. Ans.(C) (Kirti + Malti) 1 day work = 1/2 1 day work of Malti = 1/30 Kirti's 1 day work =  $\frac{1}{12} - \frac{1}{30} = \frac{5-2}{60}$  $=\frac{3}{60}=\frac{1}{20}$ : Time taken by kirti finish the work = 20 days

#### 8. Ans.(D)

9.

10.

11.

12.

Work done by Rita & Meena in 1 day = 1/10 Work done by Rita in 1 day = 1/15Work done by Meena in 1 day  $= \frac{1}{10} - \frac{1}{15} = \frac{3-2}{30} = \frac{1}{30}$ So Meena will complete that work in 30 days. Ans.(B) Work done by Rohan and Rohit in 1 day = 1/10Rohan's work in 1 day = 1/15Rohit's work done in 1 day = 1/10 - 1/15= 1/30Therefore, Rohit will finish that work in 30 days. Ans.(A) Let P alone complete this work in n days. (P + Q)'s 1 day work = 1/6 part One day's work of Q = 1/10 part 1 day work of P = 1 / n part According to Question Hence  $\frac{1}{10} + \frac{1}{n} = \frac{1}{6}$  $\frac{1}{n} = \frac{1}{6} - \frac{1}{10}$  $\frac{1}{n} = \frac{1}{15}$ 1 day work of P = 1/15Hence the time taken by P to finish the entire work alone = 15 days Ans.(D) Suppose Sandra alone will complete that work in x day and Mayuri alone will complete that work in y day. One day work of both =  $\frac{1}{x} + \frac{1}{y} = \frac{1}{45}$  $\therefore \frac{1}{y} = \frac{1}{45} - \frac{1}{x} \Rightarrow \frac{x - 45}{45x}$ ∴ 1 day work of Sandra =  $\frac{1}{x}$ ∴ 1 day work of Mayuri =  $\frac{x-45}{45x}$ According to Question, Time taken for Mayuri to work 1/3 and Sandra for 2/3 parts = 104 days  $\frac{15x}{x-45} + \frac{2x}{3} = 104$  $45x + 2x^2 - 90x = 312(x - 45)$  $2x^2 - 357x + 14040 = 0$ (2x - 117)(x - 120) = 0 $x = \frac{117}{2}$  or 120 Sandra has done slow work, so x = 120Ans.(A) Arjuna's 1 day work = 1/12 part 1 day work of Bhima = 1/15 part

Let one day's work of Chetna = 1/x part

1 day work of all three =  $\frac{1}{12} + \frac{1}{15} + \frac{1}{r}$  $\frac{1}{5} = \frac{5+4}{60} + \frac{1}{x}$  $\frac{1}{5} = \frac{1}{5} - \frac{9}{60}$  $\frac{12-9}{60} = \frac{1}{x}$  $\frac{1}{x} = \frac{3}{60} = \frac{1}{20}$ Hence time taken Hence time taken by Chetan to complete the work alone = 20 daysAns.(B) Let the time taken by Zari to complete the work alone = x days According to Question - $\frac{1}{6} + \frac{1}{x} = \frac{1}{4}$  $\Rightarrow \frac{x+6}{6x} = \frac{1}{4}$  $\Rightarrow 4x + 24 = 6x$  $\Rightarrow 2x = 24 \Rightarrow x = 12$  days Therefore, Zari will complete the work alone in 12 days. Ans.(C) L.C.M of A and B = 60Thus, total work = 60 units Work done by A in 1 day = 60/30 = 2 units Work done by B in 1 day = 60/20 = 3 units 1 day work of both (A + B) = 2 + 3 = 5 units 6 days work of both =  $5 \times 6 = 30$  units Remaining work = 60 - 30 = 30 units Time taken by B to complete the remaining work = 30/3 = 10 days Ans.(D) 1 day's work of A = 1/3 part 1 day's work of B = 1/7 part 1 day work of both  $(A + B) = \left(\frac{1}{2} + \frac{1}{7}\right)$  $=\frac{7+3}{21}=\frac{10}{21}$  part 2 days work part of (A + B) =  $\frac{10 \times 2}{21} = \frac{20}{21}$  part Hence the remaining work = 1 - 20 / 21 $=\frac{1}{21}$  Part left. Ans.(A) Let the remaining work is completed in x days.  $\therefore$  Rakesh worked = x days And Ranjit worked = x + 2 days  $\therefore$  One day job of both =  $\frac{x+2}{6} + \frac{x}{4} = 1$  $\frac{4x + 8 + 6x}{24} = 1$ 10x = 24 - 810x = 16x = 1.6

13.

14.

15.

16.

# 17. Ans.(C)

Total work =  $18 \times 12$ Work done =  $18 \times 4$ Remaining work =  $18 \times 8$  $18 \times 8 = (18 - 2) \times D$  $18 \times 8 = 16 \times D$ D = 9 days

# **18. Ans.(B)** Total work = $800 \times 30$ Work done = $800 \times 12$ Remaining work = $800 \times 18$ According to Question – $800 \times 18 = (800 - 80) \times D$ $800 \times 18 = 720 \times D$ $D = \frac{800 \times 18}{720} = 20$

So the remaining work will take 20 days to complete.

# 19. Ans.(C)

20.

According to Question, 1 day work of Ranjit= 1/25 part 1 day work of Anji = 1/20 part  $\therefore$  1 day work for both (Ranjit + Anji) =  $\frac{1}{2r}$  +  $\frac{1}{20} = \frac{4+5}{100} = \frac{9}{100} \text{ part}$   $\therefore 5 \text{ days work of (Ranjit + Anji)}$   $= 5 \times \frac{9}{100} = \frac{9}{20} \text{ part}$ Hence Anji will complete the remaining work in =  $\left(1 - \frac{9}{20}\right) \times 20 = \frac{11}{20} \times 20 = 11$  days Ans.(B) Let, time taken by Sandra to complete the work = x days Time taken by Mayuri to complete the work = y days  $\therefore$  One day work of both  $= \frac{1}{x} + \frac{1}{y} = \frac{1}{60} \dots (I)$ Time taken by Mayuri to complete 1/3 work = y/3 daysRemaining work =  $1 - \frac{1}{3} = \frac{2}{3}$ Time taken by Sandra to complete 2/3 work =  $x \times \frac{2}{3} = \frac{2x}{3}$  days Both took time to complete the work  $=\frac{2x}{3}+\frac{y}{3}=150$ 2x + y = 450y = 450 - 2x....(ii) Putting the value of y in (i),

60(x + y) = xy60(x + 450 - 2x) = x(450 - 2x) $60(450 - x) = 450x - 2x^2$  $60 \times 450 - 60x = 450x - 2x^2$  $2x^2 - 510x + 60 \times 450 = 0$  $x^2 - 255x + 13500 = 0$  $x^2 - (180 + 75)x + 13500 = 0$  $x^2 - 180x - 75x + 13500 = 0$ x(x - 180) - 75(x - 180) = 0(x - 180)(x - 75) = 0x = 180,75Hence, Sandra (Sadra works slower than Mayuri) will take time to complete the work alone = 180 days 21. Ans.(D) Remaining days = 30 - 4 = 26 days Remaining men = 280 - 80 = 200 Men If 280 men worked for 26 days then the work would have ended  $M_1D_1 = M_2 \times D_2$  $280 \times 26 = 200 \times D_2$  $D_2 = \frac{280 \times 26}{200} = \frac{182}{5}$  $= 36\frac{2}{5}$  days 22. Ans.(A) Let work be done in x days According to Question,  $\frac{x-11}{15} + \frac{x}{24} = 1$ 24x - 264 + 15x = 36039x = 624 $x = \frac{624}{39} = 16$ Hence, the entire work will be done in (x)= 16 days. 23. Ans.(D)  $M \cdot D = M_1 D_1 + M_2 D_2 + M_3 D_3$  $15 \times 20 = 15 \times 10 + 5 \times 10 + 5 \times D_3$  $300 - 150 - 50 = 5D_3$  $5D_3 = 100$  $D_3 = 20$ Total time taken = 20 + 10 + 5 = 35 days 24. Ans.(B) Let all work will be done in x days. According to Question,  $\frac{2}{8} + \frac{x}{10} + \frac{x}{12} = 1$  $\frac{1}{4} + \frac{x}{10} + \frac{x}{12} = 1$  $\frac{x}{10} + \frac{x}{12} = 1 - \frac{1}{4}$  $\frac{x}{10} + \frac{x}{12} = 1 - \frac{1}{4}$  $\frac{6x + 5x}{60} = \frac{3}{4}$  $\frac{11x}{60} = \frac{3}{4}$  $x = \frac{45}{11}$  days

## 25. Ans.(C)

Let the remaining work be completed in x days.

 $\therefore M_1 D_1 = M_2 D_2$   $48 \times (17 - 6) = 44 \times x$   $48 \times 11 = 44 \times x$   $x = \frac{48 \times 11}{44} = 12$ 

26. Ans.(C)

27.

28.

Let A complete the total work in x days. Time taken by A to do 3/8 part =  $\frac{3x}{9}$  days Time taken by B to do 5/8 part  $=\left(102-\frac{3x}{8}\right)$  Day Time taken by B to complete the work  $=\left(102-\frac{3x}{8}\right)\frac{8}{5}$  day According to Question,  $\frac{1}{x} + \frac{1}{\left(102 - \frac{3x}{8}\right)\frac{8}{5}} = \frac{1}{45}$  $\frac{\frac{1}{x} + \frac{5}{816 - 3x}}{\frac{816 - 3x + 5x}{(816 - 3x)x}} = \frac{1}{45}$ 15(816 + 2x) = x(272 - x) $12240 + 30x = 272x - x^2$  $x^2 - 272x + 30x + 12240 = 0$  $x^2 - 242x + 12240 = 0$  $x^2 - 72x - 170x + 12240 = 0$ (x-72)(x-170) = 0x = 72,170A has the highest ability to work.  $A = 72 days, B \neq 170$ Ans.(A) 8 days later -Remaining men = 32Remaining days = 16 Later, 16 days of work of 36 men are left, which 32 men will do together.  $: M_1D_1 = M_2D_2$  $\therefore 36 \times 16 = 32 \times D_2$  $D_2 = 18 \text{ days}$ Ans.(C) Let A take time to complete work = 12 days Time taken by B to complete the same = 16 days 1 day work of A and B =  $\frac{1}{12} + \frac{1}{16}$  $=\frac{4+3}{48}=\frac{7}{48}$  $\therefore$  3 day work of A and B =  $3 \times \frac{7}{48} = \frac{7}{16}$  part Remaining work =  $1 - \frac{7}{16} = \frac{9}{16}$  part : Time taken for B to complete  $\frac{1}{16}$  work = 1 day

 $\therefore$  Time taken for B to complete  $\frac{9}{16}$  work  $16 \times \frac{9}{16}$ = 9 days Thus, it took time for B to complete the remaining work = 9 days. Ans.(B)  $\frac{1}{A} + \frac{1}{B} = \frac{1}{12} - \dots - (i)$ Let A takes x days to work 1/5 part. Time taken by A to complete the work = 5x daysTime taken by B to do 4/5 work = (22 - x) daysTime taken to complete the work  $= (22 - x)\frac{5}{4}$  days From equation (i),  $\Rightarrow \frac{1}{5x} + \frac{4}{5(22-x)} = \frac{1}{12}$  $\Rightarrow \frac{110 - 5x + 20x}{25x(22 - x)} = \frac{1}{12}$  $\Rightarrow \frac{110 + 15x}{25 \times (22 - x)} = \frac{1}{12}$  $\Rightarrow \frac{(22 + 3x)}{5 \times (22 - x)} = \frac{1}{12}$  $\Rightarrow 264 + 36x = 110x - 5x^2$  $\Rightarrow 5x^2 - 74x + 264 = 0$  $\Rightarrow 5x^2 - 30x - 44x + 264 = 0$  $\Rightarrow 5x(x-6) - 44(x-6) = 0$  $\Rightarrow (x-6)(5x-44) = 0$  $x = 6, x = \frac{44}{5} = 8.8$ Time taken by B to complete the work  $= (22 - x) \times \frac{5}{4}$  days  $= (22-6) \times \frac{5}{4}$  $= 16 \times \frac{5}{4} = 20$  days  $= (22 - 8.8) \times \frac{5}{4}$  $13.2 \times \frac{5}{4} = 16.5$  days Ans.(B) Work done by A in 1 day =  $\frac{1}{8}$  part Work done by B in 1 day =  $\frac{1}{10}$  Part (A + B) work done in 1 day  $=\frac{1}{8}+\frac{1}{10}=\frac{9}{40}$  part Let both A and B work together for x days.

29.

30.

Let both A and B work together for x day According to Question,  $\frac{9x}{40} + \frac{1}{10} = 1$   $\Rightarrow \frac{9x}{40} = 1 - \frac{1}{10}$   $\Rightarrow x = \frac{9}{10} \times \frac{40}{9}$  x = 4 daysHence A worked for 4 days. **Ans.(A)**Number of posted soldiers = 1200
Let x soldiers left after 4 days.
Formula -  $M_1 \times D_1 = M_2 \times D_2$ ,  $1200 \times 28 = 1200 \times 4 + (1200 - x) \times 32$   $1200 \times 24 = (1200 - x) \times 32$  28800 = 38400 - 32x

32x = 38400 - 28800

32x = 9600x = 300

31.

Let the entire work took x days to finish. According to Question,

$$\frac{x}{15} + \frac{2}{10} = 1$$

$$\frac{x}{15} = 1 - \frac{2}{10}$$

$$\Rightarrow \frac{x}{15} = \frac{8}{10}$$

$$\Rightarrow x = 15 \times \frac{4}{5}$$

$$x = 12$$

:. The entire work will be finished in 12 days. So Sunita alone will take (12 - 2) = 10 days to complete the remaining embroidery.

### 33. Ans.(D)

(A + B)'s one day work = 1/50 part (B + C)'s One day work =  $\frac{1}{37.5}$  Part (C + A)'s One day work =  $\frac{1}{30}$  part 2(A + B + C)'s One day work =  $\left(\frac{1}{50} + \frac{10}{375} + \frac{1}{30}\right)$  part 2(A + B + C) =  $\left(\frac{1}{50} + \frac{2}{75} + \frac{1}{30}\right)$ 2(A + B + C) =  $\left(\frac{6 + 8 + 10}{300}\right)$ A + B + C =  $\frac{12}{300} = \frac{1}{25}$  part  $\frac{1}{50} + C = \frac{1}{25}$ C =  $\frac{1}{25} - \frac{1}{50} = \frac{2 - 1}{50} = \frac{1}{50}$  part Hence, the work can be completed in 50 days by C.

$$A + \frac{2}{75} = \frac{1}{25}$$

$$A = \frac{1}{25} - \frac{2}{75} = \frac{3-2}{75} = \frac{1}{75}$$
Hence it will take 75 days for A to complete the work.  

$$\frac{1}{30} + B = \frac{1}{25}$$

$$B = \frac{1}{25} - \frac{1}{30} = \frac{6-5}{150} = \frac{1}{150}$$
Therefore, B can complete the work in 150 days.  
**Ans.(A)**  
One day work of A, B and C = 1/18 part  
One day work of B and C = 1/162 part  
According to Question,  

$$\frac{1}{4} + \frac{1}{B} + \frac{1}{c} = \frac{1}{81} \dots \dots (i)$$

$$\frac{1}{4} + \frac{1}{B} = \frac{10}{972} \dots \dots (ii)$$
From equation (i) and (ii),  

$$\frac{1}{c} = \frac{1}{81} - \frac{10}{972}$$

$$\frac{1}{c} = \frac{972 - 810}{81 \times 972} = \frac{162}{81 \times 972} = \frac{1}{486}$$
From equation (iii),  

$$\frac{1}{B} + \frac{1}{486} = \frac{1}{162}$$

$$\frac{1}{B} = \frac{1}{162} - \frac{1}{486} = \frac{3-1}{486}$$

$$\frac{1}{B} = \frac{2}{486} = \frac{1}{243}$$
Hence B alone will complete the work in 243 days.  
**Ans.(D)**:  
1 day work of A = 1/11  
One day's work of B =  $\frac{1}{16.5}$   
(A + B + C)'s One day's work  
 $= \frac{1}{11} + \frac{1}{16.5} + \frac{1}{c} = \frac{1}{5.5}$ 
One day's work of C =  $\frac{1}{5.5} - (\frac{1}{11} + \frac{1}{16.5})$ 

One day work of A and B =  $\frac{1}{40}$  .... (i) One day work of B and C =  $\frac{1}{56}$  ...... (ii) One day work of C and A =  $\frac{1}{70}$  ..... (iii) Adding equation (1), (2) and (3),  $2(A + B + C) = \frac{1}{40} + \frac{1}{56} + \frac{1}{70} = \frac{7 + 5 + 4}{280} = \frac{16}{280}$  $(A + B + C) = \frac{16}{2 \times 280} = \frac{8}{280} = \frac{1}{35}$  ..... (4) From equation (4) and equation (1), One day's work of C =  $\frac{1}{35} - \frac{1}{40} = \frac{8-7}{280} = \frac{1}{280}$ Hence time taken by C to complete the work = 280 days

37. Ans.(B)

According to Question, Work done by B and C = Work done by 2 × A B + C = 2A ....(i)  $\therefore$  One day work of A, B and C, A + B + C = 1/6 Putting the value of B + C from equation (i),  $A + 2A = \frac{1}{c}$ 

$$3A = \frac{1}{6} \Rightarrow \boxed{A = \frac{1}{18}}$$

Hence A alone will complete this work in 18 days.

# 38. Ans.(A)

According to Question – Rajan's work = 6 days Bhavesh's work = 8 days (Rajan + Bhavesh)'s one day work =  $\frac{1}{6} + \frac{1}{8}$ =  $\frac{4+3}{24} = \frac{7}{24}$ According to the question, Charan works alone in the amount of time Rajan and Bhavesh take to work together. 1 day work of Bhavesh and Charan =  $\frac{1}{8} + \frac{7}{24} = \frac{3+7}{24} = \frac{10}{24}$ Hence the time taken by Bhavesh and Charan to complete the work  $-\frac{24}{24} = 2^{\frac{2}{2}}$  days

$$=\frac{10}{10}=2\frac{1}{5}$$

39.

Ans.(C) Total work = 60 units  $\therefore$  Jiban works 3 units a day. Jiban will do in 2 days = 3 × 2 = 6 units  $\therefore$  Panu and Jalil assist Jiban on the third day.  $\therefore$  Three days work = (2 days work of Jiban) + (Panu + Jalil + Jiban) = 2 × 3 + 2 + 1 + 3 = 12 unit Time taken in 1 unit work = 3/12  $\therefore$  Time taken to do 60 units =  $\frac{3}{12} \times 60$ = 15 days

36.

 $=\frac{1}{5.5}-\left(\frac{2.5}{16.5}\right)$ 

Ans.(D)

 $=\frac{3-2.5}{16.5}=\frac{0.5}{16.5}=\frac{1}{33}$ 

 $\therefore (C + D) \text{ One day's work} = \frac{1}{22}$  $\therefore D \text{ One day's work} = \frac{1}{22} - \frac{1}{33} = \frac{3-2}{66} = \frac{1}{66}$ Hence D will complete the work in 66 days.

35.

34.

# **40**. Ans.(B) (x + y)'s one day work = 1/20 part (y + z)'s one day work = 1/12 part (z + x)'s one day work = 1/15 part One day's work of 2 $(x + y + z) = \frac{1}{20} + \frac{1}{12} + \frac{1}{15}$ (x + y + z)'s One day work = $=\frac{3+5+4}{2\times60}$ (x + y + z)'s one day work $= \frac{12}{2 \times 60} = \frac{1}{10}$ part Hence, x, y and z together will complete the work in 10 days. 41. Ans.(D) Work done by A in one day = 1/6 part Work done by B in one day = 1/8 part Work done by C in one day = $\frac{1}{6} + \frac{1}{8}$ part $=\frac{4+3}{24}=\frac{7}{24}$ part One day work of B and C together = $\frac{1}{8} + \frac{7}{24} = \frac{10}{24} = \frac{5}{12}$ part Hence the time taken by B and C to complete the work together = $\frac{12}{5}$ days 42. Ans.(C) Work done by Ashok and Kiran in 1 hour $=\frac{1}{10}\dots(i)$ Work done by Kiran and Rohan in 1 hour = $\frac{1}{15}$ .....(*ii*) Work done by Ashok and Rohan in 1 hour = $\frac{1}{12}$ .....(*iii*) Adding equation (i), (ii) and (iii) 2 (Ashok, Kiran and Rohan) work done in 1 hour = $\frac{1}{10} + \frac{1}{15} + \frac{1}{12}$ Work done by Ashok, Kiran and Rohan in 1 hour = $\frac{12+8+10}{120\times 2} = \frac{30}{240} = \frac{1}{8}$ Hence Kiran's 1 hour work $= \frac{1}{8} - \frac{1}{12} = \frac{3-2}{24} = \frac{1}{24}$ Hence Kiran will take 24 hours to complete the work. 43. Ans.(C) According to Question, Suppose C started work alone from x days, $\frac{x-3}{8} + \frac{x-1}{9} + \frac{x}{12} = 1$ $\frac{9x-27 + 8x - 8 + 6x}{72} = 1$ 23x - 35 = 7223x = 72 + 3523x = 107 $x = \frac{107}{23}$

 $x = 4\frac{15}{23}$ 

Therefore, the entire work will be finished in  $4\frac{15}{23}$  days.

# 44. Ans.(D)

One day work of A, B and C =  $\frac{1}{10}$  part One day work of A and B =  $(\frac{1}{20} + \frac{1}{30})$  Part Hence, one day's work of C =  $\frac{1}{10} - (\frac{1}{20} + \frac{1}{30})$ =  $\frac{1}{10} - (\frac{3+2}{60}) = \frac{6-5}{60} = \frac{1}{60}$  part Hence the time taken by C to finish the work alone =  $\frac{1}{1/60}$  = 60 days.

# 45. Ans.(B)

46.

1 days work of (A + B) = 1/28 ----- (i) 1 days work of (B + C) = 1/35 ----- (ii) 1 days work of (C + A) = 1/42 ----- (iii) Adding all three equations 2(A + B + C)'s 1 day work =  $\frac{1}{28} + \frac{1}{35} + \frac{1}{42}$  $= \frac{15+12+10}{420}$ So, 1 days work of (A + B + C) = $\frac{37}{840}$  ..... (iv) Substracting equation(i) from equation(iv), 1 days work of C =  $\frac{37}{840} - \frac{1}{28} = \frac{37-30}{840}$ 1 days work of C =  $\frac{7}{840} = \frac{1}{120}$ Hence, C will complete the work alone in 120 days. Ans.(C) 1 days work of  $(A + B + C) = 1/45 \dots (i)$ 1 days work of  $(A + B) = \frac{1}{45}$  ... (ii) 1 days work of  $(B + C) = \frac{1}{54}$  ..... (iii) Adding equation (ii) and equation (iii),  $A + B + B + C = \frac{1}{54} + \frac{1}{90}$  $B + (A + B + C) = \frac{1}{54} + \frac{1}{90}$ From equation(i),  $B = \left(\frac{1}{54} + \frac{1}{90}\right) - \frac{1}{45}$  $B = \frac{5+3-6}{270} = \frac{2}{270} = \frac{1}{135}$ Therefore, it will take 135 days for B to complete the work alone.

# 47. Ans.(A)

Let Rathin will finish the work in R days and Bratin in B days.

According to Question,

 $\frac{1}{R} + \frac{1}{B} = \frac{1}{12}$ Or,  $\frac{10}{R} + \frac{10}{B} = \frac{10}{12} \dots \dots (i)$ and

 $\frac{10}{R} + \frac{15}{R} = 1 \dots \dots$ (ii) From equation (i) and (ii),  $\frac{10}{B} - \frac{15}{B} = \frac{10}{12} - 1$  $\Rightarrow \frac{-5}{B} = \frac{-2}{12}$ B = 30 days48. Ans.(C) Work done by Charlie and Lola in 15 days  $=\frac{15}{20}=\frac{3}{4}$ Remaining work =  $1 - \frac{3}{4} = \frac{1}{4}$ Time taken by Charlie to do 1/4 work= 12 Charlie took time to work alone =  $4 \times 12$  = 48 days 49. Ans.(C) let it will take x days to complete the work.  $34 \times 12 = 51 \times x$ x = 8 days50. Ans.(D) Suppose it will take x days to complete the work. Then,  $m_1 d_1 = m_2 d_2$  $69 \times 6 = 23 \times x$  $\Rightarrow x = \frac{69 \times 6}{23}$  $= 3 \times 6 = 18$ Therefore, it will take 18 days for 23 people to complete the work. 51. Ans.(C)  $M_1D_1 = M_2D_2$  $63 \times 126 = 98 \times D_2$  $\frac{63\times126}{98} = D_2$  $D_2 = \frac{63 \times 63}{49} = 81$  days 52. Ans.(D) Given that  $m_1 = 20$  person,  $d_1 = 25$  days  $d_2 = 10 \text{ days}, m_2 = ?$  $m_1d_1 = m_2d_2$  $20 \times 25 = 10 \times m_2$  $m_2 = 50 \text{ person}$ Therefore, 50 people will complete the work in 10 days. 53. Ans.(B)  $M_1D_1 = M_2D,$  $30 \times 12 = 40 \times D_2$  $D_2 = \frac{30 \times 12}{40}, D_2 = 9$  days So it will take 9 days for 40 people to complete the same work. 54. Ans.(A)

M = Man, D = Days, W = Work $\frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$  $= \frac{15 \times 5}{750} = \frac{25 \times 6}{W_2}$  $W_2 = \frac{25 \times 6 \times 750}{75} = Rs. 1500$ 55. Ans.(B) Let, extra x people will be needed to make 100000 bulbs in 9 days. by formula  $\frac{M_1D_1}{W_1} = \frac{\dot{M}_2D_2}{W_2}$  $M_1 = 45 M_2 = (45 + x)$  $D_1 = 12 D_2 = 9$  $W_1 = 40,000 W_2 = 100,000$  $\frac{45 \times 12}{40,000} = \frac{(45 + x) \times 9}{100,000}$ 150 = 45 + XX = 105Therefore, 105 additional people will be required. 56. Ans.(C) Formula - $\frac{M_1}{W_1} = \frac{M_2}{W_2}$  $\frac{12}{111} = \frac{M_2}{148}$  $M_2 = \frac{12 \times 148}{1111} = 16 \text{ man}$ 57. Ans.(A) Let the number of days required = x days Therefore  $M_1D_1H_1 = M_2D_2H_2$  $8 \times 15 \times 6 = 9 \times x \times 8 \text{ or } x = \frac{15 \times 6}{9} = \frac{90}{9}$ x = 10 days58. Ans.(A) Let the remaining wheat will be sufficient for x davs..  $\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$ 105 × 22 105 × 5  $\frac{105 \times 22}{6190.80} = \frac{105 \times 5}{6190.80} + \frac{(105 + 14)x}{6190.80}$  $105 \times 22 = 105 \times 5 + (105 + 14)x$  $105 \times 22 = 105 \times 5 + 119x$ 2310 = 525 + 119x2310 - 525 = 119x1785  $\frac{119}{119} = x$ x = 15 days. **59**. Ans.(D) According to Question, (M = Men, W = Women)

$$2M \times 30 = 3W \times 30$$

$$2M = 3W$$

$$1M = \frac{3}{2}W$$
Total women,  

$$6M + 1W = 6 \times \frac{3}{2}W + 1W = 10W$$

$$M_1D_1 = M_2D_2$$

$$3 \times 30 = 10 \times D_2$$

$$\therefore D_2 = \frac{3 \times 30}{10} = 9 \text{ days}$$
60. Ans.(A)  
Ratio of efficiency of men of both groups  

$$= 3 \times 1\frac{1}{2} \cdot 2 \times 1 = \frac{9}{2} \cdot 2 = 9 \cdot 4$$
Formula,  

$$\frac{M_1D_1H_1P_1}{W_1} = \frac{M_2D_2H_2P_2}{W_2} \stackrel{3}{\text{ th}}$$

$$\frac{38 \times 12 \times 6 \times 9}{1} = \frac{57 \times D_2 \times 8 \times 4}{2}$$

$$D_2 = 27 \text{ days}$$
Therefore, in 27 days 57 men can do double  
work by doing 8 hours work.  
61. Ans.(D)  
Number of chocolates packed by Amit in 1  
min = \frac{30}{45} = \frac{1}{2}
Number of chocolates packed by Guneet in 1  
min =  $\frac{3}{45} = \frac{2}{3}$ 
Chocolate packed by Amit and Guneet in 1  
min =  $\frac{1}{2} + \frac{2}{3} = \frac{7}{6}$ 
Number of chocolates packed in 1 hour =  

$$\frac{7}{6} \times 60 = 70$$
62. Ans.(A)  
One day's work of  $A = \frac{1}{10}$  part  
One day's work of  $B = \frac{1}{20}$  part  
Both's 5 day's work  $= \frac{1}{10} + \frac{5}{20}$   

$$= \frac{10 + 5}{20} = \frac{15}{20} = \frac{3}{4}$$
 part  
63. Ans.(D)  
Time taken by D = 18 days  
Time taken by C = 18 x18 = 9 days  
Time taken by C = 12 \times 18 = 9 days  
Time taken by C = 12 \times 18 = 9 days  
Time taken by C = 13 = \frac{18\times9}{10 + 9} = \frac{18\times9}{27} = 6 days
64. Ans.(B)  
1 day's work of Mansi =  $\frac{1}{72}$  part  
Let work done in x days.  
According to Question,

$$\frac{x}{72} + \frac{x-33}{45} = 1$$

$$\frac{45x + 72x - 2376}{3240} = 1$$
117*x* = 3240 + 2376
$$x = \frac{5616}{117} = 48$$
= 48 days
**Ans.(D)**
Let the Sunny will take x time to complete the work.
According to Question -
$$\frac{1}{x} + \frac{1}{18} = \frac{1}{12}$$

$$\frac{1}{x} = \frac{1}{12} - \frac{1}{18}$$

$$\frac{1}{x} = \frac{3-2}{36} = \frac{1}{36}$$

$$x = 36$$
Work done by Sunny and Zain together
$$\frac{1}{36} + \frac{1}{45} = \frac{5+4}{180} = \frac{9}{180}$$
Time taken by Sunny and Zain to do 180/9
work = 20 days
**Ans.(C)**
One day's work of X and Y = 1/6 part
One day work of X = 1/9 part
 $\therefore$  One day work of X = 1/9 part
 $\therefore$  One day work of Mahesh = 1/18 part
1 day work of Mahesh = 1/18 part
1 day work of both (Mahesh + Kishore) =
$$\frac{1}{18} + \frac{1}{36} = \frac{3}{36} = \frac{1}{12}$$
6 days work of both = 6/12 = 1/2
Remaining work in% =  $\frac{1/2}{1} \times 100$ 

$$= \frac{1}{2} \times 100 = 50\%$$
**Ans.(B)**
Ratio of efficiency of Lohit and Ayush = 2: 1
 $\therefore$  Ratio of ime = 1: 2
By question,
$$\frac{1}{2x} + \frac{1}{x} = \frac{1}{17}$$

=

$$2x = 51$$

2x = 51Ayush take time to work alone= 2x=51 days

69.

Ans.(C) 1/2 of y work complete in 1/6 of x time.

1 work of y will complete in 1/3 of x time. According to Question - $\frac{1}{x} + \frac{1}{y} = \frac{1}{10}$  $\frac{1}{y/3} + \frac{1}{y} = \frac{1}{10}$  $\frac{4}{y} = \frac{1}{10}$ v = 40 davs70. Ans.(B) Suppose A does a work in A day and B does the same work in B days. Time taken by A to work 4/7 part = 4/7A And the time taken for B to complete the remaining  $\left(1 - \frac{4}{7} = \frac{3}{7}\right)$  part =  $\frac{3}{7}B$ According to Question,  $\frac{1}{A} + \frac{1}{B} = \frac{1}{35} \dots (i)$  $\frac{4}{7}A + \frac{3}{7}B = 114 \dots \dots$  (ii) Solving equations (i) and (ii) A = 42 daysB = 210 days Hence the time taken by A to complete the work = 42 days. 71. Ans.(C) Let A can complete a work in x days. ∴ Working capacity of A =  $\frac{1}{x}$ ∴ Working capacity of B =  $\frac{1}{x} \times \frac{150}{100} = \frac{3}{2x}$ : According to Question  $\frac{1}{x} + \frac{3}{2x} = \frac{1}{1.2}$  $\frac{2}{2x} + \frac{3}{2x} = \frac{1}{1.2}$ 2x = 6x = 3Hence B alone will complete the same work in 2 days. 72. Ans.(A) 2 days work of Amit and Arun  $=\left(\frac{1}{12}+\frac{1}{9}\right)=\left(\frac{3+4}{36}\right)=\frac{7}{36}$  part  $\therefore 2 \times 5 = 10$  Day 's work  $= \frac{7 \times 3}{36}$  $\therefore$  Required time = 10 days 73. Ans.(C) As per the first statement, Work done by A and B in one day =  $\frac{1}{15}$  part The work done by B in one day =  $\frac{1}{1875}$  part  $\therefore$  Work done by (A + B) =  $\frac{1}{4} + \frac{1}{B} = \frac{1}{15}$ Work done by A in one day

 $\frac{1}{A} = \frac{1}{15} - \frac{1}{18.75}$  $\frac{A}{A} = \frac{15}{15} - \frac{18}{75}$  $\frac{1}{A} = \frac{5-4}{75}$  $\frac{1}{A} = \frac{1}{75}$ Hence the time taken by A to finish the work is 75 days. Suppose the work is finished in x days. According to the question, (According to the second statement)  $\frac{x}{75} + \frac{(x - 7.5)}{18.75} = 1$  $\frac{x}{75} + \frac{x}{18.75} - \frac{7.5}{18.75} = 1$   $\frac{18.75x + 75x}{75 \times 18.75} = 1 + \frac{7.5}{18.75}$   $\frac{93.75x}{75 \times 18.75} = \frac{18.75 + 7.5}{18.75}$   $\frac{93.75x}{75 \times 18.75} = 26.25$   $\frac{26.25 \times 75}{75}$  $x = \frac{26.25 \times 75}{93.75} = 21$ So, both worked together = 21 - 7.5= 13.5 days Ans.(D) Ans.(b) One day work of A + B = 1/15 One day's work of B =  $\frac{1}{15} - \frac{1}{18.75} = \frac{1}{75}$ 12.5 days work of B =  $\frac{12.5}{75} = \frac{125}{750} = \frac{1}{6}$ Remaining work =  $1 - \frac{1}{6} = \frac{5}{6}$  work Time taken by (A + B) to complete the work = 15 daysTime taken by (A + B) to complete 5/6 work  $= 15 \times \frac{5}{6} = 12.5$  days Hence A and B worked together for 12.5 days. Ans.(B) (A + B)'s one day work = 1/10 part (B + C)'s one day work = 1/12 part (C + A)'s one day work = 1/15 part One day work of  $2(A + B + C) = \frac{1}{10} + \frac{1}{12} + \frac{1}{15}$  $=\frac{5+5+4}{60} = \frac{15}{60}$ (A + B + C)'s one day work=  $\frac{1}{4\times 2} = \frac{1}{8}$ Hence A's 1 day work =  $\frac{1}{8} - \frac{1}{2} = \frac{3-2}{24} = \frac{1}{24}$ A alone will complete the work in 24 days. Ans.(C) According to Question, Work done by A, B and C in 1 day = 1/81  $A + B + C = \frac{1}{81}\dots\dots(i)$ 

74.

75.

76.
So, 1 day work of A + B =  $\frac{1}{97.2}$  $A + B = \frac{10}{972}$  $A + B = \frac{5}{486}\dots\dots(ii)$ Putting the value of equation (ii) in equation (i),  $C = \frac{1}{81} - \frac{5}{486}$  $C = \frac{6-5}{486} = \frac{1}{486}$ So one day work of (B + C) = 1/162 $B + \frac{1}{486} = \frac{1}{162}$  $B = \frac{1}{162} - \frac{1}{486}$  $B = \frac{3 - 1}{486} = \frac{1}{243}$ Hence B along will Hence B alone will complete that work in 243 days. Ans.(B) According to Question, (M = Men, B = Boys) $(12M + 6B) \times 4 = (4M + 14B) \times 8$ 12M + 6B = 8M + 28B4M = 22B2M = 11BM:B = 11:2Ans.(B) A total of 100 notebooks were considered for sale. According to Question, First day notebook sold =  $100 \times \frac{2}{5} = 40$ Remaining notebook = 100 - 40 = 60Notebook sold the other day =  $60 \times \frac{3}{4} = 45$ Remaining notebook = 100 - (40 + 45)75 = 100 - 85 = 15But, 15 = 75 $So, 100 = \frac{75}{15} \times 100 = 500$ Thus, the number of notebooks = 500Ans.(B) :: 6B = 10G $\therefore 12B = 20G$ Formula –  $M_1D_1 = M_2D_2$ ,  $\Rightarrow 10G \times 25 = (12B + 30G) \times D_2$  $\Rightarrow 10G \times 25 = (20G + 30G) \times D_2$  $\Rightarrow 10 \times 25 = 50 \times D_2$  $\Rightarrow D_2 = \frac{10 \times 25}{50} = 5 \text{ days}$ Ans.(C) M = Man

Formula  $-M_1D_1 = M_2D_2$  $200 \times 1024 = 256 \times M_2$  $M_2 = 800$ Ans.(D) Let A can complete a work in x days. Working hours -A completes 1 work in = x days A completes 5/7 work in = 5/7 x days Remaining work (2/7) done by B in = (90 - 5/7)x) davs So, B completes 1 work in =  $(90 - 5/7 x) \times 7/2$ davs = (660 - 5x)/2 dayAccording to Question,  $\therefore \frac{1}{A} + \frac{1}{B} = \frac{1}{35}$  $\frac{1}{x} + \frac{2}{(630-5x)} = \frac{1}{35}$ 35(630 - 5x + 2x) = x(630 - 5x) $7(630 - 3x) = (126x - x^2)$  $4410 - 21x = 126x - x^2$  $x^2 - 147x + 4410 = 0$  $x^2 - 105x - 42x + 4410 = 0$ (x - 105)(x - 42) = 0 $x = 42, x \neq 105$  (from option) Hence, it will take 42 days for A to do 1 work. Ans.(D) 1 day work of A + B = 1/12One day's work of A alone = 1/15 part 1 day work of B alone =  $\frac{1}{12} - \frac{1}{15}$ According to Question, Let A and B work together for x days x.A + x.B + 10 B = 1x (A + B) + 10 B = 1 $x\left(\frac{1}{12}\right) + \frac{10}{60} = 1$  $\frac{x}{12} = 1 - \frac{1}{6}$  $\frac{x}{12} = \frac{5}{6}$ x = 10 daysAns.(D) 10 men will do the total work  $= 10 \times 8 = 80$  work Remaining work after 4 days = 80 - 40 = 40 work 8 men will do the remaining work  $=\frac{40}{8}=$  in 5 days

### 84. Ans.(C)

81.

82.

83.

Let A and B work in x and y days respectively. Then,

80.

77.

78.

79.

D = Days

 $\frac{1}{x} + \frac{1}{y} = \frac{1}{12}$  $\frac{y+x}{xy} = \frac{1}{12}$ : A does half work and B does half which takes a total of 25 days.  $\frac{x}{2} + \frac{y}{2} = 25$  $x + y = 50 \dots \dots (ii)$ From equation (ii) and (i),  $xy = 12 \times 50$  $xy = 600 \dots \dots \dots \dots \dots \dots (iii)$ The third equation will be satisfied only when x = 30 and y = 20. Thus, time taken by B to work = 20 days 85. Ans.(A) 1 day work of (A + B) = 1/20 part 1 day work of (B + C) = 1/30 part 1 day work of (C + A) = 1/24 part 1 day work of all three  $\left(\frac{1}{20} + \frac{1}{30} + \frac{1}{24}\right) \times \frac{1}{2}$ =  $\frac{6+4+5}{120\times 2} = \frac{1}{8\times 2} = \frac{1}{16}$ B alone taken time to complete the work  $=\frac{1}{16}-\frac{1}{24}$  $=\frac{3-2}{48}=\frac{1}{48}$ B alone will complete the work in 48 days. Time taken by C to work alone =  $\frac{1}{16} - \frac{1}{20}$  $= \frac{5-4}{80} = \frac{1}{80}$ Hence C alone will complete the work in 80 days Hence, B and C will complete their work in 48 and 80 days respectively. 86. Ans.(C) 1 day work of A and B (A + B) = 1/40 part 1 day work of B and C (B + C) = 1/30 part 1 day work of C and A (C + A) = 1/24 part 1 day work of C and A (C + 7) =  $\frac{1}{124}$  part 1 day work of three = (A+B+C) =  $\frac{1}{40} + \frac{1}{30} + \frac{1}{24} = (\frac{3+4+5}{120})\frac{1}{2} = \frac{1}{10} \times \frac{1}{2} = \frac{1}{20}$ One day's work of A alone =  $\frac{1}{20} - \frac{1}{30}$  $=\frac{3-2}{60} = \frac{1}{60}$ Hence A will complete the work in 60 days. B's 1 day work =  $\frac{1}{20} - \frac{1}{24} = \frac{6-5}{120} = \frac{1}{120}$ So B will complete the work in 120 days. 1 day work of C =  $\frac{1}{20} - \frac{1}{40} = \frac{2-1}{40} = \frac{1}{40}$ Hence C will complete the work in 40 days. 87. Ans.(A)  $(A + B + C) = \frac{1}{10} \dots \dots (i)$ 

1 day work of 
$$(A + B) = \frac{1}{12}$$
 ...... (ii)  
1 day work of  $(B + C) = \frac{1}{20}$  ...... (iii)  
From equation (ii) + equation (iii),  
 $\Rightarrow B + \frac{1}{10} = \frac{1}{12} + \frac{1}{20}$  {From equ (i}  
 $\Rightarrow B = \frac{1}{12} + \frac{1}{20} - \frac{1}{10}$   
 $\Rightarrow B = \left(\frac{5 + 3 - 6}{60}\right)$   
 $\Rightarrow B = \frac{2}{60}$   
 $\Rightarrow B = \frac{1}{30}$   
Hence B will complete the work in 30 days.  
**Ans.(D)**

Let, X men are needed to finish the considered task.

$$\frac{m_1h_1d_1}{w_1} = \frac{m_2h_2d_2}{w_2}$$
According to Question,  
 $16 \times 8 \times 12 \qquad x \times 8 \times 24$ 

1 x = 24

Thus, the number of persons required = 24 men

89. Ans.(C)

88.

Suppose it will take x days to complete the work According to Question -

$$10 \times 12 = \left(4 + \frac{15}{2.5}\right) \times x$$
  

$$10 \times 12 = \left(\frac{10 + 15}{2.5}\right) \times x$$
  

$$2.5 \times 10 \times 12 = 25 \times x$$
  

$$25 \times 12 = 25 \times x$$
  

$$x = 12$$
  
Therefore, it will take 12 day

I neretore, it will take 12 days to complete the work.

The time taken by N to complete the work

$$= 12 \times \frac{1}{2} = 6 \text{ days}$$
  
Nork done by both in 1 day  
1 1

$$= \frac{12}{12} + \frac{1}{6} = \frac{1}{12} + \frac{2}{12} = \frac{3}{12} = \frac{1}{4}$$

91. Ans.(D)  
Time taken by both  

$$= \frac{15 \times 18}{33} = \frac{15 \times 6}{11} = \frac{90}{11}$$
 days  
92. Ans.(D)

Time taken by L and M to complete the work together

$$= \frac{30 \times 90}{30 + 90} = \frac{30 \times 90}{120}$$
$$= \frac{45}{2} = 22\frac{1}{2} \text{ days}$$

93. Ans.(D)

94.

Work done by P and Q in 1 day

$$= \frac{1}{10} + \frac{1}{15}$$
$$= \frac{3+2}{30} = \frac{5}{30}$$
$$= \frac{1}{6}$$

Hence, work done by both in 5 days = 5/6

Ans.(A) Work done by A in 1 day = 1/10 part Work done by B in 1 day = 1/20 part Work done by both of them in 2 days  $-2(\frac{1}{2} + \frac{1}{2})$ 

$$= 2\left(\frac{1}{10} + \frac{1}{20}\right)$$
$$= 2\left(\frac{2+1}{20}\right) = 2\left(\frac{3}{20}\right) = \frac{3}{10}$$

95. Ans.(C)

Let the Kamal does a work in x days Ishaan does the same work in 2x day. According to Question – Work done by both of them in one day

 $1 \quad 2 \quad 1$ 

$$\frac{1}{x} + \frac{1}{x} = \frac{1}{29}$$
$$\frac{3}{x} = \frac{1}{29}$$
$$x = 29 \times 3$$
$$x = 87$$

## 96. Ans.(A)

Suppose G alone will complete that work in x days.

According to Question,

$$\therefore \frac{1}{50} + \frac{1}{x} = \frac{1}{30}$$
$$\Rightarrow \frac{1}{x} = \frac{1}{30} - \frac{1}{50} = \frac{5-3}{150}$$
$$x = \frac{150}{2} = 75 \text{ days}$$

Hence G alone will do that work in 75 days.

## 97. Ans.(D)

Ratio of efficiency of Amrit and Kushal = 2:1 ∴ Ratio of time = 1: 2 Suppose the time taken by Amrit and Kushal

to work alone is x and 2x respectively.

$$\frac{x \times 2x}{x + 2x} = 6$$
$$\frac{2x^2}{3x} = 6 \Rightarrow x = \frac{6 \times 3}{2}$$

x = 9 days

Thus, the time taken by Kushal to complete the work =  $9 \times 2 = 18$  days

### 98. Ans.(A)

Time taken for M and R to complete the work together

$$= \frac{5 \times 20}{5 + 20}$$
$$= \frac{100}{25}$$
$$= 4 \text{ days}$$
Ans.(A)

Work done by F in 1 day =  $\frac{1}{10} - \frac{1}{30}$ 

$$=\frac{3-1}{30}=\frac{2}{30}=\frac{1}{15}$$
 part

30 30 15 ' Hence F alone can do the same work in 15 days.

### 100. Ans.(A)

99.

Time taken by Q complete that work  $12 \times 30$ 

$$= \frac{12 \times 30}{30 - 12} \\ = \frac{12 \times 30}{18} \\ = 20 \text{ days}$$

### 101. Ans.(A)

One day's work of Jenny =  $\frac{1}{12} - \frac{1}{16}$ 

$$=\frac{4-3}{-1}$$

So Jenny will complete the work alone in 48 days.

## 102. Ans.(C)

Let P take x days to do the work and Q takes 2x days to do the work.

According to question -

$$\frac{1}{x} + \frac{1}{2x} = \frac{1}{22}$$

$$\frac{2+1}{2x} = \frac{1}{22}$$

$$x = 33$$

 $\therefore Q$  will take 66 days to complete the work.

### 103. Ans.(B)

Suppose Manoj will complete the work in x days

Therefore,  $\frac{1}{x} + \frac{1}{2x} = \frac{1}{22}$   $\frac{2+1}{2x} = \frac{1}{22}$   $\frac{3}{2x} = \frac{1}{22}$  2x = 66 x = 33Therefore, Manoj will complete the work in 33 days and Anurag =  $33 \times 2 = 66$  days 104. Ans.(B)

Suppose Ullash completes the work in x days and Tejas in 2 x days.

According to Question –

$$\frac{1}{x} + \frac{1}{2x} = \frac{1}{18}$$

$$\frac{2}{2x} + \frac{1}{18} = \frac{1}{18}$$

$$2x - 54$$

Hence, the time taken by Tejas to complete the work alone = 54 days

### 105. Ans.(B)

Let time taken by yash to complete the work be x days.

As Yash is twice as capable as Vivek.

So, time taken by Vivek to complete the same be 2x days.

By question,

$$\frac{1}{x} + \frac{1}{2x} = \frac{1}{23}$$
$$\Rightarrow \frac{3}{2x} = \frac{1}{23}$$

 $\Rightarrow x = \frac{1}{2}$  days Hence the time taken by Vivek to complete the work (2x)

 $=\frac{69}{2} \times 2 = 69$  days

### 106. Ans.(B)

Suppose Ankit completes a work in 2x day and Himanshu in x day. According to Question.

$$\frac{1}{x} + \frac{1}{2x} = \frac{1}{16}$$
$$\frac{2+1}{2x} = \frac{1}{16}$$
$$\frac{2x}{2x} = 48$$
$$x = 24$$

Hence, Ankit will complete that work in  $(2x) = 24 \times 2 = 48$  days.

### 107. Ans.(C)

X completes 25% = 1/4 of a work = in 20 days  $\therefore$  X will complete the entire work in 80 days Remaining work =  $1 - \frac{1}{4} = \frac{3}{4}$ Both together complete 3/4 = 15 days  $\therefore$  both together will complete the entire work =  $15 \times \frac{4}{3} = 20$  days  $\therefore$  1 day work of Y =  $\frac{1}{20} - \frac{1}{80}$ =  $\frac{4-1}{80} = \frac{3}{80}$ Y will complete that work in =  $\frac{80}{2} = 26\frac{2}{2}$  days

### 108. Ans.(B)

Suppose Anirudra finishes work in x day and ashwin 2x day.

So, one day work of Anirudra = 1/xAnd, one day's work of Ashivan = 1/2xAccording to Question - $\frac{\frac{1}{x} + \frac{1}{2x}}{\frac{2+1}{2x}} = \frac{1}{\frac{1}{2x}}$  $+\frac{1}{2x}=$ 1  $\frac{1}{14}$ 14  $\frac{3}{2x} = \frac{1}{14}$ x = 21So,  $2x = 2 \times 21$ = 42 daysSo Ashwin alone can do that work in 42 days. 109. Ans.(A) 1 day work of S and T = 1/50 part 20 day work of S and T =  $\frac{20}{50} = \frac{2}{5}$  part  $\therefore$  Remaining work =  $1 - \frac{2}{5} = \frac{3}{5}$  part 110. Ans.(C) 1 min work of X = 60/4 = 15 pages 1 min work of X and Y = 750/30= 25 pages  $\therefore$  1 min work of Y = 25 - 15 = 10 pages : The time taken by Y to copy 100 pages  $=\frac{100}{10}=10$  min Ans.(A) 111. x days work of A = 2/5Whole work = 5x/2Remaining work =  $1 - \frac{2}{5} = \frac{3}{5}$ Time taken by A and B to work 3/5 = 6 days The time taken by A and B to work together  $= 6 \times \frac{5}{3} = 10$  days According to Question,  $\frac{1}{\frac{5}{2}x} + \frac{1}{100} = \frac{1}{10}$  $\frac{2}{5x} + \frac{6}{100} = \frac{1}{10} \Rightarrow \frac{40 + 6x}{100x} = \frac{1}{10}$ 40 + 6x = 10x4x = 40x = 10 days112. Ans.(A) Work done by (P + Q) in 1 day = 1/12 Work done by (Q + R) in 1 day = 1/15 Work done by (R + P) in 1 day = 1/20 By adding,  $2 (P + Q + R) = \frac{1}{12} + \frac{1}{15} + \frac{1}{20}$  $= \frac{5 + 4 + 3}{60}$  $\frac{12}{60}$ =  $=\frac{1}{5}$ 

: Work done by (P + Q + R) in 1 day  $= \frac{1}{5\times 2}$   $= \frac{1}{10}$ Hence, time taken by (P + Q + R) to work

together = 10 days

### 113. Ans.(A)

Let the number of students leaving the camp to run the ration for 25 days = x By question,  $180 \times 20 = (180 - x) \times 25$  $180 - x = \frac{180 \times 20}{25}$  $180 - x = \frac{3600}{25}$ 180 - x = 144x = 180 - 144 = 36Therefore, 36 students will have to leave the camp.

### 114. Ans.(C)

One day's work of Smita = 1/12 part One day's work of Sam = 1/9 part  $\therefore$  4 days work of both = 4  $\left(\frac{1}{12} + \frac{1}{2}\right)$ 

$$= 4\left(\frac{3+4}{36}\right) = \frac{7}{9} \text{ part}$$
  
Remaining Work =  $1 - \frac{7}{9} =$ 

### 115. Ans.(D)

Work done by both of them in 20 days =  $\frac{20}{50} = \frac{2}{5}$  part

2

9

### 116. Ans.(A)

Let the number of excluded persons be x. According to Question,  $30 \times 20 = 6 \times 30 + (26 - 6) \times (30 - x)$  600 = 180 + 20(30 - x) 600 - 180 = 20(30 - x)  $(30 - x) = \frac{420}{20}$  (30 - x) = 21 x = 9Number of people leaving work = 9

### 117. Ans.(B)

Suppose Anil does the work for N days. Work done by Anil in 1 day = 1/14 part The work done by Rohit in 1 day = 1/21 part According to Question,  $\frac{N}{14} + \frac{N+3}{21} = 1$   $\frac{3N+2N+6}{42} = 1 \Rightarrow 5N+6 = 42$   $5N = \frac{42}{5} = 1 \Rightarrow 5N + 6 = 42$ So the number of days it takes to finish the work

$$=\frac{36}{5}+3=\frac{51}{5}$$

118. Ans.(C) Let the No. of additional employees = xAccording to Question,  $M_1 \times D_1 = M_2 \times D_2$  $(25 - 10) \times 42 = (30 + x) \times 10$  $15 \times 42 = 10 \times (30 + x)$  $30 + x = \frac{630}{10} \Rightarrow 63$ x = 63 - 30x = 33119. Ans.(A) One day work of Ravi, Rohan and Rajesh  $= \frac{1}{10} + \frac{1}{12} + \frac{1}{15} = \frac{6+5+4}{60} = \frac{15}{60}$  $= \frac{1}{10}$ Therefore, it will take 4 days for the three to complete the work together.

### 120. Ans.(B)

1 day work of A and B =  $\frac{1}{10} + \frac{1}{15} = \frac{1}{6}$  part  $\therefore$  4 days work of A and B =  $\frac{4}{6} = \frac{2}{3}$  part Remaining work =  $1 - \frac{2}{3} = \frac{1}{3}$  part 1 day work of B and C =  $=\frac{1}{15} + \frac{1}{20} = \frac{7}{60}$  part ∴ Time taken to work  $\frac{7}{60}$  part = 1 day ∴ Time taken to work  $\frac{1}{3}$  part = 1 ×  $\frac{60}{7}$  ×  $\frac{1}{3}$  $=\frac{20}{7}$  days Total time =  $\frac{20}{7} + 4 = \frac{48}{7}$  days 121. Ans.(D) Work done by P, Q and R in 1 day = 1/4Work done by P and Q in 1 day =  $\frac{1}{8} + \frac{1}{12}$  $=\frac{3+2}{24}=\frac{5}{24}$ Work done by R in 1 day  $\frac{1}{4} - \frac{5}{24}$  $=\frac{6-5}{24}=\frac{1}{24}$ Hence R alone will complete the same work in 24 days. 122. Ans.(B)

Suppose C alone will do that work in x days Work done by A in 1 day = 1/10The work done by B in 1 day = 1/20Work done by C in 1 day = 1/xAccording to Question,

$$\frac{1}{10} + \frac{1}{20} + \frac{1}{x} = \frac{1}{5}$$

$$\frac{1}{x} = \frac{1}{5} - \frac{1}{10} - \frac{1}{20}$$

$$\frac{1}{x} = \frac{4-2-1}{20}$$

$$\frac{1}{x} = \frac{1}{20}$$
**X** = 20 days
**123. Ans.(C)**
Work done by (A + B + C) in a 1 day
$$= \frac{1}{2} \left(\frac{1}{10} + \frac{1}{15} + \frac{1}{20}\right)$$

$$= \frac{1}{2} \times \left(\frac{6+4+3}{60}\right)$$

$$= \frac{13}{120}$$

$$\therefore \text{ One day work of B = One day work of (A + B + C) - One day work of (A + C)$$

$$= \frac{13}{120} - \frac{1}{20}$$

$$= \frac{13-6}{120}$$

$$= \frac{13-6}{120}$$

$$= \frac{13-6}{120}$$
Therefore B alone will finish the work in  $\frac{120}{7}$ 
days.
**124. Ans.(D)**

$$M_1 \times D_1 = M_2 \times D_2$$

$$16 \times 35 = 25 \times D_2$$

$$D_2 = \frac{16 \times 35}{25} \Rightarrow \boxed{D_2 = 22.4}$$
So it will take 22.4 days for 25 men to make model.
**125. Ans.(B)**

$$\therefore M_1D_1 = M_2D_2$$

$$\therefore 5 \times 9 = 3 \times D_2$$

$$\Rightarrow D_2 = \frac{5 \times 9}{3}$$

$$= 15 \text{ days}$$
**126. Ans.(B)**

$$M_1 = 30 \text{ Man, } M_2 = 40 \text{ Man}$$

$$H_1 = 5 \text{ hrs. } H_2 = 6 \text{ hrs}$$

$$D_1 = 16 \text{ days, } D_2 = ?$$

$$D_2 = \frac{M_1D_1H_1}{M_2H_2}$$

$$D_2 = \frac{30 \times 16 \times 5}{40 \times 6}$$

$$D_2 = in 10 \text{ days}$$
**127. Ans.(A)**

$$\because \frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$$
According to Question,

of (A +

 $\frac{(10M + 5W)60}{4}$ 1  $= \frac{(5M + 20W) \times D_2}{\frac{1}{2}} \dots \dots \dots \dots (i)$  $\therefore 1M = 2W \text{ (Given)}$ Putting 1 M = 2 W in equation (1),  $\frac{(10 \times 2W + 5W) \times 60}{4} = \frac{(5 \times 2W + 20W)2 \times D_2}{1}$  $25W \times 60 = 30W \times 2 \times D_2$  $D_2 = 25 \text{ days}$ 128. Ans.(B) Given that - $M_1 = 1, M_2 = 1$  $D_1 = 4, D_2 = ?$  $H_1 = 8, H_2 = 6$  $W_1 = 1W_2 = 7$ According to Question,  $\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 H_2}{W_2}$  $\frac{\frac{M_1 D_1 m_1}{W_1}}{W_1} = \frac{\frac{M_2 D_2 m_2}{W_2}}{W_2}$   $\frac{1 \times 4 \times 8}{1} = \frac{1 \times D_2 \times 6}{7}$   $D_2 = \frac{32 \times 7}{6}$   $D_2 = \frac{112}{3} = 37\frac{1}{3} \text{ days}$ **129**. Ans.(A) Given - $M_1 = 60$  worker,  $D_1 = 7$  days,  $W_1 = 120$  meter  $M_2 = 70$  worker,  $D_2 = 5$  days,  $W_2 = ?$  $\therefore \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2}$  $\therefore \frac{60 \times 7}{120} = \frac{70 \times 5}{W_2} \Rightarrow \frac{7}{2} = \frac{350}{W_2}$  $W_2 = 100$  meter **130**. Ans.(B) Given that - $M_1 = 12$  Man,  $D_1 = x$  day  $M_2 = 12 + 8 = 20$  Man,  $D_2 = 60$  day  $M_1D_1 = M_2D_2$  $12 \times x = 20 \times 60$  $x = \frac{20 \times 60}{12}$ x = 100 days131. Ans.(C)  $M_1 = 54$  Member  $H_1 = 35 \text{ hrs}$  $M_2 = 18$  Member  $H_2 = ?$  $H_2 = \frac{M_1 \times H_1}{M_2}$  $=\frac{54\times35}{18}$ = 105 hrs 132. Ans.(C)  $M_1D_1 = M_2D_2$ 

$$\Rightarrow 18 \times 7 = 15 \times D_2$$
$$D_2 = \frac{126}{15} = 8.4$$

133.

Ans.(A) Ratio of days =  $\frac{1}{5}$ :  $\frac{1}{5}$  ( $\because$  time  $\propto \frac{1}{1}$ ) = 7:5

134. Ans.(D) (Adil + Viren)'s 1 day work = 1/20..... (i) (Viren + Chirag)'s 1 day work = 1/50...(ii) (Adil + Chirag)'s 1 day work =1/40 part...(iii) Adding equation i, ii and iiii 2 (Adil + Viren + Chirag)'s 1 day work  $=\frac{1}{20}+\frac{1}{50}+\frac{1}{40}$  $=\frac{10+4+5}{200}=\frac{19}{200}$  part (Adil + Viren + Chirag)'s 1 day work =  $\frac{19}{400}$  $\therefore$  1 day work of Adil =  $\frac{19}{400} - \frac{1}{50}$  $=\frac{19-8}{400}=\frac{11}{400}$ . Time taken by Adil alone to complete the work =  $\frac{400}{11}$  days Now Viren's 1 day work =  $\frac{19}{400} - \frac{1}{40}$  $=\frac{19-10}{400}=\frac{9}{400}$  $\div$  Time taken by Viren to complete the work  $=\frac{400}{9}$  days : Required ratio =  $\frac{400}{11}$ :  $\frac{400}{9}$  = 9:11

#### 135. Ans.(A)

The time taken is inversely proportional to the rate of work. Let A and B complete the work separately in 5x and 8x days.

: Work done by both in 1 day =  $\frac{1}{40}$  Part According to Question,

$$\frac{\frac{1}{5x} + \frac{1}{8x} = \frac{1}{40}}{\frac{13}{40x} = \frac{1}{40}}$$
$$x = 13$$

: A alone will complete that work in 65 days.

136. Ans.(C)

Work efficiency  $\propto \frac{1}{\text{time}}$ 

P's efficiency =  $\frac{1}{60}$ 

Q's efficiency =  $\frac{1}{50}$ 

Hence, the ratio of work efficiency of P and Q

$$=\frac{\overline{60}}{\frac{1}{50}}=\frac{50}{60}=\frac{50}{60}$$

137. Ans.(A)

Given that Man Woman

Work efficiency = 3: 1 $\therefore$  Time = 1 : 3 : 5 women do work in 36 days. Time taken by 5 men to do work =  $36 \times \frac{1}{2}$ 

## 138.

= 12 daysAns.(A) The ratio of the work efficiency of Carpenter A and Carpenter B = 2:1∵ Ratio of time = 1: 2 According to Question,  $\frac{1}{x} + \frac{1}{2x} = \frac{1}{10} \Big[ \text{Time} = \frac{1}{\text{Work efficiency}} \Big]$  $\frac{\frac{2}{2} + 1}{\frac{2x}{2x}} = \frac{1}{10}$  $\frac{\frac{3}{2x}}{\frac{2x}{2x}} = \frac{1}{10}$  $\frac{1}{2x} = \frac{1}{10}$ x = 15Days taken by A = x = 15 days Days taken by  $B = 2x = 15 \times 2 = 30$  days 139. Ans.(A) Ratio of efficiency of Rahul and Raghav = 8:5 Number of flowers plucked by Raghav  $= 260 \times \frac{5}{13} = 100$ 140. Ans.(A) 150 second bill = 18 200 second bill =  $\frac{18 \times 200}{150}$ = Rs.24 141. Ans.(A) 2 min 30 seconds i.e. (120 + 30) seconds bill = Rs. 25 1 second bill =  $\frac{25}{150} = \frac{1}{6}$ Then. 3 min 20 seconds = 180 + 20 = 200 seconds 200 second bill =  $\frac{1}{6} \times 200 = \frac{100}{3} = 33.33$ Ans.(D)

### 142.

3 min 40 seconds =  $3 \times 60 + 40$ = 220 seconds  $2 \min 10 \text{ seconds} = 2 \times 60 + 10$ = 130 seconds : Fax bill of 220 second = Rs. 15 So, Fax bill of 130 seconds =  $\frac{15}{220} \times 130$  $=\frac{195}{22} = Rs.8.8$ 143. Ans.(A) Telephone bill of 3 min 20 seconds  $=\frac{10}{3}$  min = Rs. 35.50 Telephone bill of 1 min =  $\frac{35.50 \times 3}{10}$ Telephone bill of 5 min and  $30^{10}$  seconds =  $\frac{35.50 \times 3}{2} \times \frac{11}{2}$ 

$$=\frac{35.50\times3}{10}\times\frac{11}{2}$$

$$= 58.575 = Rs.58.6$$

144. Ans.(A) 5 min 40 seconds = 5x 60 + 40 = 340 seconds Bill of 340 second = 13 rupees Bill of 1 second =  $\frac{13}{340}$ Bill of 2 min 40 seconds (120 + 40 = 160 seconds) =  $\frac{13 \times 160}{340}$  = *Rs*. 6.1 145. Ans.(B) Suppose lentils are enough for x days to nourish the remaining children. According to Question,  $1200 \times 14 = (1200 - 180) \times x$  $\Rightarrow$  1200  $\times$  14 = 1020  $\times$  x 16800  $\Rightarrow x = \frac{10000}{1020}$  or  $x = 16.47 \approx 16.5$  days 146. Ans.(B) Number of letters read by Rekha in 25 min = 15So, Number of letters read in 45 min  $=\frac{15\times45}{25}=27$ 147. Ans.(A) 1 day's work of A = 1/5 part 1 day's work of B = 1/8 part Ratio of work / efficiency of A and B = 1/5: 1/8 A:B = 8:5Hence, A's share  $= \frac{6,760}{13} \times 8 = 520 \times 8 = Rs.4,160$ Ans.(D) 148. One day's work of  $P = \frac{1}{12}$  part One day's work of  $Q = \frac{1}{16}$  part Let Q works x days later with P. According to Question  $\frac{9}{12} + \frac{(9-x)}{16} = 1$  $\frac{36 + 27 - 3x}{48} = 1$ 63 - 3x = 4815 = 3xx = 5Hence Q should be work with P after 5 days. 149. Ans.(C) 1 day work by  $P = \frac{1}{10}$  part 4 day work by P =  $\frac{4}{10} = \frac{2}{5}$  part Remaining work  $1 - \frac{2}{5} = \frac{3}{5}$  p art Work donebu Q in 9 days =  $\frac{3}{5}$  part Work donebu Q in 1 day =  $\frac{5_3}{5\times9} = \frac{1}{15}$  part Work done by (P + Q)  $=\frac{1}{10}+\frac{1}{15}=\frac{2}{30}+\frac{3}{30}=\frac{5}{30}=\frac{1}{6}$  part Hence the time taken by P and Q to work together = 6 days150. Ans.(C)

1 day's work of P = 1/181 day's work of Q = 1/15 - 1/18 = 1/9010 day's work of (P+Q) = 10/15 Remaining work = 1 - 10/15 = 1/3Remaining work doe by P alone. So, time taken by P = (1/3)/(1/18) = 6 days Ans.(A) 1 hour work of P = 1/4 part... (i) 1 hour of (Q + R) = 1/3 part .... (ii) 1 hour work of (P + R) = 1/2 part.... (iii) From equation (i) and (iii) - $P + R = \frac{1}{2}$  $\Rightarrow \frac{1}{4} + R = \frac{1}{2}$  $\Rightarrow R = \frac{1}{2} - \frac{1}{4} = \frac{2-1}{4} = \frac{1}{4}$ ∴ From equation (iii) –  $Q + R = \frac{1}{3}$   $\Rightarrow Q = \frac{1}{3} - \frac{1}{4} = \frac{1}{12}$ Hence Q alone took time to finish this work = 12 daysAns.(C)  $E_1D_1 = E_2D_2$ , [E = Efficiency, D = Day] $130 \times 20 = D_2 \times 100$  $D_2 = 26$ Hence Q alone will do this work in 26 days. Ans.(A) Suppose Ravi will complete the work in x davs. By question -By question –  $\frac{1}{15} + \frac{1}{9} + \frac{1}{x} = \frac{1}{3}$   $\frac{1}{x} = \frac{1}{3} - \frac{1}{15} - \frac{1}{9}$   $\frac{1}{x} = \frac{15 - 3 - 5}{45} = \frac{15 - 8}{45}$   $\frac{1}{x} = \frac{7}{45}$  $x = \frac{45}{7}$  $x = 6\frac{3}{7}$  days Hence Ravi will complete the work in  $6\frac{3}{7}$  days. Ans.(C) Let P do the work in x days and Q does it in 2x days. According to Question - $\frac{\frac{1}{x} + \frac{1}{2x} = \frac{1}{7}}{\frac{3}{2x} = \frac{1}{7}}$  $x = \frac{21}{2}$ x = 10.5 daysSo P alone will do that work in 10.5 days.

155. Ans.(A)

151.

152.

153.

154.

Let the time taken by Q = xThen time taken by P = 1.5x1 day work of (P + Q) = $\frac{1}{x} + \frac{1}{1.5x} = \frac{1}{18}$   $\frac{1.5 + 1}{1.5x} = \frac{1}{18}$   $\frac{2.5}{1.5x} = \frac{1}{18}$   $x = \frac{18 \times 2.5}{1.5} = 30$ Hence Q alone will complete that work in 30 davs. 156. Ans.(C) One day's work of P = 1/12 part One day's work of Q = 1/16 part 4 days work of (P + Q) =  $\left(\frac{1}{12} + \frac{1}{16}\right) \times 4$  $= \frac{(4+3)}{48} \times 4 = \frac{7}{48} \times 4$  $=\frac{7}{12}$  part Remaining work =  $1 - \frac{7}{12} = 5/12$  part 157. Ans.(A) Suppose Ajay does work for x days. According to Question,  $\frac{x}{70} + \frac{x+47}{60} = 1$ 60x + 70(x+47) = 420060x + 70x + 3290 = 4200130x = 4200 - 3290130x = 4200130x = 910 $x = \frac{910}{130} = 7$ Hence Ajay left work after 7 days. 158. Ans.(B) Let total work finished in x days According to Question,  $\frac{2}{10} + \frac{x-3}{12} + \frac{x}{15} = 1$   $\frac{1}{5} + \frac{x-3}{12} + \frac{x}{15} = 1$   $\frac{5(x-3) + 4x}{60} = \frac{4}{5}$  9x - 15 = 489x = 63x = 7 daysTherefore, the work will be completed in 7 days. 159. Ans.(C) One day's work of P = 1/6 part One day's work of Q = 1/8 part According to Question,  $\frac{1}{P} + \frac{1}{O} + \frac{1}{R} = \frac{1}{3}$  $\Rightarrow \frac{1}{6} + \frac{1}{8} + \frac{1}{R} = \frac{1}{3}$  $\Rightarrow \frac{1}{R} = \frac{1}{3} - \left(\frac{7}{24}\right)$  $\frac{1}{R} = \frac{1}{24}$ 

Work efficiency ratio of P, Q, R =  $\frac{1}{6}:\frac{1}{8}:\frac{1}{24}$  =  $\overline{P:Q:R} = 4:3:1$ Wages of  $R = 3200 \times \frac{l}{8} = Rs.400$ 160. Ans.(A) 1 day work of (P + Q) = 1/151 day work of (Q + R) = 1/121 day work of (P + R) = 1/202 (P + Q + R)'s work done in 1 day  $= \frac{1}{15} + \frac{1}{12} + \frac{1}{20}$  $= \frac{\frac{13}{4} + \frac{5}{5} + \frac{3}{3}}{\frac{60 \times 2}{60}} = \frac{12}{\frac{60 \times 2}{60}} = \frac{1}{\frac{5}{5} \times 2} = \frac{1}{\frac{10}{10}}$ Hence time taken for all three (P + Q + R) to finish work = 10 days 161. Ans.(B) Work done by (P + Q) in 8 days = 1/8Work done by (Q + R) in 12 days = 1/12 Work done by (P + Q + R) in 6 days = 1/6 Work done by R in 1 day  $\frac{1}{6} - \frac{1}{8}$  $=\frac{4-3}{24}=\frac{1}{24}$ Work done by P in 1 day  $\frac{1}{6} - \frac{1}{12}$  $=\frac{4-2}{24}=\frac{2}{24}=\frac{1}{12}$ (P + R) work done by both  $\frac{1}{24} + \frac{1}{12}$  $= \frac{1+2}{24} \Rightarrow \frac{3}{24} = \frac{1}{8} \text{ days}$ 162. Ans.(C Work done by (P + Q) in 1 day = 1/30 Work done by (Q + R) in 1 day = 1/24 Work done by (R + P) in 1 day = 1/20  $2(P + Q + R) = \frac{1}{30} + \frac{1}{24} + \frac{1}{20}$  $2(P + Q + R) = \frac{4 + 5 + 6}{120} = \frac{15}{120}$ (P + Q + R)'s one day work = 1/16 part So, time taken by (P + Q + R) to work together = 16 days163. Ans.(D) 1 day work of P + Q + R + S = 1/20 part 1 day work of (P + Q) = 1/50 part 1 day's work of R = 1/60 part 1 day's work of S =  $\frac{1}{20} - \frac{1}{50} - \frac{1}{60}$ =  $\frac{15 - 6 - 5}{300} = \frac{4}{300}$ So S alone will complete this work in 75 days. 164. Ans.(B) If P, Q and R finish a work in 1 day. 1 day's work of P and Q = 70% = 7/10 1 day work by Q and R =  $50\% = \frac{1}{2}$ : 1 day work of R =  $1 - \frac{7}{10} = \frac{3}{10}$ 

Hence R alone will complete the work in  $\frac{10}{2}$  $= 3\frac{1}{2}$  day. Again 1 day work of P =  $1 - \frac{1}{2} = \frac{1}{2}$ Hence P alone will complete the work in 2 days. Again 1 day work of  $Q = \frac{1}{2} - \frac{3}{10} = \frac{2}{10} = \frac{1}{5}$ Hence Q alone will complete the work in 5 days. Thus, first P will complete the work. 165. Ans.(C) Given that - $M_1 = 200, H_1 = 8, D_1 = 6$  $M_2 = 300, H_2 = 6, D_2 = ?$ Formula - $M_1 D_1 H_1 = M_2 D_2 H_2$  $200 \times 8 \times 6 = 300 \times 6 \times D_2$  $D_2 = \frac{16}{3}, D_2 = 5\frac{1}{3}$  days 166. Ans.(D) By the proportionality rule,  $M_1D_1 = M_2D_2$  $250 \times 30 = 200 \times D_2$  $\therefore D_2 = 37.5 \text{ days}$ Hence, the material will last in = 37.5 - 30 = 7.5 more days. 167. Ans.(C)  $M_1 H_1 D_1 = M_2 H_2 D_2$  $16 \times 7 \times 48 = M_2 \times 12 \times 32$  $M_2 = 14$ Therefore, 14 more women will be required to finish the work in 32 days. 168. Ans.(A)  $M \rightarrow Man$  $D \rightarrow \text{Days}$  $M_1D_1 = M_2 \times D_2$  $36 \times 25 = 15 \times x$  $x = \frac{36 \times 25}{15} = 60$  days 169. Ans.(C) M = Man B = Boys $(9M + 12B) \times 4 = (4M + 16B) \times 6$  $(9M + 12B) \times 2 = (4M + 16B) \times 3$ 18M + 24B = 12M + 48B18M - 12M = 48B - 24B6M = 24BΜ 4  $\frac{m}{B} = \frac{\pi}{1}$ Total work =  $(9M + 12B) \times 4$  $= (36 + 12) \times 4$  $= 48 \times 4$ = 192

 $(6M + 24B) \times days = 192$  $(24 + 24) \times days = 192$ days =  $\frac{192}{24 + 24} = \frac{192}{48} = 4$ 170. Ans.(C)  $\therefore A:B = \frac{1}{8}:\frac{1}{16} = 2:1$ 171. Ans.(D)  $\therefore M_1 D_1 = M_2 D_2$  $20W \times 16 = 16M \times 15$  $\frac{1M}{1W} = \frac{20 \times 16}{16 \times 15} = \frac{4}{3}$  $M \cdot W = 4 \cdot 3$ 172. Ans.(A) According to Question, (6M + 2B) = (1M + 1B)5 $\Rightarrow 6M + 2B = 5M + 5B$  $\Rightarrow 1M = 3B$ M:B = 3:1173. Ans.(B) According to Question, (4 boys + 6 girls) 8 = (3 boys + 7 girls) 1032 boys + 48 girls = 30 boys + 70 girls2 boys = 22 girls $\frac{1 \text{ boys}}{1 \text{ girls}} = \frac{22}{2} = \frac{11}{1} = 11:1$ 174. Ans.(B) Formula:  $M_1D_1 = M_2D_2$ (6 Man + 8 Boys) 10 = (26 Man + 48 Boys) 2 60 Man + 80 Boys = 52 Man + 96 Boys 60 Man - 52 Man = 96 Boys - 80 Boys Man = 16 Boys Man 16 2  $\frac{10}{\text{Boys}} = \frac{10}{8} =$ 1 Man : Boys = 2: 1 175. Ans.(C) P work 2/5 part in = 10 days So P will do the complete work  $= 10 \times \frac{5}{2} = 25$  days By question –  $\frac{(P+Q)5}{1} = \frac{P \times 25}{1} \left[ \because \frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2} \right]$ 15P + 15Q = 25P150 = 10P $\frac{P}{Q} = \frac{15}{10}$  $\frac{P}{Q} = \frac{3}{2}$ Ratio of Work efficiency = 3: 2

## 12. (Alligation)

7.

1. 4/5 of the milk-water mixture was milk. If 5 liters of water is added to this 20 liters mixture, what will be new percentage of milk in new mixture.

 RRB Group-D - 19/11/2022 (Shift-III)

 (A) 64
 (B) 75

 (C) 36
 (D) 44

2. The ratio of milk and water in a mixture of 35 liters is 4 : 1. 7 liters of water is added to this mixture, then find the new ratio of milk and water?

 RRB Group-D - 16/10/2018 (Shift-I)

 (A) 2:7
 (B) 2:1

 (C) 2:3
 (D) 1:3

**3**. Gold is 17 times heavier than water and 9 times heavier than copper. In what proportion should the metals be mixed, so that they become 12 times heavier than water?

RRB Group-D - 11/10/2018 (Shift-III)

(A) 4 : 3	<b>(B)</b> 7 : 1
(C) 3 : 5	<b>(D)</b> 3 : 2

4. The ratio of honey and water in two containers is 4 : 3 and 6 : 7 respectively. How much of the mixture (in liters) from the second container is combined with the 3.5 liter mixture from the first container to get the same ratio of honey and water in the second container?

 RRB Group – D- 30/10/2018 (Shift-III)

 (A) 6 liter
 (B) 6.5 liter

 (C) 7 liter
 (D) 7.5 liter

5. The initial ratio of sugar and flour in a food item was 17:28. Elizabeth added so much flour to this 27 kg food that the ratio of sugar and flour became 2: 5. How much flour did Elizabeth add later?

 RRB Group-D - 19/11/2022 (Shift-II)

 (A) 8.5kg
 (B) 8.7kg

 (C) 8.3kg
 (D) 8.1kg

6. A bakery sells bread, cakes, puffs and all cereal biscuits. Every day, he uses 9kg of flour for all purposes to make the above items. If 20% of all-purpose flour used to make cake, what is the actual quantity (in g) of all-purpose flour used to make the cake?

	RRB Group-D - 26/11/2022 (Shift-I)
<b>A)</b> 1800	<b>(B)</b> 2000
<b>C)</b> 1500	<b>(D)</b> 1000

What quantity of copper will be there in a 1 kg alloy, if the alloy contains 32% copper, 40% zinc and the remaining gilt?

RRB G	roup-D-18/11/2022 (Shift-II)
<b>(A)</b> 400 kg	<b>(B)</b> 280 kg
<b>(C)</b> 240 kg	<b>(D)</b> 320 kg

8. If the price of 1.25 kg potato and 2.015 kg tomato is Rs. 35.26, what will be the average price of potato and tomato together (up to two place of decimal)?

RRB G	Group-D - 28/11/2018 (Shift-I)
(A) rs.12.32	<b>(B)</b> rs.14.04
(C) rs.10.80	<b>(D)</b> rs.11.95

**9.** A person makes a loss of 20% by selling Type A tea at the rate of Rs. 160 per kg. The same person gets 20% profit on selling Type B tea at the rate of Rs. 400 per kg. To get 25% profit, in which ratio should type A and type B tea should be mixed and sold at Rs. 300 per kg?

	RRB Group-D -12/10/2018 (Shift-II)
<b>(A)</b> 4: 5	<b>(B)</b> 3: 2
(C) 2: 1	<b>(D)</b> 1: 2

**10.** There are two mixtures of syrup, the ratio of water and syrup in the first mixture is 4: 3 and in the second mixture their ratio is 3: 2, both are mixed in the ratio of 1: 2 respectively. What will be the ratio of water and syrup in the prepared mixture?

RRB C	Group-D - 08/10/2018 (Shift-I)
( <b>A)</b> 2: 1	<b>(B)</b> 62: 43
<b>C)</b> 58: 47	<b>(D)</b> 9: 8

**11**. Two different mixtures of water and syrup in which the ratio of water and syrup are 4: 1 and 3: 1 respectively, they are mixed in the ratio of 1: 2. What is the ratio of water and syrup in the final mixture?

	RRB ALP &	Tec. (20-08-18	Shift-III)
(A) 19 : 1	11	<b>(B)</b> 23 : 7	
(C) 17 : 1	13	<b>(D)</b> 4 : 3	

**12.** There are two mixtures of water and squash. The first mixture has a water-squash ratio of 5 : 1. And the other has a ratio of 3 : 1. These are mixed in the ratio 3 : 2. What is the ratio of water and squash in the final mixture?

**RRB ALP & Tec. (17-08-18 Shift-III)** (A) 5 · 3 (B) 10 : 9

(A) 5 : 3	(B) 10 :
(C) 6 : 1	<b>(D)</b> 4 : 1

**13.** In a milk water mixture 2/3 part is milk. The total volume of the mixture is 21 liters. If 4 liters of water is added to it, what will be the percentage of milk in the mixture?

	RRB ALP & Tec. (09-08-18 Shift-II)
<b>(A)</b> 44	<b>(B)</b> 56
<b>(C)</b> 14	<b>(D)</b> 11

**14.** The ratio of milk and water in two pots is 2 3 and 7 : 3, find the ratio of milk and water in the new mixture obtained (in the third new vessel) after mixing the mixture of the two pots.

RRB NTPC 11/08/2022 Shift: 1

<b>(A)</b> 2 : 1	<b>(B)</b> 11 : 9
(C) 3 :2	<b>(D)</b> 2 : 3

**15.** A mixture of 5 liters of sugar contains 6% sugar, out of which 1 liter of water becomes steam. Find the percentage of sugar in the remaining mixture.

RRB NTPC 23/07/2022 Shift: 3

<b>(A)</b> 5%	<b>(B)</b> 7.5%
(C) 6%	<b>(D)</b> 4%

**16**. In what ratio should 30% potassium nitrate solution be mixed with 60% potassium nitrate solution so that the resulting solution contains 40% potassium nitrate?

	RRB NTPC 18.04.2016 Shift : 2
(A) 2 : 1	<b>(B)</b> 3 : 1
(C) 1 : 3	<b>(D)</b> 4.5

**17**. The mixture of sugar and water in two pots, A and B, is in the ratio 4: 5 and 3: 2. In what proportion can these two mixtures be mixed to obtain a new mixture of half sugar and half water?

### RRB NTPC 02/02/2021Shift: 3

<b>(A)</b> 2 : 3	<b>(B)</b> 9 : 5
( <b>C)</b> 7 : 5	<b>(D)</b> 2 : 7

**18**. 30 liters of salt solution contains 5% salt. How many liters of water should be added to this

solution so that the resulting solution has 3% salt content?

	RRB NTPC 09/05/2022 Shift: 3
(A) 20 liter	( <b>B</b> ) 25 liter
(C) 30 liter	(D) 35 liter

**19.** In what proportion should a grocer mix wheat of Rs 2.25 per kg and wheat of Rs 2.75 per kg so that the mixture obtained becomes Rs 2.534 per kg (approx).

	RRB NTPC 18.04.2016 Shift: 3
(A) 2 : 3	<b>(B)</b> 3 : 2
(C) 5 : 3	<b>(D)</b> 3 : 4

**20.** In what proportion should Darjeeling tea costing Rs.400 per kg be mixed with Assam tea costing Rs.300 per kg, so that there is a profit of 20% on selling the mixture at the rate of Rs.408 per kg –

RRB N	NTPC	09/05/2022	Shift: 1	
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<b>(A)</b> 1 : 2	<b>(B)</b> 2 : 3
<b>(C)</b> 2 : 5	<b>(D)</b> 1 : 6

21. Quality A and B rice, priced at Rs 35 per kg and Rs 65 per kg respectively, are mixed. The new average price of the mixture obtained is Rs 50 per kg. What is the ratio of the quantity of A and B in the mixture?

### RRB NTPC 02/02/2021Shift: 2

<b>(A)</b> 1: 2	<b>(B)</b> 1: 3
(C) 1: 1	<b>(D)</b> 1: 5

**22.** In two containers, acid and water are mixed in the ratio of 3: 1 and 5: 3 respectively. To obtain a new mixture, in which the ratio of acid and water is 2: 1, in what ratio should the two types of mixture be mixed?

1110 19900 011	
	RRB NTPC 02/02/2021Shift: 1
<b>(A)</b> 1:2	<b>(B)</b> 2:1
<b>(C)</b> 2:3	<b>(D)</b> 3:2

**23.** Two alloys P and Q are made by mixing silver and aluminum metals in the ratio of 5:3 and 7:9 respectively. If equal amounts of alloys have been melted to form a new alloy R, then the ratio of silver and aluminum in R will be-

## RRB NTPC 02/02/2021Shift: 3

<b>(A)</b> 17: 15	<b>(B)</b> 15: 17
<b>(C)</b> 13: 17	<b>(D)</b> 17: 13

24. A tea trader has 3 varieties of tea to sell. Brand A was sold at Rs 252 per kg, Brand B at Rs 280 per kg and Brand C at Rs 316 per kg. At the end of the year, he finds that he has left 274 kg of brand A tea, 197 kg of brand B and 54 kg of brand C tea. He mixes all three and sells the mixture at the rate of Rs. 283.50 per kg. What was his profit or loss on the sale?

RRB NTPC 09/05/2022 Shift: 1

(A) rs. 7565.50 profit	(B) rs. 7565.50 loss
(C) rs. 8232.40 profit	(D) rs. 8125.30 loss

25. Two varieties of salt T and S, whose purchase prices are Rs.25 and Rs.35 per kg respectively, are mixed in the ratio of 4: 6. The mixed variety is sold at the rate of Rs.37 per kg. What is the approximate profit percentage?

	RRB NTPC 19.01.2017 Shift: 2
<b>(A)</b> 20%	<b>(B)</b> 33%
<b>(C)</b> 25%	<b>(D)</b> 38%

**26.** In a bucket two liquids A and B are mixed in the ratio 7 : 5. If 9 liters of the mixture is replaced by 10 liters of B liquid, then the ratio of the two liquids becomes 7 : 9. How many liters was the liquid A in the bucket?

RRB F	Paramedical - 21/07/2018 Shift-II)
<b>(A)</b> 25	<b>(B)</b> 22.75
<b>(C)</b> 31	<b>(D)</b> 21

**27.** A jar of milk contains 40% water. One part of it is replaced by another milk, which has 19% water, now the percentage of water is 26%. What quantity of milk was replaced?

•	RRB JE - 25/05/2019 (Shift-II)
<b>(A)</b> 2 / 3	<b>(B)</b> 2 / 5
(C) 1 / 5	<b>(D)</b> 1 / 3

- **28.** Four pots of equal size are filled with a mixture of milk and water. The quantity of milk in all four pots is 80% 75%, 60% and 50% respectively. If all four mixtures are mixed,
  - **Solution**

1. Ans.(A)

According to Question – The quantity of milk in the mixture =  $20 \times \frac{4}{5} = 16$  liters. The quantity of water in the mixture = 20 - 16 = 4 liters. The ratio of milk and water in the mixture after adding 5 litre water. = 16: (4 + 5) = 16: 9The percentage of milk in the new mixture =  $\frac{16}{25} \times 100 = 16 \times 4 = 64\%$  what will be the ratio of water and milk in the mixture obtained?

	RRB JE – 26/05/2019 (Shift – I)
(A) 13 : 27	<b>(B)</b> 27 : 53
(C) 3 : 5	<b>(D)</b> 29 : 51

**29**. From a container with 50 liters of pure milk, 10 liters of milk is extracted and 10 liters of water is poured. If this process is repeated three times, what is the ratio between water and milk after all?

	RRB JE - 27/05/2019 (Shift-III)
(A) 7 : 16	<b>(B)</b> 9 : 16
(C) 61 : 64	<b>(D)</b> 1 : 4

**30**. To dilute 16 liters of milk containing 10% water, how many liters of water should be added to it, so that the amount of water in the mixture is 20%?

	RRB JE - 01/06/2019 (Shift-I)
(A) 2 liter	<b>(B)</b> 4 liter
(C) 1 liter	(D) 3 liter

**31.** The two varieties of rice are valued at Rs.50 per kg and Rs.60 per kg respectively, which are mixed in some proportion, and the mixed rice is sold at Rs.70 per kg, to yield a 20% profit. What is the ratio in which both rice varieties are mixed?

	RRB JE - 31/05/2019 (Shift-I)
(A) 3 : 5	<b>(B)</b> 2 : 5

(~) 0.0	
<b>(C)</b> 1 : 5	<b>(D)</b> 2 : 7

**32.** Two types of rice, priced at Rs.38 per kg and Rs.42 per kg, are mixed in the same quantity. And are sold at a rate of Rs.45 per kg. Find the percentage profit.

	RRB JE - 28/05/2019 (Shift-II)
<b>(A)</b> 10%	<b>(B)</b> 12.5%
<b>(C)</b> 18%	<b>(D)</b> 15%

## 2. Ans.(B)

According to Question -

The quantity of milk in the mixture =  $\frac{4}{5} \times 35 = 28$  liters.

Water quantity in the mixture =  $\frac{1}{5} \times 35$  liters. The ratio of milk and water in the mixture after

adding 7 litre water. = 28:(7 + 7) = 2:1

3. Ans.(C)

According to Question -



To be mixed in the ratio of 3: 5.

4. Ans.(B) Let the total mixture taken from the second container be x liters According to Question –  $\frac{3.5 \times \frac{7}{7} + \frac{6x}{13}}{3.5 \times \frac{7}{7} + \frac{7x}{13}} = 1$ 

$$\frac{2 + \frac{5x}{13}}{\frac{3}{2} + \frac{7x}{13}} = 1$$
  
$$\frac{26 + 6x}{39 + 14x} = \frac{1}{2}$$
  
$$52 + 12x = 39 + 14x$$
  
$$2x = 13$$
  
$$x = 6.5 \text{ Liter}$$

### 5. Âns.(B)

Total quantity of food item = 27 kg.

Ratio of sugar and flour = 17: 28  $\therefore$  Quantity of Sugar =  $\frac{17 \times 27}{17 + 28} = \frac{17 \times 27}{45} = \frac{51}{5}$  kg  $\therefore$  Quantity of flour =  $\frac{28 \times 27}{17 + 28} = \frac{28 \times 27}{45} = \frac{84}{5}$  kg Suppose if it contains (x) kg. When the flour is mixed,

Then, 
$$\frac{\frac{5}{5}}{\frac{84}{5}+x} = \frac{2}{5}$$
  
 $\Rightarrow \frac{51}{84+5x} = \frac{2}{5}$   
 $\Rightarrow 168 + 10x = 255$   
 $\Rightarrow 10x = 255 - 168 = 87$   
So,  $x = 8.7$  kg.

6. Ans.(A)

Actual quantity of flour for making cake = x kg  $x = \frac{9 \times 20}{100} = \frac{9}{5} = 1.8 kg$ = 1800 gm

## 7. Ans.(D)

Alloy = 1 kg = 1000Let the alloy = 100%



Quantity of Copper =  $1000 \times \frac{32}{100} = 320g$ 8. Ans.(C) Price of 1.25 kg potato and 2.015 kg tomato = Rs. 35.26 Average price =  $\frac{35.26}{1.25 + 2.015}$  $=\frac{35.26}{3.265}=Rs.10.792$ = Rs. 10.809. Ans.(C) Let A be the x part and B the y part. According to Question,  $\frac{160x + 400y}{x + y} \times \frac{125}{100} = 300$  $\frac{160x + 400y}{x + y} \times \frac{5}{4} = 300$ x + y160x + 400y = 240(x + y)(240 - 160)x = (400 - 240)y80x = 160y $x = 2y, \frac{x}{y} = \frac{2}{1}$ x:y = 2:110. Ans.(B) The amount of water in the first mixture =  $\frac{4}{\pi}$ And quantity of syrup =  $\frac{3}{7}$ 

Quantity of water in the second mixture =  $\frac{3}{r}$ 

And the quantity of syrup =  $\frac{2}{r}$ 

According to Question,

By mixing the two mixtures in the ratio 1:2

 $\Rightarrow \frac{\frac{4}{7} \times 1 + \frac{3}{5} \times 2}{\frac{3}{7} \times 1 + \frac{2}{5} \times 2} = \frac{\frac{4}{7} + \frac{6}{5}}{\frac{3}{7} + \frac{4}{5}} = \frac{20 + 42}{15 + 28} = \frac{62}{43}$ 

Required ratio = 62:43 **Ans.(B)** 

11.

Suppose the ratio of water and syrup in the final mixture is x: y.

$$\frac{\frac{4}{5}}{x + y}$$

$$\frac{\frac{3}{4}}{\frac{x + y}{x + y}} = \frac{3}{4}$$

$$\frac{\frac{3}{4}}{\frac{x + y}{x + y}} = \frac{1}{5} = 1:2$$

$$= \frac{\frac{3}{4} - \frac{x}{x + y}}{\frac{x}{x + y} - \frac{4}{5}} = \frac{1}{2}$$

$$= \frac{3}{2} - \frac{2x}{x + y} = \frac{x}{x + y} - \frac{4}{5}$$

$$= \frac{3x}{x + y} = \frac{3}{2} + \frac{4}{5}$$

$$= \frac{3x}{x + y} = \frac{23}{10}$$

$$= \frac{x}{x + y} = \frac{23}{30}$$

x = 23 and x + y = 3023 + y = 30y = 7Therefore, Ratio = x: y = 23:712. Ans.(D) According to Question -Required ratio  $= \left(\frac{5}{6} \times 3 + \frac{3}{4} \times 2\right) : \left(\frac{1}{6} \times 3 + \frac{1}{4} \times 2\right)$  $= \left(\frac{5}{2} + \frac{3}{2}\right) : \left(\frac{1}{2} + \frac{1}{2}\right) = \frac{8}{2} : \frac{2}{2} = 4:1$ 13. Ans.(B) The amount of milk in the mixture  $=\frac{2}{2} \times 21 = 14$  liters and the amount of water = 7 liters According to Question, % of Milk =  $\frac{\text{Quantity of milk}}{\text{Amount of total mixture}} \times 100$  litre. = 14/25 × 100 = 56% [: Total mixture after mixing water = 21 + 4 = 25 liter] Percent of milk = 56% 14. Ans.(B) Required amount  $= \left(\frac{2}{5} + \frac{7}{10}\right): \left(\frac{3}{5} + \frac{3}{10}\right)$  $= \frac{11}{10}: \frac{9}{10} = 11: 9$ 15. Ans.(B) Quantity of sugar =  $\frac{5\times 6}{100}$  = 0.3 liter Remaining mixture = 4 liters The percentage of sugar in the remaining mixture =  $\frac{0.3}{4} \times 100$ = 7.5% 16. Ans.(A) According to Question - $P_1$  $P_2$ 30 60 40 20 10 Required ratio = 20: 10 = 2: 117. Ans.(B)

According to Question -





The total price of a mixture of teas of brand A, B and C =  $(274 + 197 + 54) \times 283.50$  $= 525 \times 283.50 = \text{Rs}.148837.5$ Thus, the total profit on sales = 148837.5 - 141272 = 7565.50 Rs. Ans.(A) Cost price of salt T =  $25 \times 4 = 100$ Cost price of salt  $S = 35 \times 6 = 210$ Total cost price = Rs.310 Total selling price =  $37 \times 10 = Rs.370$ . Selling price =  $\frac{Cost \ price(100 + P/L)}{Cost \ price(100 + P/L)}$ 100  $\Rightarrow 370 = \frac{310 \times (100 + P\%)}{100}$ 3700 - 3100 = P%31 600 = P%31 P% = 19.35%P% = 20% (approximately) Ans.(B) First condition Fluids A and B are respectively 7x Liter, 5x l iter After extraction of 9 litres mixture remaining mixture = (12x - 9) liters The amount of A in this mixture =  $(12x - 9) \times \frac{7}{12} = \left(\frac{28x - 21}{4}\right)$  litre And quantity of B =  $(12x - 9) \times \frac{5}{12}$ Again, after adding 10 liter of liquid B in mixture  $= (12x - 9) \times \frac{5}{12} + 10 = \frac{(60x - 45)}{12} + 10$  $= \frac{60x - 45 + 120}{12} = \frac{60x + 75}{12} = (\frac{20x + 25}{4})$ Second condition:  $\therefore \left(\frac{28x-21}{4}\right) \times \frac{4}{20x+25} = \frac{7}{9}$  $\Rightarrow 7(20x + 25) = 9(28x - 21)$ 140x + 175 = 252x - 189175 + 189 = 252x - 140x364 = 112xx = 3.25quantity of  $A = 7x = 7 \times 3.25 = 22.75$  litre Ans.(A) Water (I) Water (II) 40% 19% 269

14

2

25.

26.

27.

7

1

ż

Quantity of milk =  $\frac{2}{3}$ 28. Ans.(B) I II III IV (M) Milk  $\rightarrow$  80 75 60 50 (W) water  $\rightarrow 20254050$ M:WM:WM:WI = 80:20 II = 75:25 III = 60:40 $= 4:1 \\ M:W$ = 3:1= 3:2IV = 50:50= 1:1 According to Question,  $M:W = \left(\frac{4}{5} + \frac{3}{4} + \frac{3}{5} + \frac{1}{2}\right): \left(\frac{1}{5} + \frac{1}{4} + \frac{2}{5} + \frac{1}{2}\right)$  $\therefore M: W$  $= \left(\frac{16 + 15 + 12 + 10}{20}\right) : \left(\frac{5 + 4 + 8 + 10}{20}\right)$ = 53:27Or, W: M = 27 : 53 **29**. Quantity of pure milk in container  $= 50 \left(1 - \frac{10}{50}\right)^3$  $= 50\left(1-\frac{1}{5}\right)^{3}$  $= 50 \times \frac{4}{5} \times \frac{4}{5} \times \frac{4}{5} = \frac{128}{5}$ Quantity of water =  $50 - \frac{128}{5}$  $=\frac{\frac{250-128}{5}}{5}=\frac{122}{5}$ Water : Milk =  $\frac{122}{5}:\frac{128}{5}$ = 61:64 30. Ans.(A) Let the mixture be added x liters of water Quantity of milk at beginning = Quantity of milk at the end

 $16 \times 90 = (16 + x) \times 80$ 

144 = 128 + 8x

31. Ans.(C) According to Question –



32. Ans.(B)

Price of first type of rice = Rs 38 / kg. Price of second type of rice = Rs 42 / kg. Cost price of both types of rice = (38 + 42) = Rs. 80. Sale price of both types of rice = 45 × 2 = 90. Profit = Selling price - Cost price = 90 - 80 = 10 Profit% =  $\frac{\text{Profit}}{\text{Cost price}} \times 100$ =  $\frac{10}{80} \times 100 = 12.5\%$ 

## 13. (Pipe & Cistern)

1. If two flood gates A and B work together, the reservoir will be filled in 6 hours. Gate A fills the reservoir 5 hours faster than Gate B. In how many hours does the flood Gate A fill the reservoir?

	RRB Group-D - 19/11/2022 (Shift-I)
(A) 5 hr	<b>(B)</b> 10 hr
(C) 7 hr	<b>(D)</b> 13 hr

2. Pipes A and B can fill a water tank in 30 and 45 min respectively while pipe C can drain all water in 60 min. If all three pipes are opened simultaneously, how much time will it take to fill the empty tank?

RRB Group-D - 04/10/2018 (Shift-II)

(A)  $(34 + \frac{1}{2})$  min (B) 60 min (C)  $(18 + \frac{5}{7})$  min (D)  $(25 + \frac{5}{7})$  min

**3.** Pipe A can fill an empty tank in 14 hours. Together with pipe B, it can fill empty tank in 12 hours. Therefore, pipe B alone can fill empty tank in ------ hours.

 RRB Group-D - 23/11/2022 (Shift-I)

 (A) 84
 (B) 75

 (C) 78
 (D) 77

4. One pipe can fill a tank in 12 hours and another pipe can fill it in 15 hours. If both pipes are opened simultaneously, how long will it take to fill the tank in half?

RRB Group- D-15/10/2018 (Shift-I)

(A) $4\frac{2}{3}$ hr	<b>(B)</b> 3 $\frac{1}{3}$ hr
(C) $6\frac{2}{3}$ hr	<b>(D)</b> $2\frac{1}{3}$ hr

5. Pipes J and K can fill a tank in 15 min and 20 min respectively. If both pipes are opened simultaneously, how long will it take to fill the tank?

RRB Group-D - 11/10/2018 (Shift-III)

(A) $17\frac{1}{2}$ min	<b>(B)</b> 11 $\frac{3}{5}$ min
(C) $15\frac{2}{3}$ min	<b>(D)</b> 8 $rac{4}{7}$ min

6. Pipes A and B can fill an empty tank in 10 hours and 15 hours respectively. In how many hours both pipes can fill the tanks simultaneously?

RRB Group-D - 16/10/2018 (Shift-II)

<b>(A)</b> 10	<b>(B)</b> 6
<b>(C)</b> 4	<b>(D)</b> 15

7.

9.

44 pipes can fill a large water tank in 21 hours. How many hours will 55 pipes take to fill such five tanks?

	RRB Group-D - 12/12/2018 (Shift-I)
<b>(A)</b> 63	<b>(B)</b> 84
(C) 72	<b>(D)</b> 54

8. Pipe A can fill an empty tank in 14 hours. This pipe together with another pipe B can fill this empty tank in 10 hours. In how many hours can pipe B fill this empty tank alone?

	RRB Group-D - 12/11/2018 (Shift-II)
<b>(A)</b> 35	<b>(B)</b> 20
<b>(C)</b> 30	<b>(D)</b> 25

Pipe A and Pipe B can fill a tank in 4 and 16 hours respectively. In how many hours can they both fill the tank together?

RRB Group – D – 25/10/2018 (Shift-II)

(A) $\frac{4}{15}$ hr	<b>(B)</b> $\frac{17}{3}$ hr
(C) $\frac{16}{5}$ hr	(D) $rac{16}{7}$ hr

 Two pipes A and B can fill a tank in X min and 6 min respectively. If both pipes are working together, it takes 1.5 min to fill the tank. Find the value of x?
 PRR Group-D- 11/10/2018 (Shift-I)

	RRB Group-D- 11/10/2018 (S
(A) 1 min	<b>(B)</b> 2 min
(C) 4 min	<b>(D)</b> 5 min

**11.** One pipe can fill a tank in 7.8 hours while the second pipe can empty it in 19.5 hours when this tank is full. Both pipes were opened when the tank was half empty. How long will it take to fill it?

RRB Group-D - 19/11/2022 (Shift-II)		
(A) 5.2 hr	<b>(B)</b> 3.9 hr	
(C) 7.8 hr	<b>(D)</b> 6.5 hr	

**12.** One pipe can fill a tank in 7/4 hours while another pipe can empty it in 21/8 hours when the tank is full. Both pipes were opened when the tank was two-thirds empty. How long will it take to fill the tank?

RRB Group-D - 26/11/2022 (Shift-I)

(A) 3 hr 20 min	<b>(B)</b> 3 hr 30 min
(C) 3 hr 45 min	<b>(D)</b> 3 hr 15 min

**13**. One tap can fill a tank in 25 min and another tap can empty the same tank in 50 min. If both those taps are opened simultaneously, how long will it take to fill the tank?

RRB Group-D - 18/11/2022 (Shift-II)

(A) 1 hr 5 min	<b>(B)</b> 50 min
(C) 55 min	(D) 1 hr 10 min

**14.** A tank has two taps. One tap fills the tank in 8 hours and the other tap empties it in 10 hours. If both the taps are opened simultaneously, how much time will it take to fill the tank?

	RRB NTPC - 09/2022 (Shift-I)
<b>(A)</b> 40	<b>(B)</b> 20
<b>(C)</b> 30	<b>(D)</b> 50

**15.** A tank has two taps, the first fills the tank and the second draws water from the tank. The tank fills in 4 hours when only the first tap is open and in 12 hours when both taps are open. How long does it take to empty a full tank when only the second tap is open?

RRB Group-D - 10/10/2018 (Shift-III)		
<b>(A)</b> 10 hr	<b>(B)</b> 4 hr	
( <b>C)</b> 6 hr	<b>(D)</b> 8 hr	

**16.** The tank has two taps. Tap A is to fill the tank and tap B is to empty the tank. If only tap A can fill the tank in 35 hours, only tap B can empty the filled tank completely in 70 hours. Find how many hours it will take to fill the half empty tank completely.

RRB	Group-D - 06/12/2018 (Shift-II)
(A) 35 hr	<b>(B)</b> 40 hr
(C) 70 hr	( <b>D</b> ) 55 hr

**17.** One tap fills a tank in 1 hour and 30 min, but due to leakage in the tank, it takes 2 hours and 15 min to fill it. How long will the tank take to empty completely due to leakage?

RRB Group-D - 01/09/2022 (Shift-I)		
(A) 45 min	(B) 4 hr 30 min	
(C) 1 hr 30 min	<b>(D)</b> 2 hr 45 min	

**18.** One tap can fill a tank in 25 min and another tap can empty the same tank in 50 min. If both taps are opened simultaneously, the tank will be filled in ...... Min.

RRB Group-D - 01/09/2022 (S	
<b>(A)</b> 55	<b>(B)</b> 45
<b>(C)</b> 20	<b>(D)</b> 50

19. A tank has two pipes. Pipe M is for filling the tank and pipe N is for emptying the tank. If pipe M takes 45 hours to completely fill the tank and pipe N takes 90 hours to empty the fully filled tank, then how many hours will it take to fill the half empty tank completely? RRB Group-D - 11/12/2018 (Shift-II)

RRB Group-D - 11/12/2018 (Shift	
<b>(A)</b> 45 hr	<b>(B)</b> 35 hr
(C) 60 hr	<b>(D)</b> 40 hr

20. A tank usually fills in 8 hours but due to leakage in the bottom, it takes two more hours to fill. If the tank is full, only the leak will empty it in .....

RRB (	Group-D - 12/10/2018 (Shift-II)
(A) 20 hr	<b>(B)</b> 40 hr
(C) 30 hr	<b>(D)</b> 10 hr

**21.** A tube can fill a tank in 15 hours. Due to the bottom leakage, it fills in 20 hours. If the tank is full then in how much time it will be empty due to leakage?

RRB Group-D - 19/11/2022 (Shift-I	
(A) 20 hr	<b>(B)</b> 60 hr
(C) 32 hr	<b>(D)</b> 40 hr

**22.** Two pipes fill a tank separately in 6.3 hours and 8.4 hours respectively, while the third pipe can empty the filled tank in 4.8 hours. If all three pipes are opened simultaneously when the tank is empty, then how much time will it take to fill the tank completely?

RRB Group	D-D - 23/10/2018 (Shift-II)
(A) 13 hr 20 min	(B) 12 hr 18 min
(C) 14 hr 18 min	<b>(D)</b> 14 hr 24 min

23. A and B together can fill a tank in 6 hours. B and C together can fill the tank in 10 hours. A and C together can fill the tank in 7  $\frac{1}{2}$  hours. How long will A alone take to fill the tank? RRB Group-D - 17/11/2022 (Shift-I)

	Group-D - 17/11/2022 (Sim
<b>(A)</b> 10 hr	<b>(B)</b> 12 hr
(C) 11 hr	<b>(D)</b> 13 hr

24. There are 3 pipes connected to a tank. The first pipe can fill the tank in 30 min and the second in 45 min. While the third pipe is to empty the tank. The tank fills in 27 min when all three pipes are open. Find the time in which the third pipe will empty the tank?

RRB Group-D - 19/11/2022 (Shift-II)		
(A) 54 min	<b>(B)</b> 52 min	
(C) 50 min	<b>(D)</b> 56 min	

25. Taps A and B can fill a tank in 2 hours and 8 hours respectively. Tap C can empty the filled tank in 4 hours. If all the taps are opened simultaneously, how long will it take to fill the tank completely?

RRB Group-D - 08/10/2018 (Shift-II)

- (**B**)  $\frac{9}{2}$  hr (**D**)  $\frac{3}{2}$  hr (A)  $\frac{8}{3}$  hr (C) 3 hr
- 26. A tank has two entrances, which can fill the tank completely in 6 hours and 8 hours respectively. An evacuation gate can empty the entire tank in 10 hours. If all three pipes are opened simultaneously, in an empty tank, how long will it take to fill the tank completely?

RRB Group-D - 08/10/2018 (Shift-II)

(A) $5\frac{5}{23}$ hr	<b>(B)</b> 6 $\frac{5}{23}$ hr
(C) $6\frac{5}{46}$ hr	<b>(D)</b> 5 $rac{5}{46}$ hr

27. Two inlet pipes can fill a tank in 5 and 7 hours respectively. And an outlet pipe can empty this completely filled tank in 14 hours. If all three pipes are opened simultaneously in a completely empty tank, how long will it take to fill the tank completely?

RRB G	roup-D - 11/10/2018 (Shift-II)
(A) $4\frac{11}{13}$ hr	<b>(B)</b> 5 $\frac{11}{13}$ hr
(C) $3\frac{13}{19}$ hr	<b>(D)</b> 5 $\frac{2}{13}$ hr

28. The first two of the three pipes can fill an empty tank in 10.8 hours and 21.6 hours respectively. While the third pipe can empty the filled tank in 18 hours. If the tank is empty and all three pipes are opened simultaneously, in how many hours will the tank be filled?

> RRB Group-D - 25/11/2022 (Shift-II) (A) 13.2 (B) 12 (C) 14.4 (D) 15.6

29. Two pipes, together, can fill a tank in 3.9 hours and 5.2 hours respectively while a third pipe can empty a tank in 10.4 hours. All three pipes are opened simultaneously when the tank is filled 1/12. How long will it take to fill the tank completely?

RRB Group	-D - 26/11/2022 (Shift-III)
(A) 2 hr 45 min	(B) 2 hr 10 min
(C) 2 hr 11 min	<b>(D)</b> 2 hr 36 min

30. Pipe A can fill a tank in 8 hours, pipe B in P hour and pipe C in 24 hours, if all the pipes are open, it takes 2.4 hours to fill the tank. Then find the value of P.

	RRB Group-D - 10/10/2018 (Shift-III)
(A) 2 hr	<b>(B)</b> 1 hr
(C) 3 hr	<b>(D)</b> 4 hr

31. A tank can be filled by two tubes A and B in 12 hours and 16 hours respectively. The full tank can be emptied with a third tap in 8 hours. If all the taps are turned on at the same time, how much time is required to fill the empty tank?

RRB Group-D - 22/10/2018 (Shift-II) (A) 24 hr (B) 40 hr (C) 16 hr (D) 48 hr

32. Tap A and B fill a tank in 5 and 20 hours respectively. Tap C empties the filled tank in 10 hours. If all the three taps are opened simultaneously, how much time will it take to fill the tank completely?

	RRB Group-D - 30/10/2018 (Shift-III)
(A) $\frac{29}{2}$ hr	( <b>B</b> ) $rac{17}{5}$ hr
(C) $\frac{20}{6}$ hr	<b>(D)</b> $\frac{20}{3}$ hr

33. A tap can fill a vessel in 4 hours. After half the spout is filled, three more pieces of the same size are opened. How long will it take all the totes to fill the cistern?

RRB Group-	D - 05/11/2018 (Shift-II)
(A) 2 hr 30 min	<b>(B)</b> 2 hr
<b>(C)</b> 1 hr 30 min	<b>(D)</b> 3 hr

34. Pipe A and C can fill a tank in 60 hours and 48 hours respectively while pipe B can empty the filled tank in 24 hours. How many hours will it take to fill the tank 1/3 when the tank is full and all three pipes are opened simultaneously? 

	RRB Group-D - 01/11/2018 (Shift-II)
<b>(A)</b> 240	<b>(B)</b> 160
( <b>C)</b> 80	<b>(D)</b> 120

35. A and B together fill the cistern in 6 hours. B and C together fill the cistern in 10 hours. A and C together fill the cistern in  $7\frac{1}{2}$  hours. How much time will C take to fill the cistern alone?

RRB	Group-D - 26/10/2018 (Shift-II)
(A) 25 hr	<b>(B)</b> 15 hr
<b>(C)</b> 40 hr	<b>(D)</b> 30 hr

**36.** Two pipes can fill a tank in 5 hours and 3 hours respectively, while the third pipe can empty the tank in 7.5 hours. When the tank was 1/10 full then all the three pipes were opened simultaneously, then how much time will it take to fill the tank completely?

 RRB Group-D - 23/10/2018 (Shift-II)

 (A) 2 hr 20 min
 (B) 2 hr

 (C) 2 hr 15 min
 (D) 2 hr 30 min

**37.** X and Y two pipes can fill a tank in 24 hours and 32 hours respectively. If both the pipes are open simultaneously, at what time should the first pipe be closed so that it takes only 16 hours to fill the tank?

RRB Grou	p-D - 18/11/2022 (Shift-III)
(A) after 18 hr	(B) after 10 hr
(C) after 15 hr	(D) after 12 hr

**38.** Two gas filling tubes A and B can fill a gas cylinder in 12 min and 15 min respectively. But a third tube can empty it in 6 min. The first two tubes are initially opened for 5 min and then the third tube is also opened. In how much time will the cylinder be empty?

<b>RRB Group-D</b> -	12/10/2018	(Shift-II)
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(A) 70 min	<b>(B)</b> 45 min
<b>(C)</b> 60 min	<b>(D)</b> 30 min

**39.** Two inlet pipes, A and B, can fill an empty tank in 22 and 33 hours respectively. They were opened simultaneously but A was closed 3 hours before the tank was filled. How many hours will it take for both pipes to fill the tank?

	RRB Group-D - 17/11/2022 (Shift-I)	
(A) 16.2	<b>(B)</b> 15	
(C) 14.2	<b>(D)</b> 16	

**40.** Two pipes A and B can fill an empty tank in 1.8 and 2.7 hours respectively. Pipe C can empty the entire tank in 4.5 hours if no other pipe is working. Initially the pipe A and pipe C are opened when the tank is empty. After a few hours, pipe A is closed and pipe B is opened. Thus it takes a total of 5.5 hours to fill the tank. For how much time pipe B remained open.

 RRB Group-D - 20/09/2022 (Shift-II)

 (A) 2.7
 (B) 5

 (C) 3
 (D) 4.5

**41.** Three flood gates A, B and C can fill a reservoir in 6 hours. C is closed after working together for 2 hours, Flood Gate A and B can fill the remaining part in 7 hours. How many

hours will it take to fill the reservoir with flood gate C?

 RRB Group-D - 22/11/2022 (Shift-I)

 (A) 16
 (B) 12

 (C) 14
 (D) 10

**42.** A tank has two inlet pipes so that it can be filled in 4 hours and 6 hours respectively. An evacuation pipe can empty the entire tank in 8 hours. Both inlet pipes are closed, after opening for one hour. The three pipes are then opened together. in how many hours, the remaining part of the tank can be filled?

### RRB Group-D - 10/10/2018 (Shift-II)

<b>(A)</b> 3 hr	<b>(B)</b> 3 $rac{1}{4}$ hr
<b>(C)</b> 2 hr	<b>(D)</b> 5 $\frac{1}{3}$ hr

**43.** Three pipes A, B and C can fill a tank in 4 hours. Pipes A and B together can fill the tank in 9 hours. If all three pipes A, B and C are started together, and after 3 hours pipes A and B are closed, then how many hours will C alone take to fill the tank?

RRB Group-D - 16/10/2018 (Shift-	
<b>A)</b> 2	<b>(B)</b> 1.8
C) 2.25	<b>(D)</b> 1.5

**44.** Inlet pipe P can fill a tank in 7 hours while outlet pipe Q can empty a fully filled tank in 6 hours. If only P is opened for the first 3 hours and after that Q is also opened, how many hours will be required to empty the tank?

	RRB Group-D -25 / 09 / 2018 (Shift-II)
<b>(A)</b> 24	<b>(B)</b> 28
<b>(C)</b> 21	<b>(D)</b> 18

**45.** Two gas filling tubes A and B can fill a gas cylinder in 15 min and 40 min respectively. Both tubes are opened simultaneously but after 4 min, tube A closes. How long will it take to fill the cylinder?

RRB Group-	D - 25/11/2022 (Shift-III)
(A) 14 min 40 sec	<b>(B)</b> 10 min 10 sec
(C) 20 min 10 sec	<b>(D)</b> 29 min 20 sec

**46.** Pipe A can fill an empty tank in 6.8 hours while pipe B can fill it in 10.2 hours. Only pipe B is turned on for 1.7 hours after which pipe A is also turned on. How long will it take to fill the tank?

### RRB Group-D - 26/11/2022 (Shift-II)

(A) 5 hr 6 min	<b>(B)</b> 5 hr 10 min
<b>(C)</b> 5 hr 12 min	<b>(D)</b> 5 hr 5 min

**47.** Pipes C and D alone can fill a tank in 4 and 5 hours respectively. If pipe C closes after 3 hours and pipe D is opened at the same time, in how many hours will the tank be filled?

RRB Group-D - 28/11/2022 (Shift-I)

<b>(A)</b> 1.25	<b>(B)</b> 1
<b>(C)</b> 1.5	<b>(D)</b> 0.8

**48**. Pipe A alone can fill a tank in 10 hours. Pipe B alone can fill the same tank in 12 hours. When these pipes are opened simultaneously, it is found that a leak under the tank will take an additional 60/231 hours to completely fill the tank. If both pipes are closed, calculate how long it will take for the fully filled tank to be emptied from the leak.

RRB Group-D - 01/09/2022 (Shift-II)

<b>(A)</b> 110hr	<b>(B)</b> 132hr
(C) 143hr	<b>(D)</b> 120hr

**49.** Two inlet pipes A and B can fill an empty tank in 2.5 and 15 hours, respectively, while pipe C can empty the same tank in 7.5 hours. Pipes A, B and C were run together when the exhaust was empty, but pipe B was shut down after some time, which took 3.5 hours to fill the tank. For how much time pipe B was opened?

 RRB Group-D 01/12/2018 (Shift-II)

 (A) 1 hr
 (B) 2 hr

 (C) 1.5 hr
 (D) 0.5 hr

**50.** Three pumps can fill a water tank separately in 15, 20 and 30 hours respectively. All three pumps were simultaneously started at 8 am. At that time the tank was 1/5 full. The first pump stopped after 4 hours. The third pump also stopped after the next 2 hours. At what time will the tank fill up?

RRB Group-D- 27/11/2018 (Shift-I)

(A) 2: 30 p.m.	<b>(B)</b> 2: 40 p.m.
(C) 3: 20 p.m.	<b>(D)</b> 1: 20 a.m.

**51.** Pipe A can fill an empty tank in 15 hours while pipe B takes 25 hours to fill it. Initially only pipe A was turned on for some time and then stopped and immediately pipe B was turned on. In total, it takes 19 hours to fill the tank completely. How long did pipe A run?

RRB G	roup-D - 27/11/2018 (Shift-III)
<b>(A)</b> 9 hr	<b>(B)</b> 6 hr
<b>(C)</b> 7.5 hr	<b>(D)</b> 3 hr

**52.** In a tank, two inlet pipes and one outlet pipe are present. The tank can be filled separately from the inlet pipe in 6 hours and 8 hours and

the tank can be emptied in 10 hours from the outlet pipe. If the inlet pipe is opened and closed after 1 hour and then all the three pipes are opened simultaneously, how much time will it take to fill the remaining tank?

RRB Gro	oup-D -15/10/2018 (Shift-II)
(A) 75 / 23 hr	<b>(B)</b> 82 / 23 hr
(C) 85 / 23 hr	<b>(D)</b> 72 / 23 hr

**53.** Pipe A alone can fill a tank in 4.5 hours, while together with pipe B it can fill it in 2.25 hours. If only pipe A is turned on for half an hour after which pipe B is also turned on, how much time will it take to fill the tank?

RRB Grou	ip-D - 01/10/2018 (Shift-II)
(A) 2 hr 30 min	(B) 2 hr 15 min
(C) 2 hr	<b>(D)</b> 2 hr 20 min

**54.** Pipe A can empty a filled tank in 5.6 hours, while pipe B can fill the same empty tank in 7 hours. When tank is full, pipes A and B are opened for every one hour alternatively, then how much time can it take to empty the tank?

RRB Group-D - 25/11/2022 (Shift-I)

(A) 48 nr	( <b>B</b> ) 56 nr
<b>(C)</b> 55 hr	<b>(D)</b> 47 hr

**55.** An inlet pipe and an outlet pipe are opened alternatively for one hour in an order to fill and empty a tank. The inlet pipe is started when the tank is empty. The inlet pipe takes 15 hours to fill the empty tank completely, while the outlet pipe can completely empty the filled tank in 21 hours. How many hours will it take to fill the tank?

	RRB Group-D - 18/11/2022 (Shift-II)
<b>(A)</b> 100	<b>(B)</b> 52.5
<b>(C)</b> 105	<b>(D)</b> 99

**56.** Pipe A can fill an empty tank in 1.5 hours, while pipe B can empty a filled tank in 2.4 hours. When the tank is empty, pipe A is turned on for one hour and closed. Now the B pipe is opened for one hour to drain the water from the tank and then closed. Both pipes are opened and closed alternately for one hour each time. How long will it take to fill the tank completely?

RRB Gr	oup-D - 19/11/2022 (Shift-III)
<b>(A)</b> 4.75hr	<b>(B)</b> 6.375hr
(C) 7 hr	<b>(D)</b> 8 hr

**57.** Starting with the inlet pipe in the empty cistern, one hour inlet pipe and one hour outlet alternately turn on and off. The inlet pipe takes 11.25 hours to fill the empty hull

and the outlet pipe can empty the filled hull completely in 22.5 hours. How long will it take to fill the cistern?

RRB Group-l	D - 19/11/2022 (Shift-III)
(A) 44 hr	<b>(B)</b> 45 hr
(C) 43 hr 50 min	<b>(D)</b> 42 hr 45 min

**58.** Pipe A is an inlet pipe that can fill an empty tank in 69 hours. Pipe B can empty the filled tank in 46 hours. Starting from pipe B, both the pipes were opened in sequence for one hour in the filled tank. How long will it take for the tank to empty?

RRB Grou	p-D - 27/11/2022 (Shift-I)
(A) 11 day 12 hr	(B) 11 day 10 hr
<b>(C)</b> 1 day 13 hr	<b>(D)</b> 11 day 7 hr

**59.** An inlet pipe and an outlet pipe are opened in an order of one hour to fill and empty a tank. The inlet pipe is started when the tank is empty. It takes 10.5 hours for the inlet pipe to fill the empty tank, while the outlet pipe can completely empty the filled tank in 35 hours. How long will it take to fill the tank?

RRB Group-D - 04/12/2018 (Shift-III)	
(A) 28 hr 7 min	<b>(B)</b> 29 hr
<b>(C)</b> 30 hr	<b>(D)</b> 28 hr 42 min

**60.** Pipe A is an inlet pipe that can fill an empty tank in 57 hours. Pipe B can empty this filled tank in 38 hours. When the tank is full, both pipes are alternately started for one hour each time, starting from B. How long will it take to empty the tank?

RRB Grou	p-D - 15/11/2018 (Shift-III)
(A) 9 day 13 hr	(B) 9 day 10 hr
(C) 9 day 12 hr	<b>(D)</b> 9 day 7 hr

**61.** Pipe A can empty a filled tank in 32 hours while pipe B can fill this empty tank in 60 hours. If pipes A and B are alternately turned on for one hour each time then how long will it take to empty the filled tank?

 RRB Group- 02/11/2018 (Shift-I)

 (A) 315 hr
 (B) 320 hr

 (C) 319 hr
 (D) 311 hr

**62.** An oil pot is 3/5 full. When 20 liters of oil is used from it, it is 7/12 full. Find the pot capacity?

RRB Group-D - 15/10/2018 (Shift-II)

(A) 1200 liter	<b>(B)</b> 1400 liter
(C) 1600 liter	(D) 1000 liter

**63.** A water tank is filled through three pipes X, Y and Z in 5h. Pipe Z is three times faster than pipe Y and pipe Y is twice as fast as pipe X. How long will it take to fill the water tank with pipe X alone?

RRB Group-D - 17/11/2022 (Shift-II)		
( <b>A)</b> 35 hr	<b>(B)</b> 40 hr	
( <b>C)</b> 60 hr	<b>(D)</b> 45 hr	

**64.** A tank is filled by three pipes X, Y and Z in 6 hours. If Z is three times faster than Y and Y is two times faster than X, then how many hours will be required to fill the tank by pipe X?

RRB G	roup-D -22 /10/2018 (Shift-II)
(A) 27 hr	<b>(B)</b> 54 hr
(C) 30 hr	(D) 45 hr

**65.** Two inlet taps, one of which has a capacity of 4.5 times greater than the other, an outlet faucet that can empty a tank in 9 hours, when working together, can fill an empty tank in 7.5 hours. How many hours will the less efficient tap take to fill the empty tank alone?

	RRB Group-D - 27/11/2018 (Shift-I)
<b>(A)</b> 18	<b>(B)</b> 27
(C) 22.5	<b>(D)</b> 13.5

**66.** One of the two water pipes in a tank works 1.5 times more efficiently than the other. If both these pipes work with a water drain pipe that can empty the tank in 12 hours alone, then the empty tank can be filled in 28 hours. How long will it take for the less efficient pipe to fill the empty tank alone?

	RRB Group-D - 05/10/2018 (Shift-II)
<b>(A)</b> 21	<b>(B)</b> 18
<b>(C)</b> 24	<b>(D)</b> 15

67. A pipe working at full speed can fill an empty tank in 2 hours. However, during the first hour it operated at one-twelfth of its capacity, during the second hour it served at one-ninth of its capacity, during the third hour it served at one-sixth of its capacity, During the fourth hour it worked at one-fourth of its capacity and during the fifth hour it was only one-third efficient compared to the capacity at which it was supposed to operate. The second pipe also did the same thing, but if it worked at its full speed then it had to fill the empty tank in 4 hours. If both the pipes and the pipe which empties the tank at a constant speed, are turned on simultaneously, half empty tank can be filled in 5 hours. If a single emptying pipe is

run, how many hours will it take to empty the filled tank?

	RRB Group-D - 19/11/2022 (Shift-III)
<b>(A)</b> 20	<b>(B)</b> 24
<b>(C)</b> 30	<b>(D)</b> 32

68. A pipe, working at full speed, can fill an empty tank in 2 hours. However, during the first two hours it operated at one-twelfth of its capacity, during the second two hours it operated at one-ninth of its capacity, during the third two hour it served at one-sixth of its capacity, during the fourth two hour it worked at onefourth of its capacity and during the fifth two hours it worked one third of its capacity. A second pipe also shows a similar performance, but if it works at full speed it will fill the empty tank in 4 hours. There is also a drain pipe which draws water out of the tank at a fixed rate. If all three pipes work together, the empty tank can be filled in 10 hours. In how many hours will the drain pipe completely empty the filled tank if both other pipes remain closed?

	RRB Group-D - 27/11/2022 (Shift-III)
<b>(A)</b> 24	<b>(B)</b> 30
<b>(C)</b> 20	<b>(D)</b> 32

**69.** One inlet pipe of two inlet pipes works twice as efficiently as the second inlet pipe. A drain pipe can empty a fully filled tank in 12 hours. If all three pipes are opened simultaneously, the empty tank is filled in 12 hours. In how many hours will the less efficient inlet pipe alone fill the empty tank?

	RRB Group-D - 28/11/2022 (Shift-I)
<b>(A)</b> 15	<b>(B)</b> 18
<b>(C)</b> 12	<b>(D)</b> 9

**70.** The efficiency of inlet pipe A is twice that of B. Pipe C is an outlet pipe. To emptying a filled reservoir C takes three times the time taken by pipe A to fill this empty reservoir. If the three pipes are opened simultaneously when the reservoir is empty, it takes 6 hours to fill the reservoir. When A and C are working together, how much time will it take to fill the reservoir?

RRB Group-D - 15/11/2018 (Shift-I)

<b>(A)</b> 15.75 hr	<b>(B)</b> 10.5 hr
<b>(C)</b> 21 hr	<b>(D)</b> 42 hr

**71.** One tap can fill the water tank in 4 hours. The tap was opened and 3/4 of the tank was filled. Then two more taps of equal feeding capacity were opened. Then 15 min later, another tap

with a capacity of two times the first tap was opened to drain the water from the tank. Calculate the time it takes to fill the tank.

RRB Grou	up-D - 15/11/2018 (Shift-I)
(A) 4 hr 15 min	<b>(B)</b> 4 hr
(C) 3 hr	(D) 3 hr 30 min

**72.** Two inlet pipes, one of which is twice the capacity of the other. There is also a third outlet pipe which can empty the fully filled tank in 10 hours. When all three pipes are open simultaneously, it takes 2.5 hours to fill the tank completely. How many hours will it take to fill the tank with a low capacity pipe alone?

	RRB Group-D - 01/10/2018 (Shift-II)
<b>(A)</b> 6	<b>(B)</b> 7
( <b>C)</b> 8	<b>(D)</b> 5

**73.** Pipe A fills the tank in a quarter of the time than pipe B. Pipe C takes three times as long as pipe A to fill it. If all three pipes are opened simultaneously, they can fill an empty tank in 24 hours. If pipe C is not turned on, how many hours will it take to fill the empty tank?

RRB G	iroup-D - 18/11/2022 (Shift-III)
<b>(A)</b> 30.2	<b>(B)</b> 28.4
(C) 30.6	<b>(D)</b> 30.4

**74.** A jug has two holes. The first hole empties the jug in 15 min. The second hole empties the jug in 20 min. If the leak is happening at a fixed rate, then in how much time the jug will be emptied by both holes?

RRB RPF	Constable - 22/01/2019 (Shift-II)
(A) $\frac{4}{7}$	<b>(B)</b> $7\frac{4}{7}$
(C) $8\frac{5}{7}$	<b>(D)</b> $8\frac{4}{7}$

**75.** A tank can be filled by two pipes simultaneously in 45/4 min. The larger pipe can fill the tank in 12 min less time than the smaller pipe. How long will it take to fill the tank with a large pipe alone?

	RRB RPF SI - 05/01/2019 (Shift-II)
(A) 30 min	<b>(B)</b> 12 min
(C) 18 min	<b>(D)</b> 24 min

**76.** Two pipes A and B can fill a tank in 45 and 36 hours respectively. If both pipes are opened simultaneously, how long will it take to fill the tank?

 RRB RPF Constable - 25/01/2019 (Shift-III)

 (A) 10 hr
 (B) 20 hr

 (C) 2 hr
 (D) 5 hr

**77.** 2 / 5th part of tank 'A' is filled with water. Pipe P can fill it in 10 min; While pipe Q can empty it in 6 min. If both P and Q are opened simultaneously, in what time will the tank become empty?

 RRB RPF Constable - 17/01/2019 (Shift-I)

 (A) 6 min
 (B) 6.5 min

 (C) 5.5 min
 (D) 7 min

**78.** A tank of water is 2/5 full. Pipe A can fill the tank in 12 min, and pipe B can empty the same tank in 6 min. If both pipes are opened simultaneously, how long will it take for the empty tank to filled completely or the filled tank to be emptied?

(A) It will be filled in 4.8 min.
(B) It will be empty in 5.6 min.
(C) It will be empty in 4.8 min.
(D) It will be filled in 5.6 min.

**79.** Pipes A and C can fill an empty tank in 7 and 10.5 hours respectively while pipe B can empty the filled tank in 5.25 hours. If the three pipes are opened simultaneously when the tank is empty, how many hours will it take to fill 2/3 of the tank?

 RRB RPF Constable - 24/01/2019 (Shift-III)

 (A) 14
 (B) 21

 (C) 12
 (D) 15.75

**80.** Two pipes X and Y can fill a gas tank in 60 min and 75 min respectively. There is also an outlet Z. If all three pipes are used simultaneously, the tank is filled in 50 min. How much time will be taken by Z to empty the entire tank?

RR	B RPF SI - 11/01/2019 (Shift-I)
<b>(A)</b> 100 min	<b>(B)</b> 75 min
(C) 90 min	<b>(D)</b> 50 min

**81**. Pipes A and B can fill a tank in 7 hours and 10 hours respectively while pipe C can empty the tank in 14 hours. If all the pipes are started simultaneously, how long will it take to fill the tank?

RRB RPF Constable - 18/01/2019 (Shift-III)

(A) $0\frac{-}{6}$ m	( <b>D</b> ) 0 - 11
( <b>C)</b> 5 <sup>1</sup> / <sub>2</sub> hr	<b>(D)</b> 5 $rac{5}{6}$ hr

82. A tank can be filled by a tap in 10 hours. However, it takes 11 hours to fill the tank due to a leak. The tap is closed when the tank is full. How many hours will the tank take to empty due to leakage?

## RRB RPF Constable - 20/01/2019 (Shift-I)

<b>(A)</b> 130	<b>(B)</b> 110
(C) 100	<b>(D)</b> 50

**83.** Two pipes P and Q fill a tank in 15 and 20 min respectively. They are both opened, but P is closed after 4 min. In how much time does the tank fill up from the beginning?

RRB RPF SI - 13/01/2019 (Shift-III)

- (A) 16 min (B) 16 min 20 sec (C) 14 min 20 sec (D) 14 min 40 sec
- 84. When pipes A and B work together, an empty tank can be filled in 24 hours. If B is closed after working 8 hours together but A remains open, it will take a total of 28 hours to fill this tank. In how much time will A alone fill the tank?

	RRB RPF SI - 12/01/2019 (Shift-III)
(A) 30 hr	<b>(B)</b> 31 hr
(C) 28 hr	(D) 29 hr

**85.** If a pipe P fills a tank in 10 min. 5 pipes, each having a capacity of 20% of pipe P, can fill the tank?

 RRB RPF Constable - 20/01/2019 (Shift-III)

 (A) 10 min
 (B) 50 min

 (C) 130 min
 (D) 175 min

**86.** When running pipes A, B and C together, they fill a tank in 4 hours. Pipe A fills water twice as fast as pipe B and pipe C fills twice as fast as pipe A. How long will it take for pipe A to completely fill the tank alone?

	RRB RPF SI - 12/01/2019 (Shift-II)
<b>(A)</b> 7 hr	<b>(B)</b> 30 hr
(C) 28 hr	<b>(D)</b> 14 hr

**87.** Two pipes X and Y alone fill the tank in 48 and 72 min respectively. If both are opened simultaneously, how much time will it take to fill the tank?

	RRB ALP	& Tec.	(31-08-18 Shift-II)
(A) 39.4	min	(B)	60 min
(C) 28.8	min	(D)	24 min

**88.** A pump fills the tank in 4 hours, but due to a leak, the tank is filled in 5 hours. How long will the leak take to empty the filled tank?

	RRB ALP & Tec. (29-08-18 Shift-III)
(A) 20 hr	<b>(B)</b> 9 hr
<b>(C)</b> 1 hr	<b>(D)</b> 4.5 hr

**89.** One pipe can fill a tank in 4 hours while another pipe can empty the filled tank in 10 hours. The two pipes were opened simultaneously when the tank was half empty. Find out in how much time the tank will be filled?

 RRB ALP & Tec. (13-08-18 Shift-III)

 (A) 6 hr 40 min
 (B) 5 hr 30 min

 (C) 4 hr 20 min
 (D) 3 hr 20 min

**90.** Pipes A, B and C are connected to an empty tank. The first two pipes fill the tank completely in 4 and 10 hours respectively, and the third empties the entire tank in 6 hours. If all three pipes are opened simultaneously, when the tank is half full, how many hours will it take to fill the tank completely?

 RRB ALP & Tec. (31-08-18 Shift-III)

 (A)  $\frac{30}{11}$  (B)  $\frac{60}{11}$  

 (C)  $\frac{120}{11}$  (D)  $\frac{90}{11}$ 

**91.** The first two of the three pipes can fill an empty tank in 9 and 18 hours respectively, while the third can fill the tank in 15 hours. If all three pipes are opened when the tank is empty, then in how many hours the tank will be full?

 RRB ALP & Tec. (21-08-18 Shift-I)

 (A) 10
 (B) 12

 (C) 11
 (D) 13

**92.** Raghu's tanker can fill a reservoir in 4 hours. Three more tankers are opened after filling the reservoir in half. How long will it take to fill the reservoir completely?

RRB AL	P & Tec. (20-08-18 Shift-II)
(A) 2 hr 40 min	<b>(B)</b> 2 hr
(C) 3 hr	<b>(D)</b> 2 hr 30 min

**93**. Pipes A and C can fill an empty tank in 32 and 48 hours respectively, while pipe B can empty the filled tank in 24 hours. If the three pipes are open simultaneously, how many hours will it take to fill the tank 2/3?

 RRB ALP & Tec. (14-08-18 Shift-II)

 (A) 96
 (B) 64

 (C) 72
 (D) 48

**94.** Pipes A, B and C are connected to an empty tank. The first two pipes can fill the tank in 4 and 10 hours respectively. While the filled tank is emptied by the third pipe in 6 hours. If all three pipes are opened simultaneously

when 3/5 of the tank is full, how many hours will it take to fill the tank completely? RRB ALP & Tec. (10-08-18 Shift-II)

	RRB ALP & Tec. (10-08
(A) <sup>36</sup>	(B) <sup>48</sup> / <sub>48</sub>
<sup>11</sup>	$(-)_{11}_{24}$
(C) $\frac{11}{11}$	(D) <u></u>

**95.** Pipe A alone fills an empty tank in 4 hours whereas it together with pipe B fills it in 3 hours. After running pipe A for one hour, pipe B is also opened, then how much time will it take to fill the tank?

RRB ALI	P & Tec. (31-08-18 Shift-II)
(A) 3 hr	(B) 3 hr 15 min
(C) 3 hr 25 min	<b>(D)</b> 3 hr 20 min

**96.** Two pipes A and B can fill an empty tank in 32 and 48 hours respectively. When no other pipe is working, pipe C can empty the entire tank in 64 hours. Initially, pipe A and pipe C were turned on when the tank was empty. After a few hours, pipe A was turned down and pipe B was turned on at the same time. While doing so, it took 112 hours to fill the tank. For how many hours was pipe B operational?

 RRB ALP & Tec. (31-08-18 Shift-II)

 (A) 72
 (B) 70

 (C) 77
 (D) 84

**97.** Pipe A can fill an empty tank in 18 hours, while pipe B can empty the filled tank in 30 hours. When the tank is empty, both pipes are alternately started for one hour each time, starting from A. How long will it take to fill the tank?

RI	RB ALP &	Tec. (30-08-18	Shift-III)
<b>(A)</b> 45 hr		<b>(B)</b> 90 hr	
(C) 86 hr 40	) min	<b>(D)</b> 86 hr 48 r	min

**98.** Two pipes, working alternately, fill a tank in 2 and 3 hours respectively, while a third pipe empties the tank in 6 hours. When the tank was 1/6 full, all three pipes were opened simultaneously. How long will it take to fill the tank completely?

RRB ALP	& Tec. (17-08-18 Shift-III)
(A) 1 hr 15 min	(B) 1 hr 30 min
(C) 1 hr 20 min	(D) 1 hr

**99**. Pipe A can empty a filled tank in 28 hours. While pipe B can fill the same empty tank in 35 hours. When the tank is full, both pipes are alternately started for one hour each time, starting from A. How long will it take to empty the tank?

### RRB ALP & Tec. (13-08-18 Shift-I)

(A) 279 hr	<b>(B)</b> 271 hr
(C) 275 hr	<b>(D)</b> 280 hr

**100.** Two pipes A and B can fill a tank in 25 min and half an hour respectively and pipe C can empty three gallons per min. If all three pipes are operated simultaneously, the tank is filled in 15 min. Find the capacity of the tank.

RRB	ALP & Tec. (30-08-18 Shift-I)
(A) 450 gallon	<b>(B)</b> 300 gallon
<b>(C)</b> 240 gallon	<b>(D)</b> 600 gallon

**101.** Pipes P, Q and R discharges solutions A, B and C respectively. If P, Q and R are operated alone, the empty tank can be filled in 30 min, 20 min and 10 min respectively. When the tank is empty and all three pipes are opened, what will be the ratio of C solution in the tank after 3 min?

	RRB ALP & Tec. (21-08-18 Shift-I)
<b>(A)</b> 6	(B) $\frac{5}{11}$
<b>(C)</b> 5	(D) $\frac{6}{11}$

**102.** The efficiency of one of the two inlet pipes is double that of the other. Both working with an exhaust hose, which can empty the tank in 8 hours alone, can fill the empty tank in 8 hours. How many hours will be taken to self-fill the empty tank by a less efficient inlet pipe?

	RRB ALP & Tec. (17-08-18 Shift-II)
<b>(A)</b> 12	<b>(B)</b> 6
<b>(C)</b> 10	<b>(D)</b> 8

103. A pipe working at full speed can fill an empty tank in 1 hour. However, it is believed that during the first hour, it uses 1/12 of its normal capacity, during the second hour, it uses 1/9 of its normal capacity, and during the third hour, it uses 1/6 of its normal capacity. During the fourth hour, it uses 1/4 of its normal capacity and during the fifth hour, it uses 1/3 of its normal capacity. Another pipe also shows a similar performance, but if it works at full speed, it will fill the empty tank in 2 hours. With a pipe which drains the water out of the tank at a constant rate, the empty tank can be filled in 5 hours by working together with the three pipes. If any other pipe is not working, how many hours will it take to empty the full tank by the drainage pipe?

	RRB ALP & Tec. (14-08-18 Shift-I)
<b>(A)</b> 16	<b>(B)</b> 12
<b>(C)</b> 10	<b>(D)</b> 15

**104.** The capacity of Sita's bucket is three times that of Ramu's bucket. Sita turns the bucket 60 times to fill an empty drum. If both Sita and Ramu start filling the drum together, then how many times they both have to fill the bucket and turn into doom.

	RRB ALP & Tec. (10-08-18 Shift-II)
<b>(A)</b> 45	<b>(B)</b> 40
(C) 50	<b>(D)</b> 30

**105**. A water tank has two holes. Hole-1 alone empties the tank in 9 min and Hole-2 alone empties the tank in 6 min. If the water leakage is at a fixed rate, then in how many min the tank is empty when running simultaneously?

### RRB NTPC 23/07/2022 Shift-1

(A) 3 <sup>3</sup> / <sub>5</sub>	(B) <sup>3</sup> / <sub>5</sub>
(C) $3\frac{1}{5}$	<b>(D)</b> $3\frac{2}{5}$

**106.** A container has two holes. The first hole empties the container in 15 min and the second hole empties the container alone in 10 min. If the water is leaking from the container at a constant rate, in how many min will the container be emptied when both holes are opened simultaneously?

	RRB NTPC 23/07/2022 Shift-3	3
<b>(A)</b> 6	(B) $\frac{1}{6}$	
(C) <sup>1</sup> / <sub>-</sub>	<b>(D)</b> 7	

**107.** A tube has two holes. A single hole empties the tube in 29 min. The second hole alone empties the tube in 6 min. If leakage is happening at a fixed rate, then in how long will the tube be emptied by both holes?

### RRB NTPC 02/02/2021Shift: 3

(A) $\frac{34}{35}$	<b>(B)</b> 3 $\frac{34}{35}$
(C) $4\frac{33}{35}$	<b>(D)</b> $4\frac{34}{35}$

**108.** A tank has two holes. The first hole empties the tank alone in 21 min. The second empties the tank alone in 7 min. If leakage is happening at a fixed rate, in how much time the tank will be emptied by both holes?

RRB NTPC 11/08/2022Shift: 1

(A) $\frac{1}{4}$	<b>(B)</b> 4 $\frac{1}{4}$
(C) $5\frac{2}{4}$	<b>(D)</b> 5 $\frac{1}{4}$

**109.** A glass filled with water has two holes. On opening the first hole alone, the glass empties in 9 min and on opening only the second hole, the glass empties in 3 min. In how many min

will the glass be emptied when both holes are opened?

	RRB NTPC 19.01.2017 Shift: 1
(A) $\frac{1}{4}$	<b>(B)</b> 2 <sup>2</sup> / <sub>4</sub>
(C) $3\frac{1}{4}$	<b>(D)</b> $2\frac{1}{4}$

**110.** A tank has two holes. The first hole empties the tank in 3 min. The second hole empties the tank in 5 min. If leakage is happening at a fixed rate, in how much time the tank will be emptied by both holes?

. ,	RRB NTPC 26.04.2016 Shift: 2
(A) <sup>7</sup> / <sub>8</sub>	<b>(B)</b> 2 $\frac{7}{8}$
(C) 1 <sup>5</sup> / <sub>8</sub>	<b>(D)</b> $1\frac{7}{8}$

**111.** A bowl has two holes. The first hole empties the bowl alone in 4 min. The second hole empties the bowl alone in 12 min. If the leak is occurring at a fixed rate, in how long will the bowl be emptied by both holes?

	RRB NTPC 23/07/2022 Shift: 3
<b>(A)</b> 1.33	<b>(B)</b> 3.5
<b>(C)</b> 4	<b>(D)</b> 3

**112.** A tank can be filled in 30 min. There is a leak in the tank that can empty the tank in 90 min. So how long will the tank be filled?

	RRB NTPC 31.03.2016: 2
<b>(A)</b> 60 min	<b>(B)</b> 45 min
<b>(C)</b> 55 min	<b>(D)</b> 50 min

**113.** It takes 12.5 min to fill a pot completely with juice. Children from the same vessel drink juice at a fixed rate, which causes the pot to empty in 25 min. How long will it take to fill the vessel at the current rate?

	RRB NTPC 18.01.2017 Shift: 3
20 min	<b>(B)</b> 12.5 min
25 min	<b>(D)</b> 30 min

**114.** A faucet can fill a tank in 20 min. If a leak is capable of emptying the tank in 60 min, in how long time will the tank be filled?

(A) (C)

. . . . .

RRB NTPC 06.04.2016 Shift: 1

(A) 1 hr	<b>(B)</b> 45 min
<b>(C)</b> 30 min	<b>(D)</b> 50 min

**115.** A Honda motor can fill a syntax tank in 4 hours. There was a leak in the tank, which took 6 hours to fill the tank. Assuming the tank is full; in what time will the leak empty the tank?

RRB NTPC 02/02/2021Shift: 3

<b>(A)</b> 12 hr	<b>(B)</b> 15 hr
(C) 11 hr	(D) 10 hr

**116.** It takes 15 min to fill an oil tank. However the oil tank is being emptied through an exhaust pipe, which can empty it in 30 min. If this exhaust pipe remains open, how long will it take to fill this tank completely?

<b>RRB NTPC</b>	09/05/2022	Shift: 3
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(A) 20 min	<b>(B)</b> 25 min
(C) 30 min	<b>(D)</b> 40 min

**117.** Two pipes A and B can fill a tank in 12 and 16 min respectively. Both pipes are opened simultaneously but pipe A is closed 4 min before filling. In how many min tank will be full?

### RRB NTPC 12/08/2022Shift: 2

(A) 9 min, 8 sec	<b>(B)</b> 10 min, 9 sec
(C) 11 min, 9 sec	<b>(D)</b> 11 min, 29 sec

**118.** A container of water was 3/5 full, when 38 liters of water is taken out of it, then only 1/8 part is left full. What is the total capacity of the container?

### RRB NTPC 10/08/2022 Shift: 3

(A) 60 liter	(B) 65 liter
(C) 75 liter	(D) 80 liter

**119.** There are two pipes: pipe X and pipe Y to fill the empty tank. Pipe X alone can fill 2/3 of the empty tank in 10 hours. Pipe Y alone can fill 1/6 of the empty tank in 5 hours. In how many hours will both pipes fill the empty tank carrying the flow at their respective constant rate?

# RRB Paramedical - 20/07/2018 (Shift-III) (A) 30 hr (B) 10 hr (C) 24 hr (D) 15 hr

**120.** Two inlet pipes, of which the first inlet pipe is twice as capable as the second inlet pipe, with another outlet pipe which, in 12.5 hours can empty the filled tank, working together, all three can fill the empty tank in 2.5 hours. In how many hours will the low capacity inlet pipe fill the empty tank?

RRB Para	medical - 21/07/2018 (Shift-III)
<b>(A)</b> 7.5	<b>(B)</b> 6.25
<b>(C)</b> 5	<b>(D)</b> 8.75

**121.** Two pipes can fill a tank in 20 hours and 30 hours respectively. If both pipes are opened, in what time will the tank be filled?

RRB JE - 26/06/2019 (Shift-I)

<b>(A)</b> 10 hr	<b>(B)</b> 12 hr
<b>(C)</b> 18 hr	<b>(D)</b> 15 hr

122. A pipe can fill a tank in 20 min, but an evacuation pipe can empty it in 28 min. When both pipes are opened, in what time will the tank be filled?

	RRB JE - 28/05/2019 (Shift-
<b>(A)</b> 72 min	<b>(B)</b> 56 min
<b>(C)</b> 96 min	<b>(D)</b> 70 min

**123.** Two pipes 'P' and 'Q' together can fill a tank in 4 hours. When both pipes are opened separately, Q takes 6 hours more time than P to fill it completely. In how much time can P alone fill the tank?

	RRB JE - 02/06/2019 (Shift-I)
<b>(A)</b> 5 hr	<b>(B)</b> 6 hr
(C) 8 hr	<b>(D)</b> 7 hr

**124.** A tank can be filled in 9 hours. But due to a leak, it takes an hour longer. If the tank is full, then in what time it will be empty due to leakage?

	RRB JE - 01/06/2019 (Shift-III)
<b>A)</b> 60 hr	<b>(B)</b> 75 hr
<b>C)</b> 30 hr	<b>(D)</b> 90 hr

**125.** A tank has three inlets. When the first two are opened simultaneously it takes as much time to fill the tank as it takes to fill the tank by the third inlet alone. The second inlet takes 5 hours more to fill the tank than the first and 4 hours less than the third. In how many hours can the first inlet fill the tank alone?

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 15 hr	<b>(B)</b> 6 hr
(C) 12 hr	<b>(D)</b> 10 hr

**126.** One tap can fill a tank in 6 hours. After half the tank is full, three more identical taps are opened. How long will it take to fill the tank?

RRB JE - 31/05/2019 (Shift-III)

<b>(A)</b> 2 hr 20 min	<b>(B)</b> 4 hr 30 min
<b>(C)</b> 3 hr 25 min	<b>(D)</b> 3 hr 45 min

**127.** Pipes P and Q can fill a tank in 6 and 4 hours respectively. Pipe P is opened at 7 o'clock, and P and Q are opened alternately for one hour. In what time will the tank be filled?

RRB JE - 29/05/2019 (Shift-II)

<b>(A)</b> 6 hr	<b>(B)</b> 3 hr
<b>(C)</b> 4 hr 30 min	<b>(D)</b> 5 hr

**128.** Two taps P and Q alone take 60 min and 40 min to fill a tank. If tap Q is opened for the first half hour and only tap P is opened for the remaining time, how long will it take to fill the tank?

	RRB JE - 30/05/2019 (Shift-I)
<b>(A)</b> 45 min	<b>(B)</b> 32 min
<b>(C)</b> 36 min	<b>(D)</b> 48 min

129. Two pipes P and Q can fill a tank in 32 min and 48 min. Both pipes are opened and after some time pipe Q is closed. The tank fills in 24 min. When was pipe Q closed? RRB JE - 01/06/2019 (Shift-III)

	RRB JE - 01/06/2019 (Shift-
<b>(A)</b> 12 min	<b>(B)</b> 15 min
(C) 10 min	<b>(D)</b> 16 min

**130.** A bucket can be filled separately by two taps P and Q in 12 min and 15 min. Both taps are opened, but after 3 min, tap P is closed. How much extra time will it take for tap Q to fill the bucket?

RRB	JE - 27/06/2019 (Shift-III)
A) 6 min 15 sec	(B) 8 min 15 sec
<b>C)</b> 6 min 30 sec	<b>(D)</b> 9 min

**131.** A pipe P can drain all the water from a tank in 20 hours. Another pipe Q can drain 20 liters of water per hour. If both pipes are opened, the tank empties in 12 hours. Find the capacity of the tank.

	RRB JE - 02/06/2019 (Shift-II)
(A) 400 liter	<b>(B)</b> 800 liter
(C) 650 liter	<b>(D)</b> 600 liter

**132.** There is a leak (leak) in a tank, which can empty it in 8 hours. Another pipe has been attached to the tank, which can fill 6 liters of water per hour. The pipe is opened, but due to perforation (leakage), the tank empties in 12 hours. What is the capacity of the tank?

	RRB JE - 27/06/2019 (Shift-I)
(A) 80 liter	(B) 120 liter
(C) 144 liter	<b>(D)</b> 78 liter

**133.** If a bucket is 80% full, then it contains 2 liters more water than when it is  $66\frac{2}{3}$ %. Find the capacity of the bucket.

	RRB JE - 27/06/2019 (Shift-III)
(A) 20 liter	<b>(B)</b> 10 liter
(C) 15 liter	(D) 12 liter

134. A tank can be filled with two pipes, one of which can be filled three times faster than the other. If both pipes fill the tank together in 36 min, then in what time will the slow pipe fill the tank alone?

	RRB JE - 30/05/2019 (Shift-III)
<b>A)</b> 81 min	<b>(B)</b> 144 min
<b>C)</b> 120 min	<b>(D)</b> 108 min

135. Pipe P works twice as fast as pipe Q and pipe Q works twice as fast as R pipe. All three pipes together fill a tank in 8 hours. How long will it take for Q to fill the same tank alone? 00/00/0040 /01 14 1

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 56 hr	<b>(B)</b> 14 hr
<b>(C)</b> 25 hr	<b>(D)</b> 28 hr

136. The ratio of time taken by three taps P, Q and R to fill a tank separately is 2:1:6. Which of these taps is the fastest?

	RRB JE - 27/06/2019 (Shift-I)
(A) CND	<b>(B)</b> P
<b>(C)</b> Q	<b>(D)</b> R

137. Three pipes P, Q and R can fill a tank in 30 min, 20 min and 10 min. When the tank is empty, all three pipes are opened, while they discharge three chemical solutions S, T and U, respectively. After 3 min, find the ratio of the solution U in the material present in the tank.

	RRB JE - 28/06/2019 (Shift-III)
<b>(A)</b> 7 / 11	<b>(B)</b> 4 / 11
(C) 6 / 11	<b>(D)</b> 5 / 11

## Solution

4.

#### 1. Ans.(B)

Let B fill the reservoir in x + 5 hours and A fills the reservoir = x hours. According to Question

$$\frac{1}{x} + \frac{1}{x+5} = \frac{1}{6}$$

$$\frac{x+5+x}{x^2+5x} = \frac{1}{6}$$

$$12x + 30 = x^2 + 5x$$

$$x^2 - 7x - 30 = 0$$

$$x^2 - 10x + 3x - 30 = 0$$

$$(x - 10)(x + 3) = 0$$

$$\boxed{x = 10}$$
Therefore, the reservoir will be filled

in 10 hours by high flood gate A.

#### 2. Ans.(D)

Capacity of 1 hour of pipe A =  $\frac{1}{30}$ Capacity of 1 hour by pipe B =  $\frac{1}{45}$ 

Capacity of 1 hour by pipe C =  $\frac{1}{60}$ 

$$= \frac{1}{30} + \frac{1}{45} - \frac{1}{60}$$
  
=  $\frac{\frac{6+4-3}{180}}{\frac{7}{180}} = \frac{180}{7} = (25 + \frac{5}{7}) min$ 

3. Ans.(A)

Time taken by A to fill the vessel = 14 hours Part filled in 1 hour by A = 1/14 part

Time taken by A and B together to fill the tank = 12 hours

Part filled by A and B in 1 hour =  $\frac{1}{12}$  part Suppose B alone can fill the tank in n hours. By question,

$$\frac{1}{14} + \frac{1}{n} = \frac{1}{12}$$

$$\frac{1}{n} = \frac{1}{12} - \frac{1}{14}$$

$$\frac{1}{n} = \frac{7-6}{84} \Rightarrow \frac{1}{n} = \frac{1}{84} \Rightarrow \boxed{n = 84}$$
Thus, time taken by B to fill the tank alone
$$= 84 \text{ hours}$$

Ans.(B)

(A)

Filled part of tank in 1 hour by pipe A =  $\frac{1}{12}$  part Part of tank filled by pipe B in 1 hour =  $\frac{1}{15}$  part Let the half of the tank be filled with both pipes in t hours. According to Question -

$$\Rightarrow \frac{t}{12} + \frac{t}{15} = \frac{1}{2}$$
$$\Rightarrow \frac{5t+4t}{60} = \frac{1}{2}$$
$$\Rightarrow 9t = 30$$
$$\Rightarrow t = \frac{10}{3}$$
$$\Rightarrow t = 3\frac{1}{3}$$

Therefore, half of the tank will be filled in  $3\frac{1}{2}$ hours.

### 5. Ans.(D)

Tank filled by pipe J in 1 min =  $\frac{1}{15}$ Tank filled by pipe K in 1 min =  $\frac{1}{20}$ Tank filled by pipe J and K in 1 min =  $\frac{1}{15} + \frac{1}{20}$  $=\frac{4+3}{60}=\frac{7}{60}$ So, Time taken to fill the entire tank =  $\frac{60}{7}$  =  $8\frac{4}{7}$  min

6. Ans.(B) Filled part of the tank by pipe A in 1 hour =  $\frac{1}{10}$ part Pipe B filled tank in 1 hour = 1/15 parts Filled part of tank in 1 hour by pipes A and B  $=\frac{1}{10} + \frac{1}{15} = \frac{5}{30} = \frac{1}{6}$  part So the time taken to fill it together = 6 hours 7. Ans.(B) According to Question,  $\frac{m_1d_1}{m_2d_2} = \frac{m_2d_2}{m_2d_2}$  $W_1$  $\frac{\frac{w_1}{44\times 21}}{1} = \frac{\frac{w_2}{55\times x}}{5}$  $\frac{44 \times 21}{1} = 11x$  $x = 4 \times 21$ x = 84 hour 8. Ans.(A) According to Question, Pipe A fills the empty tank in 1 hour =  $\frac{1}{14}$ Together with other pipe B ie (A + B) fills this empty tank in 1 hour part = 1/10 So, Pipe B fills the empty tank in 1 hour =  $\frac{1}{10} - \frac{1}{14} = \frac{14-10}{140} = \frac{4}{140} = \frac{1}{35}$  part Hence, pipe B will take 35 hours to fill the entire tank. 9. Ans.(C) Part filled by pipe A in 1 hour =  $\frac{1}{4}$  part Part filled by pipe B in 1 hour =  $\frac{1}{16}$  part Hence part of tank filled by A and B in 1 hour =  $\frac{1}{4} + \frac{1}{16} = \frac{4+1}{16} = \frac{5}{16}$  part Thus, the time taken to fill the tank completely  $=\frac{1}{5/16}=\frac{16}{5}$  hours. 10. Ans.(B) Time taken to fill the tank by pipe 'A' = x min.Time taken to fill the tank by pipe 'B' = 6 min Total time taken to fill the tank = 1.5 min According to Question,  $\frac{1}{x} + \frac{1}{6} = \frac{1}{1.5} \\ \Rightarrow \frac{6+x}{6x} = \frac{1}{1.5}$  $\Rightarrow 1.5(6 + X) = 6X$  $\Rightarrow$  9 + 1.5X = 6X  $\Rightarrow 6x - 1.5X = 9$  $\Rightarrow 4.5X = 9$  $\Rightarrow X = \frac{9}{4.5}$  $X = 2 \min$ 11. Ans.(D) First pipe filled in one hour =  $\frac{1}{78}$ 

Part emptied by the second pipe in one hour = 1 19.5 The two pipes filled together in one hour  $= \frac{1}{\frac{7.8}{7.8}} - \frac{1}{\frac{19.5}{19.5}}$  $= \frac{\frac{19.5 - 7.8}{19.5 \times 7.8}}{\frac{19.5 \times 7.8}{152.1}} = \frac{11.7}{152.1}$ Time taken to fill the  $\frac{11.7}{152.1}$  part = one hour So the time taken to fill the entire tank =  $\frac{152.1}{11.7}$  hours Now it taken time to fill the remaining half of the tank  $=\frac{152.1}{11.7} \times \frac{1}{2} = \frac{152.1}{23.4} = 6.5$  hours Ans.(B) Let, it will take t hours to fill the tank. According to Question - $\frac{t}{7} - \frac{t}{21} = \frac{2}{3}$  $\Rightarrow \frac{12t - 8t}{21} = \frac{2}{3}$  $\Rightarrow \frac{4t}{21} = \frac{2}{3}$  $\Rightarrow t = \frac{2 \times 21}{3 \times 4}$  $\Rightarrow t = \frac{7}{2}h$  $\Rightarrow t = 3\frac{1}{2}$  $\Rightarrow t = 3:\frac{1}{2} \times 60$  $\Rightarrow t = 3h30min$ Therefore, it will take 3 hours and 30 min to fill the tank. Ans.(B) Let the filling tap = AEvacuation tap = B Filled part of tank in 1 min by tap A =  $\frac{1}{25}$ The tank emptied in 1 min by tap B =  $\frac{1}{50}$ Thus, the tank filled with both taps in 1 min =  $\frac{1}{25} - \frac{1}{50} = \frac{2-1}{50} = \frac{1}{50}$ Thus, the time taken to fill the entire tank = 50 min. Ans.(A) It takes 8 hours for X to fill the tank while Y takes 10 hours to empty the tank. . Filling part of the tank in one hour

$$=\frac{1}{x}-\frac{1}{x}=\frac{1}{2}-\frac{1}{10}=\frac{1}{40}$$

 $\therefore$  Total time to fill the tank = 40 hours

### 15. Ans.(C)

12.

13.

14.

Part of tank filled by first tap in one hour  $=\frac{1}{4}$  part

Part of tank filled by both taps in one hour  $=\frac{1}{12}$  Part

: Part of the tank filled in 1 hour by the second tap =  $\frac{1}{4} - \frac{1}{12}$  Part

$$=\frac{3-1}{12}=\frac{2}{12}=\frac{1}{6}$$

Therefore, the second tap will empty the filled tank in 6 hours.

### 16. Ans.(A)

Filled part of tank in 1 hour by tap A =  $\frac{1}{35}$ 

Part of tank emptied in 1 hour by tap B =  $\frac{1}{70}$ 

Let the time taken to fill half the empty tank = tAccording to Question –

$$\frac{t}{35} - \frac{t}{70} = \frac{1}{2}$$
$$\frac{2t - t}{70} = \frac{1}{2}$$
$$\frac{t}{70} = \frac{1}{2}$$

t = 35 hrs. Therefore, it will take 35 hours to fill half empty tank completely.

### 17. Ans.(B)

1 hour 30 min = 90 min 2 hour 15 min = 135 min According to Question, Empty part of tank in 1 min due to leakage =  $\frac{1}{90} - \frac{1}{135} = \frac{3-2}{270} = \frac{1}{270}$ Thus, time taken to empty the tank = 270 min = 4 hour 30 min

### 18. Ans.(D)

One tap fills in 1 min =  $\frac{1}{25}$  part Second tap empties in 1 min =  $\frac{1}{50}$  part Both tap together in 1 min =  $\frac{1}{25} - \frac{1}{50} = \frac{2-1}{50} =$  $\frac{\frac{1}{50}}{\text{Total time taken to fill the tank}} = 50 \text{ min}$ 

19.

20.

Pipes M and N filled the tank in 1 hour =  $\frac{1}{45}$  –  $\frac{1}{90} = \frac{2-1}{90} = \frac{1}{90}$ Time taken by M and N to fill the entire part of the tank = 90 hours : Time taken to fill half of the tank  $=\frac{90}{2}=45$  hour Ans.(B) Time taken to fill the tank completely = 8 hours

Part filled in one hour =  $\frac{1}{8}$  part Time taken to fill the tank due to leakage = 8 + 2 = 10 hours Part filled in one hour =  $\frac{1}{10}$ Emptied part in 1 hour due to leakage

 $=\frac{1}{8}-\frac{1}{10}=\frac{5-4}{40}=\frac{1}{40}$ 

Therefore, the tank will be empty in 40 hours due to leakage.

21.

22.

23.

24.

Ans.(B) Time taken to fill the tank by tap = 15 hours So, part of tank filled in 1 hour by tap =  $\frac{1}{15}$ Time taken to fill the tank due to leakage = 20 hours Thus, part of tank filled in 1 hour due to leakage = 1/20Let the tank will be emptied in x hours by the leakage. Therefore,:  $\frac{1}{x} = \frac{1}{15} - \frac{1}{20}$  $\frac{1}{x} = \frac{4-3}{60} = \frac{1}{60}$ x = 60 hour Ans.(D) Part of tank filled in 1 hour by three pipes  $= \frac{1}{6.3} + \frac{1}{8.4} - \frac{1}{4.8}$  $= \frac{10}{63} + \frac{10}{84} - \frac{10}{48}$  $= \frac{\frac{10}{10}}{\frac{10}{10}} = \frac{10}{\frac{10}{10}} = \frac{5}{72}$ Thus, time taken to fill the tank  $=\frac{72}{r}$  $14\frac{2}{5}$  hours = 14 hours 24 min Ans.(A) Part filled by (A + B) in 1 hour =  $\frac{1}{6}$ Part filled by (B + C) in 1 hour =  $\frac{1}{10}$ Part filled by (C + A) in 1 hour =  $\frac{2}{15}$ So by adding all three, Part filled by 2 (A + B + C) in 1 hour  $=\frac{1}{6}+\frac{1}{10}+\frac{2}{15}$ Part filled by 2 (A + B + C) in 1 hour =  $\frac{12}{30}$ Part filled by (A + B + C) in 1 hour =  $\frac{12}{60}^{30} = \frac{1}{5}$ Part filled by A in 1 hour =  $\frac{1}{5} - \frac{1}{10}$ Part filled by A in 1 hour =  $\frac{2-1}{10} = \frac{1}{10}$ Hence the tank is filled by A in 10 hours. Ans.(A) The time it takes to fill the tank when opening

all the three pipes together = 27 min, Let, third pipe empties the tank in x min.

$$\frac{\frac{1}{30} + \frac{1}{45} - \frac{1}{x}}{\frac{1}{x}} = \frac{1}{\frac{1}{30}} + \frac{1}{45} - \frac{1}{\frac{1}{x}} = \frac{\frac{1}{30} + \frac{1}{45} - \frac{1}{\frac{1}{270}}}{\frac{1}{270}} = \frac{\frac{15-10}{270}}{\frac{1}{x}} = \frac{\frac{5}{270}}{\frac{1}{x}}$$

x = 54Therefore, the third pipe will empty the tank in 54 min.

### 25. Ans.(A)

Filled part of tank in 1 hour by tap A =  $\frac{1}{2}$ 

 $\frac{\frac{1}{27}}{\frac{1}{27}}$ 

Filled part of tank in 1 hour by tap  $B = \frac{1}{8}$ 

Part of tank emptied in 1 hour by tap C =  $\frac{1}{4}$ 

According to Question,

: Tank will be filled in 1 hour by (A + B + C) =  $\frac{1}{2} + \frac{1}{8} - \frac{1}{4} = \frac{3}{8}$  part

: Total time taken by the three taps to fill the tank =  $\frac{8}{3}$  hours

### 26. Ans.(A)

Part filled by (A + B + C) in one hour  $= \frac{1}{6} + \frac{1}{8} - \frac{1}{10} = \frac{23}{120}$   $\therefore \text{ Time taken to fill the tank completely}$   $= \frac{1}{6} + \frac{1}{8} - \frac{1}{10} = \frac{23}{120}$   $= 5\frac{5}{23} \text{ hours}$ 

### 27. Ans.(C)

Part of tank filled by A in 1 hour =  $\frac{1}{5}$ Part of tank filled by B in 1 hour =  $\frac{1}{7}$ Part of tank emptied in 1 hour by C =  $\frac{1}{14}$ Part of tank filled by all three pipes =  $=\frac{1}{5} + \frac{1}{7} - \frac{1}{14} = \frac{14 + 10 - 5}{70} = \frac{19}{70}$ 

Therefore, the tank can be filled in  $3\frac{13}{19}$  hours by all three taps.

### 28. Ans.(B)

Part of tank filled by all three pipes in 1 hour =  $\frac{1}{10.8} + \frac{1}{21.6} - \frac{1}{18} = \frac{10}{108} + \frac{10}{216} - \frac{1}{18}$ 

$$=\frac{20+10-12}{216}=\frac{18}{216}=\frac{1}{12}$$

Time taken to fill the tank by all three pipes = 12 hours

### 29. Ans.(D)

Remaining part of tank =  $1 - \frac{1}{12} = \frac{11}{12}$  part According to Question –

$$\frac{t}{3.9} + \frac{t}{5.2} - \frac{t}{10.4} = \frac{11}{12}$$

$$\frac{10t}{39} + \frac{10t}{52} - \frac{5t}{52} = \frac{11}{12}$$

$$\frac{40t + 30t - 15t}{156} = \frac{11}{12}$$

$$\frac{55t}{156} = \frac{11}{12}$$

$$t = \frac{13}{5} = 2$$
 hours 36 min

### 30. Ans.(D)

Filled part of tank in 1 hour by pipe A =  $\frac{1}{8}$ 

Part of tank filled by pipe B in 1 hour =  $\frac{1}{p}$ 

Part of tank filled by pipe C in 1 hour =  $\frac{1}{24}$ The three together fill the tank in 2.4 hours. By question –

$$\frac{1}{8} + \frac{1}{p} + \frac{1}{24} = \frac{1}{2.4}$$
$$\frac{1}{p} = \frac{10}{24} - \frac{1}{8} - \frac{1}{24}$$
$$\frac{1}{p} = \frac{10^{-3-1}}{24}$$
$$\frac{1}{p} = \frac{6}{24}$$
$$\boxed{P = 4 \text{ hour}}$$

## 31. Ans.(D)

Let T be the time taken to fill the empty tank.

Filled part of tank in 1 hour by A =  $\frac{1}{12}$ Filled part of tank in 1 hour by B =  $\frac{1}{16}$ 

The tank emptied in 1 hour by the third tap =  $\frac{1}{8}$ According to Question –

$$\therefore \frac{1}{T} = \frac{1}{12} + \frac{1}{16} - \frac{1}{8}$$

$$\Rightarrow \frac{1}{T} = \frac{4+3-6}{48}$$

$$\Rightarrow \frac{1}{T} = \frac{1}{48}$$

$$\Rightarrow T = 48 \text{ hours}$$

### 32. Ans.(D)

Tap A fills in 5 hours, tap B fills in 20 hours. Tap C empties the tank in 10 hours. Part of tank filled by all three taps in 1 hour  $=\frac{1}{5}+\frac{1}{20}-\frac{1}{10}=\frac{4+1-2}{20}=\frac{3}{20}$ So, total time taken to fill thetank  $=\frac{20}{2}$  hours.

## 33. Ans.(A)

Let the tank be filled in x hour. According to Question,  $\frac{1}{2} + \frac{x}{4} + \frac{x}{4} + \frac{x}{4} + \frac{x}{4} = 1$   $\frac{4x}{4} = \frac{1}{2} \Rightarrow x = \frac{1}{2}$  hour Total time taken to fill the tank =  $2 + \frac{1}{2}$ = 2 hours 30 min.

### 34. Ans.(B)

Pipe A filled the tank in 1 hour =  $\frac{1}{60}$ Part of tank filled in 1 hour by pipe C =  $\frac{1}{48}$ Part of tank emptied by pipe B in 1 hour =  $\frac{1}{24}$ 

Therefore, the part emptied by the three tanks in 1 hour  $= \frac{1}{24} - \left(\frac{1}{60} + \frac{1}{48}\right) = \frac{10 - (4+5)}{240} = \frac{1}{240}$ Hence, the time taken to empty 2/3 of the tank  $=\frac{2/3}{1/240}=160$  hours Therefore, it will take 160 hours to empty 2/3 of the tank ie to fill 1/3 part. Ans.(D) 1 hour work of A and B  $\left(\frac{1}{A} + \frac{1}{B}\right) = \frac{1}{6}$ 1 hour work of B and C  $\left(\frac{1}{B} + \frac{1}{C}\right) = \frac{1}{10}$ 1 hour's work of A and C  $\left(\frac{1}{A} + \frac{1}{C}\right) = \frac{1}{\frac{15}{2}} = \frac{2}{15}$ Adding equation (1), (2), (3)  $\left(\frac{1}{A} + \frac{1}{B}\right) + \left(\frac{1}{B} + \frac{1}{C}\right) + \left(\frac{1}{A} + \frac{1}{C}\right) = \frac{1}{6} + \frac{1}{10} + \frac{2}{15}$  $2\left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C}\right) = \frac{5+3+4}{30}$  $2\left(\frac{1}{4} + \frac{1}{8} + \frac{1}{6}\right) = \frac{12}{30}$  $\frac{1}{A} + \frac{1}{B} + \frac{1}{C} = \frac{12}{30 \times 2} = \frac{1}{5}$ 1 hour work of A, B and C =  $(\frac{1}{A} + \frac{1}{B} + \frac{1}{C}) = \frac{1}{5}$ Substituting equation (1) from equation (4)  $\frac{1}{A} + \frac{1}{B} + \frac{1}{C} - \left(\frac{1}{A} + \frac{1}{B}\right) = \frac{1}{5} - \frac{1}{6}$  $\frac{1}{C} = \frac{6-5}{30} = \frac{1}{30}$  $\frac{1}{C} = \frac{1}{30}$ Time taken to fill the tank by C = 30 hours Ans.(C) Emptied part of tank =  $1 - \frac{1}{10} = \frac{9}{10}$ 

39.

40.

41.

Filled part of tank by all three pipes in 1 hour  $=\frac{1}{2}+\frac{1}{2}-\frac{1}{2}$ 

$$= \frac{5}{1} + \frac{3}{1} - \frac{7.5}{75}$$
$$= \frac{15 + 25 - 10}{75} = \frac{30}{75} = \frac{2}{5}$$
Time taken to fill 2/5 of tank = 1 h

Time taken to fill 9/10 of tank =  $\frac{5}{2} \times \frac{9}{10} = 2$ hour 15 min

## 37. Ans.(D)

35.

36.

Let the first pipe was closed after x hours. According to Question,

$$\Rightarrow \frac{x}{24} + \frac{16}{32} = 1$$
$$\Rightarrow \frac{x}{24} + \frac{1}{2} = 1$$
$$\Rightarrow \frac{x}{24} = \frac{1}{2}$$
$$x = 12 \text{ hour}$$

Ans.(B)

Therefore, the first pipe should be closed after 12 hours.

### 38.

Tube  $A \rightarrow 12$  min Tube  $B \rightarrow 15$  min [L.C.M of 12 and 1 5

= 60 unit] Tube  $C \rightarrow (-6)$  Empties in min. Tube  $A \rightarrow 12 \min \rightarrow 60$  unit  $A \rightarrow 1 \min \rightarrow 5$  unit Tube  $B \rightarrow 15 \text{ min } \rightarrow 60 \text{ unitt}$  $B \rightarrow 1 \min \rightarrow 4$  unit (A + B) Both tubes together 9 units / min (A + B) Both tubes for the first 5 min Opened =  $5 \times 9 = 45$  Unit C will empty =  $\frac{60}{6}$  = 10 unit / min When the C tube is opened. (A + B - C) Tube work together = 5 + 4 - 10 = -1 unit / min Hence, 1 unit / min will be empty. So it will take 45 min to empty 45 units. Ans.(B) Let the time taken by both the pipes to fill the tank is x hours. By question - $\frac{x-3}{22} + \frac{x}{33} = 1$  $\frac{3x-9+2x}{66} = 1$ 5x-9 = 665x = 75x = 15Therefore, it takes 15 hours to fill the tank by both pipes. Ans.(D) Part filled by pipe A in 1 hour =  $\frac{1}{1.8}$ Part filled by pipe B in 1 hour =  $\frac{1}{2.7}$ Part emptied by pipe C in 1 hour =  $\frac{1}{45}$ Let pipe A opened for x hours. So pipe B open for (5.5 - x) hours. And pipe C was always open (up to 5.5 hours). Then,  $\frac{x}{1.8} + \frac{(5.5-x)}{2.7} - \frac{5.5}{4.5} = 1$  $= \frac{15x + 55 - 10x - 33}{27} = 1$ 5x = 27 + 33 - 555x = 5x = 1Hence pipe A opened for 1 hour. So pipe B worked = (5.5 - 1) = up to 4.5 hours Ans.(C) Part of reservoir filled by A, B and C in 1 hour = 1/6 Part of reservoir filled by A, B and C in 2 hour  $= 2 \times 1/6 = 1/3$ So, Remaining part = 1 - 1/3 = 2/3Part filled by A and B in 7 hours =  $\frac{2}{3}$ Part filled by A and B in 1 hour =  $\frac{2}{21}$  Part

Part filled in 1 hour by  $C = \frac{1}{6} - \frac{2}{21} = \frac{7-4}{42}$ 

 $=\frac{3}{42}=\frac{1}{14}$ 

Time taken by C to fill the reservoir = 14 hours **Ans.(C)** 

Let the time taken to fill the remaining part of the tank = t hour

Tank filled in 1 hour by both entrance pipes  $\frac{1}{4} + \frac{1}{6} = \frac{5}{12}$ 

<sup>4</sup> <sup>6</sup> <sup>12</sup> Remaining part  $1 - \frac{5}{12} = \frac{7}{12}$ According to Question –

$$\frac{t}{4} + \frac{t}{6} - \frac{t}{8} = \frac{7}{12}$$

$$\frac{6t + 4t - 3t}{24} = \frac{7}{12}$$

$$\frac{7t}{24} = \frac{7}{12}$$

$$t = \frac{7 \times 24}{7 \times 42}$$

$$t = \frac{1}{7 \times 12}$$
  
 $t = 2$  hrs.

Therefore, the remaining part of the tank will be filled in 2 hours.

## 43. Ans.(B)

42.

Part filled by (A + B + C) in 1 hour =  $\frac{1}{4}$ 

Part filled by (A + B) in 1 hour =  $\frac{1}{a}$ 

Part filled by C in 1 hour =  $\frac{1}{4} - \frac{1}{9} = \frac{5}{36}$ 

Time taken by C to fill the entire tank =  $\frac{36}{5}$  hrs. Let C complete the remaining work in t hour. According to Question,

$$3\left(\frac{1}{A} + \frac{1}{B} + \frac{1}{c}\right) + \frac{t}{c} = 1$$
$$\frac{t}{c} = 1 - \frac{3}{4}$$
$$t = \frac{36}{5} \times \frac{1}{4} = \frac{9}{5}$$
$$t = 1.8$$

The time taken by C to fill the remaining part is 1.8 hours.

44. Ans.(D)

Time taken by P and Q to fill the tank =  $\frac{7\times 6}{7-6}$  = 42 hrs.

Part of tank filled by P in 1 hour =  $\frac{1}{7}$  part

Part of tank filled by P in 3 hours =  $\frac{3}{7}$  part

Time taken to empty the  $\frac{3}{7}$  part of tank by Q =

1

 $\frac{3}{7} \times 42 = 18$  hours

### 45. Áns.(D)

Suppose cylinder will be full in t min. According to Question –

$$\frac{\frac{4}{15} + \frac{t}{40} = 1, \frac{32 + 3t}{120} = 3t = 120 - 32$$
$$t = \frac{88}{3}$$

t = 29 min 20sec

### 46. Ans.(A)

Part filled by pipe A in 1 hour =  $\frac{1}{6.8}$ Part filled by pipe B in 1 hour =  $\frac{1}{10.2}$ Part Filled by pipe B in 1.7 hours =  $\frac{1.7}{10.2} = \frac{1}{6}$ Remaining Part =  $1 - \frac{1}{6} = \frac{5}{6}$  part Part filled by (A + B) in 1 hour =  $\left(\frac{1}{6.8} + \frac{1}{10.2}\right) = \frac{25}{102}$ Time taken to fill 5/6 parts by (A + B) =  $= \frac{5}{6} \times \frac{102}{25} = \frac{17}{5} = 3.4$  hrs. Total Time = 1.7 + 3.4 = 5.1 hours = 5 hours 6 min

## 47. Ans.(A)

Part filled by pipe C in one hour =  $\frac{1}{4}$ Part filled by pipe C in three hours =  $3 \times \frac{1}{4} = \frac{3}{4}$ Remaining part =  $1 - \frac{3}{4} = \frac{1}{4}$  part Time taken for pipe D to fill a part = 5 hours Hence the time taken for pipe D to fill the remaining 1/4 part =  $5 \times \frac{1}{4} = \frac{5}{4} = 1.25$  hour

### 48. Ans.(D)

Filled part of tank in 1 hour by pipe A =  $\frac{1}{10}$ Filled part of tank in 1 hour by pipe B =  $\frac{1}{12}$ Due to the assumed leakage, the tank will be emptied in x hours.

: Empty part of tank due to leakage in 1 hour  $=\frac{1}{r}$ 

(A + B) filled tank in 1 hour =  $\left(\frac{1}{10} + \frac{1}{12}\right) = \frac{11}{60}$ Therefore, pipes A and B together can fill the tank in  $\frac{60}{11}$  hours.

Total time to fill tank due to leakage =  $\frac{60}{11}$  +  $\frac{60}{231} = \frac{1320}{231}$  hrs.

By question,  $\frac{1}{A} + \frac{1}{B} - \frac{1}{x} = \frac{231}{1320}$   $\frac{1}{10} + \frac{1}{12} - \frac{1}{x} = \frac{231}{1320}$   $\frac{1}{x} = \frac{11}{60} - \frac{231}{1320}$   $\frac{1}{x} = \frac{242 - 231}{1320} = \frac{11}{1320}$   $x = \frac{1320}{11} = 120 \text{ hrs.}$ 

Therefore, full tank filled will be completely empty in 120 hours by leakage.

### 49. Ans.(A)

Let pipe B opened for x hours. According to Question,

$$\frac{\frac{1}{A} + \frac{1}{B} - \frac{1}{c} = 1}{\frac{3.5}{2.5} + \frac{x}{15} - \frac{3.5}{7.5} = 1}$$
$$\frac{\frac{7}{5} + \frac{x}{15} - \frac{7}{15} = 1}{\frac{x}{15} = 1 - \frac{7}{5} + \frac{7}{15}}$$
$$= \frac{1 - \frac{7}{5} + \frac{7}{15}}{\frac{15}{15}}$$
$$= \frac{15 - 21 + 7}{15}$$
$$\frac{x}{15} = \frac{1}{15} \Rightarrow x = 1 \text{ hrs.}$$

50. Ans.(B)

> Filled part of tank by first pump in 1 hour =  $\frac{1}{15}$ Filled part of tank in 1 hour by second pump  $=\frac{1}{20}$

> Filled part of tank in 1 hour by third pump =  $\frac{1}{20}$

Pre – filled section of tank = 
$$\frac{1}{r}$$
 (Given)

Remaining part =  $1 - \frac{1}{5} = \frac{4}{5}$ 

Let the tank will take x hours to fill According to Question,

$$\frac{\frac{4}{15} + \frac{x}{20} + \frac{6}{30} = \frac{4}{5}}{\frac{16 + 3x + 12}{60}} = \frac{4}{5}$$

$$\frac{28 + 3x = 48}{3x = 20}$$

$$x = \frac{20}{3} = 6 \text{ hrs } 40 \text{ min}$$
Hence the required time = 8am + 6 hr.

Hence the required time = 8am + 6 hr 40 min = 2:40 pm

### 51. Ans.(A)

Let pipe A was switched on for x hours. According to Question,

$$\frac{x}{15} + \frac{19 - x}{25} = 1$$
  

$$\frac{5x + 57 - 3x}{75} = 1$$
  

$$2x + 57 = 75$$
  

$$2x = 75 - 57$$
  

$$2x = 18$$
  

$$x = 9$$
  
Hence pipe A was opened for 9 hours.

52. Ans.(C)

Let the remaining tank will take n hours to fill. According to Question.

$$\frac{n+1}{8} + \frac{n+1}{6} - \frac{n}{10} = 1$$

$$\Rightarrow \frac{6n+6+8n+8}{48} - \frac{n}{10} = 1$$

$$\Rightarrow \frac{7n+7}{24} - \frac{n}{10} = 1$$

$$\Rightarrow \frac{70n+70-24n}{240} = 1$$

$$\Rightarrow \frac{35n+35-12n}{120} = 1$$

$$\Rightarrow 23n + 35 = 120$$

$$23n = 85$$

$$\boxed{n = \frac{85}{23} \text{ hrs.}}$$

#### 53. Ans.(A)

Let pipe B will fill the tank in x hours. Filled part of tank in 1 hour by A =  $\frac{1}{4.5}$ Filled part of tank by A and B in 1 hour =  $\frac{1}{225}$  $\frac{\frac{1}{4.5} \times \frac{1}{2} + \frac{x}{2.25}}{\frac{10}{90} + \frac{100x}{225}} = 1$  $\frac{\frac{1}{90}}{\frac{1}{9} + \frac{4x}{9}} = 1$ 1 + 4x = 9 x = 2 hrs. Thus, the total time taken to fill the tank = 2hours + 30 min = 2 hours 30 min

#### 54. Ans.(D)

$$\frac{A = -5.6}{B = +7} \rightarrow 39.2$$

Unit – 7

Work done by (A + B) in 2 hours =  $\frac{+5.6}{(-1.4)}$ Work done by (A+B) in 46 hours =  $-1.4 \times 23$ Remaining work = 39.2 - 32.2 = 7 unit Now in 47 hours the A will drain 7 unit of water.

So total hours = 46 + 1 = 47 hours

#### 55. Ans.(D)

Filled part of tank in 2 hours =  $\frac{1}{15} - \frac{1}{21}$  $= \frac{1}{15} - \frac{1}{21} = \frac{7-5}{105} = \frac{2}{105}$ Multiplying by 49, the portion of the tank filled in 98 hours =  $\frac{2}{105} \times 49 = \frac{14}{15}$  $\therefore$  Remaining part =  $1 - \frac{14}{15} = \frac{1}{15}$ 

So, A will fill 1/15 part in the next 1 hour. So it will take a total of 99 hours.

### 56. Ans.(D)

Part of tank filled by pipe A in 1 hour =  $\frac{1}{15}$  part Part of the tank filled by pipe B in 1 hour =  $\frac{1}{24}$ part

Therefore, pipe A and pipe B are opened one by one in turn and after closing, i.e., filled part

of the resulting tank in 2 hours. =  $\frac{1}{1.5} - \frac{1}{2.4} = \frac{2.4 - 1.5}{3.60} = \frac{.9}{3.6} = \frac{9}{36} = \frac{1}{4}$ Thus 1/4 of the tank fills in = 2 hours, Hence, time taken to fill the entire part  $=\frac{4\times 2}{1}=8$  hours

### 57. Ans.(D)

Water filled by inlet pipe in 1 hour =  $\frac{1}{1125}$  part Water drawn by outlet pipe in 1 hour =  $\frac{1}{225}$ parts
Water filled in 2 hours in turn by both pipes =  $\frac{\frac{1}{11.25} - \frac{1}{22.5}}{= \frac{1}{22.5}} = \frac{\frac{2-1}{22.5}}{= \frac{1}{22.5}}$ 

Water filled by pipes in 2 hours =  $\frac{1}{22.5}$  parts Water filled in 2 × 21 hours =  $\frac{1}{22.5}$  × 21 Water filled in 42 hours =  $\frac{42}{45}$  parts Remaining part =  $1 - \frac{42}{45} = \frac{3}{45}$ Time taken to fill  $\frac{3}{45}$  portion by inlet pipe =  $\frac{3}{45}$  × 11.25 =  $\frac{3}{4}$  hour =  $\frac{3}{4}$  × 60 = 45 min Total time = 42 hrs. 45 min. **Ans.(D)** 

58.



Emptied in 2 hours = 1 liter Emptied in  $(2 \times 135)$  hours = 135 liters. Last 3 liter will be emptied by pipe B in 1 hour So total time taken = 271 = 11 days 7 hours

59. Ans.(D)

Filled part of tank with inlet pipe A in 1 hour =  $\frac{1}{10.5}$ 

Empty part of tank in 1 hour by output pipe B  $=\frac{1}{35}$ 

The portion filled by both (A + B) in a total of 2 hours

Hours  $= \frac{1}{10.5} - \frac{1}{35}$   $= \frac{2}{21} - \frac{1}{35}$   $= \frac{70-21}{21\times35} = \frac{49}{35\times21} = \frac{7}{105} = \frac{1}{15}$ Time taken to fill  $\frac{1}{15}$  part = 2 hours In 2 x 14 hours, filled part of the tank =  $\frac{14}{15}$ Remaining part =  $1 - \frac{14}{15} = \frac{1}{15}$ Now the time taken by the pipe to fill  $\frac{1}{15}$  part  $= \frac{1}{15} \times 10.5 = 0.7$  hrs.  $= 60 \times 0.7 = 42$  min. Thus, the total time taken to fill the tank = 28

60. Ans.(C)

hours 42 min

Filled part of tank in 1 hour by pipe A =  $\frac{1}{57}$ Part of tank emptied by pipe B in 1 hour =  $\frac{1}{38}$  Part of tank emptied by both pipes in 2 hours  $= \frac{1}{38} - \frac{1}{57} = \frac{57-38}{57\times38} = \frac{19}{57\times38} = \frac{1}{114}$ Time taken to empty  $\frac{1}{114}$  part = 2 hours  $\therefore$  Time taken to empty the entire tank  $= 2 \times 114 = 228$  hours = 9 days 12 hours

61. Ans.(D)

Time taken to fill the tank = 40 hours Time taken to empty the tank = 32 hours If both taps are alternately operational emptying part of the tank in 2 hours  $= \frac{1}{32} - \frac{1}{40} = \frac{5-4}{160} = \frac{1}{160}$ Time taken to fill  $\frac{1}{160} \times 155$  part of tank  $= 2 \times 155$ In the end only the emptying pipe will work. Time taken to empty  $\frac{1}{32}$  part = 1 hour Thus, the time taken to empty the entire tank

# 62. Ans.(A)

Part of oil present in the pot =  $\frac{3}{5}$ 

Remaining oil after extract 20 liters oil =  $\frac{7}{12}$ So the part that was filled with 20 liters of oil =  $\frac{3}{2} - \frac{7}{12}$ 

$$=\frac{12}{36-35}=\frac{1}{60}$$

: Quantity of oil present in  $\frac{1}{60}$  part = 20 liters

... Quantity of oil present in one part

$$=\frac{20\times60}{1}$$
 = 1200 liters

= 310 + 1 = 311 hrs.

Hence the capacity of the pot is 1200 liters.

## 63. Ans.(D)

Let the time taken to fill the tank through pipe = t hours

$$4$$
  $2 \pm 6 = 1$ 

 $\frac{9}{t} = \frac{1}{5} \Rightarrow t = 45 \text{ hours}$ 

Therefore, pipe X will fill the tank in 45 hours.

# 64. Ans.(B)

The time taken by X, Y and Z is 6T, 3T and 2T respectively.

 $\begin{array}{l} X:Y:Z\\ x:2x:6x \rightarrow \text{ Capacity} \end{array}$ 

 $6:3:1 \rightarrow \text{Time}$ 

$$\frac{1}{6T} + \frac{1}{3T} + \frac{1}{T} = \frac{1}{6}$$

$$\Rightarrow \frac{1+2+6}{6T} = \frac{1}{6}$$

 $\Rightarrow$  T = 9 Thus, the time taken by X to fill the tank = 6T = 6 × 9 = 54 hours

65. Ans.(C)

If pipe A fills a tank in x hours, then

⊡⊡ 1

Pipe B will fill it in  $\frac{x}{4.5}$  hours as B's work capacity is 4.5 times more than A. According to Question,  $\frac{\binom{1}{x} + \frac{4.5}{x}}{\frac{1}{9x} - \frac{1}{9}} = \frac{1}{7.5}$   $\frac{\binom{1}{x} - \frac{1}{9}}{\frac{1}{9x} - \frac{1}{9}} = \frac{2}{15}$   $\frac{\binom{49.5 - x}{9x}}{\frac{9}{x} - \frac{2}{15}} = \frac{2}{15}$  $\Rightarrow 5(49.5 - x) = 6x$  $\Rightarrow 247.5 - 5x = 6x$  $\Rightarrow 11x = 247.5$  $\Rightarrow x = \frac{2475}{110}$  $\Rightarrow x = 22.5$  hrs. Ans.(A) Let the working capacity of tank A = 1Then, the working capacity of tank B = 1.5A : B = 1 : 1.5 = 10 : 15 = 2 : 3 The ratio of the times of A and B will be inversely proportional to their efficiency. Hence ratio of times = 3: 2 Hence A's time is 3x and B's time is 2x. According to Question - $\Rightarrow \frac{1}{2x} + \frac{1}{3x} - \frac{1}{12} = \frac{1}{28}$  $\Rightarrow \frac{5}{6x} = \frac{1}{28} + \frac{1}{12} \\ \Rightarrow \frac{5}{6x} = \frac{12 + 28}{28 \times 12}$  $\Rightarrow \frac{5}{x} = \frac{40}{56} \boxed{x = 7}$ 

Time taken to fill the tank with less efficient pipe =  $3x = 3 \times 7 = 21$  hours

# 67. Ans.(B)

66.

Let the emptying pipe empty the tank in x hours.

By question –  

$$\frac{1}{2} \left[ \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} \right] + \frac{1}{4} \left[ \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} \right] - \frac{5}{x} = \frac{1}{2}$$

$$\frac{1}{2} \times \frac{34}{36} + \frac{1}{4} \times \frac{34}{36} - \frac{5}{x} = \frac{1}{2}$$

$$\frac{17}{36} + \frac{17}{72} - \frac{5}{x} = \frac{1}{2}$$

$$\frac{34 + 17}{72} - \frac{1}{2} = \frac{5}{x}$$

$$\frac{51 - 36}{72} = \frac{5}{x}$$

$$\frac{51 - 36}{72} = \frac{5}{x}$$

$$\frac{15}{72} = \frac{5}{x}$$

$$x = \frac{5 \times 72}{15}$$

$$x = 24$$

Therefore, the emptying pipe will empty the tank in 24 hours.

# 68. Ans.(A)

Let the emptying pipe empty the tank in x hours.

According to Question -

$$\Rightarrow \frac{1}{2} \left[ 2 \left\{ \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} + \right\} \right] + \frac{1}{4} \left[ 2 \left\{ \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} \right\} \right] + \frac{1}{3} \left\{ 2 \left\{ \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} \right\} \right] - \frac{10}{x} = 1$$
  
$$\Rightarrow 2 \left[ \frac{3}{4} \left( \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3} \right) \right] - \frac{10}{x} = 1$$
  
$$\Rightarrow \frac{3}{4} \times \frac{34}{36} - \frac{5}{x} = \frac{1}{2}$$
  
$$\Rightarrow \frac{17}{24} - \frac{5}{x} = \frac{1}{2}$$
  
$$\Rightarrow \frac{5}{x} = \frac{17}{24} - \frac{12}{24}$$
  
$$\Rightarrow \frac{5}{x} = \frac{5}{24}$$
  
$$x = 24 \text{ hrs.}$$

# 69. Ans.(B)

Suppose the second pipe fills the tank in x hours. Then the first pipe will take (x/2) hour (because it works doubly efficiently). A third pipe empties the tank in 12 hours. Then, according to the question,

$$\frac{\bar{x}}{2} + \frac{1}{x} - \frac{1}{12} = \frac{1}{12} \text{ or } \frac{2}{x} + \frac{1}{x} - \frac{1}{12} = \frac{1}{12}$$
$$\Rightarrow \frac{3}{x} = \frac{1}{12} + \frac{1}{12}$$
$$\Rightarrow \frac{3}{x} = \frac{2}{12}$$
$$\Rightarrow x = 18 \text{ hrs.}$$

## 70. Ans.(B)

71.

Let the time taken by A to fill the tank is x hour. The time taken by B to fill the tank will be 2x hour. Time taken by C to empty the tank will be 3x hour.

According to Question,  $\frac{1}{x} + \frac{1}{2x} + \frac{1}{3x} = \frac{1}{6}$   $= \frac{6+3-2}{6x} = \frac{1}{6}$ X = 7 hrs A = 7 hrs, B = 14 hrs, C = 21 hrs Filled part of tank in one hour by A and C together  $= \frac{1}{7} - \frac{1}{21} = \frac{2}{21}$ Hence the time taken by A and C to fill the reservoir  $= \frac{21}{2} = 10.5$  hours. **Ans.(D)** 

According to Question, Total part of tank filled by pipes in 3 hours 15 min

 $= \frac{3}{4} + \frac{1}{16} + \frac{1}{16} + \frac{1}{16} = \frac{15}{16}$ The time taken to fill the remaining 1/16 of the tank is x hour.

$$\frac{x}{4} + \frac{x}{4} + \frac{x}{4} - \frac{x}{2} = \frac{1}{16}$$

$$\frac{3x}{4} - \frac{2x}{4} = \frac{1}{16}$$

$$\frac{x}{4} = \frac{1}{16} \Rightarrow x = 15 \text{ min.}$$
Time to leave to fill the step 10.

Time taken to fill the tank completely =  $3hr \ 15m + \ 15min = 3$  hour 30 min 72. Ans.(A) Let. Time taken by A = 2nTime taken by B = n By question - $\frac{1}{2n} + \frac{1}{n} - \frac{1}{10} = \frac{10}{25}$  $\frac{1}{2n} + \frac{1}{n} = \frac{2}{5} + \frac{1}{10}$  $\frac{1+2}{2n} = \frac{4+1}{10}$  $\frac{\frac{3}{2n}}{\frac{2n}{2n}} = \frac{5}{10}$  $\boxed{n = 3}$ Time taken by low capacity pipe  $= 2n = 2 \times 3$  hrs = 6 hrs 73. Ans.(D) Given -A:B = 1:4A:C = 1:3A:B:C = 1:4:3Let A, B, C fill the tank in x, 4x and 3x hours respectively. According to Question -Ratio of working capacity of A: B: C  $= 1:\frac{1}{4}:\frac{1}{3} = 12:3:4$ Total time =  $19 \times 24 = 456$ Total time taken by  $(A + B) = \frac{456}{15}$ = 30.4 hrs. 74. Ans.(D) The time taken by both holes to empty the jug =  $\frac{1}{15} + \frac{1}{20} = \frac{4+3}{60} = \frac{7}{60}$ Required time =  $\frac{60}{7} = 8\frac{4}{7}$  min 75. Ans.(C) Let the time taken by the big pipe to fill the tank = t Time taken to fill tank by small pipe = t + 12According to Question,  $\frac{1}{t} + \frac{1}{t+12} = \frac{1}{\frac{45}{t}}$  $\frac{t+12+t}{t(t+12)} = \frac{4}{45}$  $90t + 540 = 4t^2 + 48t$  $4t^2 - 42t - 540 = 0$  $2t^2 - 21t - 270 = 0$ 2t(t-18) + 15(t-18) = 0(t-18)(2t + 15) = 0t - 18 = 0 $t = 18 \min$ 76. Ans.(B) Part filled by pipe A in one hour =  $\frac{1}{45}$ Part filled by pipe B in one hour =  $\frac{1}{36}$ Hence, the part filled by (A + B) in one hour =  $\frac{1}{45} + \frac{1}{36} = \frac{4+5}{180} = \frac{9}{180} = \frac{1}{20}$ 

Therefore, both pipes will fill the entire tank in 20 hours.

1 min work of pipes P and Q =  $\frac{1}{10} - \frac{1}{6}$ =  $\frac{3-5}{30} = \frac{-2}{30} = \frac{-1}{15}$ Time taken to empty the tank by Q =  $\frac{\frac{2}{5}}{\frac{1}{15}} = \frac{2}{5} \times \frac{15}{1} = 6$  min

78. Ans.(C)

79.

80.

Part of tank filled in 1 min by pipe A =  $\frac{1}{12}$ Part of tank emptied in 1 min by pipe B =  $\frac{1}{c}$ Let the time taken to fill or empty the tank completely = t minAccording to Question, Time taken to empty or fill tank by both pipes  $= \frac{t}{12} - \frac{t}{6} = \frac{2}{5}$  $\Rightarrow \frac{t-2t}{12} = \frac{2}{5}$  $\Rightarrow \frac{-t}{12} = \frac{2}{5}$  $\Rightarrow t = -4.8 \text{ min.}$ Where (-) indicates emptying of the tank. Ans.(A) Suppose all three pipes will fill 2/3 of the tank in x hours.  $\Rightarrow \frac{x}{7} + \frac{x}{10.5} - \frac{x}{5.25} = \frac{2}{3}$  (Because only 2/3 of the tank is to be filled)  $\Rightarrow \frac{x}{7} + \frac{10x}{105} - \frac{100x}{525} = \frac{2}{3}$  $\Rightarrow \frac{75x + 50x - 100x}{525} = \frac{2}{3}$  $\Rightarrow \frac{125x - 100x}{525} = \frac{2}{3}$  $\Rightarrow \frac{25x}{525} = \frac{2}{3}$  $\Rightarrow \frac{x}{21} = \frac{2}{3}$  $\Rightarrow x = \frac{21 \times 2}{3} = 14$  $\Rightarrow x = 14$  hrs. Ans.(A) Let the time taken by Z be x min. Filled part of tank in 1 min by  $X = \frac{1}{60}$ Y filled the tank in 1 min =  $\frac{1}{75}$ Empty part of tank in 1 min by  $'Z' = \frac{1}{2}$ According to Question,  $\frac{1}{60} + \frac{1}{75} - \frac{1}{r} = \frac{1}{50}$ 

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \left(\frac{1}{60} + \frac{1}{75}\right)$$
  

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \left(\frac{5+4}{300}\right)$$
  

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \frac{9}{300}$$
  

$$\Rightarrow -\frac{1}{x} = \frac{6-9}{300} = -\frac{3}{300}$$
  

$$\Rightarrow -\frac{1}{x} = -\frac{1}{100}$$
  

$$\Rightarrow x = 100 \text{ min}$$
  
Thus, time taken by 'Z' = 100 min

81. Ans.(D)

Filled part of tank in 1 hour by pipe A =  $\frac{1}{7}$ 

Filled part of tank in 1 hour by pipe B =  $\frac{1}{10}$ 

Filled part of tank in 1 hour by pipe C =  $\frac{1}{14}$ 

By question,

Opening all three pipes together, taken time to fill the tank

$$= \frac{1}{7} + \frac{1}{10} - \frac{1}{14}$$
$$= \frac{10 + 7 - 5}{70} = \frac{12}{70} = 5\frac{5}{6}$$

Therefore, all three pipes together will fill the tank in  $5\frac{5}{6}$  hours.

#### Ans.(B) 82.

=

Part of tank filled by tap in 1 hour =  $\frac{1}{10}$ Part of tank filled by tap in 1 hour due to leakage =  $\frac{1}{11}$ 

Let the tank take x hours to empty According to Question.

$$\frac{1}{10} - \frac{1}{x} = \frac{1}{11}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{10} - \frac{1}{11}$$

$$= \frac{11 - 10}{110}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{110}$$

$$= 110$$
 hour

Hence the time taken for the tank to be emptied = 110 hours

#### 83. Ans.(D)

Let the extra time taken by Q to fill the tank = t min

By question,  $\frac{\frac{4}{15} + \frac{t+4}{20}}{\frac{16+3t+12}{60}} = 1$ 3t + 28 = 603t = 32t = 10 mint. 40 sec.

# Total time taken = 10 min 40 seconds + 4 min = 14 min 40 seconds

#### 84. Ans.(A)

Suppose A alone will take t hours to fill the tank.

```
According to Question -
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$$\frac{\frac{8}{24} + \frac{20}{t} = 1}{\frac{20}{t} = 1 - \frac{1}{3}}$$

$$\frac{\frac{20}{t}}{\frac{1}{t} = \frac{2}{3}}$$

$$t = 30 \text{ hour}$$
Hence A alone will take 30 hours to fill the tank.

85. Ans.(A)

Capacity of P = 10 min  $\therefore \text{ One min capacity of } P = \frac{1}{10}$ 20% capacity of P =  $\frac{1}{10} \times \frac{20}{100} = \frac{1}{50}$ Time to fill tanks by 5 pipes  $= \frac{1}{50} + \frac{1}{50} + \frac{1}{50} + \frac{1}{50} + \frac{1}{50} = \frac{1}{50} = \frac{1}{10}$ Therefore total time = 10 min

#### 86. Ans.(D)

The time taken by pipes A, B and C to fill the tank together = 4 hours Let the time taken by pipe A to fill the tank = xhours

 $\therefore$  Time taken to fill the tank by pipe B = 2x

 $\therefore$  Time taken to fill the tank by pipe C =  $\frac{x}{2}$ 

: Filled part of tank in 1 hour by pipes A, B and C

$$\Rightarrow \frac{1}{x} + \frac{1}{2x} + \frac{1}{\frac{x}{2}} = \frac{1}{4} 
\Rightarrow \frac{1}{x} + \frac{1}{2x} + \frac{2}{x} = \frac{1}{4} 
\Rightarrow \frac{1}{x} \left[ 1 + \frac{1}{2} + 2 \right] = \frac{1}{4} 
\Rightarrow \frac{1}{x} \left[ \frac{2+1+4}{2} \right] = \frac{1}{4} 
\Rightarrow \frac{1}{x} \times \frac{7}{2} = \frac{1}{4} 
\Rightarrow x = \frac{7 \times 4}{2} 
x = 7 \times 2 = 14 \text{ hrs.} 
Thus, the time taken b$$

by pipe A to fill the tank alone = 14 hours

#### 87. Ans.(C)

Part of tank filled by pipes X and Y in 1 min =  $\frac{1}{48} + \frac{1}{72} = \frac{72 + 48}{48 \times 72} = \frac{120}{3456}$ Time taken by pipes X and Y to fill the tank = $\frac{3456}{120} = 28.8 \text{ min}$ 120

#### 88. Ans.(A)

Let the leakage take t hour to empty the filled tank then -

$$\frac{1}{4} - \frac{1}{t} =$$

- $\frac{\frac{1}{t}}{\frac{1}{t}} = \frac{\frac{1}{4} \frac{1}{5}}{\frac{1}{t}} = \frac{\frac{5-4}{20}}{1}$

$$\frac{1}{2} = \frac{1}{2}$$

$$= 20$$

t = 20 hour

So, Tank will be empty in 20 hours.

Ans.(D) According to Question Filled part by First pipe in 1 hour =  $\frac{1}{4}$ Emptied part by second pipe in 1 hour =  $\frac{1}{10}$ Filled part by (First + Seconds) pipes in 1 hour =  $\left(\frac{1}{4} - \frac{1}{10}\right) = \frac{5-2}{20} = \frac{3}{20}$ Half  $\left(\frac{1}{2}\right)$  of the tank is already filled. Thus, the remaining part of the tank  $=1-\frac{1}{2}=\frac{1}{2}$ ∴ Time taken to fill  $\frac{3}{20}$  part = 1 hour ∴ Time taken to fill  $\frac{1}{2}$  part =  $\frac{20}{3} \times \frac{1}{2} = \frac{10}{3}$  hrs. = 3 hours 20 min Ans.(A) According to Question  $= \frac{1}{4} + \frac{1}{10} - \frac{1}{6}$  $= \frac{15 + 6 - 10}{60} = \frac{11}{60} \text{ part}$ Time taken to fill entire tank =  $\frac{60}{11}$  hrs. Time taken to fill half tank =  $\frac{60}{2 \times 11} = \frac{30}{11}$  hour Ans.(A) Filled part of tank in 1 hour by pipe A =  $\frac{1}{2}$ Filled part of tank in 1 hour by pipe B =  $\frac{1}{16}$ Part of tank emptied in 1 hour by pipe C =  $\frac{1}{15}$ ... Filled part of tank in 1 hour by (A+B+C)  $= \frac{1}{9} + \frac{1}{18} - \frac{1}{15}$  $= \frac{10 + 5 - 6}{90}$  $= \frac{9}{90} \Rightarrow \frac{1}{10}$ Thus, time taken to fill the entire tank = 10hours Ans.(D) ·· Raghu's tanker fills half of the reservoir in 2 hours. : Three more similar tankers = total of 4 tankers together, will fill the remaining  $\frac{1}{2}$  tank  $in \frac{2}{4} hour = 30 min$ Thus, the time taken to fill the reservoir completely = 2 hours 30 min Ans.(B) Part filled by pipe A in 1 hour =  $\frac{1}{32}$ Part filled by pipe 'C' in 1 hour =  $\frac{1}{4}$ Part emptied in 1 hour by pipe 'B' =  $\frac{1}{24}$ Filled part of tank in 1 hour by three pipe =  $\frac{1}{32} + \frac{1}{48} - \frac{1}{24} = \frac{3+2-4}{96} = \frac{1}{96}$ : It takes 1 hour to fill  $\frac{1}{96}$  part.

89.

90.

91.

92.

93.

:. Time taken to fill  $\frac{2}{3}$  part = 96 ×  $\frac{2}{3}$  = 64 hours Ans.(D) A, B and C will fill the tank together in one

hour =  $\frac{1}{4} + \frac{1}{10} - \frac{1}{6} = \frac{15 + 6 - 10}{60} = \frac{11}{60}$ ∴ Tank will fill by all three =  $\frac{60}{11}$  hrs.

The remaining empty part of the tank =  $1 - \frac{3}{5} = \frac{2}{5}$ 

 $\overset{\circ}{\cdot}$  Time taken for all three to fill the remaining empty part of the tank

$$=\frac{60}{11} \times \frac{2}{5} = \frac{24}{11}$$
 hour

# 95. Ans.(Č)

94.

Part of tank filled in 1 hour by pipe A =  $\frac{1}{4}$ Part of tank filled in 1 hour by A and B together =  $\frac{1}{3}$  part Empty part of tank =  $1 - \frac{1}{4} = \frac{3}{4}$ 

Empty part of tank =  $1 - \frac{1}{4} = \frac{3}{4}$ Time taken to fill remaining empty part by A and B together =  $\frac{3}{4} \times 3 = \frac{9}{4} = 2.25$  hours That is, the time taken to fill the tank completely = 1 + 2.25 = 3.25 hours Therefore, it will take 3 hours, 25 min

# 96. Ans.(A)

Suppose tap A was closed after x hours and tap B was opened, so it can be assumed that tap A ran x hours, tap B ran (112 - x) hours and C ran 112 hours.

Then 
$$x \cdot A + B(112 - x) - C \times 112 = 1$$
  
 $\Rightarrow \frac{x}{32} + \frac{112 - x}{48} - \frac{112}{64} = 1$   
 $\Rightarrow \frac{6x + (112 - x)4 - 112 \times 3}{192} = 1$   
 $\Rightarrow 6x + 448 - 4x - 336 = 192$   
 $\Rightarrow 2x + 112 = 192$   
 $2x = 192 - 112$   
 $2x = 80$   
 $x = 40$  hrs.  
 $\therefore$  Pipe B kept on 112 - x hours  
Therefore, required time = 112 - x  
 $= 112 - 40 = 72$  hrs.

97. Ans.(D)

$$+5$$
  $+5$   $+5$   $+5$   $+6$   $+5$   $+6$   $+3$ 

Work done in 2 hours on alternate = + 5 - 3 = 2 units  $\therefore 1 \ cycle \ (2 \ hrs.) \rightarrow 2 \ unit$  $\downarrow \times 43 \ \downarrow \times 43$  $86 \ hrs. 86 \ unit$  Therefore, the remaining 4 units are done by pipe A in =  $\frac{4}{5} \times 60 = 48$  min.

Thus, the total time taken to fill the tank = 86 hours 48 min

# 98. Ans.(A)

All three tanks will be filled in an hour =  $\frac{1}{2}$  +  $\frac{1}{3} - \frac{1}{6} = \frac{3+2-1}{6} = \frac{4}{6} = \frac{2}{3}$  part  $\therefore$  Remaining part of tank  $= 1 - \frac{1}{6} = \frac{5}{6}$ 

 $\therefore$  Time taken to fill the remaining tank =  $\frac{\overline{6}}{2}$ 

$$=\frac{5}{6} \times \frac{3}{2} = \frac{5}{4} = 1\frac{1}{4}$$
 hrs.  
i.e. 1 hour 15 min

**99**.



 $B \rightarrow 35 hr$ 

Ans.(B)

Tank emptied by A in 1 hour =  $1 \times 5 = 5$  unit Tank filled by B in 1 hour =  $1 \times 4 = 4$  unit  $\therefore$  Tank emptied in 2 hr by (A + B) = -5 + 4 =-1 unit  $\therefore$  1 unit tank empties in 2 hours,  $\therefore$ 135 unit to be emptied by (A + B) =  $135 \times 2 = 270$  hours And the remaining 5 units will be emptied = in 1 hour (by A)

 $\therefore$  Total time = 270 + 1 = 271 hours.

### 100. Ans.(A)

According to Question,



 $\Rightarrow$  450 gallon

### **101.** Ans.(D) The ratio of work done by P, Q and R in 3 min is as below.

$$= \frac{3}{30} : \frac{3}{20} : \frac{3}{10} = \frac{1}{3} : \frac{1}{2} : \frac{1}{1}$$
$$= 2: 3: 6$$

That is, the ratio of P, Q and R = 2: 3: 6 then the ratio of solution C =  $\frac{6}{2+3+6} = \frac{6}{11}$ 

# 102. Ans.(A)

Suppose a high efficiency pipe fills the tank in x hours.

A low efficiency pipe fills the tank in 2x hours. And the third pipe empties that tank in 8 hours.

According to Question,

$$\frac{\frac{1}{x} + \frac{1}{2x} - \frac{1}{8} = \frac{1}{8}}{\frac{3}{2x} = \frac{2}{8}}$$

2x = 12

Thus, low efficiency pipe fills the tank in 12 hrs.

# 103. Ans.(B)

Suppose the drain pipe will empty the tank in x hours.

The working capacity of the first pipe is 1 while the working capacity of the second pipe is  $\frac{1}{2}$ . First pipe filled part of tank in 5 hours

$$= \frac{1}{12} + \frac{1}{9} + \frac{1}{6} + \frac{1}{4} + \frac{1}{3}$$
$$= \frac{3+4+6+9+12}{36} = \frac{34}{36}$$

Then the tank filled in 5 hours by the second pipe =  $\frac{1}{2} \times \frac{34}{36} = \frac{17}{36}$ 

When all three pipes are opened

simultaneously – 
$$\frac{34}{36} + \frac{17}{36} - \frac{5}{7} = 1$$

$$\frac{\frac{51}{36} - 1}{\frac{15}{36} = \frac{5}{x}},$$
$$\frac{\frac{15}{36} = \frac{5}{x}}{x},$$

x = 12 hrs. **Ans.(A)** Let the capacity of Ramu's bucket = x Then the capacitance of Sita's bucket = 3x Drum capacity  $60 \times 3x = 180x$ Let both poured bucket n times in drum.  $\therefore N(3x + x) = 180x$ 

$$N = \frac{180x}{4x} = 45$$

105. Ans.(A)

104.

Emptied part by hole – 1 in 1 min =  $\frac{1}{9}$ 

Emptied part by hole – 2 in 1 min =  $\frac{1}{6}$ 

Therefore, the part of the tank emptied by hole - 1 and hole - 2 in 1 min.

$$=\frac{1}{2}+\frac{1}{2}=\frac{9+6}{2}=\frac{15}{2}$$

 $= \frac{1}{9} + \frac{1}{6} = \frac{1}{9 \times 6} = \frac{1}{54}$ The time taken by both holes to empty tank simultaneously  $= \frac{54}{15} = \frac{18}{5} = 3\frac{3}{5}$  min. 106. Ans.(A) 1 min leakage by hole  $-1 = \frac{1}{15}$ And 1 min leakage by hole -2 = 1/101 min leakage by both holes =  $\frac{1}{15} + \frac{1}{10}$  $=\frac{25}{150}$  part Hence the time taken by hole - 1 and hole - 2 to empty the container =  $\frac{150}{25}$  = 6 min Therefore, holes -1 and  $2^{25}$  together will empty the container in 6 min. 107. Ans.(D) Part emptied by hole -1 in 1 min  $=\frac{1}{\frac{29}{6}}$ Part emptied by hole -2 in 1 min  $=\frac{1}{\frac{1}{6}}$ Part emptied by both hole in 1 min  $= \frac{1}{29} + \frac{1}{6} = \frac{6+29}{174} = \frac{35}{174}$ Thus, the time taken by both holes to empty the tank =  $\frac{174}{35} = 4\frac{34}{35}$  min 108. Ans.(D) The time taken by both holes to empty =  $\frac{1}{21} + \frac{1}{7} = \frac{1+3}{21} = \frac{4}{21}$ Required time  $=\frac{21}{4}=5\frac{1}{4}$  min. 109. Ans.(D) When two holes open together, time taken to empty the glass  $=\frac{1}{9} + \frac{1}{3} = \frac{3+9}{9\times 3}$  $=\frac{9\times 3}{12} = \frac{27}{12} = \frac{9}{4} = 2\frac{1}{4}$ 110. Ans.(D) Part of the tank emptied in 1 min by the first hole =  $\frac{1}{2}$ Part of the tank emptied in 1 min by the second hole =  $\frac{1}{5}$ : Part emptied by both holes in 1 min =  $\frac{1}{3} + \frac{1}{5} = \frac{5+3}{15} = \frac{8}{15}$ So the whole tank will be empty in  $\frac{15}{2} = 1\frac{7}{2}$ min. 111. Ans.(D) Time taken by first hole = 4 minTime taken by second hole = 12 min Time taken by both holes together =  $\frac{1}{4} + \frac{1}{12} = \frac{3+1}{12} = \frac{4}{12} = \frac{1}{3}$ Hence the required time = 3 min 112. Ans.(B) Part of tank filled in 1 min =  $\frac{1}{30} - \frac{1}{90}$  $= \frac{3-1}{90} = \frac{1}{45}$   $\therefore \text{ Tank will be filled in 45 min.}$ 113. Ans.(C) Time taken to fill the pot =  $\frac{1}{12.5} - \frac{1}{25} = \frac{10}{125} - \frac{1}{25} = \frac{10-5}{125}$ 

 $=\frac{5}{125}=\frac{1}{25}$ 

Therefore, the vessel will be filled in 25 min.

#### 114. Ans.(C)

Part filled in 1 min by filling tap =  $\frac{1}{20}$ And the part emptied by the emptying tap in 1  $\min = \frac{1}{60}$ Therefore, the portion filled by both taps in 1  $min - \frac{1}{2}$ 

$$=\frac{40}{20} = \frac{60}{60}$$

 $\frac{1}{20\times60} = \frac{1}{30}$ Thus, time taken by both of them to fill the tank completely = 30 min

#### 115. Ans.(A)

Required time =  $\frac{1}{4} - \frac{1}{6}$  $=\frac{3-2}{2}=\frac{1}{2}$ 

Hence the leak will empty the tank in 12 hours.

#### 116. Ans.(C)

Part of tank filed by both pipes in 1 min =  $\frac{1}{15} - \frac{1}{30} = \frac{30-15}{15\times30}$ Time taken to fill the tank =  $\frac{30 \times 15}{30 - 15} = \frac{30 \times 15}{15}$ = 30 min.

#### 117. Ans.(A)

Let it takes T min to fill the tank. According to Question,  $\frac{\frac{T-4}{12} + \frac{T}{16}}{\frac{4(T-4) + 3T}{4}} = 1$ 

$$\Rightarrow \frac{48}{48} = 1$$
  

$$\Rightarrow 4T - 16 + 3T = 48$$
  

$$\Rightarrow 7T - 16 = 48$$
  

$$\Rightarrow 7T = 48 + 16$$
  

$$\Rightarrow 7T = 64$$
  

$$\Rightarrow T = \frac{64}{7} = 9\frac{1}{7} \text{ min.} = 9 \text{ min } \frac{1}{7} \times 60 \text{ sec.}$$
  

$$= 9 \text{ min, } 8.5 \text{ sec} \approx 9 \text{ min, } 8 \text{ sec.}$$

#### 118. Ans.(D)

Let x be the total capacity of the container. According to Question,  $\frac{3}{5}x - 38 = \frac{1}{8}x$  $\frac{3}{5}x - \frac{x}{8} = 38$  $\frac{24x-5x}{40} = 38$ 

 $19x = 38 \times 40$ 

 $x = 2 \times 40 x = 80$  *litre*. Therefore, the total capacity of the container is 80 liters.

#### 119. Ans.(B)

Time taken to fill 2/3 of tank by pipe X = 10 hours  $\therefore$  Time taken to fill the entire part  $= 10 \times \frac{3}{2} = 15$  hour

Time taken to fill  $\frac{1}{c}$  of tank by pipe Y = 5 hours . Time taken to fill the entire portion  $= 5 \times 6 = 30$  hours. Part of tank filled by both pipes X and Y together in 1 hour =  $\frac{1}{30} + \frac{1}{15} = \frac{1}{10}$   $\therefore$  Time taken to fill the entire tank = 10 hours 120. Ans.(B) Suppose there are three pipes A, B and C.  $A = 2 \times B$  $C = \frac{1}{12.5}h$  (Empties)  $A + B - C = \frac{1}{2.5}$  $A + B = \frac{1}{2.5} + \frac{1}{12.5} = \frac{10}{25} + \frac{10}{125}$  $A + B = \frac{50 + 10}{125} = \frac{60}{125}$  $\therefore A = 2E$  $3B = \frac{60}{125} \Rightarrow B = \frac{20}{125} = \frac{4}{25}$ Hence the time taken for the low capacity pipe to fill the hose =  $\frac{25}{4}$  = 6.25 hrs. 121. Ans.(B) Part of tank filled by first pipe in 1 hour =  $\frac{1}{20}$ And the second pipe filled in 1 hour =  $\frac{1}{30}$ Hence Part of tank filled by both pipe in 1 hour =  $\left(\frac{1}{20} + \frac{1}{30}\right) = \left(\frac{3+2}{60}\right) = \left(\frac{5}{60}\right) = \frac{1}{12}$ Therefore, the tank will be filled in 12 hours. 122. Ans.(D) Part filled by the first pipe in 1 min =  $\frac{1}{20}$ Evacuated by drainage pipe in 1 min =  $\frac{1}{28}$ Both pipes filled in 1 min =  $\frac{1}{20} - \frac{1}{28}$  $=\frac{28-20}{20\times 28}=\frac{8}{20\times 28}=\frac{1}{70}$  part Thus, time taken to fill the tank = 70 min. 123. Ans.(B) Let pipe P take x hours to fill the tank Then Q will take x + 6 hours to fill the tank Part of tank filled by (P + Q) in 1 hour =  $\frac{1}{4}$ According to Question,  $\frac{1}{x} + \frac{1}{x+6} = \frac{1}{4}$   $\frac{(x+6) + (x)}{x(x+6)} = \frac{1}{4}$  $(2x + 6) \times 4 = x^2 + 6x$  $8x + 24 = x^2 + 6x$  $x^2 - 2x - 24 = 0$  $x^2 - (6 - 4)x - 24 = 0$  $(x^2 - 6x) + (4x - 24) = 0$ x(x-6) + 4(x-6) = 0(x + 4)(x - 6) =x - 6 = 0, x = 6

Therefore, P alone can fill the tank in 6 hours.

## 124. Ans.(D)

Part of tank filled in 1 hour by filling pipe =  $\frac{1}{9}$ Part of tank filled in 1 hour by filling pipe due

to leakage =  $\frac{1}{10}$ 

Part of tank emptied in 1 hour by leakage = $\frac{1}{9} - \frac{1}{10} = \frac{10-9}{90} = \frac{1}{90}$ 

Hence the tank will be emptied by leakage in 90 hours.

# 125. Ans.(A)

Let the time taken by the first inlet to fill the tank is x hr. Time taken to fill the tank by the second inlet = (x + 5) hour Time taken to fill the tank by the third inlet = (x + 9) hour According to Question - $\frac{1}{x} + \frac{1}{x+5} = \frac{1}{x+9}$  $\frac{2x+5}{x^2+5x} = \frac{1}{x+9}$  $2x^2 + 5x + 18x + 45 = x^2 + 5x$  $x^2 + 19x + 45 = 0$  $x^2 + 18x + 45 = 0$  $x^2 + 15x + 3x + 45 = 0$ x(x + 15) + 3(x + 15) = 0(x + 15) + (x + 3) = 0x + 15 = 0 or x + 3 = 0x = -15 (:Time is not negative)  $\therefore x = 15$  hours Thus, the time taken to fill the tank through the first inlet = 15 hours

# 126. Ans.(D)

127.

Part of tank filled in 1 hour by 1 tap =  $\frac{1}{6}$ Part filled in 4 hours by the same 4 taps  $=\frac{4}{6}=\frac{2}{3}$ So four taps can fill the entire tank in 3/2 hours or 90 min. Time taken to fill half tank =  $\frac{90}{2}$  = 45 min Time taken to fill half tank by first tap= 3 hours Thus the total time taken to fill the tank = 3 hours 45 min Ans.(D) LCM of 6 and 4 = 12 unit work 1 hour work of P = 2 units Work of 1 hour of Q = 3 units Work of 2 hours of (P + Q) = 5 units Thus, the work of  $2 \times 2$  hours =  $5 \times 2$ = 10 units Remaining work = 2 units

 $\therefore$  Time taken by P to finish 2 unit work

= 1 hour

 $\therefore$  Time taken to fill the tank = 2 × 2 + 1

= 5 hours

128. Ans.(A)

129.

130.

$$\begin{array}{c} P & Q \\ 60 & 40 \\ 2 & 3 \\ 120 \end{array}$$

120Let, total capacity of the tank is 120 liter. [LCM of 60,40 = 120]Water fills in 1 min = 3 liter  $\therefore$  Water fill in 30 min = 3 x 30 = 90 The remaining volume of the tank = 120 - 90 = 30 liters. P fills the remaining quantity  $\Rightarrow \frac{30}{2} = 15 \text{ min}$ Time taken to fill the tap P and Q = 30 + 15 = 45 min Ans.(A) Part of tank filled in 1 min by pipe P =  $\frac{1}{32}$ Part of tank filled in 1 min by pipe Q =  $\frac{1}{48}$ Pipe P will work from beginning to end. 24 min work of P =  $\frac{24}{32} = \frac{3}{4}$  part Remaining part =  $1 - \frac{3}{4} = \frac{1}{4}$  part Time taken to fill the remaining part by Q  $=\frac{1}{4} \times 48 = 12 \text{ min}$ Hence pipe Q was closed after 12 min. Ans.(B) Let tap Q take extra time to fill the bucket = tmin According to Question,  $\frac{3}{12} + \frac{3+t}{15} = 1$  $\frac{\frac{12}{3+t}}{\frac{15}{15}} = \frac{1}{4} - \frac{1}{4}$  $\frac{\frac{3+t}{15}}{\frac{3+t}{15}} = \frac{3}{4}$ 12 + 4t = 454t = 33 $t = \frac{33}{4}$  $t = 8\frac{1}{4} = 8$  min. 15 sec

Ans.(D) 131.

$$\frac{1}{12} - \frac{1}{20} = \frac{20 - 12}{240} = \frac{8}{240}$$
  
= 30 × 20 = 600 litre

132. Ans.(C)

Part of tank filled in 1 hour by second pipe  $\begin{pmatrix} 1 & 1 \end{pmatrix}$ 1

$$= \left(\frac{1}{8} - \frac{1}{12}\right) = \frac{1}{24}$$
  
If there was no second tap hole, the tank  
would have filled in 24 hours  
 $\therefore$  Tank capacity =  $6 \times 24 = 144$  litre

#### 133. Ans.(C)

134.

 $80\% - 66\frac{2}{3}\% = 2$  litre  $\frac{240-200}{3}\% = 2 \text{ litre}$  $\frac{40}{3}\% = 2 \text{ litre}$ Thus, bucket capacity = 15 liters Ans.(B)

Suppose a slow speed pipe fills the tank in x min

Then the high speed pipe will fill it in  $\frac{x}{2}$  min.

$$\frac{1}{x} + \frac{3}{x} = \frac{1}{36}$$

$$\frac{4}{x} = \frac{1}{36}$$

$$x = 144$$
Therefore, a s

slow speed pipe will fill the tank in 144 min.

#### 135. Ans.(D)

According to the considered efficiency, the time taken by P, Q, R pipes to fill the tank is 4x, 2x and x hour respectively.

According to Question –  

$$\frac{1}{4x} + \frac{1}{2x} + \frac{1}{x} = \frac{1}{8}$$

$$\frac{1+2+4}{4x} = \frac{1}{8}$$

$$\frac{7}{4x} = \frac{1}{8}$$
 $x = 14$  hour  
Thus, the time taken by Q to fill the tank = 2x  
 $= 2 \times 14 = 28$  hour  
Ans.(C)

136. Ans.(C)

	Р	Q	R
Time	2 :	1:	6
Capacity	$\frac{1}{2}$ :	$\frac{1}{1}$ :	<u>1</u> 6
LCM of 2, $6 = 6$	-	-	0
	$\frac{1}{2} \times 6$ :	$\frac{1}{1} \times 6$ :	$\frac{1}{6} \times 6$
	3 :	6:	1

Therefore, the capacity of Q tap is high, So, this tap will be the fastest.

#### 137. Ans.(C)

Part filled in 1 min by P, Q and R  $= \frac{1}{30} + \frac{1}{20} + \frac{1}{10}$   $\frac{2+3+6}{60} = \frac{11}{60}$ Solution filled in 3 min by R  $= \frac{1}{10} \times 3 = \frac{3}{10}$ The ratio of solution U to R  $=\frac{\frac{3}{10}}{\frac{11}{20}}=\frac{3\times 20}{11\times 10}=\frac{6}{11}$ 

# 14. (Simple Interest)

8.

1. What will be the interest in 2 years and 3 months of Rs.2500 at the rate of 6% annual interest?

 RRB Group-D - 05/10/2018 (Shift-I)

 (A) 423.50 rs.
 (B) 445 rs.

 (C) 337.50 rs.
 (D) 375 rs.

2. How much interest will be received in 10 years on the amount of Rs.1600? If the rate of interest is 7.25% per annum.

 RRB Group-D - 20/09/2022 (Shift-I)

 (A) 1240 rs.
 (B) 1160 rs.

 (C) 1220 rs.
 (D) 1180 rs.

**3.** Sarathi deposited Rs.3,125 in a bank on which 8% simple interest was payable annually by the bank. If Sarathi kept the money in the bank for 5 years, how much interest will he earn?

RRB Gro	oup-D - 28/11/2022 (Shift-II)
(A) 1,290 rs.	<b>(B)</b> 1,250 rs.
(C) 1,240 rs.	(D) 1,280 rs.

**4.** What will be the interest in 5 years at Rs.4,600 at the rate of 4.5% annual simple interest?

 RRB Group-D - 28/11/2022 (Shift-III)

 (A) 1,020 rs.
 (B) 1,025 rs.

 (C) 1,035 rs.
 (D) 1,045 rs.

5. At 5.25% simple interest per annum, \_\_\_\_\_ interest will be earned in 8 years on an amount of Rs.3,250.

RRB Gro	oup-D - 19/11/2022 (Shift-III)
<b>A)</b> 1,425 rs.	<b>(B)</b> 1,395 rs.
<b>C)</b> 1,365 rs.	<b>(D)</b> 1,465 rs.

6. Akshay borrows Rs 3000 at the rate of 6% simple annual interest for 2 years and lends the same amount to his friend at 9% annual simple interest for 2 years. How much will Akshay benefit in a year?

RRB G	roup-D - 25/11/2022 (Shift-II)
( <b>A)</b> 90 rs.	<b>(B)</b> 180 rs.
( <b>C)</b> 120 rs.	<b>(D)</b> 150 rs.

7. What will be the amount received at a simple annual interest rate of 7.5% at Rs.1640 in 6 years?

RRB Group-D - 25/11/2022 (Shift-I)

(A) 750 rs.	<b>(B)</b> 748 rs.
(C) 742 rs.	(D) 738 rs.

An amount at the same simple interest rate becomes Rs.457 in 5 years and Rs.574 in 10 years. Find the value (in Rupees) of the amount.

	RRB G	roup D - 06/12/2018 (Shift-II)
(A) 500	rs.	<b>(B)</b> 280 rs.
(C) 340	rs.	(D) 420 rs.

**9.** On a compounded sum, the simple interest received in 5/2 years at an annual rate of 12% is Rs. 50 less than the simple interest received in 7/2 years at an annual rate of 10% on the same amount. Find the amount.

RRB Grou	up-D - 18/11/2022 (Shift-II)
(A) 1,500 rs.	<b>(B)</b> 1,000 rs.
(C) 2,5000 rs.	<b>(D)</b> 1,200 rs.

10. At the rate of 8% simple interest, an amount becomes Rs.924 in  $6\frac{3}{4}$  years. What amount was deposited initially? RRB Group-D - 19/11/2022 (Shift-III)

( <b>A)</b> 626 rs.	<b>(B)</b> 650 rs.
( <b>C)</b> 600 rs.	<b>(D)</b> 675 rs.

**11.** The difference of interest of 4 years at the rate of 12% per annum simple interest on a sum of a money and 5 years at the rate of 9% per annum simple interest on the same amount is Rs.412.50. What is money?

RI	RB Group-l	D - 03/12/2018 (Shift-II)
<b>(A)</b> 13,900	rs.	(B) 14,630 rs.
<b>(C)</b> 14,080	rs.	<b>(D)</b> 13,750 rs.

**12.** A person has Rs.2000. He gives a portion of the amount at 5% simple interest rate and the remaining amount at 4% simple interest rate. After 1 year he earns Rs.96. What amount did he pay at 4% interest rate?

RRB	Group-D - 26/10/2018 (Shift-II)
(A) 500 rs.	<b>(B)</b> 480 rs.
(C) 400 rs.	<b>(D)</b> 420 rs.

**13.** 600 was given to two persons, out of which the first person was given at 5% annual interest rate and the second person at 10% annual interest rate. After one year, the sum

of interest of both is Rs 40. First find the amount given to the person.

RRB Group-D - 27/11/2018 (Shift-I)

(A) 400 rs.	<b>(B)</b> 420 rs.
(C) 380 rs.	<b>(D)</b> 200 rs.

**14.** A sum of money invested for 2 years 9 months at the rate of 8% annual simple interest becomes Rs.915 at the end of the period. How much was invested initially?

RRB G	Group-D - 05/11/2018 (Shift-II)
(A) 725 rs.	<b>(B)</b> 700 rs.
<b>(C)</b> 675 rs.	<b>(D)</b> 750 rs.

**15.** The interest received in 3.5 years on the amount invested at 16% simple interest rate per year is equal to the interest received on investing another amount for 5 years at 12.6% simple interest rate. What is the ratio of the two invested amounts?

	RRB Group-D - 11/12/2018 (Shift-I)
<b>(A)</b> 14:9	<b>(B)</b> 8: 7
(C) 9: 8	<b>(D)</b> 6: 5

**16.** When an amount was invested for 5 years, it yielded an amount of Rs 5,250. If the simple interest was 2% more per year, then the amount received was Rs 5,600. What was the amount of investment?

**RRB Group-D - 04/10/2018 (Shift-I)** (A) 4,000 rs. (B) 3,750 rs.

(C) 3,250 rs.	<b>(D)</b> 3,500 rs.
When an amount	is invested for 5 year

**17.** When an amount is invested for 5 years, the amount becomes Rs.3,640. If the rate of simple interest increased by 2% per year, then this amount becomes Rs.3,920. What is the principal amount.

RRB Grou	p-D - 25/11/2022 (Shift-III)
(A) 2,560 rs.	<b>(B)</b> 2,690 rs.
(C) 2,750 rs.	(D) 2,800 rs.

- 18. In how many years will a certain sum be doubled at an annual interest rate of 28.75%? RRB Group-D - 16/10/2018 (Shift-III)
   (A) 6.00
   (B) 3.47
   (C) 3.00
   (D) 3.90
- **19.** At what rate per cent will an amount double in 15 years?

RRB Group-D - 16/11/2018 (Shift-III)

<b>(A)</b> 50%	<b>(B)</b> 25%
(C) $\frac{20}{3}\%$	<b>(D)</b> 33.33%

**20.** An investment of 775 for 6 years yields an interest of Rs 372. What is the annual rate of simple interest?

	RRB Group-D - 16/10/2018 (Shift-III)
<b>(A)</b> 7%	<b>(B)</b> 8%
<b>(C)</b> 9%	<b>(D)</b> 7.5%

21. Mani deposits Rs.12,500 in a bank and it becomes Rs.15,500 in 6 years at the rate of simple interest. What is the rate of interest?

	RRB Group-D - 11/10/2018 (Shift-II)
<b>(A)</b> 4%	<b>(B)</b> 5%
(C) 3%	<b>(D)</b> 6%

**22.** An investment of Rs.1125 for three months yields an interest of Rs.27. What will be the annual rate of simple interest?

	RRB Group-D - 22/11/2022 (Shift-I)
<b>(A)</b> 7.2%	<b>(B)</b> 12%
<b>(C)</b> 9.6%	<b>(D)</b> 2.4%

- 23. Simple interest for 6 years on an amount of Rs. 1775 is Rs.852. What is the simple interest rate per year?
   RRB Group-D 03/12/2018 (Shift-III)
   (A) 8%
  - (A) 8%
     (B) 9%

     (C) 7%
     (D) 7.5%
- 24. If the value of a bill of Rs 600 becomes Rs 660 in 2 years, what is the rate of simple interest per year?

	RRB Group-D - 12/11/2018 (Shift-I)		
<b>(A)</b> 10%	<b>(B)</b> 4%		
<b>(C)</b> 6%	<b>(D)</b> 5%		

25. Neha's amount of Rs. 8000 becomes Rs. 9200 after 3 years at a fixed simple interest rate. If the interest rate was increased by 2%, what amount would she have received?

RRB Gro	up-D - 22/10/2018 (Shift-III)
(A) rs.8900	<b>(B)</b> rs. 9800
(C) rs.2000	(D) rs. 9680

26. The amount of Rs. 800 becomes Rs. 956 in 3 years at a fixed rate of simple interest. If the rate of interest increases by 4%, then the amount of Rs. 800 will be in 3 years: RRB RPF SI - 10/01/2019 (Shift-I)

		•
(A) rs.1025	<b>(B)</b> rs. 1020.80	
(C) rs.1052	(D) rs.1054	

27. Simple interest on a certain sum is 1/36 of the principal. If the rate of interest and number of years are equal, then what is the rate of interest?

### RRB Group-D -12/11/2018 (Shift-III)

(A) $\frac{6}{19}\%$	<b>(B)</b> $\frac{5}{3}\%$
(C) $\frac{10}{3}\%$	(B) $\frac{10}{12}\%$

**28.** An investment of Rs.1,080 for 3 months yielded an interest of Rs.27. The annual simple interest rate was:

 RRB Group-D - 11/10/2018 (Shift-I)

 (A) 7.5%
 (B) 5%

 (C) 2.5%
 (D) 10%

**29.** Investments of Rs.875 made for 3 months yield interest of Rs.21. What was the rate of simple interest per year?

**RRB Group-D - 01/10/2018 (Shift-I)** (A) 12% (B) 2.4%

<b>(C)</b> 7.2% <b>(D)</b> 9.6°	%

**30.** Raghu has invested Rs.1000 and received Rs.1300 after x years, at a simple interest rate of 6% per annum. Find the value of x?

RRB Group-D - 27/11/2022 (Shift-I)

(A) 2 year	<b>(B)</b> 5 year
(C) 3 year	<b>(D)</b> 4 year

**31.** At what time will the simple interest of Rs.1800, at the rate of 5% per year, be Rs.390?

RRB Group-D - 16/10/2018 (Shift-II)

(A) 5 year 2 month	(B) 5 year 4 month
(C) 4 year 4 month	(D) 4 year 2 month

**32.** Simple interest on a fixed amount is 9/4 of the principal amount. If the number of years and the rate of interest are the same, then for what period the amount was deposited?

RRB Group-D - 26/10/2018 (Shift-III)

<b>A)</b> 12 year	<b>(B)</b> 5.5 year
<b>C)</b> 15 year	<b>(D)</b> 7.5 year

**33**. The difference in simple interest paid by banks for two years at Rs 5000 is Rs 25. Explain the difference between the interest rates of the two banks:

RRB Group-D - 23/10/2018 (Shift-III)

<b>(A)</b> 0.25%	( <b>B)</b> 0.60%
<b>(C)</b> 1%	<b>(D)</b> 0.10%

**34.** Vimal has given a loan of Rs.5000 to Kamal for 2 years and to Sumal, a loan of Rs.3000, for 4 years at same simple interest rate and received Rs.2,200 as interest from both. Calculate the interest rate per year.

RRB Group-D - 10/10/2018 (Shift-III)

<b>(A)</b> 13%	<b>(B)</b> 15%
<b>(C)</b> 23%	<b>(D)</b> 10%

**35.** Anuj invested some money in a scheme for 3 years at a simple interest rate of 12% per annum. In addition, he invested three times in the second plan for 2 years. If he has earned the same interest from both the schemes, what is the normal interest rate of the second plan?

RRB Group-D	- 27/11/2022 (Shift-III)
(A) 12% per year	(B) 18% per year
(C) 6% per year	(D) 9% per year

**36.** Find the simple interest from 5 February 2017 to 19 April 2017 for an amount of Rs. 5000 at the rate of 6.25% annual interest.

RF	RB RPF SI - 10/01/2019 (Shift-I)
(A) 62.50 rs.	<b>(B)</b> 48.50 rs.
<b>(C)</b> 64 rs.	<b>(D)</b> 80 rs.

**37.** How much interest will be received of Rs.3680 in 2.5 years at 4% annual simple interest rate?

RRB RPF Co	onstable - 17/01/2019 (Shift-III)
(A) 368 rs.	<b>(B)</b> 92 rs.
(C) 184 rs.	<b>(D)</b> 274 rs.

**38.** A compounded amount was invested for 5 years at a compounded rate at simple interest. If it had been invested at a 10% higher rate, it would have gained Rs.2000 more. What was the principal invested?

RRB RPF Con	stable - 22/01/2019 (Shift-II)
A) 3500 rs.	<b>(B)</b> 4000 rs.
<b>C)</b> 4500 rs.	<b>(D)</b> 5000 rs.

**39.** At 6% simple interest per annum, a sum of amount at the end of  $3\frac{3}{4}$  years yields a total amount of Rs.2,940. What was the amount invested?

	RRB RP	F SI - 11/01/2019 (Shift-III)
(A) 2,350	rs.	<b>(B)</b> 2,400 rs.
(C) 2,550	rs.	<b>(D)</b> 2,600 rs.

**40.** The interest earned on the money invested for six years at a simple interest rate of 9.5% per annum was Rs 456. What was the amount invested?

 RRB RPF Constable - 19/01/2019 (Shift-II)

 (A) 750 rs.
 (B) 775 rs.

 (C) 800 rs.
 (D) 850 rs.

**41.** At what rate of interest will an amount double itself in 12 years?

RRB RPF SI - 12/01/2019 (Shift-II)

<b>(A)</b> 8%	<b>(B)</b> $8\frac{1}{2}\%$
(C) $8\frac{1}{3}\%$	<b>(D)</b> $8\frac{\bar{1}}{4}\%$

**42.** On deposits of Rs.5000 for 4 years and 4000 for 5 years, a uniform annual rate of simple interest is applied, and a total interest of Rs.2,400 is received. Find the annual rate of interest.

RRB R	PF Constable - 20/01/2019 (Shift-II)
<b>(A)</b> 4%	<b>(B)</b> 7%
<b>(C)</b> 6%	<b>(D)</b> 9%

**43.** If an amount becomes Rs.20720 in 4 years and Rs.24080 in 6 years, find the amount and the rate of simple interest.

RRB RPF SI - 05/01/2019 (Shift-III)

<b>(A)</b> 16000 <i>rs</i> .,8%	<b>(B)</b> 14000 <i>rs</i> .,10%
(C) 14000 rs.,12%	( <b>D</b> ) 16000 <i>rs</i> .,12%

44. In how much time will an amount double, if invested at a simple annual rate of 12.5%? RRB RPF SI - 16/01/2019 (Shift-I)

(P) 7 year

(A) o year	( <b>b</b> ) / year
(C) 9 year	<b>(D)</b> 8 year

(1) C .....

**45.** What will be the interest earned on the principal amount of Rs.3,675, at the rate of 4% simple interest per annum for 2 years?

 RRB ALP & Tec. (31-08-18 Shift-II)

 (A) 289.50 rs.
 (B) 292 rs.

 (C) 294 rs.
 (D) 288.50 rs.

**46.** How much interest will be received on the amount of Rs.2,000 invested for 6 years at the rate of 8.5% simple annual interest?

RRB ALP & Tec. (31-08-18 Shift-III)

(A) 930 IS.	( <b>D)</b> 1,020 IS.
(C) 510 rs.	<b>(D)</b> 1,275 rs.

**47**. Rs. X invested at 9% simple interest per annum for 5 years yields as much interest as 7.5% simple interest per annum for 4 years on investment of Rs.y. Find x: y.

RRB A	LP & Tec. (30-08-18 Shift-III)
(A) 45:30	<b>(B)</b> 2:3
(C) 16:15	<b>(D)</b> 8:9

**48.** Saathi deposited Rs 825 in a bank that promised 8% annual simple interest. If saathi keeps the money in the bank for 5 years, how much interest will she earn on it:

RRB ALP & Tec. (20-08-18 Shift-I)

<b>(A)</b> 280 rs.	<b>(B)</b> 330 rs.
(C) 290 rs.	(D) 480 rs.

**49.** For 5 years, simple interest, at the rate of 9% per annum, investing Rs x, yields the same amount of interest as for 8 years, at a simple interest rate of 6.25% per annum, investing Rs. y. Find x: y?

R	RB ALP & Tec. (31-08-18 Shift-III)
<b>(A)</b> 16: 15	<b>(B)</b> 10: 9
<b>(C)</b> 45: 50	<b>(D)</b> 5: 8

**50.** A sum of money at the end of  $3\frac{1}{4}$  years at 5% annual simple interest becomes a total of Rs.2,790. What was the amount invested?

	RRB ALP & 1	Гес. (17-08-18 Shift-II)
(A) 2,350	rs.	(B) 2,400 rs.
<b>(C)</b> 2,600	rs.	(D) 2,550 rs.

**51.** Rahi deposited a sum of Rs.600 in a bank on which he is to receive a simple interest of 8% per annum. If Rahi kept the money in the bank for 5 years, then how much amount will he receive as interest?

RRB	ALP & Tec. (14-08-18 Shift-II)
(A) 240 rs.	<b>(B)</b> 200 rs.
(C) 280 rs.	<b>(D)</b> 480 rs.

**52.** At 6% per annum simple interest, a sum of money becomes Rs.834 in  $6\frac{1}{2}$  years. What was the amount invested initially?

RRB	ALP & Tec. (13-08-18 Shift-I)
<b>(A)</b> 600 rs.	<b>(B)</b> 626 rs.
<b>(C)</b> 675 rs.	<b>(D)</b> 650 rs.

**53.** A sum of money was invested for 4 years at simple interest at 7.5% per annum. If the investment was for 5 years, the interest earned would have been Rs.375 more. What was the amount invested initially?

	RRB AL	P & Tec. (09-08-18 Shift-II)
(A) 4,500	rs.	<b>(B)</b> 5,000 rs.
<b>(C)</b> 3,750	rs.	<b>(D)</b> 4,750 rs.

**54.** 5 years interest on Rs. x at the rate of 8% per annum simple interest is the same as 6 years interest on Rs. y at 7.5% simple annual interest rate. Find the x: y.

	RRB ALP & Tec. (21-08-18 Shift-I)
<b>(A)</b> 9: 8	<b>(B)</b> 5: 6
<b>(C)</b> 16: 15	<b>(D)</b> 40: 45

**55.** The 3-month interest on the invested amount of Rs.750 is Rs.18. What is the rate of simple interest per year?

	RRB ALP & Tec. (09-08-18 Shift-II)
<b>A)</b> 2.4%	<b>(B)</b> 9.6%
<b>C)</b> 7.2%	<b>(D)</b> 12%

**56.** An interest on an amount borrowed at an annual rate of 6% in x years is 1/3 of its principal. Find x.

RRB NTPC 10/08/2022 Shift : 2 (B)  $4^{\frac{2}{-}}$ 

(A) $5\frac{3}{9}$	( <b>B</b> ) 4 $\frac{2}{29}$
(C) $6\frac{3}{7}$	<b>(D)</b> $5\frac{3}{4}$

(A) = 5

**57.** What is the ratio of the simple interest earned on a certain amount at the rate of 12% for 6 years and 12 years?

	RRB NTPC 30.03.2016 Shift : 1
<b>(A)</b> 1: 2	<b>(B)</b> 2: 3
<b>(C)</b> 3: 4	<b>(D)</b> 4: 5

- 58. Find the simple interest of Rs.50 for 6 months at the rate of 10 percent for each month. RRB NTPC 18.04.2016 Shift : 1

  (A) 35 rs.
  (B) 40 rs.
  (C) 25 rs.
  (D) 30 rs.
- **59.** At a compound rate of simple interest, Rs.800 becomes Rs.956 in 3 years. If this principal becomes Rs.1052 in the same period, what is the percentage of increase in the rate of interest?

	RRB NTPC 09/05/2022 Shift : 2
<b>(A)</b> 7%	<b>(B)</b> 4%
<b>(C)</b> 5%	<b>(D)</b> 9.5%

Find the total simple interest of 3 years at an annual rate of 7% of Rs.500 and 10% of Rs.700 and 4% of Rs.1000, annually.
 RRB NTPC 02/02/2021Shift : 3

	RRB NTPC 02/02/2021Shift :
<b>(A)</b> 435	<b>(B)</b> 500
<b>(C)</b> 700	<b>(D)</b> 1000

**61.** Find the simple interest of Rs.2000 between 9 March 2010 to 21 May 2010 at an annual rate of 8.25%.

 RRB NTPC 02/02/2021Shift : 3

 (A) 43 rs.
 (B) 37 rs.

 (C) 33 rs.
 (D) 40 rs.

**62.** Rita invested an amount at the rate of 2.5% for 4 years. Sita invested the same amount for 6 years at the same rate. What is the ratio of simple interest earned by Rita to simple interest earned by Sita?

RRB NTPC 09/05/2022 Shift : 2

<b>(A)</b> 3: 2	<b>(B)</b> 2: 3
<b>(C)</b> 1: 3	<b>(D)</b> 1: 4

**63.** Sushmita takes Rs.900 at 6% per annum simple interest, how much money will she have to return after 4 years?

 RRB NTPC 26.04.2016 Shift : 2

 (A) 261 rs.
 (B) 1161 rs.

 (C) 1116 rs.
 (D) 216 rs.

**64.** Find out the principal which becomes Rs. 1000 in 9 months at 8% annual rate of simple interest.

F	RRB NTPC 23/07/2022 Shift : 3
( <b>A)</b> 781.40 rs.	<b>(B)</b> 981.40 rs.
<b>C)</b> 943.40 rs.	<b>(D)</b> 843.40 rs.

**65.** The simple interest for 'y' years at the rate of y% of a principal is y rupees. Find the Principal.

	RRB NTPC 09/05/2022 Shift : 1
<b>(A)</b> 100 ÷ <i>y</i>	<b>(B)</b> 100 × <i>y</i>
<b>(C)</b> 100 <i>y</i> <sup>2</sup>	<b>(D)</b> 100 ÷ y <sup>2</sup>

66. In 10 years, at what simple interest rate, a certain sum of money will double itself?

<b>(A)</b> 7%	<b>(B)</b> 8%
<b>(C)</b> 9%	<b>(D)</b> 10%

**67.** A sum of money (P) becomes 2 times in 10 years. How much will this amount become in 20 years at the same rate of simple interest?

RRB	NTPC 09/05/2022 S	Shift :	3
	(B) 2P		

(A) P	( <b>B</b> ) 2P
<b>(C)</b> 3P	<b>(D)</b> 4P

(A) D

**68.** A sum of money becomes 3 times its own in 5 years. In how many years will this amount be 5 times of itself at the same interest rate?

RRB NTPC 02/02/2021Shift : 2

- (A) 5 year (B) 10 year (C) 9 year (D) 8 year
- **69.** Find the simple interest rate at which a sum, at the rate of simple interest, becomes five times in 10 years.

	RRB NTPC 18.04.2016 Shift : 2
<b>(A)</b> 40%	<b>(B)</b> 35%
<b>(C)</b> 25%	<b>(D)</b> 50%

**70**. Z paid Rs 10,920 after 4 years with 10% annual simple interest. How many rupees did he borrow?

	RRB NTPC 10/08/2022Shift-1
(A) rs. 7,600	<b>(B)</b> rs. 7,800
( <b>C)</b> rs.8,200	<b>(D)</b> rs. 7,400

**71.** The simple interest is the (9/16) share of P at a fixed sum of P at R% per annum. If R is equal to the number of years (N), then find the value of N.

	RRB NTPC 23/07/2022	Shift-2
<b>(A)</b> 8.5	<b>(B)</b> 7	
<b>(C)</b> 7.5	<b>(D)</b> 6	

72. The maturity value after 3 years and 5 years at the same rate of simple interest of fixed sum of money is Rs.8255 and Rs.9,425 respectively. Find the annual rate of interest. RRB NTPC 12/08/2022Shift : I

	RRB NTPC 12/08/2022Shift :
<b>(A)</b> 9%	<b>(B)</b> 8%
<b>(C)</b> 7%	<b>(D)</b> 6%

**73**. Prachi take Rs 550 at a simple annual interest rate of 5%. How much will he have to pay after 4 years?

	RRB NTPC 11/08/2022Shift : 3
<b>(A)</b> 101	<b>(B)</b> 606
( <b>C)</b> 660	<b>(D)</b> 110

**74**. At a simple interest, Rs. 1500, becomes Rs. 1800 in 2 years. What will be amount if the rate of interest is increased by 5%?

RRB NTPC 02/02/2021Shift : 1

(A) rs.1500	(B) rs.1900
(C) rs. 1950	(D) rs.2000

**75.** Simple interest at the rate of 12% is added to the principal at the end of every six months, then what will be the annual effective rate of interest?

	RRB NTPC 30.03.2016 Shift : 2
<b>(A)</b> 12.34%	<b>(B)</b> 12.26%
(C) 12.38%	<b>(D)</b> 12.36%

**76.** Ram lent Shiva Rs.3000 for 3 years and Rs.8000 to Krishna for 5 years at the same simple annual rate of interest, he received a total interest of Rs.5220 from both. Find the percentage of annual rate of interest.

	RRB NTPC 11/08/2022Shift : III
<b>(A)</b> 6%	<b>(B)</b> 7%
<b>(C)</b> 8%	<b>(D)</b> 9%

**77.** The simple interest of Rs.8,500 deposited for 3 years is Rs.2,040. Find the annual rate of interest.

RRB NTPC 18.01.2017 Shift : 1

<b>(A)</b> 8%	<b>(B)</b> 8.5%	
<b>(C)</b> 9%	<b>(D)</b> 7.5%	

**78.** Simple interest of Rs.7800 for 2 years 8 months, is Rs.1976. Find the annual rate of interest.

	RRB NTPC 02/02/2021Shift : 2
<b>A)</b> 8.5%	<b>(B)</b> 9%
<b>C)</b> 9.5%	<b>(D)</b> 10%

**79.** The numerical value of the percentage rate of interest and time are equal and the simple interest on an amount is 9/16 of the principal. Find the rate of simple interest.

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 9/2%	<b>(B)</b> 11%
<b>(C)</b> 15/2%	<b>(D)</b> 12%

80. If the interest earned over a period of 8 years is equal to the principal, what is the rate of simple interest applied?
RRB NTPC 12/08/2022Shift : 1

	RRB NTPC 12/08/2022Shift :
<b>(A)</b> 8	<b>(B)</b> 10.5
<b>(C)</b> 12	<b>(D)</b> 12.5

**81**. At a fixed sum of money, a rate of 10% per annum for 2 years yields a simple interest of Rs 2000. If the interest on this amount is compounded annually, what will be the difference between the two types of interest?

### RRB NTPC 11/08/2022Shift : 3

(A) rs.200	(B) rs. 220
(C) rs. 100	(D) rs. 120

**82.** In how much time, simple interest of Rs.4000 (principal), at 6% per annum, will become Rs.400?

	RRB NTPC 18.01.2017 Shift : 2
(A) 20 month	(B) 22 month
(C) 14 month	(D) 18 month

**83.** In how much time will a sum of money, at the rate of 25% simple interest, become 7/6 of its own?

	RRB NTPC 18.04.2016 Shift :
(A) 6 month	(B) 8 month
(C) 9 month	<b>(D)</b> 10 month

**84.** In what time will the simple interest of Rs 8,750 become 6/25th of the principal at an annual rate of 8 percent?

### RRB NTPC 23/07/2022 Shift : 2

3

(A) 3 year	<b>(B)</b> 4 year
<b>(C)</b> 2 year	<b>(D)</b> 5 year

85. M borrowed some money at a fixed simple interest rate for 1 year. But the rate of interest is increased by 2%, then the difference of simple interest is Rs 120. Find the Principal. RRB NTPC 12/08/2022Shift : 2

( <b>A)</b> rs.4,000	( <b>B)</b> rs. 5,000
<b>(C)</b> rs. 6,000	<b>(D)</b> rs.7,000

86. In how much time will the amount invested at the rate of  $12\frac{1}{2}\%$  per annum become 3 times of itself?

 RRB Paramedical - 20/07/2018 (Shift-II)

 (A) 12 year
 (B) 8 year

 (C) 16 year
 (D) 4 year

**87.** A person is paying Rs. 5000 for 2 years at the rate of 4% per annum of simple interest. He borrows it to another person for 6 years at an annual rate of 6.25%. Find the profit received by him every year.

	RRB JE - 22/05/2019 (Shift-III)
(A) 150 rs.	<b>(B)</b> 112.50 rs.
(C) 167.50 rs.	<b>(D)</b> 125 rs.

**88.** After 10 years the simple interest on a sum of money will be Rs. 600. If after 5 years the principal is increased thrice, what will be the total interest after 10 years?

	RRB JE - 25/05/2019 (Shift-I)
(A) 300 rs.	<b>(B)</b> 900 rs.
(C) 1200 rs.	<b>(D)</b> 600 rs.

**89.** What is the simple interest received at Rs. 2400 in 4 years 6 months at the rate of 4.5% per annum?

	RRB JE - 24/05/2019 (Shift-I)
( <b>A)</b> 486 rs.	<b>(B)</b> 816 rs.
<b>C)</b> 796 rs.	<b>(D)</b> 926 rs.

**90.** Find the ratio of simple interest of 4 years and 8 years for a particular amount at a mixed rate.

	RRB JE - 30/05/2019 (Shift-II)
<b>(A)</b> 1: 2	<b>(B)</b> 2: 1
(C) 2: 3	<b>(D)</b> 1: 4

**91.** In two different schemes, find the ratio of simple interest received from the same amount invested at the same rate for 6 years and 10 years respectively.

-	RRB JE - 29/05/2019 (Shift-I)
<b>(A)</b> 4: 3	<b>(B)</b> 3: 5
<b>(C)</b> 4: 5	<b>(D)</b> 3: 4

**92.** At a compounded simple interest, the amount of Rs. 800 becomes Rs. 956 in 3 years. If the rate is increased by 4%, what will be the increase in investment?

RRB JE - 28/06/2019 (Shift-III)

<b>(A)</b> 108 rs.	<b>(B)</b> 96 rs.
<b>(C)</b> 1052 rs.	(D) 72 rs.

93. If the amount of Rs750 becomes Rs1000 in 5 years at simple interest, then how much will it be in 10 years at simple interest?
 RRB JE - 02/06/2019 (Shift-II)

	RRB JE - 02/06/2019 (Shift-
<b>(A)</b> 1750 rs.	<b>(B)</b> 2000 rs.
(C) 1250 rs.	<b>(D)</b> 1500 rs.

**94.** A sum of money was invested at a compound rate of simple interest for 10 years. If it had been invested at a 5% higher rate, the interest would have been Rs.1200 more. Find the amount.

	RRB JE - 26/06/2019 (Shift-I)
(A) 2500 rs.	<b>(B)</b> 2000 rs.
(C) 3000 rs.	<b>(D)</b> 2400 rs.

**95.** 2 years simple interest on an amount is Rs 400. If 'r' was 4% more, then the simple interest would have been Rs. 400 more. What is the original amount?

	RRB JE - 22/05/2019 (Shift-I)
<b>(A)</b> 4000 rs.	<b>(B)</b> 12000 rs.
<b>(C)</b> 5000 rs.	<b>(D)</b> 10000 rs.

**96.** An investment of Rs 16000 at 8% simple interest for 1 year and a second investment at 18% simple interest for the same period, yields a profit of 10% on the total investment. Find the total amount invested.

	RRB JE - 27/05/2019 (Shift-III)		
(A) 22000 rs.	<b>(B)</b> 20000 rs.		
<b>(C)</b> 20500 rs.	<b>(D)</b> 18000 rs.		

**97.** If a simple interest of 15 months at 7.5% per annum on an amount is Rs.32.50 more than 8 months simple interest at 12.5% per annum on the same amount, find that amount.

	RRB JE - 29/05/2019 (Shift-II)		
(A) 3000 rs.	<b>(B)</b> 3060 rs.		
(C) 3120 rs.	<b>(D)</b> 2900 rs.		

**98.** The simple interest charged in 2 years on any money borrowed at the rate of 7% per annum is the same as the interest charged in 4 years at 5% per annum for an amount of Rs.1750. Find the amount.

	RRB JE - 30/05/2019 (Shift-i)	
(A) 1800 rs.	<b>(B)</b> 1600 rs.	
<b>(C)</b> 2500 rs.	<b>(D)</b> 2400 rs.	

**99.**  $P_1, P_2, P_3$  are invested at 4%, 6%, 8% respectively in such a way that the simple interest received from all the three amounts at

the end of the year is equal. If the sum of the three invested amounts is Rs 2600. Then find the values of  $P_1$ ,  $P_2$  and  $P_3$  respectively.

RRB JE - 28/05/2019 (Shift-II)
(A) 1100 rs., 800 rs., 700 rs.
(B) 1200 rs., 600 rs., 800 rs.
(C) 1000 rs., 900 rs., 700 rs.
(D) 1200 rs., 800 rs., 600 rs.

**100.** If an amount doubles in 4 years at a compounded rate, then in how many years will this amount become 16 times at the same rate of simple interest?

	RRB JE - 23/05/2019 (Shift-III)		
(A) 25 year	<b>(B)</b> 16 year		
(C) 12 year	<b>(D)</b> 60 year		

**101.** At what rate of interest will an amount double itself in 30 years?

RRB JE - 26/05/2019 (Shift-III)

(A) 3 <sup>-</sup> / <sub>3</sub> %	<b>(B)</b> 3%
(C) $3\frac{1}{2}\%$	<b>(D)</b> $3\frac{1}{4}\%$

**102.** An amount of Rs.25000 becomes Rs.32000 in 4 years. Find the rate of interest.

	RRB JE - 25/05/2019 (Shift-III)
<b>(A)</b> 6.5%	<b>(B)</b> 8%
<b>(C)</b> 7%	<b>(D)</b> 6%

**103.** If an amount is 4 times in 20 years, then find the rate of simple interest?

RRB JE - 24/05/2019 (Shift-III)

(A) $13\frac{1}{3}\%$	<b>(B)</b> 10%
( <b>C</b> ) 20%	<b>(D)</b> 15%

**104.** If the amount of Rs 64 increases to Rs 83.20 in 2 years, then at same rate of simple interest the amount of Rs 86 will be in 4 years:

	RRB JE - 22/05/2019 (Shift-III)
0	$(\mathbf{P})$ rc 124 70

<b>(A)</b> rs. 114.8	<b>(B)</b> rs. 124.70
(C) rs.127.40	<b>(D)</b> rs. 137.60

**105.** The loan of Rs.2400 is repaid by paying an amount of Rs.3264 at the end of the loan period, the duration of the years and the rate of interest are statistically equal. What is the rate of simple interest?

	RRB JE - 27/05/2019 (Shift-III)
<b>(A)</b> 6%	<b>(B)</b> 18%
<b>(C)</b> 5%	<b>(D)</b> 10%

**106.** An amount at the same rate of simple interest becomes Rs.9800 in 5 years and Rs.12005 in 8 years. What is the rate of interest?

	RRB JE - 31/05/2019 (Shift-I)
<b>(A)</b> 12%	<b>(B)</b> 15%

(ப)	1370
(D)	5%

**107.** The amount of Rs.800 becomes Rs.956 in 3 years at a compound rate of simple interest, find the rate?

**(C)** 8%

	RRB JE - 31/05/2019 (Shift-III)
<b>(A)</b> 8.2%	<b>(B)</b> 8%
<b>(C)</b> 7.5%	<b>(D)</b> 6.5%

**108.** If an amount becomes 4 times in 7 years, in what time will this amount become 16 times at the same rate of simple interest?

	RRB JE - 27/06/2019 (Shift-III)
(A) 25 year	<b>(B)</b> 28 year
(C) 20 year	<b>(D)</b> 35 year

**109.** If the simple interest for (n) years is 12.5% more than the principal. (n) and rate (r) are numerically in the ratio 2: 1, then find the value of n, r.

RRB JE - 24/05/2019 (Shift-I)

<b>(A)</b> <i>n</i> = 12, <i>r</i> = 6%	<b>(B)</b> $n = 15, r = 7\frac{1}{2}\%$
<b>(C)</b> $n = 20, r = 10\%$	( <b>D</b> ) $n = 14, r = 7\%$

If a loan increases 3 times in 6 years at simple interest, how long will it take to get 8 times?
 RRB JE - 29/05/2019 (Shift-II)

(A) 15 year	<b>(B)</b> 22 year
(C) 20 year	<b>(D)</b> 21 year

**111.** The difference between a simple interest on a principal at a rate of 8% for 8 months and at a rate of 6% for 14 months is Rs. 200. Find the Principal.

(A)

(C)

	RRB JE - 01/06/2019 (Shift-I)
rs.12000	<b>(B)</b> rs.12800
rs.24000	<b>(D)</b> rs.14400

# **Solution**

1. Ans.(C) 2 years 3 months = 2 +  $\frac{3}{12} = \frac{9}{4}$  year Hence, simple intrest =  $\frac{p \times r \times t}{100}$ Interest received =  $\frac{2500 \times 6 \times \frac{9}{4}}{100}$  $=\frac{675}{2}=337.50$  Rs. 2. Ans.(B): Principal Amount (p) = Rs.1600 Time (t) = 10 year Rate (r) = 7.25%Simple interest =  $\frac{p \times r \times t}{100}$  $= \frac{1600 \times 7.25 \times 10}{100}$  $= 16 \times 10 \times 7.25 = Rs. 1160$ 3. Ans.(B) : Simple interest =  $\frac{p \times r \times t}{100}$  $=\frac{3125 \times 8 \times 5}{100} = Rs.1250$ 4. Ans.(C) Principal Amount (p) = 4,600 Rs. Rate (r) = 4.5% yearly Time (t) = 5 year, Interest = ?  $\mathsf{SI} = \frac{\mathsf{P} \times \mathsf{R} \times \mathsf{T}}{100}$  $=\frac{4600\times4.5\times5}{4600\times4.5\times5}$ 100  $= 46 \times 4.5 \times 5$ = Rs.10355. Ans.(C) Rate of interest = 5.25% Principal amount = 3250 Rs. Time = 8 year  $SI = \frac{p \times r \times t}{100}$  $= \frac{3250 \times 5.25 \times 8}{100}$ = *Rs*. 1365 6. Ans.(A) On money taken by Akshay  $SI = \frac{3000 \times 6 \times 2}{100}$ = Rs.360Simple interest on money given to friend  $=\frac{3000 \times 9 \times 2}{2}$ 100 = Rs.540

Akshay's *profit* in 2 years = 540 - 360= Rs.180 $profit in 1 year = \frac{180}{2} = Rs.90$ 7. Ans.(D) Principal Amount (p) = Rs.1640 Rate (r) = 7.5 % yearly Time (t) = 6 year  $\therefore \text{ Simple interest} = \frac{p \times r \times t}{100}$  $=\frac{1640\times7.5\times6}{100}$ SI = Rs.7388. Ans.(C) : Let the principal = PAnd rate = r% per year  $P + \frac{P \times 5 \times r}{100} = 457 \dots (i)$  $P + \frac{P \times 10 \times r}{100} = 574 \dots (ii)$ Substituting equation (i) from equation (ii) -: From equation (i) 457 = P + 117 $\therefore P = 457 - 117$ P = Rs.3409. Ans.(B) : Let the Principal amount = P : According to Question,  $\frac{P \times 10 \times 7}{100 \times 2} - \frac{P \times 12 \times 5}{100 \times 2} = 50$  $\frac{P \times 35}{P \times 30} - \frac{P \times 30}{P \times 30} = 50$ 100 100  $\frac{P \times 5}{1} = 50$ 100 P = Rs.100010. Ans.(C) Rate = 8%, time =  $6\frac{3}{4}$  year =  $\frac{27}{4}$  year Amount = 924 Rs. Amount = Principal  $\left(1 + \frac{\text{time} \times \text{rate}}{100}\right)$ A = D(1 + RT)

$$A = P\left(1 + \frac{1}{100}\right)$$
  
924 =  $P\left(1 + \frac{27 \times 8}{4 \times 100}\right)$ 

924 = 
$$P\left(1 + \frac{27}{50}\right)$$
  
924 =  $\frac{77P}{50}$   
 $\Rightarrow P = \frac{924 \times 50}{77}$   
 $P = Rs.600$   
11. Ans.(D)  
Let that amount be is Rs.x.  
According to Question -  
 $\frac{12 \times 4 \times x}{100} - \frac{9 \times 5 \times x}{100} = 412.50$   
 $48x - 45x = 41250$   
 $x = 13750$   
Therefore, that amount is Rs. 13,750.  
12. Ans.(C)  
Let the amount given at 4% interest rate  
 $= x :: \text{Given amount at 5%} = (2000 - x)$   
According to Question,  
 $\frac{x \times 4 \times 1}{100} + \frac{(2000 - x) \times 5 \times 1}{100} = 96$   
 $\frac{4x}{100} + \frac{2000 \times 5 \times x}{100} = 96$   
 $\frac{4x}{100} + \frac{10000}{100} = 96$   
 $\frac{x}{100} = 4$   
Thus money given at 4% interest = Rs. 400  
13. Ans.(A) :  
Suppose the amount given to another person  
at 10% interest = x  
Then the amount given to the first person at  
5% interest rate =  $(600 - x)$   
SI = 40  
According to Question,  
 $\Rightarrow \left(x \times \frac{10}{100} \times 1\right) + \left\{(600 - x) \times \frac{5}{100} \times 1\right\} = 40$   
 $\Rightarrow \frac{x}{10} + \left\{30 - \frac{x}{20}\right\} = 40$   
 $\Rightarrow \frac{x}{10} + \left\{30 - \frac{x}{20}\right\} = 40$   
 $\frac{x}{20} = 40 - 30$   
 $x = Rs.200$   
Amount given to first person =  $600 - 200$   
 $= \text{Rs 400}.$   
14. Ans.(D)  
Let the principal amount be x.  
SI =  $\frac{P \times 1 \times 1}{100}$   
 $915 - x = \frac{x \times 8 \times 11}{100}$   
 $91500 - 100x = 22x$   
 $122x = 91500$   
 $x = Rs.750$ 

15. Ans.(C)

 $SI = \frac{p \times r \times t}{100}$ Let the first invested amount =  $P_1$ And second invested amount =  $P_2$ According to Question - $\frac{P_1 \times 16 \times 3.5}{100} = \frac{P_2 \times 12.6 \times 5}{100}$  $P_1 \times 16 \times 3.5 = P_2 \times 12.6 \times 5$  $P_1 \times 11.2 = P_2 \times 12.6$  $\frac{P_1}{P_2} = \frac{12.6}{11.2}$  $P_1: P_2 = 9:8$ 16. Ans.(D) Let the principal be x. And the interest rate is a% -According to Question,  $\left\{x + \frac{x \times (a+2) \times 5}{100}\right\} - \left\{x + \frac{x \times a \times 5}{100}\right\} = 5600 - 5250$  $\frac{10x}{100} = 350$  $\Rightarrow x = Rs.3500$ 17. Ans.(D) Let rate be x% and principal amount be y. According to Question,  $\frac{y \times (x+2) \times 5}{100} - \frac{y \times x \times 5}{100} = 3920 - 3640$  $\frac{y \times 2 \times 5}{100} = 280$ y = Rs.280018. Ans.(B) Let the principal amount = P Rate = 28.75% Interst = P  $SI = \frac{p \times r \times t}{100}$  $P = \frac{\frac{100}{P \times 28.75 \times T}}{\frac{100}{2875}}$ T =  $\frac{10000}{2875}$  = 3.47 years 19. Ans.(C) Let the principal = P, Interst = 2P - P = PTime = 15 year, rate = R%SI =  $\frac{p \times r \times 15}{100}$ P =  $\frac{P \times R \times 3}{20} \Rightarrow R = \frac{20}{3}\%$ 20. Ans.(B) Given -P = Rs.775 SI = Rs.372t = 6 year

$$SI = \frac{p \times r \times t}{100}$$
$$372 = \frac{775 \times R \times 6}{100}$$

 $\frac{6200}{775} = R$ R = 8%Hence the annual rate of simple interest will be 8%. 21. Ans.(A) Formula  $S.I. = \frac{P \times R \times T}{100}$ S.I. = 15,500 - 12,500S.I. = 3000 $3000 = \frac{12500 \times R \times 6}{100}$ r = 4%22. Ans.(C) P = 1,125t = 3 month or 3/12 year SI = Rs.27 r = ?  $r = \frac{SI \times 100}{P \times T} \\ \frac{27 \times 100}{1125 \times 3/12} = 9.6\%$ 23. Ans.(A)  $SI = \frac{P \times R \times T}{100}$   $852 = \frac{1775 \times R \times 6}{100}$   $r = \frac{85200}{10650} = 8\%$ 24. Ans.(D) SI = 660 - 600 = Rs.60 $\mathsf{SI} = \frac{\mathsf{P} \times \mathsf{R} \times \mathsf{T}}{100}$  $60 = \frac{\frac{600 \times R \times 2}{100}}{r} = \frac{\frac{60 \times 100}{600 \times 2}}{r}$ r = 5%25. Ans.(D) Amount = P + SI  $9200 = 8000 + \frac{8000 \times 3 \times r}{100}$  $1200 = 80 \times 3r$ r = 5%New rate = 5 + 2 = 7% SI =  $\frac{8000 \times 3 \times 7}{100}$  = 1680 Total Amount = 8000 + 1680 = Rs.968026. Ans.(C) SI = Amount - Principal SI =  $\frac{p \times r \times t}{100}$ 156 =  $\frac{800 \times r \times 3}{100}$  $r = \frac{156}{24} = 6.5\%$ When the rate is increased by 4% then, Addition = Simple Interest + Principal

 $=\frac{800\times10.5\times3}{100}+\ 800$  $= 8 \times 10.5 \times 3 + 800$  $= 84 \times 3 + 800 = 1052$ 27. Ans.(B) Let the principal = Rs.P  $\therefore$  SI =  $\frac{P}{36}$ Let the time = n year  $\therefore$  r = n%  $\mathsf{SI} = \frac{\mathsf{p} \times \mathsf{r} \times \mathsf{t}}{100}$  $\frac{\frac{P}{36}}{n^2} = \frac{\frac{100}{P \times n \times n}}{\frac{100}{36}} = \frac{25}{9}$  $n = \frac{5}{3}$  year  $\therefore$  r =  $\frac{5}{2}$ % 28. Ans.(D) p = 1080 Rs., t = 3 months =  $\frac{3}{12} = \frac{1}{4}$  years I = 27r = ? $\mathsf{SI} = \frac{\mathsf{p} \times \mathsf{r} \times \mathsf{t}}{100}$  $27 = \frac{1080 \times r \times 1}{100 \times 4}$ r = 10%29. Ans.(D) I = Rs.21, P = Rs.875,  $t = \frac{3}{12}$  years Formula, SI =  $\frac{p \times r \times t}{100}$  $21 = \frac{875 \times r \times 3}{100 \times 12}$ r =  $\frac{21 \times 100 \times 4}{875}$  = 9.6% 30. Ans.(B) SI = 1300 - 1000 = Rs.300  $SI = \frac{p \times r \times t}{100}$  $300 = \frac{1000 \times 6 \times x}{100}$ 100 x = 5 year 31. Ans.(C) Principal = Rs.1800 Rate = 5%Simple interest = Rs.390  $SI = \frac{p \times r \times t}{100}$  $390 = \frac{1800 \times 5 \times t}{100}$  $t = \frac{78}{18} = \frac{26}{6} = \frac{13}{3}$  year  $t = 4\frac{1}{3}$  years = 4 years 4 months 32. Ans.(C)  $SI = \frac{p + \times r \times t}{100}$ 

According to Question, rate = time  $\frac{9P}{4} = \frac{P \times \text{time} \times \text{time}}{100}$   $\frac{9 \times 100}{4} = \text{time} \times \text{time}$ time =  $\sqrt{9 \times 25} = 15$  year

33. Ans.(

34.

35.

36.

37.

Ans.(A) Suppose the first bank pays interest at the rate of R1% and the second bank pays interest at the rate of R<sub>2</sub>%. First bank interest  $\frac{5000 \times R_1 \times 2}{100} = 100R_1 \dots \dots (i)$  $=\frac{5000}{100}$ Second bank Interest  $= \frac{5000 \times R_2 \times 2}{100} = 100R_2 \dots \dots (ii)$ According to Question,  $100R_1 - 100R_2 = 25$  $100(R_1 - R_2) = 25$  $R_1 - R_2 = \frac{25}{100} = \frac{1}{4} = 0.25\%$ Ans.(D) Interest of both = 2200  $\frac{5000 \times 2 \times R}{100} + \frac{3000 \times 4 \times R}{100} = 2200$ 100R + 120R = 2200220R = 2200R = 10%Ans.(C) According to Question - $\frac{P \times 12 \times 3}{100} = \frac{3P \times 2 \times R}{100}$  $12 \times 3 = 3 \times 2 \times R$ R = 6% per year Ans.(A) r = 6.25%, Principal = Rs.5000 5 February 2017 to 19 April 2017 = 73 Days  $=\frac{73}{365}$  year  $SI = \frac{5000 \times 6.25 \times 73}{100 \times 365}$  $= \frac{50 \times 625 \times 73}{100 \times 365}$  $= \frac{1 \times 125 \times 73}{2 \times 73} = Rs. 62.5$ Ans.(A) : P = Rs.3680 r = 4% t = 2.5 year  $SI = \frac{p \times r \times t}{100}$  $3680 \times 4 \times 2.5$ = 100  $=\frac{3680\times10.0}{100}=Rs.368$ 

38. Ans.(B)

Let the principal = Pr = R%t = 5 year By question - $\frac{\frac{P \times (R+10) \times 5}{100} - \frac{P \times R \times 5}{100}}{\frac{5PR + 50P}{100} - \frac{5PR}{100}} = 2000$  $\frac{5PR + 50P - 5PR}{5PR + 50P - 5PR} = 2000$ 100  $\frac{50P}{100} = 2000$  $P = 2000 \times 2 = Rs.4000$ 39. Ans.(B) r = 6% $t = 3\frac{3}{4}$  year  $= \frac{15}{4}$  year  $A = P \left[ \frac{p \times t}{100} + 1 \right]$  $2940 = P\left[\frac{6\times\frac{15}{4}}{100} + 1\right] = P\left[\frac{90}{400} + 1\right]$  $= P \times \frac{49}{40}$  $\Rightarrow P = \frac{2940 \times 40}{2}$  $\Rightarrow P = 60 \times 40$  $\Rightarrow P = Rs.2,400$ So the amount invested = Rs.2,40040. Ans.(C) Given -Simple interest = Rs.456 Rate (R) = 9.5%Time (T) = 6 year  $:: SI = \frac{p \times r \times t}{100}$  $\Rightarrow 456 \times 100 = P \times 9.5 \times 6$  $\Rightarrow p = \frac{45600}{57}$ P = Rs.80041. Ans.(C) Let the money = PAmount = 2PRate = r% (annual) Time = 12 year SI = 2P - P = P $\therefore P = \frac{P \times r \times 12}{100}$  $r = \frac{100}{12} = \frac{25}{3}$  $r = 8\frac{1}{2}\%$ 42. Ans.(C)  $\therefore SI = \frac{P \times R \times T}{100}$ According to Question  $2400 = \frac{5000 \times 4 \times R}{100} + \frac{4000 \times 5 \times R}{100}$ 100 2400 = 200R + 200R2400 = 400RR = 6%43. Ans.(C)

Let that amount be P and the rate of simple interest is r%.

 $A - P = \frac{P \times r \times t}{100}$ According to Question,  $20720 - P = \frac{P \times r \times 4}{100} \dots \dots (i)$  $24080 - P = \frac{P \times r \times 6}{100} \dots \dots (ii)$ On dividing equation (i) by (ii) - $\frac{20720-P}{24080-P} = \frac{P \times r \times 4}{100} \times \frac{100}{P \times r \times 6}$  $\frac{24080-P}{20720-P} = \frac{2}{3}$ 62160 - 3P = 48160 - 2PP = 14000Putting the value of P in equation (i) - $20720 - 14000 = \frac{14000 \times r \times 4}{14000 \times r \times 4}$ 100 6720 = 560rr = 12%44. Ans.(D) Let the sum invested = x $A = \mathsf{P}\left(1 + \frac{\mathsf{r} \times \mathsf{t}}{100}\right)$  $\Rightarrow 2x = x \left(1 + \frac{12.5 \times t}{100}\right)$  $\Rightarrow 2 = 1 + \frac{125 \times t}{1000}$  $\Rightarrow 1 = \frac{t}{8}$ time (t) = 8 years 45. Ans.(C)  $\mathsf{SI} = \frac{\mathsf{p} \times \mathsf{r} \times \mathsf{t}}{100}$  $=\frac{3675\times4\times2}{100}=Rs.294$ 46. Ans.(B)  $SI = \frac{p \times r \times t}{100}$  $= \frac{2000 \times 8.5 \times 6}{100} = 1020$ 47. Ans.(B)  $\therefore SI = \frac{P \times R \times t}{100}$ According to Question,  $\frac{x \times 9 \times 5}{100} = \frac{y \times 7.5 \times 4}{100}$  $x \times 9 \times 5 = \frac{y \times 75 \times 4}{10}$ 3x = 2yx: y = 2:348. Ans.(B)  $\mathsf{SI} = \frac{\mathsf{p} \times \mathsf{r} \times \mathsf{t}}{100}$  $SI = \frac{\frac{825 \times 8 \times 5}{100}}{\frac{825 \times 8}{5}} = \frac{\frac{825 \times 2}{5}}{\frac{5}{5}} = \frac{1650}{5}$ SI = Rs.33049. Ans.(B) According to Question,

 $\frac{5 \times 9 \times x}{100} = \frac{8 \times 6.25 \times y}{100}$  $\frac{x}{y} = \frac{8 \times 6.25}{5 \times 9}$  $= \frac{8 \times 1.25}{9} = \frac{8 \times 125}{900} = \frac{8 \times 125}{9 \times 100}$  $\frac{x}{y} = \frac{8 \times 5}{9 \times 4} = \frac{10}{9}$ x: y = 10:950. Ans.(B)  $S.I = \frac{P \times R \times T}{100} = \frac{P \times 5 \times 13}{100 \times 4} = \frac{65}{400}P$ According to Question - $P + \frac{65}{400}P = 2790$  $\Rightarrow \frac{465P}{400} = 2790$  $\Rightarrow P = \frac{2790 \times 400}{465}$  $\Rightarrow P = 6 \times 400$  $\Rightarrow P = 2400$ Thus, the amount invested = Rs. 2400 51. Ans.(A) Given -P = Rs.600, rate = 8%, time = 5 years  $\therefore S.I = \frac{P \times R \times T}{100}$  $\Rightarrow SI = \frac{600 \times 8 \times 5}{100} = Rs.240$ 52. Ans.(A) Given -Rate of simple interest = 6%time =  $6\frac{1}{2} = \frac{13}{2}$  year Amount = Rs.834 Let the sum invested = Rs.P Simple interest  $\Rightarrow 834 - P$  $834 - P = \frac{P \times 6 \times 13}{100 \times 2}$  $834 - P = \frac{39P}{100}$ or 83400 = 139Por P = Rs.60053. Ans.(B) Let the principal amount be x. According to Question,  $\frac{x \times 7.5 \times 5}{100} - \frac{x \times 7.5 \times 4}{100} = 375$  $\left\{ \because \operatorname{SI}_{r \times 7} = \frac{p \times r \times t}{100} \right\}$  $\Rightarrow \frac{x \times 7.5 \times 1}{100} = 375$  $x = \frac{375 \times 100}{7.5}$  $x = 50 \times 100 = \text{Rs}.5000$ So, the amount invested will be Rs. 5000.

# 54. Ans.(A)

$$SI = \frac{p \times t \times r}{100}$$

According to Question,  $\frac{8 \times x \times 5}{100} = \frac{7.5 \times 6 \times y}{100}$  $\Rightarrow \frac{x}{y} = \frac{7.5 \times 6}{8 \times 5}$  $\Rightarrow \frac{4.5}{4} = \frac{45}{40} = \frac{9}{8}$  $\therefore x: y = 9:8$ 55. Ans.(B)  $SI = \frac{p \times t \times r}{100}$  $18 = \frac{750 \times R \times \frac{5}{12}}{100}$  $18 \times 100 = 750 \times R \times \frac{1}{4}$  $\frac{18 \times 100 \times 4}{100} = R$ 750  $R = \frac{18 \times 2 \times 4}{15} = \frac{48}{5}$ R = 9.6% per year 56. Ans.(A) Let principal = P By question - $\frac{P \times 6 \times x}{100} = \frac{1}{3}P$  $\Rightarrow \frac{6 \times x}{100} = \frac{1}{3} \Rightarrow x = \frac{100}{6 \times 3}$  $\Rightarrow x = \frac{50}{9} \Rightarrow x = 5\frac{5}{9}$ 57. Ans.(A) Let Principal = Rs. x : Simple interest for 6 year =  $\frac{x \times 12 \times 6}{100} = \frac{72x}{100}$ Simple Interest for 12 year =  $\frac{100}{100} = \frac{100}{100}$ Simple Interest for 12 year =  $\frac{x \times 12 \times 12}{100} = \frac{144x}{100}$  $\therefore$  Required ratio =  $\frac{72x}{100}$  :  $\frac{144x}{100}$ = 1:258. Ans.(D)  $\mathsf{SI} = \frac{\mathsf{P} \times \mathsf{R} \times \mathsf{T}}{100}$  $=\frac{50\times10\times6}{100}$  $=\frac{500\times 6}{100}$  = Rs.30 59. Ans.(B) SI = Amount - Principal = 956 - 800 = Rs.156  $SI = \frac{p \times r \times t}{100}$ 156 =  $\frac{800 \times 3 \times R}{100}$ ,  $R = \frac{52}{8}$ As second condition, the rate of growth is r.  $252 = \frac{800 \times 3 \times \left(\frac{52}{8} + r\right)}{100}$  $\frac{22}{2} = \frac{52}{8} + r$ r = 10.5 - 6.5r = 4%Hence the rate increased by 4%. 60. Ans.(A)

S.I.  $= \frac{PRT}{100}$ S.  $I_{(1)} = \frac{500 \times 7 \times 3}{100} = 105$ S.  $I_{(2)} = \frac{700 \times 10 \times 3}{100} = 210$ S.  $I_{(3)} = \frac{1000 \times 4 \times 3}{100} = 120$  $\therefore S.I. = S.I_{(1)} + S.I_{(2)} + S.I_{(3)}$ = 105 + 210 + 120 = Rs.43561. Ans.(C) By auestion. Principal amount (P) = Rs.2000annual interest rate (R) = 8.25%Time (T) = Number of days from 9 March, 2010 to 21 May, 2010 = 22 + 30 + 21 = 73days =  $\frac{73}{365}$  years  $\mathsf{SI} = \frac{PRT}{100}$  $= \frac{\frac{2000 \times 8.25 \times \frac{73}{365}}{100}}{\frac{2000 \times 825 \times 73}{100 \times 100 \times 365}} = Rs.33$ 62. Ans.(A) Let the principal be x.  $\therefore$  Simple Interest for Rita =  $\frac{x \times 2.5 \times 4}{100} = \frac{x}{10}$ Simple Interest for Sita =  $\frac{x \times 2.5 \times 6}{100} = \frac{3x}{20}$  $\therefore$  Required ratio  $=\frac{3x}{20}:\frac{x}{10}=3:2$ 63. Ans.(C)  $SI = \frac{P \times R \times T}{100}$  $= \frac{900 \times 6 \times 4}{100} = 216$ Amount = SI + Principal = 216 + 900 = 111664. Ans.(C) Let the principal = x $\therefore SI = (1000 - x)$  $\frac{x \times 8 \times 9}{100 \times 12} = 1000 - x$ 3x = 50000 - 50x53x = 50000 $x = \frac{50000}{53} = Rs.943.40$ 65. Ans.(A) Let the principal = Rs.P By question,  $SI = \frac{p \times t \times r}{100}$  $y = \frac{P \times y \times y}{100}$  $P = \frac{100 \times y}{y \times y}$  $P = \text{Rs.} \frac{100}{v}$ 66. Ans.(D)

Let principal = x, Amount = 2x: Simple interest = Amount – Principal = 2x - x = x $\frac{x \times r \times 10}{10} = x$ r = 10%67. Ans.(C)  $SI = \frac{p \times r \times t}{100}$ According to Question,  $P = \frac{P \times R \times 10}{100}$ R = 10%Second condition, Total amount after 20 years (P + SI)  $= P + \frac{P \times 20 \times 10}{100}$ = P + 2P = 3P68. Ans.(B) Let principal = P, Rate = R% Amount = 3P  $\therefore$  SI = 2P, time = 5 years  $S.I = \frac{P \times T \times R}{100}$  $2P = \frac{P \times 5 \times R}{100} \Rightarrow \frac{200}{5}$ R = 40%when, S.I = 4P $S.I = \frac{PTR}{100}$  $\frac{P \times T \times 40}{100} = 4P$ T = 10 years 69. Ans.(A) Time = 10 years Let principal = x $\therefore$  Amount = 5x Interest = 5x - x = 4xrate = R% $SI = \frac{PTR}{100}$  $4x = \frac{x \times 10 \times k}{100}$ R = 40%70. Ans.(B) Given -Rate = 10% annual, time = 4 year Amount = Rs. 10920 Let Z borrow Rs. x. According to Question  $x + \frac{x \times 10 \times 4}{100} = 10920$  $\Rightarrow \frac{7x}{5} = 10920$  $\Rightarrow 7x = 10920 \times 5$  $\Rightarrow x = \frac{10920 \times 5}{7} = 1560 \times 5 = Rs.7800$ 71. Ans.(C) Given that -

R = N $\therefore \frac{9}{16}P = \frac{PRT}{100} \left[ S.I. = \frac{PRT}{100} \right]$  $\Rightarrow \frac{9}{16}P = \frac{P \times N \times N}{100}$  $\Rightarrow N^2 = \frac{9}{16} \times 100 = \left(\frac{30}{4}\right)^2$  $\Rightarrow N = 7.5$ 72. Ans.(A) Simple interest of 2 years = 9425 - 8255 = Rs.1170 Simple interest of 3 years =  $\frac{1170}{2} \times 3 = 1755$  $\therefore$  Principal = 8255 - 1755 = Rs.6500  $\therefore \text{ S.I.} = \frac{PRT}{100}$ 1755 =  $\frac{6500 \times R \times 3}{100}R$  =  $\frac{1755}{65 \times 3}$  = 9% 73. Ans.(C) Principal (P) = 550 Rate (R) = 5%Time (T) = 4 year Simple interest (SI) =  $\frac{PRT}{100} = \frac{550 \times 5 \times 4}{100} = 110$ Amount = Principal + interest = 550 + 110 = 66074. Ans.(C) Given -Principal amount = Rs.1500 Time = 2 years Amount = Rs.1800 ∴Interest = Amount – Principal = 1800 - 1500 = Rs.300 Formula -SI =  $\frac{p \times r \times t}{r}$  $SI = \frac{100}{100}$  $\Rightarrow 300 = \frac{1500 \times R \times 2}{100}$  $\Rightarrow R = 10\%$ New rate after 5% increase = 10% + 5% = 15% New simple interest =  $\frac{1500 \times 15 \times 2}{100}$  = 450 New Amount = Principal + Interest = 1500 + 450= *Rs*. 1950 75. Ans.(D) Let the principal = Rs. 100. :. Interest at end of six months =  $\frac{100 \times 12 \times 6}{100 \times 12} = 6$  $\therefore$  Principal for next six months = 100 + 6= Rs.106Interest =  $\frac{106 \times 12 \times 6}{100 \times 12}$  = Rs.6.36 Effective annual rate of interest = 12.36%76. Ans.(D) Let the annual rate of interest = R%

$$: \frac{6000 \times R \times 3}{100} + \frac{8000 \times R \times 5}{100} = 5220$$

$$180R + 400R = 5220$$

$$R = \frac{5220}{580} = 9\%$$
77. Ans.(A)  

$$SI = \frac{P \times R \times T}{100}$$

$$2040 = \frac{8500 \times R \times 3}{100}$$

$$2040 = 85 \times R \times 3$$

$$R = \frac{2040}{85 \times 3} = 8\%$$
78. Ans.(C)  
Principal = Rs. 7800  
Time = 2 years 8 months =  $\frac{8}{3}$  years  
Rate = ?  
SI = 1976  
S.I. =  $\frac{P \times T \times R}{100}$   
 $1976 = \frac{7800 \times R \times 8}{300}$   
 $\frac{1976 \times 300}{7800 \times 8} = R$   
 $R = \frac{19}{2} = 9.5\%$   
79. Ans.(C)  
S.I. = Principal  $\times \frac{9}{16}$   
 $R = N$   
 $\therefore$  rate of interest  $(R) = \frac{100 \times 9}{16 \times R}$   
 $R^2 = \frac{900}{16}$   
 $R = \sqrt{\frac{900}{16}} = \frac{30}{4} = \frac{15}{2}\%$   
80. Ans.(D)  
Time (T) = 8 year  
Rate (R) = ?  
Principal (P) = Simple interest (SI)  
 $P = SI$   
 $\therefore SI = \frac{PTR}{100}$   
 $\therefore P = \frac{P \times 8 \times T}{100}$   
 $\Rightarrow R = 12.5\%$   
81. Ans.(C)  
Let principal = Rs. x  
 $\therefore SI = \frac{P \times R \times T}{100}$   
 $\Rightarrow 2000 = \frac{x \times 10 \times 2}{100}$   
 $x = 10000$   
Compound interest for 2 years

$$= P\left[\left(1 + \frac{r}{100}\right)^{n} - 1\right]$$

$$= 10000\left[\left(1 + \frac{10}{100}\right)^{2} - 1\right]$$

$$= 10000 \times \frac{21}{100} = Rs.2100$$

$$\therefore \text{ Difference in interest} = 2100 - 2000$$

$$= \text{Rs. 100}$$
82. Ans.(A)  
SI =  $\frac{P \times R \times T}{100}$   
400 =  $\frac{4000 \times 6 \times t}{100}$   
time =  $\frac{4000}{4000 \times 6} = \frac{10}{6}$  years =  $\frac{10}{6} \times 12$   
= 20 months  
83. Ans.(B)  
Let the principal be x and the Amount is  $\frac{7x}{6}$   
Then according to the question -  
 $\frac{7x}{6} - x = \frac{x \times 25 \times time}{100}$   
 $\Rightarrow time = \frac{4}{6}$  years  
 $= \frac{4}{6} \times 12$  months  
84. Ans.(A)  
By question -  
SI =  $8750 \times \frac{6}{25} = 2100$   
 $\frac{8750 \times R8}{100} = 2100$   
 $n = \frac{210000}{8750 \times 8}$   
 $n = 3$  years  
85. Ans.(C)  
According to Question -  
 $\frac{P \times (r + 2) \times 1}{100} - \frac{P \times r \times 1}{100} = 120$   
 $\frac{P}{100}(r + 2 - r) = 120$   
 $\frac{P}{100} \times 2 = 120$   
 $P = 120 \times 50$   
 $P = R \times 6000$   
86. Ans.(C)  
Let principle amount will triple in T years.  
From the formula,  
 $T = \frac{(n - 1)100}{R}$   
 $T = \frac{(3 - 1)100}{\frac{23}{2}}$   
 $= 16$  years

87. Ans.(B) 2 years simple interest at the rate of 4% on Rs. 5000.  $SI = \frac{5000 \times 4 \times 2}{100}$ SI = 400Simple interest of one year =  $\frac{400}{2}$  = Rs. 200 2 years simple interest at the rate of 6.25% of Rs. 5000 =  $\frac{5000 \times 6.25 \times 2}{100}$ 100  $= 50 \times 12.50 = 625$ One year simple interest  $=\frac{625}{2}=312.50$ profit = 312.50 - 200 = 112.50On lending to another person at 6.25% interest instead of 4% per annum, the person gets Rs. 112.50 profit. 88. Ans.(C) 10 years simple interest =  $\frac{P \times R \times T}{100}$  $\therefore 600 = \frac{P \times R \times 10}{100} \Rightarrow PR = 6000$ According to Question, Total SI = 5 years  $SI_1$  + 5 years  $SI_2$  $= \frac{5 \times P \times R}{100} + \frac{5 \times 3P \times R}{100} = PR \frac{20}{100}$  $= 6000 \times \frac{20}{100} = 1200$ Total SI = Rs.1200 89. Ans.(A) Given -Principal (P) = 2400 Rs. Rate (R) = 4.5%Time (T) = 4 years 6 months =  $\frac{9}{2}$  years (S.1) =  $\frac{P \times R \times T}{100} = \frac{2400 \times 4.5 \times 9}{100 \times 2}$ = Rs.48690. Ans.(A)  $\frac{4 \text{ years SI}}{8 \text{ years SI}} = \frac{\frac{p \times r \times 4}{100}}{\frac{P \times r \times 8}{100}} = \frac{1}{2} = 1:2$ 91. Ans.(B)  $\Rightarrow \frac{S.I_1}{S.I_2} = \frac{\frac{P \times R \times 6}{100}}{\frac{P \times R \times 10}{100}}$  $\Rightarrow \frac{S.I_1}{S.I_2} = \frac{6}{10} = \frac{3}{5}$  $S. I_1: S. I_2 = 3:5$ Ans.(B) 92. S.I. =  $\frac{P \times R \times T}{100}$ Amount - Principal amount  $= 956 - 800 = \frac{800 \times R \times 3}{100}$  $156 = 8 \times R \times 3$  $R = \frac{52}{8} = \frac{13}{2}\%$ 

Again R is increased by  $4\% = \frac{13}{2} + 4$  $=\frac{21}{2}\%$  $\therefore$  S.I. =  $\frac{800 \times 21 \times 3}{100 \times 2}$  = 252 Increase investment = 252 - 156 = 96 Rs. 93. Ans.(C)  $S.I. = \frac{P \times R \times 5}{100}$  $250 = \frac{750 \times R \times T}{100}$ R = 20/3%Second S.I. =  $\frac{750 \times 20/3 \times 10}{100}$ S.I. = 500 Total amount = 750 + 500 = Rs.1250 94. Ans.(D) Let money = xRate of interest = r%If the rate of interest is r% then  $SI = \frac{P \times R \times T}{100}$  $= \frac{x \times r \times 10}{100} = \frac{rx}{10}$ If the rate of interest is (r + 5)%, then S.I. =  $\frac{x \times (r+5) \times 10}{100} = \frac{rx + 5x}{10}$ According to Question,  $\frac{rx+5x}{10} - \frac{rx}{10} = 1200$  $\frac{rx+5x-rx}{10} = 1200$  $\frac{5x}{10} = 1200$ x = Rs.240095. Ans.(C) Let the principal = P, rate = r%As first condition - $400 = \frac{P \times r \times 2}{100} \dots \dots (i)$ Second condition:  $400 + 400 = \frac{P \times (r+4) \times 2}{100}$  $800 = \frac{P \times (r+4) \times 2}{100} \dots \dots (ii)$ Dividing equation (i) by equation (ii)  $\frac{\frac{1}{2}}{r} = \frac{r}{r+4}$ r = 4%Therefore  $P = \frac{SI \times 100}{t \times r} = \frac{400 \times 100}{2 \times 4}$ = Rs.500096. Ans.(B) Let the second investment = P By question -

 $\frac{16000\times8\times1}{100} + \frac{P\times18\times1}{100} = \frac{(16000+P)10}{100}$  $1280 + \frac{9P}{50} = 1600 + \frac{P}{10}$  $320 = \frac{9P}{50} - \frac{P}{10}$  $\frac{4P}{50} = 320$ P = 4000Total investment = 16000 + P = 16000 + 4000 = Rs.20000 97. Ans.(C) Let that principal be P.  $\frac{P \times 7.5 \times 15}{100 \times 12} - \frac{P \times 12.5 \times 8}{100 \times 12} = 32.50$  $\frac{P}{100 \times 12}(112.5 - 100) = 32.50$  $P \times 12.5 = 32.50 \times 100 \times 12$  $P \times 125 = 325 \times 100 \times 12$  $\therefore P = Rs.3120$ 98. Ans.(C) Let that prinsipal be x. According to Question,  $\frac{x \times 7 \times 2}{100} = \frac{1750 \times 5 \times 4}{100}$  $x = \frac{1750 \times 5 \times 4}{7 \times 2} = Rs.2500$ 99. Ans.(D) Simple interest is equal to  $P_1$ ,  $P_2$ ,  $P_3$  and time is also equal. Let simple interest (S.I) = xTime (T) = 1 years for  $P_1$  $S.I = \frac{P_1 \times R \times T}{100}$  $x = \frac{P_1 \times 4 \times 1}{100}$  $P_1 = 25x$ for  $P_2$  $x = \frac{P_2 \times 6 \times 1}{100}$  $P_2 = \frac{50x}{3}$ P<sub>3</sub> forए  $x = \frac{P_3 \times 8 \times 1}{100}$  $P_3 = \frac{25x}{2}$  $P_{1} + P_{2}^{2} + P_{3} = 2600$   $25x + \frac{50x}{3} + \frac{25x}{2} = 2600$   $\frac{150x + 100x + 75x}{6} = 2600$  $325x = 2600 \times 6$ x = 48 Rs. $P_1 = 25x = 25 \times 48 = Rs.1200$  $P_2 = \frac{50x}{3} = \frac{50}{3} \times 48 = Rs.800$  $P_3 = \frac{25x}{2} = \frac{25}{2} \times 48 = Rs.600$ 

100. Ans.(D)  $T_2 = \frac{(n_2 - 1) \times T_1}{(n_1 - 1)},$  $T_2 = \frac{(16-1)\times 4}{(2-1)}$  $= 15 \times 4 = 60$  years 101. Ans.(A) Let amount (P) = xAmount (A) = 2xSimple interest (S.I.) = 2x - x = x $\because S.I. = \frac{PRT}{100}$  $x = \frac{x \times R \times 30}{100}$  $R = \frac{100}{30} = 3\frac{1}{3}\%$ 102. Ans.(C) Given, S.I. = 32000 - 25000 = 7000 $S.I. = \frac{p \times r \times t}{100}$   $7000 = \frac{25000 \times R \times 4}{100}$   $R = \frac{7000}{1000} = 7\%$ 103. Ans.(D)  $4P = P\left(1 + \frac{R \times 20}{100}\right)$  $4-1 = \frac{R}{5}$ R = 15%104. Ans.(D) Let the rate is R%. S.I. =  $\frac{p \times r \times t}{100}$ S.I. = Amount – principal = 83.20 - 64= 19.20 S.I. =  $\frac{p \times r \times t}{100}$ 19.200 =  $\frac{64 \times R \times 2}{100}$  $\frac{1920}{128} = R$ R = 15%Rate = 15%, Princiapl = Rs.86, time = 4 years. Amount = ? S.I.  $=\frac{86 \times 15 \times 4}{100} = 51.60$ Amount = principal + simple interest = 86 + 51.60 = Rs.137.60 105. Ans.(A) Given -Rate (R) = Time (t) S.I. =  $\frac{p \times r \times t}{100}$ 

 $(3264 - 2400) = \frac{2400 \times R \times R}{100}$  $864 = 24 \times R^2$  $R^2 = \frac{864}{24}$  $R^2 = 36$ R = 6%106. Ans.(A) According to Question, Interest of three years = Amount of 8 years -Amount of 5 years = 12005 - 9800 = 2205 One year interest  $=\frac{2205}{3}=735$  $735 = \frac{\{9800 - (735 \times 5)\} \times dt \times 1}{2}$ 100  $73500 = (9800 - 3675) \times R$  $73500 = 6125 \times R$ R = 12%107. Ans.(D) Principal = 800, Time = 3 years, Rate = r%Amount = 956S.I. = 956 - 800 = 156  $\Rightarrow 156 = 800 \times \frac{r}{100} \times 3$  $\Rightarrow r = \frac{156}{24} \Rightarrow r = 6.5\%$  Yearly 108. Ans.(D) Let principal = P Amount = 4PInterest = 4P - P = 3PTime = 7 years rate of interest =  $\frac{\text{Interest} \times 100}{\text{Time} \times \text{Principal amount}}$  $\frac{3P \times 100}{7 \times P} = \frac{300}{7}\%$ Time when the Amount is 16 times =  $\frac{15P \times 100}{300}$  $\frac{300}{\times P}$  $=\frac{15\times100\times7}{300}=35$  years 109. Ans.(B) Let the principal = P Time = 2x years, Rate = x% $\therefore \text{ S.I. } = \frac{112.5}{100} \times P$ S.I. =  $\frac{P \times R \times T}{100}$  $\frac{112.5}{100} \times P = \frac{P \times 2x \times x}{100}$ 

 $112.5 = 2x^2$  $x^2 = 56.25$  $x = 7.5 = 7\frac{1}{2}$ So, rate is  $7\frac{1}{2}$ % and time = 2 x  $7\frac{1}{2}$  = 15 years 110. Ans.(D) Let the principal be x.  $\therefore$  Amount = 3xFirst condition, S.I. = 3x - x = 2xS.I. =  $\frac{p \times r \times t}{100}$  $2x = \frac{x \times R \times 6}{100}$  $R = \frac{100}{3}\%$ Second condition, S.I. =  $7x = \frac{x \times R \times n}{100}$  $7 = \frac{100/3 \times n}{100}$ n = 21 years 111. Ans.(A) Let the principal = Rs. x8 months simple interest at the rate of 8% Rate (R) = 8%, Time (T) =  $\frac{8}{12}$  years =  $\frac{2}{3}$  years S.I. =  $\frac{P \times R \times T}{100}$ =  $\frac{x \times 8 \times \frac{2}{3}}{100}$ 16x $=\frac{1}{300}$ 14 months simple interest at the rate of 6% Rate (R) = 6%, Time  $(T) = \frac{14}{12} = \frac{7}{6}$  years S.I. =  $\frac{P \times R \times T}{100} = \frac{x \times 6 \times \frac{7}{6}}{100} = \frac{7x}{100}$ Difference between simple interest = 200 7*x* 16*x*  $\frac{100}{100} - \frac{100}{300} = 200$  $\frac{21x - 16x}{300} = 200$ 5*x*  $\frac{1}{300} = 200$  $x = 40 \times 300$ x = Rs. 12000

# 15. (Compound Interest)

1. When there is an annual compound interest at the rate of about 9% per annum, then what will be the amount of Rs. 5,000 after 2 years?

RKB Gro	up-D - 10/10/2018 (Shift-II
<b>(A)</b> Rs. 5,940	<b>(B)</b> Rs. 9,950
( <b>C)</b> Rs. 5,970	<b>(D)</b> Rs. 5,936

2. Shyam deposits Rs. X for 2 years at 8% per annum compound annual interest, which becomes Rs. 72,900. Then what is the value of X?

RRB Group-D - 04/10/2018 (Shift-II)

(A) Rs. 60,500	<b>(B)</b> Rs. 62,000
(C) Rs. 60,000	(D) Rs. 62,500

3. If you invested Rs 100 on 40% annual interest, which would be quarterly compounding, how much would you get after one year?

RRB Gro	oup-D - 04/10/2018 (Shift-I)
(A) Rs. 148.11	<b>(B)</b> Rs. 146.41
(C) Rs. 145.61	<b>(D)</b> Rs. 149.01

4. A person borrowed money at 9% simple interest and invested it at 10% compound interest for 3 years. After 3 years, he received Rs. 1952 profit. How much money did he borrow?

RRB Group-D - 06/12/2018 (Shift-III)

( <b>A)</b> Rs. 30000	<b>(B)</b> Rs. 32000
( <b>C)</b> Rs. 33000	<b>(D)</b> Rs. 32543

 The money invested for two years is to be compounded on an annual basis, at a rate of 20% per annum. At maturity becomes Rs. 324. What was the initial amount invested:

 RRB Group-D - 05/12 / 2018 (Shift-II)

 (A) Rs. 240
 (B) Rs. 200

 (C) Rs. 250
 (D) Rs. 225

6. If the interest is calculated annually, then how much the amount of Rs.2000 will be after approximately 3 years at the rate of 10% annually compound interest.

	RRB NTPC - 09/2022 (Shift-II)
(A) Rs. 2510	( <b>B</b> ) Rs.2662
(C) Rs. 2520	(D) Rs. 2726

7. A person take Rs 32,000 at a simple interest rate of 9% per annum, and deposits it in the bank at a compound interest rate of 10% per annum. What will be the total increase in his wealth by the end of the third year?

RRB Gro	oup-D - 01/10/2018 (Shift-III)
<b>(A)</b> Rs.1,940	<b>(B)</b> Rs.1,952
( <b>C)</b> Rs.926	<b>(D)</b> Rs. 2,904

8. In how many years will Rs.1,728 become Rs.2,197 at  $8\frac{1}{3}$  annual rate of compound interest?

RRB RPF SI - 16/01/2019 (Shift-III)

(A) 2 years	<b>(B)</b> $1\frac{1}{2}$ years
(C) 3 years	<b>(D)</b> $2\frac{1}{2}$ years

**9**. Manoj invested Rs 15,000 in a fixed deposit scheme for 3 years, compounding at 5% per annum annually. What amount will Manoj get on maturity of fixed deposit?

	RRB Grou	p-D - 26/10	/2018 (Shift-II)
(A) Rs.	13,764.37	<b>(B)</b> Rs.	17,463.37
(C) Rs.	17,643.37	<b>(D)</b> Rs.	17,364.37

**10**. Due to an intense campaign against smoking, the percentage of smokers in a region is falling by 10% every year relative to previous years. If currently the number of smokers is 8748, then what was the number of smokers 3 years ago?

RRB G	iroup-D - 24/10/2018 (Shift-II)
(A) 12000	<b>(B)</b> 16253
<b>(C)</b> 11643	<b>(D)</b> 10000

**11**. Sita borrowed Rs.180000 at a simple interest rate of 10% per annum. On the same day, she gave that amount to her friend at an annual compound interest rate. How much rupees did he gain at the end of 2 years?

RRB Group-D - 15/10/2018 (Shift-III)

(A) Rs. 2,000	<b>(B)</b> Rs. 1,600
(C) Rs. 2,200	<b>(D)</b> Rs. 1,800

**12**. Mani deposits Rs 8000 in a bank on which he gets 5% annual interest. If the interest is calculated annually, then after two years, what will be the amount in his account?

RRB NTPC - 09/2022 (Shift-II)

( <b>A)</b> Rs. 8500	<b>(B)</b> Rs. 8700
(C) Rs. 8820	(D) Rs. 8600

**13**. An amount of Rs. 200 was invested in a scheme for a year, offering a simple interest of 10% per annum, compounding the interest annually. Another amount of Rs. 200 was invested for one year in a scheme at 10% per annum, but interest was compounded half-yearly. How much will be the interest earned under the second plan will more than first?

 RRB Group-D - 06/12/2018 (Shift-II)

 (A) 50 paise
 (B) Rs. 1

 (C) 10 paise
 (D) 25 paise

**14**. What will be the compound interest at Rs.15,625 for 1 year 6 months at 8% per annum, when compound interest is compounded half-yearly?

RRB Group-D - 12/10/2018 (Shift-III)(A) Rs.1,951(B) Rs. 1,950(C) Rs.1,900(D) Rs. 1,952

**15**. What will be the compound interest of Rs.31,250 for  $2\frac{3}{4}$  years at rate of 8% per annum?

RRB Group-D - 22/11/2022 (Shift-I)

<b>(A)</b> Rs. 7300	<b>(B)</b> Rs. 7800
( <b>C)</b> Rs. 7337	<b>(D)</b> Rs. 7387

**16**. Investing a sum of money at a 4% annual rate of compound interest yields Rs.78,030 at the end of 1 year, while the interest is compounded half-yearly. The fund is-

 RRB Group-D - 04/12/2018 (Shift-III)

 (A) Rs.76,000
 (B) Rs. 71,400

 (C) Rs. 72,500
 (D) Rs. 75,000

**17**. The interest received on a fixed sum of money at a rate of 10% in a year is Rs 400. Compute the compound interest for the same amount at the same rate and for the same period if the interest is compounded half-yearly.

RRB Group-D - 05/11/2018 (Shift-I)

( <b>A)</b> Rs. 400	( <b>B)</b> Rs. 210
(C) Rs. 410	(D) Rs. 200

**18**. The simple interest on a sum of money for 3 years at 12% per annum is Rs.6,750. What will be the compound interest on the same amount at the same rate for the same period when compounded annually?

RRB Group-D - 12/10/2018 (Shift-I)

(A) Rs. 7,092.40
(B) Rs. 7,000
(C) Rs. 7,592.40
(D) Rs. 7,500.40

**19**. Smita took a loan of Rs. 75,000 at a simple annual interest rate of 15%. She loaned that money to his friend on the same day, at the same interest rate but according to the annual compounding. How much profit will she earn after 2 years?

RRB Group	-D - 30/10/2018 (Shift-II)
(A) Rs. 1,887.5	(B) Rs. 1,867.5
(C) Rs. 1,786.5	(D) Rs.1,687.5

**20**. Anjali borrowed Rs. 22,500 for 2 years at the rate of 6% simple annual interest and on the same day she lent this amount to Ashok for compound interest at the same interest rate and for the same time. How much loss or gains will she got?

RRB G	roup-D - 11/10/2018 (Shift-II)
(A) 73 gain	<b>(B)</b> 73 loss
(C) 81 loss	<b>(D)</b> 81 gain

**21**. Rs. 100 has been invested for a year in a scheme in which annual simple interest is given at the rate of 10%. Another Rs. 100 is invested in a one-year plan that yields an annual interest at the rate of 10%, but the interest is compounded half yearly. How much is the interest received under the second plan is more than the first plan?

RRB Group-D -	16/11/2018	(Shift-III)
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<b>(A)</b> Rs. 1	<b>(B)</b> 50 paise
(C) 25 paise	(D) No difference

**22**. Simple interest of 8% on an amount for 1.5 years is Rs. 360. If the time is doubled according to the same interest rate on the same amount, find the compound interest?

RRB Grou	IP-D - 01/10/2018 (Shift-III)
<b>(A)</b> Rs. 778.13	( <b>B</b> ) Rs. 779.13
( <b>C)</b> Rs. 779	<b>(D)</b> Rs. 778

**23**. Find the difference between simple interest and compound interest at the rate of 10% per annum for 2 years at Rs 2000.

 RRB Group-D - 25/11/2022 (Shift-III)

 (A) Rs. 0
 (B) Rs. 30

 (C) Rs. 20
 (D) Rs. 10

24. The difference between compound interest and simple interest is 2 for 2 years at an interest rate of 5% on an amount. Find the original amount?

RRB Group-D - 29/10/2018 (Shift-III)

<b>(A)</b> Rs. 650	<b>(B)</b> Rs. 920
( <b>C)</b> Rs. 800	<b>(D)</b> Rs. 700

**25**. Find the difference between compound interest and simple interest at Rs. 8,000 at the rate of 5% interest for 3 years.

 RRB Group-D - 30/10/2018 (Shift-II)

 (A) Rs. 61
 (B) Rs. 58

 (C) Rs. 95
 (D) Rs. 68

**26**. The difference between simple interest and compound interest received in two years at Rs 20,000 is Rs 800. What is the annual rate of interest?

	RRB Group-D - 11/10/2018 (Shift-II)
(A) 30%	<b>(B)</b> 15%
(C) 25%	<b>(D)</b> 20%

27. There is a difference of Rs 180 between 15% simple annual interest and compound annual interest on a certain sum for 2 years. Find the exact amount.

RRB Group-D - 08/10/2018 (Shift-II)

(A) Rs. 9000	<b>(B)</b> Rs. 7000
( <b>C)</b> Rs. 8000	<b>(D)</b> Rs. 6000

**28**. What will be the difference between simple and compound interest of 2 years at 10% interest rate at Rs. 8,500?

 RRB Group-D - 23/10/2018 (Shift-II)

 (A) Rs. 68
 (B) Rs. 50

 (C) Rs. 85
 (D) Rs. 70

**29**. Deepa deposits a sum of Rs 6250 in the bank, which at the rate of annual compound interest becomes Rs 7840 in two years. The rate of interest is-

RRB Group-D - 25/11/2022 (Shift-I)

<b>(A)</b> 13%	<b>(B)</b> 10%
<b>(C)</b> 12%	<b>(D)</b> 11%

**30**. Hari invested Rs 100 for three years at a simple interest rate of 11.03%. How much should Tipu invest to get the same amount after three years, but at the rate of 10% compound interest?

 RRB Group-D - 05/11/2018 (Shift-I)

 (A) Rs. 120
 (B) Rs. 110

 (C) Rs. 100
 (D) Rs. 105

**31**. Mr. X invested Rs. 300 for three years at a simple interest rate of 11.03%. How much should Mr. Y invest for three years to get the same amount of return, but at a compound interest rate of 10%?

	RRB	Group-D -23/10/2018 (Shift-I)
(A) Rs.	250	( <b>B</b> ) Rs. 300
(C) Rs.	350	(D) Rs. 400

32. Raju invested Rs.5000 at an annual compound interest rate of P%. After 3 years he got Rs.1,655 more. Find the value of P. RRB Group - D 1/10/2018(Shift - III)

<b>(A)</b> 40	(B) 30	,
<b>(C)</b> 10	<b>(D)</b> 20	

**33**. The difference between the compound interest and simple interest of an amount at the rate of 15% per annum for 3 years is Rs. 283.50. Find the amount?

RRB Group-D - 12/10/2018 (Shift-I)(A) Rs.4,040(B) Rs.4,000(C) Rs.4,400(D) Rs.4,444

**34.** Mohit invested Rs. 10,000 in two different schemes NSC and PPF at an annual compound interest rate of 14% and 11% respectively. If the total amount of interest received in 2 years is Rs 2726, then what was the amount invested in PPF?

RRB RPF SI - 06/01/2019 (Shift-II)

(A) Rs.5000	<b>(B)</b> Rs.4000
<b>(C)</b> Rs. 6000	<b>(D)</b> Rs.7000

- 35. Find the amount of interest of Rs. 2000 for the third year at the rate of 40% of the annual compound interest.
  RRB RPF Constable -18/01/2019\$ (Shift-III) (A) Rs.1500 (B) Rs. 1600 (C) Rs. 1568 (D) Rs. 1750
- **36**. A woman invested Rs. 200 at the beginning of every year at a 5% compound interest rate. At the end of the second year his total investment amount will be.

F	RRB RPF SI - 11/01/2019 (Shift-I)
(A) Rs. 431	<b>(B)</b> Rs. 430.5
( <b>C</b> ) Rs. 435	<b>(D)</b> Rs. 430

**37**. Mr. Murthy invested Rs. 16000 in a scheme. How much money will be received if it is invested at the rate of 20% compound interest per annum for 9 months?

RRB RPF Cons	stable -17/01/2019(Shift - I)
(A) Rs. 18,523	(B) Rs. 18,521
<b>(C)</b> Rs. 18,524	<b>(D)</b> Rs. 18,522

**38**. When calculated by compounding on a halfyearly basis, find the compound interest of 18 months at 40% per annum on the amount of Rs. 18500.

### RRB RPF Constable - 25 /01/2019 (Shift-I)

(A) Rs. 13468	<b>(B)</b> Rs. 16280
( <b>C)</b> Rs. 16000	<b>(D)</b> Rs. 15469

**39**. Meena took a car loan of Rs.275000 from the bank. She paid interest at an annual rate of 8% (p.a.) and paid it in 3 years. While making the payment, she paid his old scooter and Rs.335000 to the bank. What is the total price of the scooter?

RRB RPF C	Constable - 20/01/2019 (Shift-II)
(A) Rs. 60,000	<b>(B)</b> Rs. 6,000
(C) Rs. 66,000	0 <b>(D)</b> Rs. 6,600

**40**. What will be the amount of Rs 3,000 after 2 years, if interest is compounded annually at 12 percent per annum?

RRB RPF Cor	nstable - 19/01/2019 (Shift-I)
<b>(A)</b> Rs.3,763	<b>(B)</b> Rs.3,773
<b>(C)</b> Rs.3,873	<b>(D)</b> Rs.3,766

**41.** Ranjan borrows Rs. 7500 at an annual compound interest rate of 4%. What will be the compound interest for 2 years while the interest is compounded annually?

RRB RPF SI - 11/01/2019 (Shift-II)

(A) KS. 012 (D) K	3. 0112
(C) Rs. 8121 (D) R	s. 621

**42**. If the compound interest at 5% per annum on a principal in 2 years is Rs.10 more than the simple interest on the same principal at the same time, find the principal.

RRBF	RPF SI - 12/01/2019 (Shift-II)
(A) Rs. 5,000	<b>(B)</b> Rs. 4,500
(C) Rs. 4,000	(D) Rs. 3,500

**43**. The simple interest of 3 years at 5% per annum on a fixed sum is Rs. 1260. Find the compound interest on the same amount for the same period.

 RRB RPF Constable -22/01/2019 (Shift-III)

 (A) Rs. 1324.05
 (B) Rs. 1384.05

 (C) Rs. 1428.05
 (D) Rs. 1448

**44**. Find the difference between compound interest and simple interest for 2 years at 8% per annum on an amount of Rs. 15,000.

RRB RPF SI- 13/01/2019(Shift-III)

$(\mathbf{A})$ ( $\mathbf{C}$ ) (	
(C) Rs. 108 (D) Rs. 12	

**45**. The difference between simple interest and compound interest on a certain amount at the rate of 5% for 3 years is Rs. 14.48. What is the principal?

### **RRB RPF Constable - 22/01/2019 (Shift-III)** (A) Rs. 1850 (B) Rs. 1999

(A) RS. 1850	( <b>B</b> ) RS. 1999
(C) Rs. 1899	(D) Rs. 2160

**46**. Find the difference between compound interest and simple interest of Rs. 400 at an interest rate of 5% for 2 years.

	Constable -24/01/2019 (Smit-iii)
<b>(A)</b> Rs.10	<b>(B)</b> Rs.4
<b>(C)</b> Rs.3	<b>(D)</b> Rs.1

**47**. If Rs 2,000 is invested at the rate of 20% per annum, and the interest is compounded on a half-yearly basis, what will be the amount after 18 months?

RRB	ALP & Tec. (21-08-18 Shift-II)
(A) Rs. 2,628	( <b>B</b> ) Rs. 2,662
(C) Rs. 3,200	<b>(D)</b> Rs. 2,600

**48**. The simple interest for 3 years at the rate of 12% per annum is Rs 4,140. What will be the compound interest of two years at the rate of 8% on the same amount?

RRB ALP	& Tec. (29-08-18 Shift-III)
( <b>A)</b> Rs. 2,012.40	( <b>B</b> ) Rs. 1,840
( <b>C)</b> Rs. 1,913.60	<b>(D)</b> Rs. 1,886.50

**49**. Find the interest of Rs.625001 for  $1\frac{1}{2}$  years at the rate of 21% annual compound interest.

RRB ALP	& Tec. (13-08-18 Shift-III)
(A) Rs. 20,687.5	(B) Rs. 19,687.5
( <b>C)</b> Rs. 21,638.5	<b>(D)</b> Rs. 20,695

**50**. The simple interest received on a certain sum of money in 3 years at an annual rate of 5% is Rs.5,250. What will be the compound interest of the same amount at the same rate of interest for the same period?

RRB ALP &	Tec. (10-08-18 Shift-II)
(A) Rs. 5,510.88	( <b>B</b> ) Rs. 5,516.88
(C) Rs. 5,512.88	(D) Rs. 5,517.88

**51**. In how much time, Rs 4400 will become Rs 4576 at 8% annual rate of interest, if interest compound half-yearly?

RRB AL	P & Tec. (17-08-18 Shift-I)
(A) 6 months	(B) 2 years
(C) 7 months	(D) 1 year

**52**. A woman invests Rs. 2000 per year at the beginning of every year at a compound interest rate of 5%. How much will she invest at the end of the second year?

RRB NTPC 23/07/2022 Shift-1

<b>(A)</b> Rs. 4305	<b>(B)</b> Rs. 430
<b>(C)</b> Rs. 4355	<b>(D)</b> Rs. 4350

**53**. A person borrows a certain amount from a bank for 3 years at a rate of 7% compound interest annually. If he paid Rs. 85,966 as total interest, then what was the amount borrowed?

RRB	NTPC 10/08/2022 Shift : 1
(A) Rs. 462,000	<b>(B)</b> Rs.382,000
(C) Rs. 354,000	(D) Rs. 428,000

54. How much rupees will be made from Rs. 80,000 after 2 years at an annual rate of 20% compound interest compounded half yearly?

RRB NTPC 10/08/2022 Shift : 1

(A) Rs. 97,240	<b>(B)</b> Rs.117,128
(C) Rs. 115,200	(D) Rs. 120,000

55. A takes some amount from a bank at the rate of 8% interest in which the interest is compounded half yearly. If he paid Rs.1,96,851 after one and a half year, then find the principal.

	KKR N	IPC 31.03 .2016 Shift : 3
(A) Rs. 10	58,000	<b>(B)</b> Rs. 175,000
(C) Rs. 1	79,000	(D) Rs. 184,000

**56**. 'P' money is invested for 2 years at 5% annual interest rate. If interest compounded half yearly, then after 2 years how much amount will he receive?

RRB NTPC 18.01.2017 Shift : 2(A)  $P(1.025)^4$ (B) P(1.1)(C)  $P(1.05)^2$ (D)  $P(1.025)^2$ 

**57**. A sum of money at a compound interest rate of 20% per annum becomes Rs.7200 in 2 years. Find the Principal –

RRB NTPC 18.01.2017 Shift : 3

(A) Rs.4800	(B) Rs. 6000
<b>(C)</b> Rs.5400	<b>(D)</b> Rs.5000

58. Prakash invests in an FD. What will be the maturity amount of Rs 13,000 for 6 months at a compound interest rate of 20% per annum, when interest compounding quarterly? RRB NTPC 11/08/2022Shift : 3

RF RF	RB NTPC 11/08/2022Shift : 3
(A) Rs. 14332.25	(B) Rs. 14332.5
(C) Rs. 14332.75	(D) Rs. 14332

**59**. Mr. Akhil deposited Rs. 13500 in a fixed deposit. Find the total money after 6 months at the rate of 20% annually compound

interest, if the interest is compounded every three months?

RRB NTPC 19.01.2017 Shift : 1

(A) Rs. 14,883.35	(B) Rs. 14,883.75
(C) Rs. 14,883.5	(D) Rs. 14,883

**60**. A woman invested Rs. 4000 at the beginning of the year at a compound interest rate of 5% per annum. What will be his invested amount at the end of the second year?

	RRB NTPC 19.01.2017 Shift : 3
(A) Rs.4410	<b>(B)</b> Rs. 4615
(C) Rs.5000	<b>(D)</b> Rs. 4010

**61**. Rakesh invests Rs. 10,000 in a fixed deposit scheme for 2 years at a 5% annual rate of compound interest. How much amount will he get on maturity of fixed deposit?

# RRB NTPC 02/02/2021Shift : 1

( <b>A)</b> Rs. 10000	<b>(B)</b> Rs.8500
( <b>C)</b> Rs. 11050	(D) Rs. 11025

**62**. A person invests Rs. 20,000 for 1 year at an annual rate of 15%. If the interest is compounded half-yearly, then the amount received by him at the end of the year will be-

### RRB NTPC 02/02/2021Shift : 3

(A) Rs.16537.50	(B) Rs.23112.50
(C) Rs. 18112.75	(D) Rs. 22175.30

**63**. Rs 441 is received after 2 years at an annual rate of 5% compound interest. Find the principal.

	RRB NTPC 12/08/2022Shift : 3
(A) Rs.400	<b>(B)</b> Rs. 390
(C) Rs.380	(D) Rs. 350

**64**. Gitesh took a loan for 4 years at a 5 percent rate of compound interest. If the total interest paid was Rs.431.01, find the principal.

	RRB NTPC 12/08/2022Shift : 3
(A) Rs.2000	( <b>B</b> ) Rs. 2050
(C) Rs.2100	(D) Rs. 2150

**65**. A woman deposited Rs 100 at an annual interest rate of 10%. The woman received Rs 121 at the end of the period at the annual rate of compound interest. How long did she keep the money in the bank?

### RRB NTPC 09/05/2022 Shift : 3

(A) 1 years	(B) 2 years
(C) 2.5 years	(D) 3 years

66. If a certain amount becomes Rs 6655 at the rate of compound interest of 10 percent in 3 years, find the principal amount.

	RRB NTPC 23/07/2022 Shift : 1
(A) Rs.5000	<b>(B)</b> Rs. 5500
(C) Rs. 4500	<b>(D)</b> Rs.4800

67. Rakesh invested an amount of Rs 10.000 in two different schemes NSC and PPF at annual compound interest rates of 14% and 11% respectively. If the total interest for 2 years is Rs 2726, then what was the amount invested in NSC?

### RRB NTPC 23/07/2022 Shift : 2

(A) Rs.5000	( <b>B)</b> Rs. 4000
(C) Rs. 6000	(D) Rs.7000

Satya invested some amount in a fixed 68. deposit. What amount of money will he receive on maturity if he has invested Rs. 14,500 at 20% compound interest; quarterly compounding for a period of 6 months.

> RRB NTPC 23/07/2022 Shift-3 (A) Rs. 15,986.25 (B) Rs. 15,986.5 (C) Rs. 15,986.35 (D) Rs. 15,986

69. If a person deposits Rs. 500 every year at the beginning of year for 2 years at an annual compound interest of 10%, what will be the maturity value of the money at the end of 2 vears?

	RRB NTPC 10/08/2022Shift : 3
(A) Rs.1.050	<b>(B)</b> Rs. 1,150
(C) Rs.1,155	<b>(D)</b> Rs. 1,200

70. A bank pays interest on savings account at the rate of 4% compounded half yearly. What will be the effective interest rate at the end of the year?

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 4.04%	<b>(B)</b> 4.01%
(C) 4.02%	<b>(D)</b> 4.00%

Rs. 37500, invested for  $1\frac{1}{2}$  years at rate of 71. 8% compound interest. How much the money will be if interest compounded half yearly?

RRB NTPC 23/07/2022 Shift : 1

(A) Rs. 42,182.40	(B) Rs. 42,000
(C) Rs. 42,120	(D) Rs. 42,812.40

72. 'A' invests Rs. 10,000 in a scheme at a special rate. At the end of two years the amount becomes Rs. 11,664. Find the annual interest rate if compound interest rate is applicable?

	RRB NTPC 18.01.2017 Shift : 2
<b>(A)</b> 7.9	<b>(B)</b> 8.5
(C) 8.7	<b>(D)</b> 8.0

73. If Ram deposits Rs 2000 in his savings account on which he gets 20% annual interest, compounding half yearly. How much will be in his account after one year.

	RRB NTPC 18.01.2017 Shift : 3
(A) Rs.3530	<b>(B)</b> Rs. 2420
(C) Rs.2630	(D) Rs. 3870

74. At the rate of 20% compound interest per annum, Rs 10,000 was given. If this interest is counted half-yearly, find the amount after 2 vears.

### RRB NTPC 09/05/2022 Shift : 1

(A) Rs.14600	( <b>B)</b> Rs. 12500
<b>(C)</b> Rs. 14642	<b>(D)</b> Rs. 14641

75. At what time in a bank the principal of Rs 10,000 will become Rs 13,310 at 10% per annum, while the interest is compounded annually?

	RRB NTPC 09/05/2022 Shift :2
(A) 4 years	<b>(B)</b> 5 years
(C) 3 years	(D) 6 years

76. Mr. Vagish invested money in FD. How much amount will he get at maturity, if Rs. 4500 is invested for 6 months at a rate of 20% annualy compound interest and the interest is compounded quarterly?

### RRB NTPC 02/02/2021Shift : 3

(A) Rs.4961.5	(B) Rs. 4961.25
(C) Rs. 4961.35	(D) Rs. 4961

77. Mr. Nishi borrows Rs 2000 at an annual compound interest rate of 5%, what will be the compound interest for 2 years while the interest compounded annually?

	RRB NTPC 11/08/2022Shift : 1
(A) Rs.205	<b>(B)</b> Rs. 2205
(C) Rs. 2250	(D) Rs. 250

78. A person named Shri Ram invested Rs. 14000 in FD (Fixed Deposit). How much amount will he get after the maturity period if he invests the amount (capital) for 6 months at a compound interest rate of 20% per annum and interest compounded guarterly? RRB NTPC 19.01.2017 Shift : 3

<b>(A)</b> Rs.15,437	<b>(B)</b> Rs. 15,434
<b>(C)</b> Rs. 15,436	<b>(D)</b> Rs. 15,435

**79**. Mr. Yashwant invested a few rupees in an FD. What will be the total amount of maturity if Rs.10,000 is invested for 6 months at the rate of 20% per annum, and interest compounded quarterly?

RRB NTPC 02/02/2021Shift : 2

(A) 11025.25	( <b>B)</b> 11025
<b>(C)</b> 11025.75	<b>(D)</b> 11025.5

**80**. Sanjeev invests in a fixed deposit. If Rs 11,000 is invested at the rate of 20% per annum for 6 months and the interest is compounded quarterly, then how much amount will he get on maturity?

RRB NTPC 26.04.2016 Shift : 2(A) Rs. 12127.25(B) Rs. 12127.50(C) Rs. 12127.75(D) Rs. 12127

**81**. Any money is deposited at 8% per annum compound interest. If the interest for the first year is 72, then get the interest for the second year-

RRB	NTPC	23/07/2022	Shift-2
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(A) Rs.77.56	<b>(B)</b> Rs. 77.64
<b>(C)</b> Rs.77.76	<b>(D)</b> Rs. 85.77

82. What will be the 3-year compound interest at 8% of Rs.172000 (rounded off to the nearest rupees)

RRB	NTPC 10/08/2022 Shift : 2
<b>(A)</b> Rs. 44,670	<b>(B)</b> Rs. 11,667
(C) Rs. 41,280	(D) Rs. 46,470

**83**. Find the compound interest (in nearest rupee) of Rs.7500 at 12% per annum for 2 years 4 months, if interest is calculated on an annual basis?

 RRB NTPC 10/08/2022 Shift :1

 (A) 2284
 (B) 2176

 (C) 2097
 (D) 2235

84. Find the compound interest of Rs.25000 for 12 years at interest rate of 12% per annum.

RRB NTPC 10/08/2022 Shift : 2

<b>(A)</b> Rs. 9,000	<b>(B)</b> Rs. 9,833.40
(C) Rs. 10123.20	( <b>D)</b> Rs. 10,678.90

**85**. What will be the compound interest of Rs.24000 in 2 years at 25% per annum if the interest is compounded annually?

RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> Rs. 37,500	<b>(B)</b> Rs. 13,500
(C) Rs.38,400	(D) Rs. 36,400

**86**. If the interest is compounded annually, then after 2 years, what will be the compound interest of Rs.48000 at interest rate of 20% per annum?

### RRB NTPC 10/08/2022 Shift : 2

(A) Rs. 69,120	<b>(B)</b> Rs.21,120
(C) Rs.76,800	(D) Rs. 72,000

**87**. What will be the amount of Rs. 40,000 after 2 years at interest rate of 20% per annum, if the interest is compounded annually?

### RRB NTPC 10/08/2022 Shift : 3

( <b>A)</b> Rs. 48,620	( <b>B</b> ) Rs. 58,564
(C) Rs. 57,600	(D) Rs. 60,000

**88**. If Jahnavi borrows Rs. 1,25,000 at an interest of 8% per annum, what will be the amount to be paid by her at the end of 2 years?

# RRB NTPC 23/07/2022 Shift : 2

(A) Rs. 1,45,800	(B) Rs. 2,00,000
(C) Rs.1,45,000	(D) Rs. 1,35,800

**89**. 20% compound interest is being given every year at Rs. 10,000. Calculate the amount received after 2 years if interest is charged half yearly-

# RRB NTPC 11/08/2022 Shift : 2

(A) Rs.10041	<b>(B)</b> Rs. 14641
(C) Rs.12000	(D) Rs. 13660

**90**. Find the compound interest of Rs.5000 for 3 years at an annual rate of 10%.

### RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> 1655	<b>(B)</b> 1500
(C) 1600	<b>(D)</b> 1800

**91**. Abraham took Rs. 7500 at an annual rate of 5% compound interest. What will be the compound interest after 2 years which is compounded annually?

## RRB NTPC 02/02/2021Shift : 1

(A) Rs. 768.75	( <b>B)</b> Rs. 8268.75
(C) Rs. 8286.75	(D) Rs. 786.75

**92**. Devesh borrowed Rs. 4,500 at an annual rate of 4% compound interest. What will be the compound interest after 2 years if the interest is compounded annually.

# RRB NTPC 02/02/2021Shift : 2

( <b>A)</b> Rs.367.2	<b>(B)</b> Rs. 4,867.2
( <b>C)</b> Rs. 4,876.2	( <b>D)</b> Rs. 376.2

93. Harsha borrowed Rs.8.000 at an annual rate of 4% compound interest. What will be the compound interest after 2 years if the interest is compounded annually?

I	RRB NTPC 11/08/2022Shift : 2
(A) Rs. 652.8	<b>(B)</b> Rs. 8,652.8
(C) Rs. 8,625.8	6 (D) Rs. 625.8

94. Mr. Ayush borrowed Rs.3000 at the rate of 5% per annum compound interest. What will be the compound interest after 2 years?

RRB NTPC 19.01.2017 Shift :1

<b>(A)</b> Rs.370.5	( <b>B)</b> Rs.307.5
<b>(C)</b> Rs.3307.5	<b>(D)</b> Rs. 3370.5

95. Mr. Yudish borrowed Rs.3.500 at an annual rate of 4% compound interest. What will be the compound interest compounded for 2 vears?

### RRB NTPC 02/02/2021Shift : 2

(A) Rs. 285.6	<b>(B)</b> Rs.3785.6
( <b>C)</b> Rs. 3758.6	<b>(D)</b> Rs.258.6

96. Mr. Ravish invests in an FD. What is the total amount he will get at maturity if Rs.5500 is invested for 6 months at the rate of 20% compound interest annually, and interest compounded quarterly?

RRB NTPC 26.04.2016 Shift :	
(A) Rs.6063.5	( <b>B)</b> Rs. 6063.75
(C) Rs. 6063.35	(D) Rs. 6063

97. Mr. Manjunath borrowed Rs. 3500 at a compound interest of 5% per annum. What will be the compound interest of 2 years, if the interest is compounded annually?

RRB NTPC 26.04.2016 Shift : 3

( <b>A)</b> Rs. 358.75	( <b>B)</b> Rs. 3858.75
(C) Rs. 3885.75	<b>(D)</b> Rs.385.75

**98**. Mr. Preetosh borrowed Rs. 4,500 at 5% compound interest. If the interest is compounded annually, what will be the compound interest for 2 years?

RRB NTPC 23/07/2022 Shift : 3

<b>(A)</b> Rs. 4961.25	<b>(B)</b> Rs. 461.25
<b>(C)</b> Rs. 4916.25	<b>(D)</b> Rs. 416.25

**99**. The simple interest of 8 years at 8% per annum on a deposit is Rs. 16000. What will be the compound interest of 2 years at the

rate of one fourth of this rate on the same amount?

RRB NTPC 23/07/2022 Shift-2
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<b>(A)</b> Rs. 1,020	( <b>B)</b> Rs.980
( <b>C)</b> Rs. 1,010	(D) Rs. 1,015

100. The simple interest on a certain sum of money at a certain interest rate is Rs. 1200 in 2 vears. The compound interest of the same amount gets Rs. 1290 in 2 years at the rate of same interest. What will be the principal?

RR	B NTPC 10/08/2022 Shift : 2
(A) Rs.1200	<b>(B)</b> Rs. 16000
(C) Rs. 6000	<b>(D)</b> Rs.4000

An interest of Rs. 2000 is given on a fixed 101. sum of money at the rate of 10% per annum simple interest in 2 years. If the compound interest accrues annually on this amount. what will be the effective rate of interest?

	RRB NTPC 30.03.2016 Shift : 2
<b>(A)</b> 10.25	<b>(B)</b> 10.50
(C) 10.75	<b>(D)</b> 10.15

102. An amount increased by 40% on simple interest over 4 years. What will be the compound interest at Rs.6000 for 3 years at the same rate? . . . . . . . . . . .

	<b>RRB NTPC 18.01.2017 Shift : 3</b>
(A) Rs. 1260	<b>(B)</b> Rs. 1886
( <b>C)</b> Rs. 1986	<b>(D)</b> Rs. 7986

103. If the rate of interest is 8% per annum and Rs. 10000 are compounded for half yearly at compound interest, and then calculate the rate of equivalent simple interest for the first vear.

	RRB NTPC 11/08/2022 Shift : '	1
<b>(A)</b> 8.16%	<b>(B)</b> 9%	
(C) 7%	<b>(D)</b> 10%	

104. Find the compound interest at 7% of that amount for 3 years? Whose simple interest at the rate of 7% in 3 years is Rs.18900? (Rounded off to nearest rupee)

## RRB NTPC 09/05/2022 Shift :1

(A) Rs. 19,746	( <b>B)</b> Rs. 18,390
(C) Rs. 20,254	(D) Rs. 21,053

105. Find the difference between simple interest and compound interest of 2 years at an annual rate of 20% on the principal of Rs 4000.

# RRB NTPC 09.04.2016 Shift : 3
<b>(A)</b> 160	<b>(B)</b> 120
(C) 90	<b>(D)</b> 110

**106**. Find the difference between the maturity values of (i) simple interest of 5% and (ii) annual compound interest at the same rate, for 2 years on an amount of Rs. 5000.

	RRB NTPC 06.04.2016 Shift : 2
(A) Rs.11.00	<b>(B)</b> Rs.11.50
(C) Rs.12.00	<b>(D)</b> Rs. 12.50

**107**. Each of the two amounts of Rs 10,000 was invested for 2 years. (i) at the rate of 5% simple interest (ii) at the same rate of annual compound interest. What is the difference in maturity value?

RRB NTPC 26.04.2016 Shift : 1

(A) KS.	30	( <b>D</b> ) KS. 20
( <b>C)</b> Rs.	20	(D) Rs. 40

**108**. Find the difference between simple interest and compound interest received at the rate of 7.5% in the second year of Rs 23,465.

	RRB NTPC 09/05/2022 Shift : 1
<b>(A)</b> 132	<b>(B)</b> 66
<b>(C)</b> 147	<b>(D)</b> 73.5

**109**. A loan of Rs 305 was taken for 3 years at a fixed annual rate of compound interest. A total of Rs 670 was paid after 3 years. Find the rate of compound interest.

 RRB NTPC 12/08/2022Shift : 1

 (A) 30%
 (B) 35%

 (C) 33%
 (D) 25%

**110**. Under a new scheme, a bank offers 30% annual interest. Suraj deposits Rs 10,000 under this new scheme and gets Rs 28,561 at the end of the period. For how long did Suraj choose this plan?

RRB NTPC 09/05/2022 Shift : 2

(A) 2 years	<b>(B)</b> 3.5 years
(C) 4 years	(D) 4.5 years

**111**. If Rs 10000 is invested at the rate of 20% per annum at half yearly compound interest, then 18 months later the amount will be...

RRB Paramedical - 20/07/2018 (Shift-I)

<b>(A)</b> Rs. 16000	<b>(B)</b> Rs. 13310
(C) Rs. 13000	<b>(D)</b> Rs. 13140

**112**. The difference between the simple interest and compound interest of the amount invested at 5% per annum for 2 years is Rs.15. Find the principal.

#### RRB Paramedical - 21/07/2018 (Shift-III)

(A) Rs.	4,980	<b>(B)</b> Rs.	3,000
(C) Rs.	4,800	(D) Rs.	6,000

**113**. An amount of Rs.16400 is borrowed and is to be repaid in 2 years in equal annual installments at the rate of 5% compound interest. State the amount of annual payment.

	RRB JE - 25/05/2019 (Shift-II)
(A) Rs. 7590	<b>(B)</b> Rs. 7495
(C) Rs. 7600	<b>(D)</b> Rs. 8820

**114**. An amount is invested at compound interest, for 2 years at the rate of 4% compound interest annually, this amount becomes Rs. 338. Find the principal amount.

	RRB JE - 25/05/2019 (Shift-III)
<b>(A)</b> Rs. 320	( <b>B</b> ) Rs. 312.5
(C) Rs. 318.53	<b>(D)</b> Rs. 315

**115**. An amount is invested for 2 years at 20% compound interest. If the interest is payable on a half-yearly basis, then it gets Rs. 482 more than what is payable on an annual basis. Find the principal amount?

#### RRB JE - 26/06/2019 (Shift-I)

<b>(A)</b> Rs. 19500	( <b>B)</b> Rs. 20000
(C) Rs. 21800	(D) Rs. 30000

**116**. An amount becomes Rs. 2420 in two years and Rs 2662 in three years, at a rate of compound interest. The interest was calculated on an annual compounding basis. Find the amount and rate of interest annually.

#### RRB JE - 31/05/2019 (Shift-II)

- (A) Rs. 1000 and 12%
  (B) Rs. 2000 and 10%
  (C) Rs. 2250 and 15%
  (D) Rs. 2500 and 5%
- **117**. Ganesh took a loan of Rs. 14000 which is to be repaid after three years at compound interest at the rate of 10% per annum. What is the total amount he will have to pay after three years?

	RRB JE - 31/05/2019 (Shift-III)
(A) Rs.16200	( <b>B</b> ) Rs. 18634
(C) Rs.17940	<b>(D)</b> Rs.18497

**118**. Calculate 1.5 years interest at a 10% annual interest rate on an amount of Rs 1000 when the interest is calculated on a half yearly compounding basis.

#### RRB JE - 22/05/2019 (Shift-I)

<b>(A)</b> Rs.167.36	<b>(B)</b> Rs. 157.63
<b>(C)</b> Rs.150.25	<b>(D)</b> Rs. 160.55

**119**. Find the compound interest of Rs. 6000 in  $1\frac{1}{2}$  years at a rate of 10% compound interest compounded half yearly.

RRB JE - 27/06/2019 (Shift-III)

(A) Rs.870	<b>(B)</b> Rs. 900
(C) Rs.946	(D) Rs. 910

**120**. Divide the amount of Rs.364 between A and B in such a way that the amount received after 5 years of investing A's share at the rate of 5% compound interest annually, will be equal to amount received after 7 years on investing B's share at the same rate. Find the share of A.

	RRB JE - 27/06/2019 (Shift-I)
(A) Rs.1564	( <b>B</b> ) Rs.1600
<b>(C)</b> Rs.1764	<b>(D)</b> Rs.1864

**121**. In what time amount of Rs. 1000 will be Rs. 1331 at the rate of 10% per annum compound interest?

	RRB JE - 27/06/2019 (Shift-I)
(A) 4 years	<b>(B)</b> 3 years
(C) 2 years	(D) 5 years

**122.** The simple interest of 3 years at the rate of 8% on the amount of Rs. 'X' is equal to half of the compound interest of 2 years at the rate of 10% on the amount of Rs. 4000. Find the value of 'x'.

	RRB JE - 28/06/2019 (Shift-III)
(A) Rs. 1750	<b>(B)</b> Rs.1520
(C) Rs. 6000	<b>(D)</b> Rs. 1400

**123**. At a certain amount, at a fixed rate, the compound interest and simple interest of 2 years will be Rs. 696.30 and Rs. 660. Find the amount.

	RRB JE - 29/05/2019 (Shift-I)
(A) Rs. 3000	<b>(B)</b> Rs. 4000
(C) Rs. 3300	(D) Rs. 3600

**124**. The compound interest of 2 years at a rate of 10% on a fixed amount is Rs. 2100. What will be the simple interest on the same amount at the same rate for the same period?

	RRB JE - 26/05/2019 (Shift-II)
(A) Rs. 1600	<b>(B)</b> Rs.1980
( <b>C)</b> Rs.800	<b>(D)</b> Rs.2000

**125**. On a sum, the simple interest of 2 years is Rs. 660, while keeping the rate of interest the same, the compound interest of two years is Rs. 696.30. Find the rate of interest.

RRB JE - 27/05/2019 (Shift-II)

<b>(A)</b> Rs.13%	<b>(B)</b> Rs.11%
( <b>C)</b> Rs.10%	(D) Rs.12.75%

126. An amount increases by 100% over the 8 years at a fixed rate of simple interest. What will be the compound interest of 2 years at Rs. 8000 at the same rate?
RRB JE - 29/05/2019 (Shift-JU)

	RRB JE - 29/05/2019 (Shift-III
(A) Rs.2050	( <b>B</b> ) Rs. 2075
(C) Rs. 2125	<b>(D)</b> Rs. 2025

- 127. On a certain amount, the compound interest for 2 years is Rs.309 and the simple interest is Rs.300. Find the annual interest rate. RRB JE - 22/05/2019 (Shift-III)
  - (A) 7%
    (B) 6%
    (C) 9%
    (D) 8%
- 128. Simple interest and compound interest on a fixed amount for two years are Rs. 8400 and Rs. 8652 respectively. Find the rate of interest.

	RRB JE - 29/05/2019 (Shift-III)
<b>(A)</b> 5%	<b>(B)</b> 6%
<b>(C)</b> 4.5%	<b>(D)</b> 5.5%

**129**. Find the simple interest of 2 years at 12.5% on an amount, if the compound interest of the same period at the same rate, is Rs. 510?

	RRB JE - 30/05/2019 (Shift-III)
<b>(A)</b> Rs.480	<b>(B)</b> Rs. 500
<b>(C)</b> Rs. 408	<b>(D)</b> Rs. 420

**130.** The difference of 2 years compound interest and simple interest on a fixed sum at 12.5% is Rs. 45. Find the principal amount.

	RRB JE - 22/05/2019 (Shift-I)
<b>(A)</b> Rs. 2880	<b>(B)</b> Rs. 3000
<b>(C)</b> Rs.2000	<b>(D)</b> Rs. 2440

**131**. On which principal the difference of 3 years compound interest and simple interest at the rate of 10% will be Rs. 620?

	RRB JE - 24/05/2019 (Shift-III)
(A) Rs. 18000	( <b>B</b> ) Rs. 25000
( <b>C)</b> Rs.24000	<b>(D)</b> Rs. 20000

**132**. Find the difference between compound interest and simple interest received in 4 years at the rate of 10% on the amount of Rs. 1000.

	RRB JE - 26/05/2019 (Shift-III)
(A) Rs. 64.10	<b>(B)</b> Rs. 52
(C) Rs.74	<b>(D)</b> Rs.16.40

**133**. The difference between compound interest and simple interest of 2 years at a rate of 8% on a fixed amount is Rs. 8. Find the principal.

	RRB JE - 02/06/2019 (Shift-I)
(A) Rs.2000	<b>(B)</b> Rs.1250
<b>(C)</b> Rs.1500	<b>(D)</b> Rs. 1000

**134**. The difference between compound interest and simple interest on a fixed sum is Rs. 124.05 if interest calculated on a half yearly basis for 2 years at the rate of 10%. Find the principal amount.

	RRB JE - 02/06/2019 (Shift-I)
( <b>A)</b> Rs. 8400	( <b>B</b> ) Rs. 10000
(C) Rs.8000	<b>(D)</b> Rs. 8200

**135**. The difference between simple interest and compound interest received on a sum of money for 2 years at 4% per annum is Rs. 8. Find that principal.

	RRB JE - 01/06/2019 (Shift-III)
( <b>A)</b> Rs.4000	<b>(B)</b> Rs.10000
( <b>C)</b> Rs.8000	<b>(D)</b> Rs. 5000

**136.** The amount lent at a fixed rate of compound interest per year becomes Rs 1460 in 2 years

and Rs 1606 in 3 years. Find the rate of interest.

	RRB JE - 02/06/2019 (Shift-II
<b>(A)</b> 11%	<b>(B)</b> 12%
<b>(C)</b> 10%	<b>(D)</b> 8%

**137**. An amount was deposited for 7 years at 8% simple interest. The matured amount was invested in a scheme with an annual rate of 10% compound interest, which yields an interest of Rs.1638 in 2 years. Find the principal amount.

	RRB JE - 27/05/2019 (Shift-I)
(A) Rs.6200	<b>(B)</b> Rs.5000
( <b>C)</b> Rs.7500	<b>(D)</b> Rs. 8000

**138.** At a fixed sum, the simple interest of 2 years at 4% per annum is Rs. 140. Find the difference between the compound interest and the simple interest for the same rate and the same period at the same amount.

	RRB JE - 23/05/2019 (Shift-I)
(A) Rs.2.80	<b>(B)</b> Rs. 2.40
<b>(C)</b> Rs. 3	<b>(D)</b> Rs. 1.80

## **Solution**

1. Ans.(A) Principal (P) = Rs. 5000 Time (t) = 2Rate (r) = 9%Amount = principal  $\left(1 + \frac{\text{rate}}{100}\right)^{\text{time}}$  $= 5000 \left(1 + \frac{9}{100}\right)$  $= 5000 \times \frac{109}{100} \times \frac{109}{100}$  $=\frac{5\times109\times109}{10}=5940.5\approx Rs.5940$ 2. Ans.(D) R = 8% n = 2 years A = Rs.72,900 $A = P\left(1 + \frac{R}{100}\right)^n$ , 72900 =  $P\left[1 + \frac{8}{100}\right]$  $72900 = P \times \frac{108}{100} \times \frac{108}{100}$  $P = \frac{72900 \times 100 \times 100}{108 \times 108} = Rs.62500$ Ans.(B) 3. Rate of interest = 40% annual  $\therefore$  Quarterly interest rate =  $\frac{40 \times 3}{12}$  = 10%

Time = 4 Quarter  
After 1 year = 
$$100 \times \left(1 + \frac{10}{100}\right)^4$$
  
=  $100 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$   
=  $\frac{121 \times 121}{100}$   
=  $Rs. 146.41$   
4. Ans.(B)  
Let the amount borrowed = Rs. x  
Compound Interest = Amount – Principal  
Profit = CI – SI  
According to Question,  
 $\left[\left(1 + \frac{10}{100}\right)^3 - 1\right] - \left[\frac{x \times 9 \times 3}{100}\right] = 1952$   
 $\Rightarrow \left[\left(\frac{11}{10}\right)^3 - 1\right] - \left[\frac{x \times 9 \times 3}{100}\right] = 1952$   
 $\Rightarrow x \left[\frac{1331}{1000} - 1\right] - \left[\frac{x \times 9 \times 3}{100}\right] = 1952$   
 $\Rightarrow x \left[\frac{1331}{1000} - 1\right] - \left[\frac{x \times 9 \times 3}{100}\right] = 1952$   
 $\Rightarrow x \left[\frac{331}{1000} - 1\right] - \left[\frac{x \times 9 \times 3}{100}\right] = 1952$   
 $\Rightarrow x \left[\frac{331}{1000}\right] - \frac{27x}{100} = 1952$   
 $\Rightarrow x \left[\frac{331}{1000}\right] = 1952$   
 $\Rightarrow \frac{x(331-270)}{1000} = 1952$   
 $\Rightarrow \frac{x \times 61}{1000} = 1952$   
 $\Rightarrow x = 32 \times 1000 = Rs. 32000$   
5. Ans.(D)

Let money = Rs. P Time = 2 years Rate = 20% annual  $324 = P\left(1 + \frac{20}{100}\right)^2$  $324 = P \times \frac{6}{5} \times \frac{6}{5}$  $P = \frac{324 \times 25}{36}$ P = Rs. 225 **Ans.(B)** 6. Amount = principal  $\left(1 + \frac{\text{rate}}{100}\right)^{\text{time}}$  $= 2000 \times \left(1 + \frac{10}{100}\right)^3$  $= 2000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$  $= 2 \times 1331$ = Rs.2662Ans.(B) S.I. =  $\frac{32000 \times 9 \times 3}{100}$  = 27 × 320 (S.I.) = Rs. 8,640 7. Compound Amount =  $32000 \left(1 + \frac{10}{100}\right)^3$  $= 32000 \left(\frac{11}{10}\right)^3$  $= 32000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$  $= 32 \times 1331$ = Rs. 42,592Compound Interest = Amount - Principal = 42592 - 32000= Rs. 10.592Increase in money = CI - SI= 10,592 - 8,640= *Rs*. 1,952 8. Ans.(C) Principal = Rs. 1728 Amount = Rs. 2197 Rate (R) =  $8\frac{1}{3}$ Time (n) = ? Amount = Principal  $\left(1 + \frac{R}{100}\right)^n$  $2197 = 1728 \left(1 + \frac{8\frac{1}{3}}{100}\right)^n$  $= 1728 \left(1 + \frac{25}{300}\right)^n$  $\frac{2197}{1728} = \left(\frac{13}{12}\right)^n$  $\left(\frac{13}{12}\right)^3 = \left(\frac{13}{12}\right)^n$ n = 3 years 9. Ans.(D)

Amount = Principal 
$$\left(1 + \frac{r}{100}\right)^{n}$$
  
= 15000  $\left(1 + \frac{5}{100}\right)^{3}$   
= 15000  $\times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$   
=  $\frac{138915}{8} = Rs. 17364.37$   
Hence, Manoj gets Rs. 17364.37 as maturity.  
**10.** Ans.(A)  
From the formula –  
For n years ago population  
 $A = \frac{P}{\left(1 - \frac{r}{100}\right)^{n}}$   
 $P = 8748r = 10\%$   
 $n = 3 \text{ year}$   
 $\therefore A = \frac{8748}{\left(1 - \frac{10}{100}\right)^{3}} = \frac{8748}{\left(\frac{9}{10}\right)^{3}}$   
 $A = 8748 \times \frac{10}{9} \times \frac{10}{9} \times \frac{10}{9} = 12000$   
**11.** Ans.(D):  
Rate = 10%, Principal = Rs. 180000,  
Time = 2 years  
S.I. =  $\frac{P \times R \times T}{100}$   
 $= \frac{180000 \times 10 \times 2}{100}$   
 $= Rs. 36000$   
Amount = principal  $\left(1 + \frac{1}{100}\right)^{n}$   
Amount = 180000  $\times \left(1 + \frac{10}{100}\right)^{2}$   
 $= 180000 \times \frac{11}{10} \times \frac{11}{10}$   
 $= 217800 - 180000$   
Row 121  
 $= 277800 - 36000 = Rs. 1800$   
**12.** Ans.(C)  
Amount = Principal  $\left(1 + \frac{r}{100}\right)^{n}$   
 $= 8000 \left(1 + \frac{5}{100}\right)^{2}$   
 $= 20 \times 441 = Rs. 8820$   
**13.** Ans.(A)  
Principal = Rs.200, rate = 10%, Time = 1 year  
Compounded amount of first plan

11

 $= 200 \left(1 + \frac{10 \times 1}{100}\right) \\ = \frac{200 \times 11}{10} = 220$ Compounded amount of second plan = Principal  $\left(1 + \frac{r}{100}\right)^n$ Principal = Rs. 200 Rate =  $\frac{10\%}{2}$  = 5% (Half Yearly Compounded) Time = 2 half yearly Compounded amount =  $200 \times \left(1 + \frac{5}{100}\right)^2$ =  $\frac{200 \times 21 \times 21}{20 \times 20} = \frac{441}{2} = Rs.220.5$ Profit earned under Second Plan = Amount of Second Plan – Amount of First Plan = 220.50 - 220 = 50 paisa 14. Ans.(A) Principal = Rs.15625 Rate = 8% annual = 4% Half yearly Time = 1 year 6 months = 3 Half yearly C. I. =  $15,625\left(1 + \frac{4}{100}\right)^3 - 15625$  $= 15625 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25} - 15625$ = 17.576 - 15625 = 1951 15. Ans.(D)  $A = P\left(1 + \frac{R}{100}\right)^{2} \left(1 + \frac{3R}{400}\right)$  $A = 31250 \times \left(1 + \frac{8}{100}\right)^2 \left(1 + \frac{3 \times 8}{400}\right)$  $A = 31250 \times \frac{27}{25} \times \frac{27}{25} \times \frac{106}{100}$  $A = 27 \times 27 \times 53$ *A* = *Rs*. 38637 ∴ C.I. = 38637 – 31250 = Rs.7387 16. Ans.(D) When interest is compounded annually,  $r = \frac{4}{2}\% = 2\%$ Time = 1 year = 2 Half yearly Amount =  $P\left(1 + \frac{r}{100}\right)$  $78030 = P\left(1 + \frac{2}{100}\right)^2$  $78030 = P\left(1 + \frac{1}{50}\right)^2$  $\left(\frac{51}{50}\right)^2 P = 78030$  $P = \frac{78030 \times 2500}{2601}$ Р = Rs.75000 17. Ans.(C) Let money = P, rate = 10%, t = 1 year

∴ According to Question,

$$400 = \frac{p \times r \times t}{100}$$

$$400 = \frac{p \times 10 \times 1}{100}$$

$$P = Rs.4000$$

$$r = 10\%, t = 2 \text{ Half year}$$

$$Amount = P\left(1 + \frac{r}{2 \times 100}\right)^{2}$$

$$\Rightarrow P\left(1 + \frac{r}{2 \times 100}\right)^{2}$$

$$\Rightarrow 4000 \left(\frac{21}{20}\right)^{2}$$

$$\Rightarrow 4000 \left(\frac{21}{20}\right)^{2}$$

$$\Rightarrow 4000 \times \frac{21}{20} \times \frac{21}{20}$$

$$\Rightarrow Rs.4410$$

$$Compound Interest = Amount - Principal$$

$$CI = 4410 - 4000 = Rs. 410$$

$$Ans.(C):$$

$$SI = \frac{PRT}{100}$$

$$P = \frac{6750 \times 100}{12 \times 3}$$

$$P = 18750$$

$$Amount (A) = P\left(1 + \frac{R}{100}\right)^{n}$$

$$A = 18750 \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25}$$

$$A = Rs.26342.4$$

$$CI = Amount (A) - Principal (P)$$

$$= 26342.4 - 18750 = Rs.7592.4$$

$$Ans.(D)$$

$$(SI) = \frac{PxrT}{100}$$

$$A = P\left(1 + \frac{R}{100}\right)^{n}$$

$$A = P\left(1 + \frac{R}{100}\right)^{n}$$

$$A = Rs.99187.5$$

$$CI = A - P$$

$$= 99187.5 - 75000 = Rs.24187.5$$

$$Smita's profit = 24187.5 - 22500 = Rs.1687.5$$

$$Ans.(D)$$

$$R = 6\%$$

$$T = 2$$

$$P = 22500$$

$$S.I. = 2700$$

18.

19.

20.

$$= 22500 + 2700$$

$$= 25200$$

$$A = 22500 \left(1 + \frac{6}{100}\right)^{2}$$

$$= 22500 \times \frac{53}{50} \times \frac{53}{50}$$

$$= 225281$$
Total profit = 25281 - 25200 = Rs.81
**21. Ans.(C)**
Total interest received on investment of first plan
$$= \frac{100 \times 10 \times 1}{100} = Rs.10$$
Interest received on investment of second plan
$$= 100 \left(1 + \frac{5}{100}\right)^{2} - 100$$

$$= 100 \times \left(\frac{21}{20}\right)^{2} - 100$$

$$= 100 \times \frac{441}{400} - 100$$

$$= 441 - 100 \Rightarrow \frac{441 - 400}{4} = \frac{41}{4} = Rs.10.25$$
Hence the difference of interest
$$= 10.25 - 10 = 25 \text{ paise}$$
**22. Ans.(B)**
According to Question,
S.I. =  $\frac{Pt}{100}$ 
 $360 = \frac{Px \cdot 1.5 \times 8}{100}$ 
 $P = Rs.3000$ 
Doubling the time (t) = 2 × 1.5 = 3 years
Compound Interest =  $P\left[\left(1 + \frac{r}{100}\right)^{t} - 1\right]$ 

$$= 3000 \left[\left(1 + \frac{8}{100}\right)^{3} - 1\right]$$
 $= 3000 \left[\left(1 + \frac{2}{25}\right)^{3} - 1\right]$ 
 $= 3000 \left[\frac{19683 - 15625}{625 \times 25}\right]$ 
 $= \frac{4058 \times 3000}{625 \times 25} = \frac{4.8 \times 4058}{25} = \frac{19478.4}{25}$ 
 $= Rs.779.13$ 
**23. Ans.(C)**
Given -
T = 2 years
 $p = Rs. 2000$ 
 $r = 10\%$ 
Formula -

$$D = P\left(\frac{R}{100}\right)^{2}$$

$$D = 2000 \left(\frac{10}{100}\right)^{2}$$

$$D = 2000 \times \frac{1}{100}$$

$$D = Rs.20$$
24. Ans.(C)
$$D = P\left(\frac{R}{100}\right)^{2} - \text{formula}$$

$$2 = P\left(\frac{5}{100}\right)^{2}$$

$$P = 2 \times 20 \times 20 = Rs.800$$
25. Ans.(A)
$$A = P\left(1 + \frac{R}{100}\right)^{n}$$

$$A = 8000 \left(1 + \frac{5}{100} \times \frac{105}{100} \times \frac{105}{100}\right)^{3}$$

$$A = 8000 \times \frac{105}{100} \times \frac{105}{100} \times \frac{105}{100}$$

$$A = Rs.9261$$
CI = Amount (A) - Principal (P)
$$= 9261 - 8000 = \text{Rs. 1261}$$

$$(SI) = \frac{P \times R \times T}{100}$$

$$= \frac{8000 \times 5 \times 3}{100}$$

$$= 1200$$
Hence the difference between compound interest and simple interest
$$= 1261 - 1200 = \text{Rs. 61}$$
26. Ans.(D)
Difference between 2 years simple interest and compound interest = Rs.800

Formula 
$$d = \frac{PR^2}{100^2} d = difference$$
  
P = Principal  
R = Rate  
 $800 = \frac{20000 \times R^2}{100 \times 100}$   
 $R^2 = 400$   
R = 20%

27. Ans.(C)

Let the principal = P  
SI = 
$$\frac{P \times 15 \times 2}{100} - (i)$$
  
CI =  $P\left[\left(1 + \frac{15}{100}\right)^2 - 1\right]$   
=  $P\left[\left(\frac{23}{20}\right)^2 - 1\right]$   
=  $P\left[\frac{529 - 400}{400}\right] = \frac{P \times 129}{400} - (ii)$   
According to Question -  
Compound interest ~ simple interest = 180

$$= \frac{129P}{400} - \frac{30P}{100} = 180$$
  

$$\frac{129P - 120P}{400} = 180$$
  
9P = 180 × 400  
P = 20 × 400  
P = Rs.8000  
28. Ans.(C)  
Difference between simple interest and compound interest of 2 years  
 $D = P\left(\frac{R}{100}\right)^2$   
 $D = \frac{8500 \times 10}{100} \times \frac{10}{100}$   
 $= Rs.85$   
29. Ans.(C)  
Principal = Rs. 6250  
Time = 2 years  
Amount = Rs. 7840  
Let the rate = r % annual  
Amount = Principal  $\times \left(1 + \frac{r}{100}\right)^2$   
 $7840 = 6250 \times \left(1 + \frac{r}{100}\right)^2$   
 $7840 = 6250 \times \left(1 + \frac{r}{100}\right)^2$   
 $\frac{7840}{6250} = \left(\frac{100 + r}{100}\right)^2$   
 $\frac{28}{25} = \frac{100 + r}{100}$   
 $\Rightarrow 28 \times 4 = 100 + r$   
 $r = 112 - 100$   
 $r = 12\%$  yearly  
30. Ans.(C)  
According to Question -  
 $\frac{11.03 \times 100 \times 3}{100} + 100 = P\left(1 + \frac{10}{100}\right)^3$   
 $\frac{133.09 \times 10 \times 10 \times 10}{11 \times 11 \times 11} = P$   
 $\frac{133090}{1331} = P$   
 $= Rs.99.9925 \cong Rs.100$   
31. Ans.(B)  
Let the principal amount given on compound interest be Rs. P1.  
According to Question -  
 $P_1\left(1 + \frac{r}{100}\right)^n = \frac{P_2 \times R \times t}{100} + P_2$   
 $P_1\left(1 + \frac{10}{100}\right)^3 = \frac{300 \times 3 \times 11.03}{100} + 300$   
 $P_1\left(\frac{11}{10}^3 = 99.27 + 300$ 

 $P_1\left(\frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}\right) = 399.27$  $P_1 = \frac{39927 \times 10}{1331} = 299.97 \approx Rs.300$ 32. Ans.(C) Principal = Rs. 5000 Compound Interest = Rs. 1655 Amount = 5000 + 1655 = Rs. 6655 Time = 3 years, Rate = R% Fuomuls -Amount =  $P\left[1 + \frac{r}{100}\right]^n$  $6655 = 5000 \left(1 + \frac{R}{100}\right)^{2}$  $\frac{6655}{5000} = \left(1 + \frac{R}{100}\right)^3$  $=\frac{1331}{1000}=\left(1+\frac{R}{100}\right)^3$  $=\left(\frac{11}{10}\right)^{3}=\left(1+\frac{R}{100}\right)^{3}$  $\Rightarrow \frac{11}{10} - 1 = \frac{R}{100}, \Rightarrow \frac{1}{10} = \frac{R}{100}$ R = 1033. Ans.(B) Difference = CI - SIDifference =  $\left[P\left(1 + \frac{R}{100}\right)^3 - P\right] - \left(\frac{PRT}{100}\right)$  $283.50 = P\left[\left(1 + \frac{15}{100}\right)^3 - \frac{15 \times 3}{100} - 1\right]$  $283.50 = P \left[ \frac{115}{100} \times \frac{115}{100} \times \frac{115}{100} - \frac{45}{100} - 1 \right]$  $283.50 = P \left[ \frac{12,167 - 3600 - 8000}{8000} \right]$  $P = \frac{283.5 \times 8000}{567}$ P = Rs.400034. Ans.(B) Let amount invested in NSC= Rs. x The amount invested in PPF = Rs. (1000 - x) $x\left(1 + \frac{14}{100}\right)^2 + (10000 - x)\left(1 + \frac{11}{100}\right)^2$ = 10000 + $x \times \frac{114}{100} \times \frac{114}{100} + (10000 - x)\frac{111}{100} \times \frac{111}{100} = 12726$  $\frac{12996x}{10000} + (10000 - x)\frac{12321}{10000} = 12726$  $\frac{12996x}{10000} + \frac{123210000 - 12321x}{10000} = 12726$ 12996x + 123210000 - 12321x = 127260000675x = 4050000 $x = \frac{4050000}{675} = 6000$ PPF amount = 10000 - 6000 = Rs. 4000 35. Ans.(C)

Principal = Rs. 2000 Rate = 40% Interest for 3 years =  $2000 \left[ \left( 1 + \frac{40}{100} \right)^3 - 1 \right]$  $= 2000 \times \left(\frac{7}{5}\right)^3 - 2000$ = 5488 - 2000 = 3488Interest for 2<sup>nd</sup> year  $= 2000 \times \left(1 + \frac{40}{100}\right)^2 - 2000$ = 3920 - 2000 = 1920 Interest for the third year = 3488 - 1920 = Rs. 1568 Ans.(B) First year, Principal = Rs. 200 Rate = 5%Time = 1 year Amount = principal  $\left(1 + \frac{r}{100}\right)^t$  $= 200 \left(1 + \frac{5}{100}\right)^{1} = 200 \times \frac{21}{20} = Rs.210$ Again for the second year, Principal = Rs. 210 + Rs. 200 = Rs. 410 Rate = 5%Time = 1 year New Amount =  $410 \left(1 + \frac{5}{100}\right)^{1}$  $= 410 \times \frac{21}{20}$ = Rs.430.50Ans.(D) Quarterly compounded interest rate =  $\frac{20}{4}$ % = 5% Time = 9 months = 3 quarters Amount received when Murthy become adult =  $16000 \left[ 1 + \frac{5}{100} \right]^{\frac{5}{100}}$  $\left\{ \because A = P\left(1 + \frac{r}{100}\right)^n \right\}$ = 16000  $\left(\frac{21}{20}\right)^3 = \frac{16000 \times 21 \times 21 \times 21}{20 \times 20 \times 20}$ = Rs. 18522Ans.(A) P = Rs. 18500 r (yearly) = 40%Half yearly rate = r/2% = 20% n = 3 [18 months = 3 Half yearly]  $CI = P\left(1 + \frac{r}{200}\right)^n - P$  $= 18500 \left(1 + \frac{40}{200}\right)^3 - 18500$  $= 18500 \left(\frac{6}{5}\right)^3 - 18500$  $= 18500 \times \frac{216}{125} - 18500$ = 31968 - 18500 = Rs. 13468

36.

37.

38.

#### 39. Ans.(B)

Loan taken by Meena (P) = Rs. 275000 Rate (r) = 8%, time (n) = 3 years Price of scooter = Amount - 335000  $= 275000 + \frac{275000 \times 8 \times 3}{275000 \times 8 \times 3}$ 335000 100 = 275000 + 66000 - 335000= 341000 - 335000 = Rs.6000i.e, the adjusted price of the scooter is Rs. 6000. 40. Ans.(A) Principal = Rs. 3000, rate = 12%, time = 2vears  $\therefore A = P \left(1 + \frac{r}{100}\right)^n$  $= 3000 \left( 1 + \frac{12}{100} \right)^{2}$  $= 3000 \times \frac{28}{25} \times \frac{28}{25}$  $=\frac{784\times24}{5}$ = 3763.2  $\approx$  Rs. 3763 41. Ans.(A) P = 7500, R = 4%, n = 2 year  $C.I. = P\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$  $= 7500 \left[ \left( 1 + \frac{4}{100} \right)^2 - 1 \right] = 7500 \left[ \left( \frac{26}{25} \right)^2 - 1 \right]$  $= 7500 \times \frac{676 - 625}{625}$  $= 7500 \times \frac{51}{625} = Rs.612$ 42. Ans.(C) Difference in compound interest and simple interest for two years = Principal  $\left(\frac{r}{100}\right)^2$ 

$$10 = \text{principal} \left(\frac{5}{100}\right)^2$$

$$r = 5\%$$

$$n = 2$$

$$10 = \text{principal} \left(\frac{1}{20}\right)^2$$
Principal = 10 × 400 = Rs.4000
**Ans.(A)**
Given that -
Rate of simple interest (r) = 5%
Time (t) = 3 years
Simple Interest (S.I.) = Rs. 1260
SI =  $\frac{P \times R \times T}{100}$ 

$$1260 = \frac{P \times 5 \times 3}{100}$$

$$P = \frac{126000}{15}$$

P = Rs.8400

$$A = P\left[\left(1 + \frac{r}{100}\right)^{t} - 1\right]$$

$$= 8400\left[\left(1 + \frac{5}{100}\right)^{3} - 1\right]$$

$$= 8400\left[\left(\frac{21}{20}\right)^{3} - 1\right]$$

$$= 8400\left[\frac{9261 - 8000}{8000}\right]$$

$$= 8400 \times \frac{1261}{8000}$$

$$= \frac{84 \times 1261}{80}$$

$$= Rs. 1324.05$$
**Ans.(B)**
Given -
P = Rs. 15000
R = 8%
Time (t) = 2 years
When time is 2 years, the difference between
compound interest and simple interest
$$D = P\left(\frac{R}{100}\right)^{2}$$

$$= 15000 \times \frac{4}{625} = Rs.96$$
**Ans.(C)**
SI =  $\frac{P \times R \times T}{100}$ 
Let amount = x Rs.
SI =  $\frac{x \times 5 \times 3}{100} = Rs.\frac{3x}{20}$ 
CI =  $x\left[\left(1 + \frac{5}{100}\right)^{3} - 1\right] = x\left[\left(\frac{21}{20}\right)^{3} - 1\right]$ 

$$= x\left(\frac{9261-8000}{8000}\right) = \frac{1261}{8000}x$$
According to Question,
 $\frac{1261}{8000}x - \frac{3x}{20} = 14.48$ 
 $\frac{1261x - 1200x}{8000} = 14.48$ 
 $61x = 14.48 \times 8000$ 
 $x = \frac{1448 \times 80}{61} = Rs.1899$ 
**Ans.(D)**

46. Ans

**44**.

**45**.

When there is a difference of two years between simple interest and compound interest,

Difference = Principal  $\left(\frac{r}{100}\right)^2$ difference =  $P\left(\frac{r}{100}\right)^2$ r = 5%, P = Rs.400

difference = 
$$400 \left(\frac{5}{100}\right)^2 = \frac{400}{20 \times 20} = Rs.1$$
  
**Ans.(B)**  
Principal (P) = 2000 Rs.  
Rate (r) = 20% per annum,  
Half yearly interest is payable so  
Rate (r) = 20/2, = 10%, Time (T) = 18 months  
= 3 half yearly  
A = P  $\left(1 + \frac{r}{100}\right)^n$   
= 2000  $\left(\frac{11}{10}\right)^3 = 2 \times 1331$   
After 18 months, amount will be Rs 2662.  
**Ans.(C)**  
 $\therefore SI = \frac{P \times R \times t}{100}$   
 $P = 115 \times 100$   
 $P = 115 \times 100$   
 $P = 11500$   $\left[\left(1 + \frac{8}{100}\right)^2 - 1\right]$   
 $CI = 11500 \left[\left(1 + \frac{8}{100}\right)^2 - 1\right]$   
 $= 11500 \left[\left(\frac{27}{25}\right)^2 - 1\right]$   
 $= 11500 \left[\left(\frac{27}{25}\right)^2 - 1\right]$   
 $= 11500 \left[\frac{(27)}{625}^2 - 1\right]$   
 $= 11500 \left[\frac{104}{625}\right] = Rs.1913.60$   
**Ans.(A)**  
Principal = Rs. 62500  
Rate of interest = 21% per annum  
Time  $= \frac{3}{2}$  years  
Then, CI = 62500  $\left(1 + \frac{21}{100}\right)^{\frac{3}{2}}$   
 $= 62500 \left(\frac{121}{100}\right)^{\frac{3}{2}}$   
 $= 62500 \left(\frac{11}{10}\right)^3$   
Amount  $= \frac{62500 \times 11 \times 11 \times 11}{100} = Rs.83187.5$   
Hence, C.I. = 83187.5 - 62500 = Rs. 20687.5  
**Ans.(B)**  
SI  $= \frac{P \times r \times 1}{100}$ 

**50**.

**47**.

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$$5250 = \frac{p \times 5 \times 3}{100}$$

$$P = \frac{5250 \times 20}{4}$$

$$P = 35000$$

$$CI = P\left[\left(1 + \frac{r}{100}\right)^{n} - 1\right]$$

$$= 35000 \left[\frac{21 \times 21 \times 21 - 20 \times 20 \times 20}{20 \times 20 \times 20}\right]$$

$$= 35000 \left(\frac{221 \times 21 \times 21 - 20 \times 20 \times 20}{20 \times 20 \times 20}\right)$$

$$= 35000 \left(\frac{221 \times 21 \times 21 - 20 \times 20 \times 20}{20 \times 20 \times 20}\right)$$

$$= 35000 \left(\frac{221 \times 21 \times 21 - 20 \times 20 \times 20}{20 \times 20 \times 20}\right)$$

$$= 35 \times \frac{1261}{8}$$

$$= 35 \times 157.625 = Rs.5516.88$$
**Ans.(A)**
Suppose it will take n half years.  
Given -  
Amount (A) = Rs.4576  
Principal (P) = Rs.4400  
Rate (r) = \frac{8\%}{2}
$$= 4\%$$
 half yearly  
According to Question,  
Time = 2n half year  
 $A = P\left(1 + \frac{r}{100}\right)^{n} \Rightarrow 4576$ 

$$= 4400 \left(1 + \frac{4}{100}\right)^{2n}$$

$$\left(\frac{26}{25}\right)^{1} = \left(\frac{26}{25}\right)^{2n}$$

$$\Rightarrow 2n = 1 \Rightarrow n = \frac{1}{2}$$
Hence; Required time = 6 months  
**Ans.(A)**  
Amount received in the first year  
= Money invested + Simple interest
$$= 2000 + \frac{2000 \times 5 \times 1}{100} = 2100$$
Amount received in the second year  
= Invested money + Simple interest
$$= (2100 + 2000) + \frac{4100 \times 5 \times 1}{100}$$

$$= 4100 + 205 = 4305$$

of the second year.

53. Ans.(B)

52.

51.

Let the principal amount borrowed = Rs xAmount (A) = Principal + Interest

= x + 85966 $\therefore A = P\left(1 + \frac{r}{100}\right)^n$  $x + 85966 = x \left(1 + \frac{7}{100}\right)^3$  $x + 85966 = x(1.07)^3$ x + 85966 = 1.225043x0.225043x = 8596685966 x =0.225043 x = 381998.107, x = Rs.38200054. Ans.(B) Interest is payable half yearly.  $\therefore$  Time = 2 years = 4 half year Rate =  $\frac{20}{2}$  = 10% half yearly  $\therefore A = 80000 \left(1 + \frac{10}{100}\right)^4$ = 80000 ×  $\frac{11}{10}$  ×  $\frac{11}{10}$  ×  $\frac{11}{10}$  ×  $\frac{11}{10}$  = *Rs.* 117,128 55. Ans.(B) Given -Rate r = 8% yearly, = 4% half yearly Time n = 1.5 years = 3 half year Principal =  $\frac{196851}{(1+\frac{4}{100})^3} = \frac{196851}{(26/25)^3}$ 196851×25×25×25 = 26×26×26 = 174999.82 = Rs. 175000 56. Ans.(A) 2 years = 4 half yearly  $R = \left(\frac{5}{2}\right)\%$  half yearly  $A = P\left(1 + \frac{R}{100}\right)^n$  $A = P\left(1 + \frac{5}{2 \times 100}\right)^4$  $A = P\left(\frac{41}{40}\right)^4$  $A = P(1.025)^4$ 57. Ans.(D)  $A = P \left( 1 + \frac{r}{100} \right)^n$  $7200 = P\left(1 + \frac{20}{100}\right)^2$  $7200 = P\left(1 + \frac{20}{100}\right)^2$  $7200 = P \times \frac{36}{25}$  $P = 200 \times 25 = Rs.5000$ Ans.(B) 58. P = Rs. 13000 T = 6 months = 6/3 quarter = 2 quarter

$$R = \frac{20}{4}\% = 5\% \text{ quarterly}$$

$$A = P\left(1 + \frac{R}{100}\right)^{2} = 13000 \times \left(1 + \frac{5}{100}\right)^{2}$$
Compound Amount = 13000 ×  $\left(1 + \frac{1}{20}\right)^{2}$ 

$$= 13000 \times \left(\frac{21}{20}\right)^{2}$$

$$= 13000 \times \left(\frac{21}{20}\right)^{2} = Rs. 14332.5$$
59. Ans.(B)  
When rate is payable quarterly  $r = \frac{20}{4} = 5\%$   
Time = 6 months = 2 quarters  
According to Question,  

$$= 13500 \left[1 + \frac{5}{100}\right]^{2}$$

$$= 13500 \times \frac{21 \times 21}{20 \times 20} = Rs. 14883.75$$
60. Ans.(A)  
 $S.I = \frac{PRT}{100} = \frac{4000 \times 5 \times 1}{100} = 200$   
 $C.I = \frac{4200 \times 105}{100} = Rs. 4410$ 
61. Ans.(D)  
Given –  
Principal (P) = Rs.10000  
Annual rate (R) = 5%  
Time (t) = 2 years  
Formula – A =  $P\left(1 + \frac{R}{100}\right)^{2}$   
 $= 10000 \left(\frac{21}{20}\right)^{2}$   
 $= 10000 \left(\frac{21}{20}\right)^{2}$   
 $= 10000 \left(\frac{21}{20}\right)^{2}$   
 $= 10000 \left(\frac{21}{20}\right)^{2}$   
 $= 10000 \times \frac{441}{400}$   
 $= 25 \times 441 = Rs.11025$ 
62. Ans.(B)  
Principal (P) = Rs. 20,000  
Time (n) = 2 (Half year)  
Rate (R) =  $\frac{15}{2}\%$  (Half yearly)  
 $A = P\left(1 + \frac{r}{100}\right)^{n}$   
 $= 20000 \left(1 + \frac{55}{2 \times 100}\right)^{2}$   
 $= 20000 \times \frac{43}{40} \times \frac{43}{40} = Rs.23112.50$ 
63. Ans.(A)  
According to Question,  
 $A = P\left(1 + \frac{r}{100}\right)^{n}$   
 $441 = P\left(1 + \frac{5}{100}\right)^{2}$   
 $441 = P\left(1 + \frac{5}{100}\right)^{2}$   
 $441 = P\left(\frac{21}{20}\right)^{2}$   
 $441 = P\left(\frac{41}{400}\right)^{2}$   
 $441 = P\left(\frac{41}{400}\right)^{2}$ 

**64**. Ans.(A)  $A = P \left[ \left( 1 + \frac{r}{100} \right)^n - 1 \right]$  $431.01 = P\left[\left(1 + \frac{5}{100}\right)^4 - 1\right]$  $431.01 = P \left[\frac{21}{20} \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20} - 1\right]$   $431.01 = P \left[\frac{194481}{160000} - 1\right]$   $431.01 = P \left[\frac{194481 - 160000}{160000}\right]$   $431.01 = P \times \frac{34481}{160000}$  $\mathsf{P} = \frac{431.01 \times 160000}{34481} = 1999.99$ = Rs.200065. Ans.(B) Given -Principal (P) = 100 Rs Rate (R) = 10 % Time t = ? Formula  $-A = P \left(1 + \frac{R}{100}\right)^{t}$ 121 = 100  $\left(1 + \frac{10}{100}\right)^{t}$  $\frac{121}{100} = \left(\frac{11}{10}\right)^t$  $\left(\frac{11}{10}\right)^2 = \left(\frac{11}{10}\right)^t$ t = 2 years 66. Ans.(A)  $A = P\left(1 + \frac{r}{100}\right)^n$  $6655 = P\left(1 + \frac{10}{100}\right)^3$  $6655 = \frac{1331P}{1000}$   $P = \frac{1000 \times 6655}{1331} = Rs.5000$ Ans (C) **67**. Ans.(C) Suppose the amount invested in NSC is Rs. X. So amount invested in P.P.F. (PPF) be (10,000 - x). Total Amount = 10,000 + 2726 = Rs.12726 According to Question,  $12726 = x \left(1 + \frac{14}{100}\right)^2 + (10000 - x) \times \left(1 + \frac{11}{100}\right)^2$  $12,726 = x \times \frac{114 \times 114}{100 \times 100} + 10,000 \times \frac{111 \times 111}{100 \times 100} - x \times \frac{111 \times 111}{100 \times 100}$ ⇒ 12,726 × 10,000  $= 12,996x + 12,321 \times 10,000 - 12,321x$  $\Rightarrow$  (12,726 × 10,000 - 12321 × 10,000) = 12996x - 12321x

$$x = \frac{40,50,000}{675}$$

$$= Rs. 6000$$
68. Ans.(A)  
Amount invested = Rs. 14500  
Time = 6 months = 2 quarters  
Rate = 20% annual = 5% quarterly  

$$\therefore A = P \left(1 + \frac{r}{100}\right)^{n}$$
Satya received money on maturity = 14500  

$$= 14500 \left(\frac{1}{20}\right)^{2} = 14500 \times \frac{441}{400}$$

$$= Rs. 15986.25$$
69. Ans.(C)  
Amount at the end of first year = 500 ×  
 $\left(1 + \frac{10}{100}\right)^{1} = 500 \times \frac{11}{10} = 550$   
Principal for second year = 500 + 550 = 1050  
Amount at the end of second year  

$$= 1050 \times \left(1 + \frac{10}{100}\right)^{1}$$

$$= 1050 \times \frac{11}{10} = 1155$$
Hence, at the end of 2 years, the maturity  
value of the money = Rs. 1155  
70. Ans.(A)  
The rate of interest is compounded half  
yearly.  

$$\therefore$$
 For 1 year,  
Time = 2 Half year  
rate =  $\frac{4}{2} = 2\%$  Half yearly  
Let principal = 100  

$$\therefore$$
 Amount (A) = 100  $\left(1 + \frac{2}{100}\right)^{2}$   

$$= 100 \times \frac{51}{50} \times \frac{51}{50} = Rs. 104.04$$

$$\therefore$$
 Effective interest rate at the end of the year  
= 104.04 - 100 = 4.04%  
71. Ans.(A)  
Given -  
Principal, P = Rs. 37500 r = 8% per year = 4%  
half yearly  
time t = 1 $\frac{1}{2}$  year = 3 half year  
 $(A) = P \left(1 + \frac{r}{100}\right)^{4}$   

$$= 37500 \left(1 + \frac{4}{100}\right)^{3}$$
  

$$= 37500 \left(1 + \frac{4}{100}\right)^{3}$$

Amount (A) = (P) × 
$$\left(1 + \frac{r}{100}\right)^n$$
  
⇒ 11664 = 10000  $\left(1 + \frac{R}{100}\right)^2$   
⇒  $\frac{11664}{10000} = \left(1 + \frac{R}{100}\right)^2$   
⇒  $\frac{729}{625} = \left(1 + \frac{R}{100}\right)^2$   
⇒  $1 + \frac{R}{100} = \frac{27}{25}$   
⇒  $\frac{R}{100} = \frac{2}{25}$   
R = 8%  
73. Ans.(B)  
One year = 2 half year  
rate =  $\frac{20}{2} \Rightarrow 10\%$  half yearly  
A = 2000 ×  $\left(1 + \frac{10}{100}\right)^2$   
= 2000 ×  $\frac{11}{10} \times \frac{11}{10} = ₹2420$   
74. Ans.(D)  
When interest is compounded half yearly  
rate =  $\frac{20}{2} = 10\%$   
Time = 2 × 2 = 4  
∴ A = P  $\left(1 + \frac{r}{100}\right)^n = 10000 \left(1 + \frac{10}{100}\right)^4$   
= 10000  $\left(1 + \frac{1}{10}\right)^4 = 10000 \left(\frac{11}{10}\right)^4$   
= 10000 ×  $\frac{14641}{10000} = Rs.14641$   
75. Ans.(C)  
Given -  
(P) = Rs. 10000  
(A) = Rs. 13310  
(R) = 10% annual  
(T) = ?  
A = P  $\left(1 + \frac{R}{100}\right)^t$   
13310 = 10000  $\left(1 + \frac{10}{100}\right)$   
 $\left(\frac{11}{10}\right)^3 = \left(1 + \frac{10}{100}\right)^t$   
 $\left(\frac{11}{10}\right)^3 = \left(1 + \frac{10}{100}\right)^t$   
( $\frac{11}{10}\right)^3 = \left(1 + \frac{10}{100}\right)^t$   
Rate (r) =  $\frac{20}{4} = 5\%$   
Time (n) = 2 Quarter  
(A) = P  $\left(1 + \frac{r}{100}\right)^n = 4500 \left(1 + \frac{5}{100}\right)^2$   
= 4500 ×  $\frac{21}{20} × \frac{21}{20} = Rs.4961.25$   
77. Ans.(A)  
Rate = 5% Time = 2 years, Principal = 20000

$$A = P \left(1 + \frac{r}{100}\right)^{n}$$

$$= 2000 \left(1 + \frac{5}{100}\right)^{2}$$

$$= 2000 \times \left(\frac{21}{20}\right)^{2} \Rightarrow 2000 \left(\frac{21\times21}{20\times20}\right) = 2205$$
Interest = Amount – Principal  

$$= 2205 - 2000 = 205$$
**78. Ans.(D)**  
Principal (P) = Rs. 14000  
Rate  $= \frac{20}{4} = 5\%$  quarterly  
Time (n) = 6 months = 2 quarters  
 $A = P \left(1 + \frac{R}{100}\right)^{n}$   
 $A = 14000 \times \left(\frac{21}{20}\right)^{2}$   
 $\Rightarrow 14000 \times \left(\frac{21}{400}\right)^{2}$   
 $A = 14000 \times \left(\frac{21}{20}\right)^{2}$   
 $\Rightarrow 14000 \times \left(\frac{441}{400}\right) = 441 \times 35 = 15435$ 
**79. Ans.(B)**  
Principal (P) = 10000,  
 $r = 20\%$  per annum = 5% quarterly  
(n) Time = 6 months, = 2 quarter  
 $A = P \left(1 + \frac{r}{100}\right)^{n}$   
 $= 10,000 \left(1 + \frac{5}{100}\right)^{2}$   
 $= 10,000 \left(1 + \frac{5}{100}\right)^{2}$   
 $= 10,000 \left(\frac{21}{20}\right)^{2}$   
 $= 10,000 \left(\frac{21}{20} \times \frac{21}{20}\right)^{2}$   
 $= Rs.11025$ 
**80. Ans.(B)**  
If interest is quarterly,  
time  $= \frac{6}{12} \times 4 = 2$  quarter  
 $r = \frac{20}{4} = 5\%$  quarterly  
(A)  $= P \left(1 + \frac{r}{100}\right)^{n}$   
 $= 11000 \left(1 + \frac{5}{100}\right)^{2}$   
 $= 12127.5$ 
**81. Ans.(C)**  
 $P = \frac{S.I \times 100}{R \times T} = 900$   
Money for second year = 900 + 72 = 972  
Second year interest  $= \frac{972\times8\times1}{100} = 77.76$ 

**82**. Ans.(A)

Given –  
Principal (P) = 172,000  
Rate = 8% per annum  
Time (n) = 3 years  

$$C.I = P\left(1 + \frac{r}{100}\right)^n - P = P\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$$
  
= 172000  $\left[\left(\frac{27}{25}\right)^3 - 1\right]$   
= 172000  $\left[\frac{19683}{15625} - 1\right]$   
= 172000  $\times \frac{19683 - 15625}{15625}$   
= 11.008 × 4058 = 44,670  
83. Ans.(A)  
P = Rs. 7500,  
t =  $2\frac{1}{3}$  year,  
r = 12% per year  
 $A = P\left(1 + \frac{r}{100}\right)^{2\frac{1}{3}}$   
= 7500  $\left(1 + \frac{32}{25}\right)^2 \left(1 + \frac{3}{25}\right)^{\frac{1}{3}}$   
= 7500  $\left(1 + \frac{32}{25}\right)^2 \left(1 + \frac{3}{25}\right)^{\frac{1}{3}}$   
= 7500  $\times \frac{28}{25} \times \frac{26}{25} \times \left(1 + \frac{1}{3} \times \frac{3}{25}\right)$   
= 7500  $\times \frac{28}{25} \times \frac{26}{25} \times \frac{26}{25} = Rs.9784.32$   
C.I. = RS.9784.32 – 7500 = Rs. 2284.32  
Hence compound interest will be nearest Rs.  
2284.32.  
84. Ans.(C)  
C.I. = 25000  $\left[\left(1 + \frac{3}{25}\right)^3 - 1\right]$   
= 25000  $\left[\left(1 + \frac{3}{25}\right)^3 - 1\right]$   
= 25000  $\left[\left(\frac{28}{25}\right)^3 - 1\right]$   
= 25000  $\left[\left(\frac{28}{25}\right)^3 - 1\right]$   
= 25000  $\left[\left(\frac{2952}{15625} - 1\right)$   
= 25000  $\left[\left(\frac{1 + \frac{1}{100}}{1625}\right)^2 - 24000$   
= 24000  $\left(1 + \frac{4}{10}\right)^2 - 24000$   
= 24000  $\left(1 + \frac{4}{10}\right)^2 - 24000$   
= 24000  $\left(\frac{5}{4}\right)^2 - 24000$   
= 24000  $\left[\frac{25-16}{16}\right]$   
= 24000  $\left[\frac{25-16}{16}\right]$   
= 24000  $\left[\frac{25-16}{16}\right]$   
= 24000  $\left[\frac{25-16}{16}\right]$ 

P(principal) = 48000,rate (r) = 20%time (t) = 2 years  $A = P \left( 1 + \frac{r}{100} \right)^{T} = 48000 \left( 1 + \frac{20}{100} \right)^{2}$  $= 48000 \left( 1 + \frac{1}{5} \right)^{2} = 48000 \left( \frac{6}{5} \right)^{2}$  $= 48000 \times \frac{6}{5} \times \frac{6}{5} = 69120$ Interest = Amount - Principal = 69120 - 48000 = 21120 87. Ans.(C) Principal (P) = 40,000Time (n) = 2 year Rate (r) = 20% per year  $A = P\left(1 + \frac{r}{100}\right)^2$  $= 40000 \left(1 + \frac{20}{100}\right)^2$  $= 40000 \times \frac{6}{5} \times \frac{6}{5} = 57600$ 88. Ans.(A) P = 125000, R = 8%, n = 2 years, A =?  $A = P \left( 1 + \frac{r}{100} \right)^n$  $A = 125000 \left( 1 + \frac{8}{100} \right)^2$  $= 125000 \times \frac{108 \times 108}{100 \times 100}$  $= 25 \times 54 \times 108 = \text{Rs.}145,800$ 89. Ans.(B) Given -P = Rs. 10000  $r = \frac{20}{2} = 10\%$  half yearly  $\therefore$  1 years = 2 half year  $\therefore$  2 years = 4 half year  $A = P \left( 1 + \frac{r}{100} \right)^{t}$  $A = 10000 \left(1 + \frac{10}{100}\right)^4 = 10000 \left(\frac{11}{10}\right)^4$  $= \frac{1331 \times 11 \times 10000}{10000} = Rs. 14641$ 90. Ans.(A) Principal (P) = Rs. 5000 Time (t) = 3 yearAnnual interest rate (R) = 10%  $(C.I.) = P\left[\left(1 + \frac{R}{100}\right)^{t} - 1\right]$  $= 5000 \left[ \left( 1 + \frac{10}{100} \right)^3 - 1 \right]$  $= 5000 \left[ \left( \frac{11}{10} \right)^3 - 1 \right]$  $= 5000 \left[ \frac{1331 - 1000}{1000} \right]$  $= 5000 \times \frac{331}{1000} = 1655$ Ans.(A)

(P) = Rs. 7500  
(R) = 5%  
(t) = 2 year  
C.I. = 
$$P\left[\left(1 + \frac{R}{100}\right)^{t} - 1\right]$$
  
= 7500  $\left[\left(\frac{21}{20}\right)^{2} - 1\right]$   
= 7500  $\left[\frac{441}{400} - 1\right]$   
= 7500  $\left[\frac{441}{400} - 1\right]$   
= 7500  $\times \frac{41}{400}$   
= 7500  $\times \frac{41}{400}$   
= 7500  $\times \frac{41}{400}$   
= 7500  $\times \frac{41}{400}$   
= 4500, R = 4%, n = 2 year  
 $A = P\left(1 + \frac{R}{100}\right)^{n}$   
= 4500  $\left(104 \times 104\right)^{2}$   
= 4500  $\left(\frac{104}{100}\right)^{2}$   
= 4500  $\left(\frac{104}{100} \times 100\right)^{2}$  = 4867.2  
CI =  $A - P$   
= 4867.2 - 4500 = Rs. 367.2  
93. Ans.(A)  
CI =  $P\left[\left(1 + \frac{r}{100}\right)^{n} - 1\right]$   
= 8000  $\left[\left(\frac{26}{25}\right)^{2} - 1\right]$   
= 8000  $\left[\left(\frac{26}{25}\right)^{2} - 1\right]$   
= 8000  $\left[\frac{676 - 625}{625}\right]$   
= 8000  $\times \frac{51}{625}$   
=  $\frac{64 \times 51}{5}$   
=  $\frac{3264}{5}$   
= Rs. 652.8  
94. Ans.(B)  
C.I. =  $P\left(1 + \frac{r}{100}\right)^{n} - P$   
C.I. = 3000  $\left(1 + \frac{5}{100}\right)^{2} - 3000$   
=  $3000\left[\left(\frac{21}{20}\right)^{2} - 1\right]$   
=  $3000 \left[\frac{441}{400} - 1\right]$   
=  $3000 \times \frac{41}{400}$ 

91.

95. Ans.(A)  
P = Rs. 3500, r = 4%  
t = 2 year, A = ?  
A = P 
$$\left(1 + \frac{r}{100}\right)^{t}$$
  
A = 3500  $\left(\frac{28}{25}\right)^{2}$   
A = 3500  $\times \frac{26}{25} \times \frac{26}{25}$   
= 3785.6 $\sqrt{5}$   
Interest = Amount – Principal  
= 3785.6 – 3500 = Rs. 285.6  
96. Ans.(B)  
If interest is quarterly,  
time =  $\frac{6}{12} \times 4$  = 2quarter  
rate =  $\frac{20}{4}$  = 5% quarterly  
A = P  $\left(1 + \frac{r}{100}\right)^{n}$   
A = 5500  $\left(1 + \frac{5}{100}\right)^{2}$   
= 5500  $\left(1 + \frac{1}{20}\right)^{2}$   
= 5500  $\left(1 + \frac{1}{20}\right)^{2}$   
= 5500  $\left(21 + \frac{1}{20}\right)^{2}$   
= 3500  $\times \frac{21}{20} \times \frac{21}{20}$   
=  $\frac{55\times441}{4}$  = Rs.6063.75  
97. Ans.(A)  
A = P  $\left(1 + \frac{r}{100}\right)^{n}$  =  $3500 \left(1 + \frac{5}{100}\right)^{2}$   
=  $3500 \times \frac{21}{20} \times \frac{21}{20} = \frac{35\times441}{4} = \frac{15435}{4}$   
C.I. = Amount – principal  
CI =  $\frac{15435}{4} - 3500$   
=  $\frac{15435-14000}{4}$   
=  $\frac{1435}{4} = 358.75$   
98. Ans.(B)  
P =  $4500 \left(1 + \frac{5}{100}\right)^{2}$   
=  $4500 \left(1 + \frac{5}{100}\right)^{2}$   
=  $4500 \left(1 + \frac{5}{100}\right)^{2}$   
=  $4500 \left(1 + \frac{1}{20}\right)^{2}$   
=  $4500 \left(1 + \frac{1}{20}\right)^{2}$   
=  $4500 \left(\frac{21}{20}\right)^{2}$   
=  $4500 \left$ 

 $SI = \frac{P \times R \times T}{100}$  $P = \frac{16000 \times 100}{8 \times 8} = 25000$ According to Question,  $r = 8\% \text{ of } \times \frac{1}{4}$  $CI = 25000 \left( 1 + \frac{8 \times \frac{1}{4}}{100} \right)^2 - 25000$  $=\frac{25000\times 51\times 51}{50\times 50}-25000$ = 26010 - 25000 = 1010Hence compound interest = Rs. 1010 100. Ans.(D) Rate = R, (T) = 2 year SI = 1200, CI = 1290Difference of two years of SI and CI  $D = P\left(\frac{R}{100}\right)^{2}$   $1290 - 1200 = P\left(\frac{R^{2}}{10000}\right)$  $PR^2 = 90 \times 10000$  $PR^2 = 900000 \dots \dots (1)$  $SI = \frac{PTR}{100}$  $1200 = \frac{P \times 2 \times R}{100}$  $PR = \frac{1200 \times 100}{2}$  $PR = 60000 \dots \dots (2)$ From equation (1) – PR.R = 900000 $60000 \times R = 900000$ 900000  $R = \frac{32}{60000}$ R = 15%From equation (2) - $P \times 15 = 60,000$  $P = \frac{60000}{15} P = Rs.4000$ 101. Ans.(B) Let money = xThen,  $2000 = x \times \frac{10}{100} \times 2$ x = Rs. 10,000 $CI = 10000 \left(1 + \frac{10}{100}\right)^2 - 10000$  $= 10000 \left(\frac{121}{100} - 1\right) = 2100$ So now the interest rate at 2100

$$r = \frac{2100 \times 100}{10000 \times 2} = \frac{21}{2} = 10.5\%$$
**102. Ans.(C)**  
Let rate of interest = r%  
Principal = Rs. 100  
Interest =  $100 \times \frac{40}{100} = 40$   
According to Question  
 $\Rightarrow 40 = \frac{100 \times 4r}{100}, r = 10\%$   
Compound interest of Rs. 6000  
 $\Rightarrow 6000 \times \left[ \left( 1 + \frac{10}{100} \right)^3 - 1 \right] = Rs. 1986$ 
**103. Ans.(A)**  
 $\therefore$  Interest is compounded half yearly.  
 $\therefore r = \frac{8}{2} = 4\%$  half yearly  
 $n = 1$  year =  $1 \times 2 = 2$  half year  
 $CI = P\left[ \left( 1 + \frac{r}{100} \right)^n - 1 \right]$   
 $= 1000 \left[ \frac{26}{25} \times \frac{26}{25} - 1 \right]$   
 $= 1000 \left[ \frac{676 - 625}{625} \right]$   
 $= 10000 \times \frac{51}{625}$   
 $= 816$   
If simple interest for 1 year be Rs.816.  
then, 816 =  $\frac{10000 \times R \times 1}{100}$   
 $R = 8.16\%$   
 $\therefore$  Equivalent simple interest rate = 8.16%  
**104. Ans.(C)**  
 $(S.I) = \frac{PR \times T}{100}$   
 $P = \frac{18,900 \times 100}{7 \times 3} = 900 \times 100 = 90000$   
 $(C.I) = 90000 \left[ \left( 1 + \frac{7}{100} \right)^3 - 1 \right]$   
 $= 90000 \left[ \left( \frac{107}{100} \right)^3 - 1 \right]$   
 $= 90000 \left[ \left( \frac{107}{100} \right)^3 - 1 \right]$   
 $= 90000 \left[ \left( \frac{107}{100} \right)^3 - 1 \right]$   
 $= 90000 \left[ \left( \frac{122643}{100000} - 1 \right)$   
 $= 20253.87 = Rs.20254$   
**105. Ans.(A)**  
 $(P) = Rs. 4000$   
 $(R) = 20\%$   
Difference between CI and SI for two years

$$CI - SI = P \times \left(\frac{R}{100}\right)^2$$
  
= 4000 ×  $\left(\frac{20}{100}\right)^2$  = 4000 ×  $\frac{20}{100}$  ×  $\frac{20}{100}$   
= Rs. 160

106. Ans.(D)

principal = Rs. 5000 rate = 5% time = 2 year Difference between compound interest and simple interest for two years

$$= \left(\frac{R}{100}\right)^2 \times P = \left(\frac{5}{100}\right)^2 \times 5000$$
$$= \frac{25}{100 \times 100} \times 5000 = Rs. 12.50$$

Ans.(B) Difference between CI and SI for two years

$$(D) = P\left(\frac{R}{100}\right)^2 = 10000 \left(\frac{5}{100}\right)^2 = 10000 \times \frac{25}{10000}$$

$$= Rs, 25$$

108. Ans.(A)

109.

107.

Principal (P) = 23,465 and Rate (r) = 7.5% of difference of 2 years compound interest and simple interest  $(7.5)^2$ 

$$(D) = P\left(\frac{r}{100}\right)^{2} = 23,465\left(\frac{7.5}{100}\right)^{2}$$

$$= 23465\left(\frac{75}{1000}\right)^{2}$$

$$= 23465\left(\frac{3}{40}\right)^{2}$$

$$= 23465 \times \frac{9}{1600}$$

$$= \frac{211185}{1600} \Rightarrow 131.99 = 132$$
**Ans.(A)**

$$(A) = P\left(1 + \frac{r}{100}\right)^{n}$$
Time = 3 year
$$670 = 305\left(1 + \frac{r}{100}\right)^{3}$$

$$\frac{670}{305} = \left(1 + \frac{r}{100}\right)^{3}$$

$$2.197 = \left(1 + \frac{r}{100}\right)^{3}$$

$$1 + \frac{r}{100} = 1.3$$

$$\frac{r}{100} = 0.3$$

$$r' = 0.3$$
  
 $r = 30\%$  per year  
**110.** Ans.(C)

**Ans.(C)** A = Rs. 28561

$$P = Rs. 10,000$$
  

$$r = 30\%$$
  

$$n = ?$$
  

$$\therefore A = P\left(1 + \frac{r}{100}\right)^{n}$$
  

$$28561 = 10000 \left(1 + \frac{30}{100}\right)^{n}$$
  

$$\therefore 10000 = \left(\frac{130}{100}\right)^{n} = \left(\frac{13}{10}\right)^{n} = \left(\frac{13}{10}\right)^{4}$$
  

$$\therefore n = 4 \text{ years}$$
  
Ans.(B)

Time (t) = 18 months = 3 half year Rate (r) = 20% yearly = 10% half yearly Hence required,

$$A = P \left( 1 + \frac{r}{100} \right)^{2}$$
  
= 10000  $\left( 1 + \frac{10}{100} \right)^{3}$   
= 10000  $\times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = Rs. 13310$ 

Ans.(D) Difference between simple interest and compound interest of 2 years

$$D = P\left(\frac{R}{100}\right)^{2}$$

$$15 = P\left(\frac{5}{100}\right)^{2}$$

$$P = 15 \times 20 \times 20 = Rs.6000$$
Ans.(D)

Money = Installment 
$$\left[\frac{1}{\left(1+\frac{r}{100}\right)^{1}} + \frac{1}{\left(1+\frac{r}{100}\right)^{2}}\right]$$
  
16,400 =  $x \left[\frac{1}{\left(1+\frac{5}{100}\right)^{1}} + \frac{1}{\left(1+\frac{5}{100}\right)^{2}}\right]$   
16,400 =  $x \left[\frac{1}{\frac{21}{20}} + \frac{1}{\left(\frac{21}{20}\right)^{2}}\right]$   
16,400 =  $x \left[\frac{20}{21} + \frac{400}{441}\right]$   
16,400 =  $x \left[\frac{420 + 400}{441}\right]$   
16,400 =  $x \times \frac{820}{441}$   
 $x = 20 \times 441$   
 $(x) = Rs.8820$ 

114. Ans.(B)

111.

112.

113.

P = ?, r = 4%, A = Rs. 338, t = 2 year According to Question – r > t

$$A = P \left( 1 + \frac{7}{100} \right)^{2}$$

$$338 = P \left( 1 + \frac{4}{100} \right)^{2}$$

$$338 = P \times \left( \frac{26}{25} \right)^{2}$$

$$P = \frac{211250}{676}$$

$$P = Rs.312.5$$

#### 115. Ans.(B)

Suppose principal or money = Rs. x Compound interest rate = 20%

$$A = P\left[\left(1 + \frac{r}{100}\right)^{n} - 1\right]$$
  
=  $x\left[\left(1 + \frac{20}{100}\right)^{2} - 1\right]$   
=  $x\left[\left(1 + \frac{1}{5}\right)^{2} - 1\right]$   
=  $x\left[\left(\frac{6}{5}\right)^{2} - 1\right]$   
=  $x\left[\frac{36}{25} - 1\right]$   
=  $\frac{11x}{25}$ 

If interest is payable half yearly, Rate of interest = 10% half yearly Time = 4 half years

C.I. = P 
$$\left[ \left( 1 + \frac{r}{100} \right)^n - 1 \right]$$
  
=  $x \left[ \left( 1 + \frac{10}{100} \right)^4 - 1 \right]$   
=  $x \left[ \left( \frac{11}{10} \right)^4 - 1 \right]$   
=  $x \left[ \frac{11 \times 11 \times 11 \times 11 - 10000}{10000} \right]$   
=  $x \left[ \frac{14641 - 10000}{10000} \right]$   
=  $\frac{4641x}{10000}$   
According to Question,  
 $\frac{4641x}{10000} - \frac{11x}{25} = 482$   
 $\frac{4641x - 4400x}{10000} = 482$ 

116.

Let that amount be P and the rate of interest be r%.

$$A = P\left(1 + \frac{r}{100}\right)$$

 $\frac{241x}{10000} = 482$ 

Ans.(B)

According to the condition -

 $x = 2 \times 10000 = Rs.20000$ 

 $2420 = P\left(1 + \frac{r}{100}\right)^{2} \dots \dots \dots (i)$   $2662 = P\left(1 + \frac{r}{100}\right)^{3} \dots \dots \dots (ii)$ By dividing equation (ii) by equation (i)  $1 + \frac{r}{100} = \frac{2662}{2420}$  r = 10%From equation (i) - $2420 = P\left(1 + \frac{10}{100}\right)^{2}$ 

$$P = 2420 \times \frac{10}{11} \times \frac{10}{11} = Rs.2000$$
**117. Ans.(B)**  
Principal = Rs. 14000, Time = 3 years  
Rate = 10% per annum  
Amount = 14000  $\left(1 + \frac{10}{100}\right)^3$   
= 14000  $\times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = Rs.18634$   
**118. Ans.(B)**  
P = Rs. 1000, r = 10%,  
n = 1.5 years = 3 half years  
 $CI = P\left(1 + \frac{r}{200}\right)^n - P$   
= 1000  $\left(1 + \frac{10}{200}\right)^3 - 1000$   
= 1000  $\times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20} - 1000$   
=  $\frac{9261}{8} - 1000 = 1157.63 - 1000$   
 $= Rs.157.63$   
**119. Ans.(C)**  
Interest is half yearly.  
 $\therefore R = \frac{10}{2} = 5\%$  half yearly  
 $n = 1\frac{1}{2} = \frac{3}{2} \times 2 = 3$  half year  
 $CI = P\left[\left(1 + \frac{R}{100}\right)^n - 1\right]$   
 $= 6000 \times \left[\frac{(9261 - 8000)}{8000}\right]$   
 $= 6 \times \frac{1281}{8} = \frac{7568}{8} = 945.75$   
Compound Interest (approx) = Rs. 946  
**120. Ans.(C)**  
Let the share of A = Rs. x  
B's share = Rs. (3364 - x)  
Amount of A  
 $A = P\left(1 + \frac{r}{100}\right)^t$   
 $= x\left(1 + \frac{5}{100}\right)^5$   
 $= x\left(\frac{21}{20}\right)^5$   
Amount of B -  
 $A = (3364 - x)\left(\frac{21}{20}\times\frac{21}{20}\times\frac{21}{20}$   
 $400x = 3364 \times 441 - 441x$   
 $841x = 3364 \times 441$   
 $x = \frac{3364 \times 441}{841} = Rs.1764$ 

121. Ans.(B) (P) = Rs. 1000(A) = Rs. 1331 (r) = 10%(t) = ? $A = P\left(1 + \frac{r}{100}\right)^t,$  $1331 = 1000 \left(1 + \frac{10}{100}\right)^t$  $\frac{1331}{1000} = \left(\frac{11}{10}\right)^t$  $\left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^t$ On comparing powers, t = 3 years 122. Ans.(A) Compound Interest = Amount - Principal  $= P\left(1 + \frac{r}{100}\right)^n - P$  $= 4000 \left(1 + \frac{10}{100}\right)^2 - 4000$  $= 4000 \times \frac{121}{100} - 4000$ = 4000 \times \frac{21}{100} = 840 According to Question -According to Get S.I. =  $\frac{C.I.}{2}$   $\Rightarrow \frac{x \times 8 \times 3}{100} = \frac{840}{2}$   $\Rightarrow \frac{x \times 8 \times 3}{100} = 420$  $\Rightarrow x = \frac{420 \times 100}{24} = \frac{7000}{4} = Rs. 1750$ 123. Ans.(A) Given -C.I = Rs.696.30S.I. = Rs.660T = 2 year P = 2S.I. =  $\frac{P \times R \times T}{\frac{100}{P \times R \times 2}}$ 660 =  $\frac{P \times R \times 2}{100}$  $\frac{PR}{100} = 330 - (i)$  $A = P\left[\left(1 + \frac{R}{100}\right)^2 - 1\right]$  $\Rightarrow 696.30 = P \left[ 1 + \frac{R^2}{100} + \frac{2R}{100} - 1 \right]$  $\Rightarrow 696.30 = \frac{PR^2}{(100)^2} + \frac{2PR}{100}$ From equation (i) - $696.30 = \frac{330R}{100} + 660$  $\Rightarrow 696.30 - 660 = \frac{330R}{100}$  $36.30 = \frac{330R}{100}$ 363  $R = \frac{33}{33}$ R = 11%

Putting the value of R in equation (i) - $\frac{PR}{100} = 330$  $P \times \frac{11}{100} = 330$  $P = \frac{330 \times 100}{11}$  $P = 30 \times 100$ P = Rs.3000Hence, the principal will be Rs.3000. 124. Ans.(D) C.I. =  $P\left[\left(1 + \frac{r}{100}\right)^n - 1\right]$  $2100 = P\left[\left(1 + \frac{10}{100}\right)^2 - 1\right]$  $2100 = P\left[\frac{121}{100} - \frac{1}{1}\right]$  $2100 = P\left[\frac{121 - 100}{100}\right]$  $2100 = P \times \frac{21}{100}$  $P = \frac{2100 \times 100}{21}$ (P) = 10000According to Question, S.I. =  $\frac{P \times R \times T}{100}$  $SI = \frac{10000 \times 10 \times 2}{100}$ SI = 2000Hence SI will be Rs. 2000. 125. Ans.(B)  $(SI) = \frac{PRT}{100}$  $660 = \frac{P \times R \times 2}{100}$  $PR = 330 \times 100$  $PR = 33000 \dots \dots (i)$ Difference between compound interest and simple interest for 2 years  $= P\left(\frac{R}{100}\right)^2$  $696.30 - 660 = P \times \frac{R}{100} \times \frac{R}{100}$  $36.30 = \frac{33000 \times R}{100 \times 100}$  $36.30 = 3.3 \times R$  $R = \frac{363}{33}$  $R = \frac{33}{3}$ R = 11%126. Ans.(C) Let principal = P Amount = 2PInterest = 2P - P = P

 $SI = \frac{P \times R \times T}{100}$  $P = \frac{P \times R \times 8}{100}$  $R = \frac{25}{2}\%$ By question - $A = P \left[ \left( 1 + \frac{r}{100} \right)^n - 1 \right]$  $= 8000 \left[ \left( 1 + \frac{25}{200} \right)^2 - 1 \right]$  $= 8000 \times \frac{(81 - 64)}{64}$  $= 8000 \times \frac{17}{64} = Rs.2125$ 127. Ans.(B)  $SI = \frac{P \times R \times T}{100}$  $300 = \frac{P \times R \times 2}{100}$  $PR = 15000 \dots \dots$  (i) Difference between compound interest and simple interest for 2 years  $D = P\left(\frac{R}{100}\right)^2$  $309 - 300 = P \times \frac{R}{100} \times \frac{R}{100}$ 9 =  $\frac{15000 \times R}{100 \times 100}$  (From equation 1) R = 6%128. Ans.(B) When time is 2 years -C.I.  $-S.I. = P\left(\frac{R}{100}\right)^2$  $8652 - 8400 = \frac{PR^2}{10000}$  $252 = \frac{PR^2}{10000} \dots \dots \dots \dots (i)$ S.I. =  $\frac{P \times R \times 2}{100}$  $8400 = \frac{PR}{50}$  $PR = 8400 \times 50 \dots \dots (ii)$ From equation (i) and (ii) - $PR^2 = 252 \times 10000$  $PR \times R = 252 \times 10000$  $R = \frac{252 \times 10000}{PR}$  $R = \frac{252 \times 10000}{8400 \times 500}$  $R = \frac{21 \times 10}{7 \times 5}$ R = 6%129. Ans.(A) Compound Interest = Amount – Principal

$$510 = P \left[ 1 + \frac{r}{100} \right]^{n} - P$$

$$= P \left[ 1 + \frac{r}{100} \right]^{n} - P$$

$$= P \left[ 1 + \frac{12.5}{1000} \right]^{2} - P$$

$$= P \left[ \frac{1125}{1000} \right]^{2} - P$$

$$= P \left[ \frac{81 - 64}{64} \right]$$

$$510 = \frac{P \times 17}{64}$$

$$P = \frac{510 \times 64}{17}$$

$$P = 1920$$

$$SI = \frac{1920 \times 12.5 \times 2}{100}$$

$$SI = \frac{1920 \times 25}{100}$$

$$SI = Rs.480$$

$$Ans.(A)$$

$$r = 12.5\%, t = 2 \text{ years, } CI \sim SI = Rs. 45$$

$$P = ?$$
Difference between CI and SI for 2 years
$$= P \times \left(\frac{r}{100}\right)^{2}$$

$$45 = Px \frac{(12.5)^{2}}{(100)^{2}}$$

$$P = \frac{45 \times 100 \times 100}{12.5 \times 12.5} = Rs.2880$$

$$Ans.(D)$$
Let the principal = Rs. P  
According to Question -
$$620 = \left[ P \left( 1 + \frac{10}{100} \right)^{3} - 1 \right] - \frac{P \times 10 \times 3}{100}$$

$$620 = P \left[ \frac{(1331 - 1000)}{1000} \right] - \frac{10 \times 3}{100} \right]$$

$$620 = P \left[ \frac{331 - 300}{1000} \right]$$

$$620 = P \left[ \frac{31}{100} \right]$$

$$P = Rs.20000$$

$$Ans.(A)$$
Amount after n years  $A = P \left( 1 + \frac{r}{100} \right)^{n}$ 

$$Amount after 4 years = 1000 \left( 1 + \frac{10}{100} \right)^{4}$$

$$= 1000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = Rs. 1464.1$$

130

131

132

Simple interest after 4 years =  $\frac{PRT}{100}$ 

 $= \frac{1000 \times 10 \times 4}{100} = 400$ Hence the required difference = 464.1 - 400 = Rs. 64.10 133. Ans.(B) Given -Interest rate = 8%Time = 2 yearDifference between compound interest and simple interest = Rs. 8 Let the amount = P [where D = difference]  $D = P\left(\frac{R}{100}\right)^2$  $8 = P\left(\frac{8}{100}\right)^2$  $8 = P \times \frac{4}{625}$ P = Rs. 1250134. Ans.(C) When interest payable half yearly Interest rate = 10/2 = 5% (half yearly) Time = 2 years = 4 half year Let principal = P  $P\left[\left(1 + \frac{R}{100}\right)^T - 1\right] - \left(\frac{P \times R \times T}{100}\right) = 124.05$  $P\left[\left(1 + \frac{5}{100}\right)^{4} - 1\right] - \left(\frac{P \times 5 \times 4}{100}\right) = 124.05$   $P\left[\frac{21 \times 21 \times 21 \times 21 - 20 \times 20 \times 20 \times 20}{20 \times 20 \times 20 \times 20}\right]$   $- \left(\frac{P \times 5 \times 4}{100}\right) = 124.05$   $P\left[\frac{194481 - 160000}{160000}\right] - \frac{P \times 5 \times 4}{100} = \frac{12405}{100}$   $P\left[\frac{34481 - 32000}{160000}\right] = \frac{12405}{100}$   $P\left[\frac{2481}{1600}\right] = 12405$   $P\left[\frac{12405 \times 1600}{12405 \times 1600} = 0.0000$  $P = \frac{12405 \times 1600}{2481} = Rs.8000$ 135. Ans.(D) For 2 years, CI - SI = P  $\left(\frac{r}{100}\right)^n$ 8 = P  $\left(\frac{4}{100}\right)^2$ 8 = P  $\times \frac{1}{25} \times \frac{1}{25}$ P = 8  $\times 25 \times 25$ P = P  $\simeq 5000$ P = Rs.5000136. Ans.(C)  $A = P \left(1 + \frac{r}{100}\right)^{n}$   $\frac{Amount of 3 year}{Amount of 2 year} = \frac{1606}{1460}$ 

$$\frac{P\left(1+\frac{r}{100}\right)^{3}}{P\left(1+\frac{r}{100}\right)^{2}} = \frac{1606}{1460}$$

$$\frac{1606}{P\left(1+\frac{r}{100}\right)^{2}} = \left(1+\frac{R}{100}\right)^{1}$$

$$\frac{803}{730} = \left(1+\frac{R}{100}\right)^{1}$$

$$\frac{803}{730} - 1 = \frac{R}{100}$$

$$R = \frac{803-730}{730} = \frac{73}{730} \times 100 = 10\%$$
**Ans.(B)**
Let the principal = Rs. P
S.I. =  $P \times \frac{8}{100} \times 7 = \frac{56P}{100}$ 
Amount =  $P + \frac{56P}{100} = \frac{156P}{100}$ 
According to Question,
C.I. = Rs. 1638
$$1638 = \frac{156P}{100} \left[ \left(1 + \frac{10}{100}\right)^{2} - 1 \right]$$

$$\frac{1638 \times 100}{156P} = \frac{21}{100}$$

$$P = \frac{1638 \times 100 \times 100}{156 \times 21}$$

$$P = Rs. 5000$$

137.

138. Ans.(A)

Given – R = 4% time = 2 year S.I. = 140 S.I. =  $\frac{P \times R \times T}{100}$ 140 =  $\frac{P \times 4 \times 2}{100}$ P =  $\frac{7000}{4}$  = 1750 According to condition – A =  $P\left(1 + \frac{r}{100}\right)^n$ A = 1750  $\left(1 + \frac{4}{100}\right)^2$ A = 1750  $\times \frac{26}{25} \times \frac{26}{25}$ A = 1892.8 Interest = 1892.8 – 1750 = 142.8 Difference of interest = 142.8 – 140 = Rs. 2.8

## 16. (Problems Based on Age)

1. The ratio of age of father, mother and daughter is 22:20:9. After ten years this ratio will be 27:25:14. Find the present age of the mother.

 RRB Group-D - 07/12/2018 (Shift-III)

 (A) 21
 (B) 26

 (C) 27
 (D) 40

2. Six years ago, the age ratio of Saina and Sagar was 6:5. So in the next four years, their age ratio will be 11:10 respectively. What is the age of Sagar at present?

RRB Group-D -31/10/2018 (Shift-I)

(A) 14 years	<b>(B)</b> 16 years
(C) 12 years	(D) 18 years

**3**. S is 7 years younger than R. If their age ratio is 7:9, then what is the age of S?

#### RRB Group-D - 26/11/2022 (Shift-I)

(A) 16 years	(B) 28 years
(C) 18 years	(D) 24.5 years

4. The sum of the ages of 6 persons A, B, C, D, E working in the same company is 105 years and there is a difference of 5 years in the birth of all. How old is the eldest person?

#### RRB Group-D - 19/11/2022 (Shift-II)

(A) 20 years	(B) 25 years
(C) 30 years	(D) 15 years

5. The ratio of the present ages of X and Y is 5:4. Three years from now, their age ratio will be 11: 9. What is the present age of Y?

RRB Group-D - 25/11/2022 (Shift-II)

(A) 26 years	(B) 22 years
(C) 27 years	<b>(D)</b> 24 years

6. The present ages of S and A are in the ratio of 5: 4 respectively. So after three years, their age ratio will be 11:9 respectively. What is the current age of S?

## RRB Group-D -10/10/2018(Shift-I)

(A) 24	( <b>D</b> ) 30
<b>(C)</b> 40	<b>(D)</b> 27

7. Aman is as young than Vinay as he is older than Arun, if the sum of the ages of Arun and Vinay is 40 years, then what is the age of Aman?

#### RRB Group-D -05 /12/2018 (Shift-I)

(A) 20 years	(B) 22 years
(C) 25 years	(D) 30 years

8. The current age ratio of J and K is 11:6. After five years, their age ratio will be 12:7. What is the present age of K?
 RRB Group-D - 01/09/2022 (Shift-II)

<b>A)</b> 30 years	<b>(B)</b> 60 years
<b>C)</b> 55 years	<b>(D)</b> 35 years

**9.** The present age of Rekha and Rashmi is in the ratio of 7:4. 3 years from now, their age ratio will be 8:5. What is the present age (in years) of Rashmi?

	RRB Group-D -12/11/2018(Shift-I)
<b>(A)</b> 15	<b>(B)</b> 9
8 <b>(C)</b>	<b>(D)</b> 12

**10.** The present age ratio of Meena and Sina is 4:3. After 6 years, Meena will be 26 years old. What is the present age of Sina?

#### RRB Group-D - 12/11/2018 (Shift-III)

- (A) 12 years
- (B) 19 years 6 months
- (C) 15 years
- (D) 21 years
- **11**. The sum of the ages of Sindu and Bindu is 30 years. And the product of their age is 221. How old are they?

#### RRB Group-D - 16/10/2018 (Shift-I)

- (A) 17 years, 13 years
- (B) 16 years, 14 years
- (C) 15 years, 15 years
- (D) 18 years, 12 years
- 12. Sudha's age is double that of Radha. If 6 years are subtracted from Radha's age and 4 years are increased by Sudha's age, then Sudha's age will be four times Radha's. 2 years before today, what will be the age of Sudha and Radha?

#### RRB NTPC - 09/2022 (Shift-I)

- (A) 30 years and 14 years
- (B) 26 years and 12 years
- (C) 34 years and 20 years
- (D) 30 years and 16 years

**13**. Kiran tells Varun that her brother Abhi is 4 years younger than her. It was also told that the sum of their age is 32. Help Varun in finding the ages of Kiran and Abhi.

**RRB Group-D - 11/10/2018 (Shift-III)** (A) Kiran is 18 years old and Abhi is 14 years old.

(B) Kiran's age is 16 years and Abhi's age is 12

(C) Kiran's age is 12 and Abhi's age is 16

(D) Kiran's age is 10 and Abhi is 14.

**14**. A man says to his son, "Seven years ago I was seven times your age. And in three years, the age you are, I will become your triple." Find their age.

**RRB Group-D - 12/12/2018 (Shift-I)** (A) 42,12 (B) 52,12

- **(C)** 40,14 **(D)** 20,42
- **15**. Ankita is two years younger than Anu. After four years from today, Anu's age will be two times of Ankita's age three years ago. Find the present age of Ankita and Anu.

RRB Group-D -10/12/ 2018(Shift-I)

- (A) 14 years and 16 years
- (B) 15 years and 17 years
- (C) 12 years and 14 years
- (D) 13 years and 15 years
- **16**. The sum of the present ages of Nitya and Satya is 40 years. The product of their age is 351. What is their present age in years?

 RRB Group-D - 12/11/2018 (Shift-II)

 (A) 27 and 13
 (B) 28 and 12

( <b>C)</b> 25 and 15	( <b>D)</b> 26 and 14
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17. The age of the father is four times the age of the son. In 20 years his age will be only double the age of his son. Find their age.

RRB Group-D - 18/11/2022 (Shift-III)

- (A) 36 years, 9 years (B) 44 years, 11 years (C) 40 years, 10 years
- **(D)** 60 years, 15 years
- 18. The ratio of the present ages of P and D is 3: 4 while the ratio of the present ages of D and A is 5:6. Fifteen years from now, the ratio of the ages of P and D will be 4:5. What is the sum of the present ages of the three?

RRB Group-D - 01/09/2022(Shift-III)

(A) 180 years	(B) 183 years
(C) 177 years	(D) 175 years

**19**. There is a difference of 8 years between the ages of Waqar and Naseema. When they were married 30 years ago, 4 times Waqar's age was equal to 5 times Nasima's age. What is the sum of their present age?

#### RRB Group-D - 20/09/2022 (Shift-I)

(A) 130 years	<b>(B)</b> 134 years
(C) 132 years	(D) 135 years

**20**. Seven children with the same birth date were born in seven successive years. The sum of the ages of the eldest three children is 93 years. How many years will be the sum of the ages of the youngest three children?

	RRB Group-D - 12/11/2018 (Shift-II)
<b>(A)</b> 81	<b>(B)</b> 90
<b>(C)</b> 87	<b>(D)</b> 84

21. Seven children with the same birth date were born in seven successive years. The sum of the ages of the eldest three children is 63 years. How many years will be the sum of the ages of the youngest three children?

	RRB Group-D - 18/11/2022 (Shift-III)
<b>(A)</b> 57	<b>(B)</b> 54
(C) 51	<b>(D)</b> 60

22. The ratio of the present ages of X and Y is 3:8 while the ratio of the present ages of Y and Z is 4:5. Two years ago, the ratio of the ages of X and Y was 1:3. What is the sum of the present ages of the three?

RRB Grou	up-D - 06/12/2018 (Shift-II)
(A) 126 years	<b>(B)</b> 63 years
(C) 84 years	<b>(D)</b> 105 years

- 28 months ago A's age was 3.5 times B's age.
   4 months from now, A's age will be 2.5 times
   B's age. What is the sum of their present age?
   RRB Group-D 28/11/2018 (Shift-I)
  - (A) 23 years
  - (B) 22 years 8 months
  - (C) 23 years 2 months
  - (D) 22 years 10 months
- 24. Presently the ratio of the ages of Teertha and Pradeep is 2:3, while the present ages of Pradeep and Omar are in the ratio 4:5. Four years ago, the ratio of the age of Teertha and Pradeep was 5:8. What is the sum of the ages of all three?

#### RRB Group-D - 01/09/2022(Shift-III)

(A) 140 years	(B) 120 years
(C) 90 years	(D) 105 years

25. Chavan's age was 4 times that of Pawan's age 15 years ago. Pawan's present age is one third of Sunil's age two years ago, while Chavan's present age is 3/5 of Sunil's present age. What is the sum of the present ages of the three?

 RRB Group-D - 16/11/2018 (Shift-III)

 (A) 130 years
 (B) 120 years

 (C) 128 years
 (D) 125 years

26. Trisha's age 9 months ago was three times that of Rishbh's age which is 4 months older than Yavan. After 25 months from today, 20 times Yavan's age will be equal to 9 times Trisha's age. What is the sum of their present age?

RRB Group-D -15 / 11 / 2018 (Shift-III)

- (A) 19 years 11 months
- (B) 19 years 9 months
- (C) 19 years 5 months
- (D) 18 years 9 months
- 27. Ten months ago, Tiyasha's age was 2.5 times Rishi's age, who is 15 months older than Shravan. 30 months from now, 16 times the age of Shravan, is 7 times the age of Tiyasha. What is the sum of the present ages of Tiyasha, Rishi and Shravan?

RRB Group-D - 15/11/2018 (Shift-III)

- (A) 30 years 9 months
- (B) 31 years 9 months
- (C) 31 years 3 months
- (D) 31 years 11 months
- **28**. Biju's age is 28 years less than three times Shubham's age. Shubham's age is 16 years more than 4/5 of Aamir's age. Kaveri is 10 years younger than Aamir and is half the age of Shubham. What is the sum of their ages?

RRB Group-D - 11/12/2018 (Shift-I)

(A) 196 years	(B) 182 years
(C) 180 years	(D) 188 years

**29**. y years ago Mouma's age was 1/5 of Soumi's age. After y years from now, Mouma's age will be one-fourth that of Soumi's age. What is the ratio of the present ages of Mouma and Soumi?

RRB Group-D - 27/11/2018 (Shift-III)(A) 16:25(B) 4:5(C) 7:31(D) 2:9

**30**. y years ago Juthika was one fourth of Ruby's age. Juthika's age will be one-third of Ruby's age from today. What will be the ratio of the present age of Juthika and Ruby?

	RRB Group-D - 27/11/2018 (Shift-III)
(A) 5:17	<b>(B)</b> 9:16
(C) 3:4	<b>(D)</b> 2:7

**31**. The ratio of the present age of father and son is 2:1, the product of their ages is 200, what will be the ratio of their ages after 5 years?

RRB Group-D - 05/11/2018 (Shift-II)		
<b>(A)</b> 9:5	<b>(B)</b> 10:7	
(C) 9:2	<b>(D)</b> 5:3	

**32**. 10 years ago, father's age was three times his daughter's age. After 10 years, the father's age will be double his daughter's age. What is the ratio of their present age?

	RRB Group-D - 15/10/2018 (Shift-III)
(A) 3:1	<b>(B)</b> 7:3
(C) 5:2	<b>(D)</b> 4:7

**33**. 10 years ago, a mother's age was three times her son's age. After 10 years, the mother's age will be twice the age of the son. What is the ratio of their present age?

RRB Group-D - 11/10/2018 (Shift-I)		
<b>(A)</b> 7:3	<b>(B)</b> 12:5	
<b>(C)</b> 4:2	<b>(D)</b> 6:1	

**34**. 10 years ago, Murali was three times the age of his son Satish. Ten years later, Murali's age will be two times that of Satish. What is the ratio of their present age?

	RRB Group-D - 23/11/2022 (Shift-II)
(A) 9:2	<b>(B)</b> 13:4
(C) 5:2	<b>(D)</b> 7:3

**35**. Monica's father was 38 years old when Monica was born, while her mother was 36 when her four-year-old younger sister was born. What is the difference between the ages of her parents?

 RRB Group-D -2 8/09/ 2018 (Shift-II)

 (A) 2 years
 (B) 8 years

 (C) 4 years
 (D) 6 years

(D) 9 years

36. After 11 years, Raghav's age will be 5 times of his age, 5 years ago. What is the present age of Raghav?
 RRB Group-D - 26/11/2022 (Shift-II)
 (A) 7 years
 (B) 8 years

(C) 4 years

**37.** Rani is two years older than Ragini, who is twice the age of Nag. If sum of age of Rani, Ragini and Nag is 27 years, then how old is Ragini?

RRB Group-D - 26/11/2022 (Shift-III		
<b>(A)</b> 9	<b>(B)</b> 8	
<b>(C)</b> 10	<b>(D)</b> 7	

**38.** Vishal is 20 years younger than Arya. After 12 years of age, Arya will be 1.25 times older than Vishal. Arya's age is now ......

 RRB Group-D - 27/11/2022 (Shift-I)

 (A) 72
 (B) 68

 (C) 88
 (D) 78

**39.** The total age of mother and daughter is 50 years, after 5 years the mother's age will be 4 times the daughter's age, find the present age of the daughter?

RRB Gro	up-D - 19/11/2022 (Shift-III)
(A) 12 years	<b>(B)</b> 10 years
(C) 7 years	(D) 15 years

**40.** Aneesh is three times older than his son and sum of their age is 48 years. What is the age of Aneesh?

RRB Group-D - 12/10/2018 (Shif		
<b>(A)</b> 36	<b>(B)</b> 20	
<b>(C)</b> 40	<b>(D)</b> 12	

**41.** Five years ago, the son's age was one third of his mother's age at that time. If the sum of their present ages is 70, find the present age of the mother.

 RRB Group-D - 15/10/2018 (Shift-I)

 (A) 45
 (B) 55

 (C) 50
 (D) 60

**42.** 18 years ago, Cyrus was 2.5 times older than Nikhil. The sum of their present age is 92 years. What is the present age of Nikhil?

RRB Group-D - 23/11/2022 (Shift-I)

(A) 31 years	<b>(B)</b> 32 years
<b>(C)</b> 34 years	(D) 33 years

**43.** Robin's father is 2.8 times older than him. Six years ago, Robin's father was 4 times his age. What is Robin's present age?

 RRB Group-D - 08/10/2022 (Shift-II)

 (A) 16 years
 (B) 15 years

 (C) 14 years
 (D) 17 years

**44**. I am 5 times older than my son. In 6 years, I will be three times older than his age. What will be our age after two years?

RRB Group-D - 15/10/2018 (Shift-III)

- (A) 30 years and 10 years
- (B) 32 years and 8 years
- (C) 26 years and 12 years
- (D) 28 years and 14 years

**45.** Priyamvand's present age is five years more than double the age of his cousin Ritika. After sixteen years from now Priyamvand's age will be 150% more than Ritika's age. What is the age (in years) of Priyamvad at present?

	RRB Group-D - 22/11/2022 (Shift-III)
<b>(A)</b> 33	<b>(B)</b> 23
<b>(C)</b> 26	<b>(D)</b> 17

**46.** 3/7 of my current age is equal to 4/5 of the age of one of my cousins. Three years ago my age was equal to 10 years later his age. My present age is ----.

RRB Group-D - 19/11/2022 (Shift-II)		
<b>(A)</b> 42	<b>(B)</b> 35	
<b>(C)</b> 21	<b>(D)</b> 28	

**47.** Shan's present age is 1.6 years less than Uddalak's age. 26 years ago, Uddalak's age was one year less than half of Shan's age. What is Shan's present age?

	RRB Group-D - 22/11/2022 (Shift-I)
<b>(A)</b> 68	<b>(B)</b> 84
<b>(C)</b> 76	<b>(D)</b> 60

**48.** Three years from now, Patra's age will be four years less than three times Eugene's age. The sum of their present age is 54 years. What is the present age of the Patra?

RRB Group-D - 28/11/2022 (Shift-III)		
(A) 36 years	<b>(B)</b> 43 years	
(C) 39 years	<b>(D)</b> 41 years	

**49.** Soham is 10 years younger than Parth. Eight years ago Soham's age was three times his present age, which was 4 years more than two times of Parth's. State the present age of Soham.

 RRB Group-D -18 / 09 / 2018 (Shift-II)

 (A) 28 years
 (B) 32 years

 (C) 30 years
 (D) 33 years

**50.** Neelanjan is 11 years younger than Bharti. After fifteen years, Bharti will be 1.2 times Nilanjan's age. What is Nilanjan's present age?

	RRB Group	-D - 20/09/2022	(Shift-I)
(A) 38 y	/ears	(B) 40 years	
<b>(C)</b> 42 y	/ears	<b>(D)</b> 43 years	

**51**. Srinivas is four times older than his daughter. Five years ago, Srinivas was nine times older than his daughter at that time. What is his daughter's present age?

RRB Group-D - 22/11/2022 (Shift-III)

(A) 8 years	<b>(B)</b> 6 years
(C) 5 years	<b>(D)</b> 10 years

**52.** Eight years ago, Ashwin's age was 1 year less than 3 times Arpit's age. Six years ago, Ashrin was 1 year older than 2 times of Arpit's age. What will be the age of Arpit after 7 years?

RRB Group-D - 25/11/2022 (Shift-III)

(A) 19 years	<b>(B)</b> 15 years
(C) 16 years	<b>(D)</b> 12 years

**53.** After 19 years from now Vinod's age will be double of Anand's age. Seven years ago, Anand's age was a quarter of Vinod's age. What is Vinod's present age?

RRB Group-D -25 / 09 / 2018\$ (Shift-III)

(A) 53 years	(B) 57 years
(C) 55 years	<b>(D)</b> 59 years

**54.** Five years ago, Rohit's age was 2/3 times Rohan's age. After 5 years Rohan's age will be 5/4 times Rohit's age. What is Rohit's present age?

RRB Gro	up-D - 27/11/2022 (Shift-III)
(A) 25 years	<b>(B)</b> 20 years
(C) 10 years	<b>(D)</b> 15 years

**55.** One year ago, Akash's father was 9 times Akash's age. After 3 years his father's age will be 5 times his age. What will be the age of Akash next year?

RRB Gr	oup-D - 28/11/2022 (Shift-I)
(A) 6 years	(B) 8 years
(C) 5 years	(D) 4 years

**56.** A person is 9 times older than his son. Two years later, the father will be 1 year less than 6 times of his son. Find their current age.

RRB Group-D - 10/10/2018 (Shift-III)

(A) 27 years and 3 years

- (B) 30 years and 6 years
- (C) 26 years and 10 years
- (D) 36 years and 12 years
- **57.** Dalia is 20 years older than Neetu and in two years her age will be double of Neetu's age. What is Neetu's present age?

RRB Group-D - 11/10/2018 (Shift-III)

(A) 18 years	<b>(B)</b> 16 years
(C) 20 years	<b>(D)</b> 22 years

**58**. 5 years ago, Sindhu was three times as old as Kaveri. 10 years from now, Kaveri's age will be half of Sindhu age. After 5 years from now, how old will Kaveri be?

#### RRB Group-D - 06/12/2018 (Shift-III)

	-
<b>(A)</b> 15	<b>(B)</b> 20
(C) 55	(D) 25

**59.** The total age of Daniel and Dinara is 115 years. Five years ago, two times Dinara's age was equal to three times Daniel's age. What is the present age of Dinara?

RRB Group-D - 01/09/2022 (Shift-I)

(A) 62 years	(B) 64 years
(C) 66 years	(D) 68 years

**60**. The sum of father and mother's age is 7.5 times that of their son. Mother's age is 35 years. If the father's age is 4 times the age of his son, then what is the son's age?

	RRB Group-D - 04/12/2018 (Shift-III)
<b>(A)</b> 15	<b>(B)</b> 10
(C) 18	<b>(D)</b> 12

**61**. The sum of the present ages of two persons is seven times the difference between their ages. After 5 years, the sum of their ages will become nine times the difference between their ages. What is the present age of the elder person?

RRB	Group-D - 15/11/2018 (Shift-II)
(A) 32 years	<b>(B)</b> 10 years
(C) 20 years	<b>(D)</b> 35 years

**62**. The product of the ages of Anusha and Neelima is 240. If double of Nilima's age is 4 years more than Anusha's age, then what is Anusha's age?

# RRB Group-D -05/11/2018 (Shift-I) (A) 18 years (B) 16 years (C) 20 years (D) 14 years

**63**. Two-thirds of my age is three-quarters of my cousin's age, my age 3 years ago was exactly what my cousin would be one year later, what is my current age (in years)?

	RRB Group-D - 05/11/2018 (Shift-II)
<b>(A)</b> 36	<b>(B)</b> 18
( <b>C)</b> 45	<b>(D)</b> 27

64. The present ages of Raghu and Sita is 17 years and 41 years respectively. 5 years ago, Raghu's age was ------Sita's age.

RRB Group-D - 24/10/2018 (Shift-III)		
(A) three fourths	(B) one third	
(C) half	(D) two thirds	

**65**. Brittin is currently 18 years old, while her cousin is 7 years old. In how many years will Bratin's age be 1.5 times that of his cousin?

#### RRB Group-D - 01/10/2018 (Shift-III)

<b>(A)</b> 13	<b>(B)</b> 14
<b>(C)</b> 16	<b>(D)</b> 15

**66.** Father's age is 5 years more than mother's age. Mother's present age is three times her daughter's age. The present age of the daughter is 12 years. What was the age of the father when the daughter was born?

RRB Grou	ip-D -20/09/2022	(Shift-III)
(A) 29 years	(B) 25 years	5
(C) 31 years	(D) 32 years	5

**67.** A father tells his son, "My age at the time of your birth was equal to your present age." If the present age of the father is 40 years, then what was the age of the son 5 years ago?

RRB Group-D -31/10/2018 (Shift-II)

(A) 15 years	<b>(B)</b> 13 years
(C) 17 years	(D) 23 years

**68.** At the time of marriage, a man was 6 years older than his wife. But after 12 years of marriage, he is 1.2 times his wife. How old were they at the time of marriage?

RRB Group-D - 22/10/2018 (Shift-II)

- (A) 27 years, 18 years
- (B) 24 years, 18 years
- (C) 21 years, 18 years
- (D) 23 years, 19 years
- **69**. Sita's age is two times the average age of Ram, Mohan and Sita. Ram's age is half the average age of Ram, Mohan and Sita. If Mohan's age is 5 years, then what is the average age of Ram, Mohan and Sita?

F	\RB Group D 07/12/2018 (Shift-I)
(A) 10 years	(B) 8 years
(C) 7 years	<b>(D)</b> 15 years

**70**. Six years ago, the ratio of the ages of two persons P and Q was 3: 2. After four years, their age ratio will be 8: 7. How old is P?

 RRB RPF Constable - 19/01/2019 (Shift-II)

 (A) 10 years
 (B) 12 years

 (C) 14 years
 (D) 8 years

**71**. The ratio of the age of Deepika and her mother is 3:11. After 3 years their age ratio becomes 1:3. How old is Deepika?

 RRB RPF SI - 11/01/2019 (Shift-I)

 (A) 15 years
 (B) 9 years

 (C) 13 years
 (D) 11 years

72. The ratio of the present ages of X and Y is 3:4. Five years ago, their age ratio was 5: 7, so what is Y's present age?

RRB RPF Co	nstable - 17/01/2019 (Shift-I)
(A) 50 years	<b>(B)</b> 60 years
(C) 30 years	(D) 40 years

**73.** Neeraj's age is half that of Suraj's. If 8 years is subtracted from the age of Neeraj and 5 years is increased in the age of the Suraj, then the age of the Suraj will be 5 times more than Neeraj. Two years ago, Suraj and Neeraj's age was .....

RRB RPF SI-16/01/2019 (Shift-II)

- (A) 30 years and 15 years (B) 28 years and 14 years
- (C) 26 years and 12 years

(D) 28 years and 13 years

(A)

(C)

**74.** The present age of a mother and daughter is in the ratio of 8:3. After 12 years, their age ratio will be 2:1. What is the sum of the present age of mother and daughter?

## RRB RPF SI - 12/01/2019 (Shift-II)

66 years	(B) 74 years
71 years	(D) 69 years

- 75. If the age of P is twice that of Q, and after 5 years the sum of their ages is 70 years, then find the sum of their present ages (in years)?
  RRB RPF Constable 22/01/2019 (Shift-II)
  (A) 60 (B) 40
  (C) 30 (D) 50
- 76. If the present age of P is 15 years and after 6 years the age of Q will become 26 years, then what is the ratio of their present age?
  RRB RPF Constable 25/01/2019 (Shift-III)
  (A) 4: 1
  (B) 2: 3
  (C) 2: 1
  (D) 3: 4
- 77. When the age of mother was 43 years, there was a difference of 21 years between the age of mother and son. Father is 3 years older than the mother. when the father's age is 50 years, then what will be the difference between the age of father and son?

RRB RPF	Constable - 20/01/2019 (Shift-II)
<b>(A)</b> 21	<b>(B)</b> 22
(C) 23	<b>(D)</b> 24

**78.** Tom's father is three times older than Tom. 10 years ago, Tom's father was 7 times his age. How old is Tom?

#### RRB RPF SI - 11/01/2019 (Shift-III)

(A) 15 years	<b>(B)</b> 16 years
(C) 14 years	<b>(D)</b> 17 years

**79**. After reducing three times my age, three years ago, to three times my age after three years, I get my present age. Find my present age.

	RRB RPF	SI - 06/01/2019	(Shift-II)
(A) 21 years	S	(B) 15 years	
(C) 24 years	S	(D) 18 years	

**80.** A father's age is three times his son's age and a son's age is 3/8 that of his mother's. If the difference between the ages of father and mother is 4 years, find the age of the son.

 RRB RPF Constable - 24/01/2019 (Shift-III)

 (A) 10 years
 (B) 9 years

 (C) 11 years
 (D) 12 years

**81**. Seventeen years from today, the age of chetna will be double that of Mahim. Five years ago, Mahim's age was one year less than 1/3 of the age of chetna. What is the present age of chetna?

RF	B RPF SI - 05/01/2019 (Shift-II)
(A) 60 years	<b>(B)</b> 63 years
(C) 67 years	(D) 61 years

**82**. The sum of the present ages of the two cousins is 54. 11 years ago, the elder brother was three times as old as the younger. What is the present age of elder brother?

 RRB RPF SI - 13/01/2019 (Shift-II)

 (A) 36 years
 (B) 35 years

 (C) 32 years
 (D) 34 years

**83**. I have a brother who is 3 years older than me. When my brother was born, my sister was six years old. Our average age is 14. How old is my sister now?

 RRB RPF Constable - 19/01/2019 (Shift-III)

 (A) 20 years
 (B) 19 years

- (C) 17 years (D) 18 years
- **84**. The age of a grandfather is 5 times the age of his grandson. Which of the following numbers does not support the possible total ages of grandfathers and grandchildren?

RRB RPF SI - 10/01/2019 (Shift-III)

<b>(A)</b> 50	<b>(B)</b> 54
<b>(C)</b> 72	<b>(D)</b> 66

**85**. In a group of students, 1/5 are under 8 years of age. 2/5 of the remaining students are over 8 years of age. How much of the students' age is exactly 8 years?

RRB RPF C	onstable - 19/01/2019 (Shift-III)
<b>(A)</b> 4/25	<b>(B)</b> 12/25
(C) 2/5	<b>(D)</b> 3/5

**86.** Neetu's age is 10 years more than Meetu's age, and Meetu's age is 7 years more than Geetu's age. If the sum of their ages is 48 years, then how much is Neetu's age (in years)?

	RRB ALP & Tec. (30-08-18 Shift-III)
<b>(A)</b> 25	<b>(B)</b> 22
(C) 28	<b>(D)</b> 27

**87.** Two-thirds of my current age is equal to threefourths of my cousin's age. My age of three years ago will be equal to my cousin's age four years from today. What is my present age?

 RRB ALP & Tec. (29-08-18 Shift-I)

 (A) 72
 (B) 63

 (C) 54
 (D) 81

**88**. There is a difference of 16 years between the ages of two persons A and B. 6 years ago, the older person was 3 times the age of the younger person. What is the age of the youngest of A and B?

RRB AL	P & Tec. (20-08-18 Shift-II)
(A) 15 years	(B) 11 years
(C) 14 years	(D) 12 years

**89**. The ratio of the present ages of Sai and Satish is 5:4 respectively. After three years their ages will be 11:9 respectively. What is the present age of Satish?

	RRB ALP & Tec. (10-08-18 Shift-I)
( <b>A)</b> 22	<b>(B)</b> 23
( <b>C)</b> 21	<b>(D)</b> 24

**90**. There is a difference of 5 years between the ages of Peter and Preeti. 35 years ago when the two were married, four times Peter's age was equal to 5 times Preeti's age. What is the sum of the ages of both at present?

RRB AL	P & Tec. (13-08-18 Shift-I)
(A) 105 years	(B) 110 years

	<b>100 years</b>	
(C	) 115 years	(D) 112 years

**91**. There is a difference of 6 years between the age of Charles and Shriya. When they married each other 30 years ago, Charles was 4 times as old as 5 times Shriya's age. What is the sum of their present ages?

#### RRB ALP & Tec. (10-08-18 Shift-III)

(A) 112 years	<b>(B)</b> 114 years
(C) 115 years	(D) 110 years

**92**. Pinaki is 9 years younger than Bhaswati. After thirteen years Bhaswati's age will be 1.2 times Pinaki's age. Find Pinaki's current age?

RRB A	LP & Tec. (31-08-18 Shift-I)
(A) 28 years	<b>(B)</b> 32 years
(C) 30 years	<b>(D)</b> 33 years

**93**. Bipul is 16 years younger than Sable. 12 years from now, Sable's age will be 1.5 times Bipul's age. Now Sable is ----- years old.

	RRB ALP & Tec. (31-08-18 Shift-I)
<b>(A)</b> 42	<b>(B)</b> 45
<b>(C)</b> 40	<b>(D)</b> 36

**94**. 15 years ago, Shyam was twice as old as Prabhat. Five years from now Prabhat's age will be 5/8 of Shyam's age at that time. What is Shyam's present age?

 RRB ALP & Tec. (31-08-18 Shift-III)

 (A) 72 years
 (B) 75 years

 (C) 80 years
 (D) 64 years

**95**. Jeena is 24 years younger than her mother. After eight years her mother's age will be 5/3 times her age. What is Jina's present age (in years)?

 RRB ALP & Tec. (30-08-18 Shift-III)

 (A) 24
 (B) 22

 (C) 26
 (D) 28

**96**. Priyankur's present age is seven years less than three times the age of his cousin Rihanna. Sixteen years from now, Priyankur's age will be 150% of Rihanna's age. What is the present age (in years) of Priyankur?

	RRB ALP & Tec. (29-08-18 Shift-III)
<b>(A)</b> 17	<b>(B)</b> 23
( <b>C)</b> 20	<b>(D)</b> 26

**97**. Jeremy is 26 years younger than his father. After 8 years from now, his father's age will be two years less than twice his own age. What is Jeremy's current age (in years)?

 RRB ALP & Tec. (21-08-18 Shift-II)

 (A) 20
 (B) 24

 (C) 22
 (D) 18

**98**. The sum of the present ages of a father and his son is 60 years. Six years ago, the father's age was five times the son's age. How old will the son be after 6 years?

RRB ALP & Tec. (20-08-18 Shift-I)

(A) 20 years	<b>(B)</b> 21 years
(C) 15 years	(D) 19 years

**99**. Satish is two years older than Gautam whose age is two times that of Sai. If the total of the ages of Satish, Gautam and Sai is 27, then what is the age of Gautam?

	RRB ALP & Tec. (20-08-18 Shift-III)
<b>(A)</b> 12	<b>(B)</b> 10
(C) 11	<b>(D)</b> 13

**100**. John is 15 years younger than Jill. 12 years ago Jill was 1.5 times John's age. How old is Jill currently?

	RRB ALP & Tec. (17-08-18 Shift-III)
<b>(A)</b> 57	<b>(B)</b> 45
(C) 30	<b>(D)</b> 42

**101**. Roshan's present age is 3 years less than 1.5 times Usha's present age. 12 years ago, Usha's age was 3 years more than half the age of Roshan. What is Roshan's present age?

	RRB ALP & Tec. (14-08-18 Shift-II)
<b>(A)</b> 42	<b>(B)</b> 39
(C) 33	<b>(D)</b> 30

**102**. 13 years ago Ram's age was double that of Sunny's age. Sunny will be 3/5 of Ram's age after three years from present. What is the present age of Ram?

RRB	ALP & Tec. (13-08-18 Shift-I)
(A) 64 years	<b>(B)</b> 72 years

() - )	() )
(C) 80 years	<b>(D)</b> 77 years

103. Three years from now, Dharitri's age will be eight years less than the age of Eunice. The sum of present age of these two is 61 years. What is the present age of Dharitri?
PRR ALP & Tec. (09-08-18 Shift-I)

	& Iec. (09-08-18 Shift-
(A) 43 years	<b>(B)</b> 36 years
(C) 41 years	(D) 39 years

**104**. Seven years from now, Virat will be twice as big as Mohinder. Five years ago, Mohinder's age was one year less than 2/5 of Virat's age. What is the current age of Virat?

RRB AL	P & Tec. (09-08-18 Shift-I)
(A) 53 years	<b>(B)</b> 51 years
(C) 57 years	(D) 55 years

**105.** Rathin's present age is 16 years while her cousin's present age is 7 years. After how many years Rathin's age will be 1.5 times that of his cousin's age?

	RRB ALP & Tec. (13-08-18 Shift-I)
<b>A)</b> 12	<b>(B)</b> 11
<b>C)</b> 9	<b>(D)</b> 10

**106**. Cynthia was 3 times older than Brittany 15 years ago. The sum of their present age is 94 years. How old is Brittany now?

RRB	ALP & Tec. (30-08-18 Shift-I)
(A) 33 years	<b>(B)</b> 32 years
(C) 30 years	<b>(D)</b> 31 years

**107**. The present age of Kavita, Rajita and Harita is in the ratio of 4: 7: 9. Eight years ago, sum of their age was 56. Find their present age (in years).

RRB AL	.P & Tec. (20-08-18 Shift-III)
<b>A)</b> 16,36,28	<b>(B)</b> 16,28,36
<b>C)</b> 20,35,45	<b>(D)</b> 12,21,27

**108**. What will be the age of the eldest sister, if the sum of the age of five sisters is 50 years, who is born at the interval of three years?

RRB ALP & Tec. (13-08-18 Shift-III)

(A) 16 years	(B) 4 years
(C) 14 years	(D) 18 years

**109**. The sum of one-third of Pujitha's age three years ago and half of the age after two years from the present age, is twenty years. What is her present age?

RRB AL	P & Tec. (10-08-18 Shift-III)
(A) 23 years	<b>(B)</b> 24 years
(C) 26 years	(D) 25 years

**110**. Three-fifths of my current age is as much as five-sixth of one of my cousins. My age ten years ago will be his age four years later. My current age is ......

	RRB ALP & Tec. (09-08-18 Shift-II)
<b>(A)</b> 55	<b>(B)</b> 45
(C) 60	<b>(D)</b> 50

**111.** When the father is 54 years old, then the difference between the ages of the two sisters is 4 years. Father is 2 years older than mother. The younger sister is half the age of the mother. Find the age of elder sister.

 RRB NTPC 06.04.2016 Shift : 1

 (A) 26
 (B) 27

 (C) 29
 (D) 30

**112.** There is a difference of 2 years between the age of two sisters while the age of her father is 52 years. Father is 2 years older than mother. If the age of the elder sister is half the age of the mother, find the age of the younger sister.

RRB NTPC 06. 04. 2016 Shift : 2

<b>(A)</b> 27	<b>(B)</b> 21
<b>(C)</b> 25	<b>(D)</b> 23

**113.** Sarika has three children. The first is 5 years older than the second and the second child is 4 years older than the third. The sum of their ages is 22 years. Find the age of the eldest child.

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 7	<b>(B)</b> 9
<b>(C)</b> 11	<b>(D)</b> 12

**114**. The ratio of the age of 2 brothers is 5: 8 and the difference in their age is 12 years, find their age.

	RRB NTPC 12/08/2022Shift : 3
( <b>A)</b> 20,32	<b>(B)</b> 16,28
( <b>C)</b> 18,30	<b>(D)</b> 22,34

**115**. The difference in age between Sunita and Sheela is 12 years. If 9 years ago, elder was 4 times as old than younger, then what is their present age?

RR	B NTPC 18.04.2016 Shift : 2
(A) 11 and 23	<b>(B)</b> 15 and 27
(C) 13 and 25	(D) 23 and 35

**116.** There is a difference of 20 years between the ages of Vinay and Vijay. If 5 years ago the age of the older boy was 5 times that of the younger boy, then what is their present age?

, , ,	RRB NTPC 02/02/2021Shift : 3
(A) 15 and 35	<b>(B)</b> 5 and 25
(C) 10 and 30	<b>(D)</b> 8 and 28

**117**. The ratio of the ages of Jai and Jog is 5:2. The sum of his ages is 63. What will be the ratio of their ages after 9 years?

#### RRB NTPC 10/08/2022 Shift : 1

<b>(A)</b> 5: 2	<b>(B)</b> 2: 1
(C) 3: 2	<b>(D)</b> 4: 3

**118**. Currently, the ratio of the age of Seema and Reema is 2:3. Seema is 6 years younger than Reema, after 6 years the ratio of the age of Seema and Reema will be-

	RRB NTPC 02/02/2021Shift : 1
<b>(A)</b> 2:3	<b>(B)</b> 2:7
<b>(C)</b> 3:4	<b>(D)</b> 7: 8

**119**. The ratio of the present ages of X and Y is 2:1. After 14 years their age ratio will be 29:18. What is the difference between the present age of the two?

#### RRB NTPC 11/08/2022 Shift : 3

(A) 22 years	(B) 11 years
(C) 9 years	(D) 13 years

**120**. A man is 24 years older than his son. Four years later, he will be twice his son's age. What is the father's present age?

	RRB NTPC 10/08/2022 Shift : 3
(A) 40 years	(B) 44 years
(C) 42 years	(D) 48 years

**121**. At present, Rama is 4 times his son's age. After 5 years he will be 3 times the age of his son. Find their present age?

RRB NTPC 23/07/2022 Shift : 1

<b>(A)</b> 60,15	<b>(B)</b> 40,10
<b>(C)</b> 20,5	<b>(D)</b> 32,8

**122**. After five years, Mayank's age will be 3/5th of his father's age. Five years ago their age ratio was 2:5. Find the present age of Mayank.

RRB NTPC 11/08/2022 Shift : 3

<b>(A)</b> 17	<b>(B)</b> 13
<b>(C)</b> 19	<b>(D)</b> 15

**123**. 6 years ago a man was 5 times his son. After 10 years, he will be 3 times his son. What is his son's present age?

#### RRB NTPC 18.04.2016 Shift : 3

<b>(A)</b> 20	<b>(B)</b> 18
<b>(C)</b> 24	<b>(D)</b> 22

**124**. After 2 years from now, a man's age will be four times his son's age and after 4 years the man's age will be three times his son's age. After how many years will the father's age be twice that of his son?

	RRB NTPC 10.04.2016 Shift : 3
(A) 15 years	<b>(B)</b> 16 years
(C) 17 years	(D) 18 years

**125**. The product of Sapna and Anubha's age is 150. If 4 times the age of Anubha is 10 years more than Sapna's age, find the age of Sapna.

RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> 20	<b>(B)</b> 27
<b>(C)</b> 19	<b>(D)</b> 17

**126**. If 2/3 children are in the age group of 1-12 years, 1/2 children are in the age group of 1-8 years, then find the portion of the children in the age group of 9-12 years?

#### RRB NTPC 23/07/2022 Shift : 1

<b>(A)</b> 1/3	<b>(B)</b> 1/4
<b>(C)</b> 1/6	<b>(D)</b> 1/2

127. If the sum of the ages of 4 children born at the interval of 4 years is 48, find the age of the youngest child.

	RRB NTPC 10/08/2022Shift :
(A) 4 years	<b>(B)</b> 5 years
(C) 6 years	<b>(D)</b> 7 years

128. The average age of a parent and two children is 30 years and 8 years respectively, then find the average age of the family. RRB NTPC 10/08/2022Shift : 3

	RRB NTPC 10/08/2022Shift :
(A) 16 years	<b>(B)</b> 19 years
(C) 18 years	<b>(D)</b> 17 years

**129**. 3 years ago John was 12 years old and Shankar was 15 years old. What will be their average age after 5 years from today?

	RRB NTPC 12/08/2022Shift : 3
(4) 04 5	(D) 00 F

(A) 21.5	( <b>B</b> ) 22.5
<b>(C)</b> 18.5	<b>(D)</b> 19.5

**130**. The average age of 27 students in a class is 22. If the teacher's age is also included, the average increases by 1. Find the age of the teacher.

	RRB NTPC 11/08/2022Shift : 1
<b>(A)</b> 42	<b>(B)</b> 48
(C) 50	<b>(D)</b> 52

**131**. The average age of 19 members of a group is 24 years. If the faculty age is also included, then the average age increases by 4 months. What is the age of the faculty?

RRB NTPC 11/08/2022 Shift : 2

(A) 35 years	(B) 30 years 8 month
(C) 37 years 4 month	(D) 32 years 8 month

**132**. The product of the ages of Swati and Aparna is 120. If 3 time of Aparna's age is 2 years more than Swati's age, then find Swati's age.

	RRB NTPC 18.04.2016 Shift : 1
<b>(A)</b> 18	<b>(B)</b> 20
<b>(C)</b> 24	<b>(D)</b> 16

**133**. If the average age of 20 students in class I is 10 years and the average age of 25 students in class II is 12 years. Find the average age (in years) of all the students.

#### RRB NTPC 12/08/2022Shift : 3

<b>(A)</b> 11	<b>(B)</b> 11.111
(C) 10.50	<b>(D)</b> 10.85

**134.** The present age of Z is half of A's age. After 5 years, the ratio of the ages of A and Z will be 11:6. How old will Z be after 3 years?

R	RB NTPC 12/08/2022Shift :	1
	<b>(B)</b> 30	

(A) 20	( <b>D</b> ) 30
<b>(C)</b> 28	<b>(D)</b> 22

(4) 05

**135**. The present age ratio of Naresh and Suparna is 7:3. Three years from now, their age ratio will be 2:1. The present age of Naresh is ...... years.

 RRB Paramedical -20/07/2018(Shift-I)

 (A) 10.5
 (B) 28

 (C) 14
 (D) 21

**136.** 5 years ago a man was 7 times older than his son. After 5 years he will be 3 times older than his son. What was their age two years ago?

RRB Paramedical - 21/07/2018 (Shift-II)

- (A) 26 years and 10 years
- (B) 36 years and 12 years
- (C) 38 years and 8 years
- (D) 30 years and 6 years
- **137.** The age difference of father and son is 24 years. Two years ago the father's age was twice the son's present age. What is the present age of the father?

	RRB JE - 24/05/2019 (Shift-II)
<b>(A)</b> 46	<b>(B)</b> 42
<b>(C)</b> 44	<b>(D)</b> 38

**138.** The ratio of the age of a mother and daughter is 9: 2. Mother's age at the time of daughter's birth was 28 years. How old is the daughter?

RRB JE - 27/05/2019 (Shift-II)

(A) 12 years	(B) 8 years
(C) 4 years	(D) 6 years

**139.** There is a difference of 20 years between the age of a mother and a daughter. After five years, the daughter's age will be half of her mother's present age. How old is the daughter?

0	RRB JE - 30/05/2019 (Shift-I)
(A) 15 years	<b>(B)</b> 12 years
(C) 10 years	(D) 8 years

**140.** After four years, the total age of two members of a family will be 64 years. Four years ago their age ratio was 3: 1. Find the age of the younger of the two.

	RRB JE - 01/06/2019 (Shift-II)
<b>A)</b> 10	<b>(B)</b> 16
<b>C)</b> 12	<b>(D)</b> 15

**141**. The sum and difference of the ages of the two children are 33 and 3 respectively. How old is the older child?

	RRB JE - 01/06/2019 (Shift-II)
(A) 15 years	<b>(B)</b> 16 years
(C) 18 years	(D) 24 years

**142**. The ratio of ages of three persons is 4:7:9. Eight years ago, their total age was 56. What is the present age of the eldest person?

•	RRB JE - 01/06/2019 (Shift-III)
<b>A)</b> 28	<b>(B)</b> 32
<b>C)</b> 36	<b>(D)</b> 42

**143**. The father's age at the time of his son's birth was equal to the son's present age. If the son is 20 years old, find the present age of the father.

	RRB JE - 26/06/2019 (Shift-III)
A) 39 years	<b>(B)</b> 30 years
C) 60 years	( <b>D</b> ) 40 years

**144**. P is 2 years older than Q; Q is 4 years younger than R. If the sum of their ages is 27, then what is the age of Q?

RRB JE -	27/06/2019	(Shift-III)
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(A) 8 years	<b>(B)</b> 9 years
(C) 11 years	(D) 7 years

**145.** The ratio of the ages of A and B is 3: 2. After ten years, the sum of their ages will be 80. What is their present age?

	RRB JE - 23/05/2019 (Shift-I)
<b>(A)</b> 27,28	<b>(B)</b> 36,24
<b>(C)</b> 42,28	<b>(D)</b> 45,30

**146.** A year ago the ratio of age of two sisters was 2: 3. The sum of their present age is 12. Find their present age.

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 9,3	<b>(B)</b> 7.5,4.5
<b>(C)</b> 8,4	<b>(D)</b> 5,7

**147.** The ratio of the sum and difference between the ages of the two brothers is 5: 1. If the product of their ages is 96, find their ages.

RRB JE - 26/06/2019 (Shift-III)

<b>(A)</b> 8,12	<b>(B)</b> 6,16
<b>(C)</b> 6,10	<b>(D)</b> 24,4

**148.** The ratio of age of father and son is 3: 1. The product of their age is 147. Find the sum of their ages.

### RRB JE - 24/05/2019 (Shift-I)

<b>(A)</b> 28	<b>(B)</b> 32
<b>(C)</b> 36	<b>(D)</b> 35

**149.** The ratio of the age of a mother and daughter is 12: 5. Ten years later, the mother's age will be twice that of her daughter. What is the sum of their age at present?

	RRB JE - 27/05/2019 (Shift-II)
<b>(A)</b> 60	<b>(B)</b> 75
(C) 65	<b>(D)</b> 85

**150.** A is twice as old as B. The sum of their present age is 60 years. What will be the sum of their age after 5 years?

	RRB JE - 31/05/2019 (Shift-I)
<b>(A)</b> 70	<b>(B)</b> 80
<b>(C)</b> 65	<b>(D)</b> 75

**151**. The difference between the ages of A and B is 6 and their ratio is 3: 5. Find the sum of their ages.

	RRB JE - 31/05/2019 (Shift-III)
<b>(A)</b> 24	<b>(B)</b> 40
<b>(C)</b> 16	<b>(D)</b> 32

**152.** The ages of A, B and C are in the ratio 2: 4: 5 and the sum of their ages is 77. Find the ratio of the ages of A and B after ten years.

RRB JE-24/05/2019	(Shift-I)

<b>(A)</b> 10: 17	<b>(B)</b> 12: 19
<b>(C)</b> 13: 18	<b>(D)</b> 11: 14

**153.** The daughter's age is one-quarter of her father's age. Five years later, she will be one-third of her father's age. Later, after five years, what will be the ratio of her and her father's age?

	RRB JE - 27/05/2019 (Shift-I)
<b>(A)</b> 2: 5	<b>(B)</b> 3: 5
<b>(C)</b> 3: 4	<b>(D)</b> 5: 2

**154.** Seven years ago, the age ratio of Ajit and Ganesh was 5: 7. If the product of their present age is 616, then find the ratio of their present age.

	RRB JE - 28/05/2019 (Shift-I)
<b>(A)</b> 15: 17	<b>(B)</b> 17: 15
(C) 12: 13	<b>(D)</b> 11: 14

**155.** The ages of A, B and C are in the ratio 2: 3: 4. The sum of their ages is 108. What will be the ratio of their ages after 12 years?

	RRB JE - 29/05/2019 (Shift-III)
<b>(A)</b> 2: 5: 6	<b>(B)</b> 1: 2: 3
(C) 1: 3: 5	<b>(D)</b> 3: 4: 5

**156.** The father is 3 times older than his son. After 8 years, her age is 2.5 times the son's age.

After 8 years, what will be the ratio of father and his son's age?

	RRB JE - 29/05/2019 (Shift-III)
<b>(A)</b> 5: 2	<b>(B)</b> 3: 1
(C) 2: 1	<b>(D)</b> 11: 4

**157.** Ten years ago, a mother was three times her son's age. After 10 years, her age will be double the son's age. Find the ratio of their present age.

	RRB JE - 30/05/2019 (Shift-II)
<b>(A)</b> 7: 4	<b>(B)</b> 4: 3
<b>(C)</b> 7: 3	<b>(D)</b> 3: 2

**158.** Four years ago, the ratio of age of A and B was 2:1. After four years, this ratio will be 3:2. Find the ratio of their present age.

	RRB JE - 28/05/2019 (Shift-II)
<b>(A)</b> 5:2	<b>(B)</b> 2:5
<b>(C)</b> 5:4	<b>(D)</b> 5:3

159. 4 years ago Pooja's age is equal to Deepa's age after 4 years. The ratio of Pooja's age after 4 years and Deepa's age before 4 years is 3:1. What is the ratio of their present age? RRB JE - 31/05/2019 (Shift-I)

	RRB JE - 31/05/2
<b>(A)</b> 5:7	<b>(B)</b> 5:2
<b>(C)</b> 4:7	<b>(D)</b> 5:3

**160**. The ratio of the present ages of P and Q is 6:7. Q is 4 years older than P. What will be the ratio of their ages after 4 years?

	RRB JE - 02/06/2019 (Shift-III)
<b>(A)</b> 7:9	<b>(B)</b> 7:8
<b>(C)</b> 5:8	<b>(D)</b> 8:3

161. Five years ago, the ratio of age of P and Q was 7:9. After ten years, this ratio will be 5:6. Find the ratio of their ages at present.

	RRB JE - 01/06/2019 (Shift-I)
<b>(A)</b> 6:7	<b>(B)</b> 5:4
<b>(C)</b> 2:1	<b>(D)</b> 4:5

**162.** The average age of 4 persons is 42 years. If their ages are in the ratio of 1:3:4:6 respectively, find the difference between the age of the eldest and the youngest.

#### RRB JE - 26/05/2019 (Shift-II)

(A) 61 years	<b>(B)</b> 60 years
(C) 70 years	<b>(D)</b> 59 years

**163.** At time of Asha's birth the age of her father was. When her brother, who is 4 years younger than her, was born, her mother's age was 36 years. Find the age difference of her parents.

RRB JE - 28/05/2019 (	Shift-II)
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(A) 8 years	<b>(B)</b> 6 years
(C) 4 years	(D) 2 years

164. Rajan was married 8 years ago. Then he was 5/6 of the present age. At the time of her marriage, her sister was 10 years younger than her. What is the present age of sister? RRB JE - 22/05/2019 (Shift-I)

	RRB JE - 22/05/2019
<b>(A)</b> 38	<b>(B)</b> 32
<b>(C)</b> 26	<b>(D)</b> 40

**165**. Raja is three times older than Arun. Three years ago, he was four times older than Arun. How old is Raja now?

	RRB JE - 23/05/2019 (Shift-I)
<b>(A)</b> 6	<b>(B)</b> 15
<b>(C)</b> 27	<b>(D)</b> 12

**166**. The present age of a son is 2/5 of his mother's age. After 8 years, his age will be half of his mother's age. What is his mother's present age?

	RRB JE - 26/05/2019 (Shift-III)
<b>(A)</b> 36	<b>(B)</b> 42
<b>(C)</b> 40	<b>(D)</b> 50

**167.** The ratio of age of a brother and sister is 4: 3. After 3 years, the age of the sister will be double of her present age. What is the present age of brother?

0	RRB JE - 29/05/2019 (Shift-I)
A) 4 years	<b>(B)</b> 12 years
C) 6 years	(D) 8 years

**168.** The sum of the ages of a father and son is 45 years. Five years ago, the product of their age was four times that of his father's age at that time. What is the father's present age?

	RRB JE - 27/06/2019 (Shift-III)
<b>(A)</b> 36	<b>(B)</b> 42
(C) 28	<b>(D)</b> 60

**169.** A father is five times older than his son. Five years ago, he was six times older than his son. Find the age of his son.

	RRB JE - 27/06/2019 (Shift-III)
(A) 32 years	<b>(B)</b> 35 years
(C) 25 years	<b>(D)</b> 28 years

170. A's present age is 9 years more than B. After 10 years, A's age will be double of B's age 10 years ago. What is the present age of A?
RRB JE - 30/05/2019 (Shift-II)

( <b>A)</b> 48	<b>(B)</b> 39
<b>(C)</b> 36	<b>(D)</b> 23

171. The average age of P and Q is 24 years. The average age of P, Q and R is 22 years. Find the sum of their ages in the previous year. RRB JE - 27/05/2019 (Shift-III)

(A) Data insuff	icient	<b>(B)</b> 90
<b>(C)</b> 87		<b>(D)</b> 95

**172.** The sum of the ages of father and son is 50. Six years ago, father's age was 6 more than three times the son's age. What will be the father's age after 6 years?

	RRB JE - 28/05/2019 (Shift-I
(A) 40 years	<b>(B)</b> 48 years
(C) 42 years	<b>(D)</b> 50 years

**173.** At the time of Priya's birth, her father was 38 years old. At the time of birth of her 4 year younger brother, her mother's age was 36 years. How many years is her mother younger than her father?

	RRB JE - 23/05/2019 (Shift-II)
<b>(A)</b> 4	<b>(B)</b> 5
(C) 8	<b>(D)</b> 6

**174**. The average age of a 3 child born in a 2 year interval is 8 years. What is the age of the eldest child?

	RRB JE - 24/05/2019 (Shift-II)
(A) 12 years	(B) 7 years
(C) 10 years	(D) 8 years

**175**. The sum of the ages of 5 children born at an interval of 4 years is 80. What is the age of the eldest child?

	RRB JE - 26/05/2019 (Shift-I)
<b>(A)</b> 18	<b>(B)</b> 24
<b>(C)</b> 16	<b>(D)</b> 28

**176**. The ratio of the ages of the two brothers is 7: 15. LCM of their age is 210. How old is the elder brother?

	RRB JE - 30/05/2019 (Shift-III)
<b>(A)</b> 45	<b>(B)</b> 42
<b>(C)</b> 15	<b>(D)</b> 30

**177**. A father is twice as old as his son. HCF of their age is 22. How old is the son?

RRB JE - 02/06/2019 (S	hift-l)

(A) 18 years	<b>(B)</b> 24 years
(C) 22 years	<b>(D)</b> 20 years

**178**. The ages of P and Q are 50 and 40 respectively. How long ago their age ratio was 3: 2?

RRB JE - 02/06/2019 (Shift-I)

(A) 20 years	<b>(B)</b> 10 years
(C) 15 years	(D) 5 years

179. The sum of the ages of two sisters is 81. Their age ratio is 4:5. One sister is how many years younger than the other.

> RRB JE - 27/06/2019 (Shift-I) (A) 9 (B) 27 (D) 12 (C) 18

> Let, the age of father, mother and daughter

are 22 x, 20 x and 9 x years respectively.

According to guestion -

27

180. If 4 years are subtracted from the age of a person and divided by 5, the result shows the age of his grandson. The grandson has a sister, who is 5 years old, six years younger than the grandson. What is the age of grandfather?

1.

2.

3.

Ans.(D)

22x + 10

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RRB JE - 31/05/2019 (Shift-III)
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## Solution

Hence S is 24.5 years old.

4. Ans.(C) Considered the age of eldest = x year : The age of all 6 persons respectively x, (x-5), (x-10), (x-15), (x-20) and (x-15), (x-20)– 25) year According to guestion x + x - 5 + x - 10 + x - 15 + x - 20 + x - 25 = 105 6x - 75 = 1056x = 180x = 30Hence age of the eldest = 30 year Ans.(D) 5. Let present age of X and Y be = 5x and 4xyear According to question - $\frac{5x+3}{4x+3} = \frac{11}{9}$ 45x + 27 = 44x + 33x = 33 - 27x = 6Hence the present age of  $Y = 4 \times 6$ = 24 year 6. Ans.(B) Let, present age of S = 5x year Present age of A = 4x year Bv auestion -5x + 311  $\frac{1}{4x+3} = \frac{11}{9}$ 45x + 27 = 44x + 33x = 6Hence present age of S =  $5x = 5 \times 6$ = 30 year 7. Ans.(A)

 $\frac{1}{20x + 10} = \frac{1}{25}$ 550x + 250 = 540x + 27010x = 20x = 2Mother's present age = 20x  $= 20 \times 2$ = 40 year Ans.(B) Six years ago, Saina and Sagar's age = 6x, 5x year Present age of Saina and Sagar = (6x + 6) year, (5x + 6) year According to guestion - $\frac{6x + 6 + 4}{5x + 6 + 4} = \frac{11}{10}$ 60x + 100 = 55x + 1105x = 10x = 2Present age of Sagar =  $5x + 6 = 5 \times 2 + 6$ = 16 year Ans.(D) Let, Age of S = x year Age of R = (x + 7) year According to question x 7  $\frac{1}{x+7} = \frac{1}{9}$ 9x = 7x + 492x = 49x = 24.5 year

181.	The age granddaugh ages is a pe difference is (A) 90.20	of a ter is a 9 erfect squ a multipl RRB	grandfather :2 ratio. The s are number. e of 11, find th JE - 02/06/20 (B) 95.25	and um of If their heir age <b>19 (Shi</b>	his their age e. f <b>t-II)</b>
	<b>(A)</b> 90,20		<b>(B)</b> 95,25		
	<b>(C)</b> 72,16		<b>(D)</b> 99,22		
182.	The total age of A and B is 12 years more than the total age of R and C. Who is your age				nore

(A) 58 (C) 60 (B) 57

(D) 59

than the total age of B and C. Who is younger in A and C and how many years younger? RRB JE - 28/06/2019 (Shift-III) (A) A, 6 years (B) A, 12 years (C) C, 12 years (D) C, 6 years

According to question -Age of Vinay – Age of Aman = Age of Aman – Age of Arun Age of Vinay + Age of Arun  $= 2 \times Age of Aman = 40$ Age of Aman = 20 year 8. Ans.(A) Let the present age of J and K are 11x years and 6x years respectively. According to question -11x + 512  $=\frac{1}{7}$ 6x + 577x + 35 = 72x + 6077x - 72x = 60 - 355x = 25x = 5Hence the present age of  $K = 6 \times 5 = 30$  year 9. Ans.(D) Let, the present ages of Rekha and Rashmi are 7x and 4x years respectively. According to question -7x + 38 = 5 4x + 335x + 15 = 32x + 243x = 9x = 3Hence the present age of Rashmi = 4x $= 4 \times 3 = 12$  years 10. Ans.(C) Let meena's present age = 4x year And present age of Sina = 3x year According to question -4x + 6 = 264x = 20x = 5Present age of sina = 3x $= 3 \times 5$ = 15 year 11. Ans.(A) : Let, age of Sindu is x years and age of Bindu is (30 - x) years. According to question  $x \times (30 - x) = 221$  $30x - x^2 = 221$  $x^2 - 30x + 221 = 0$  $x^2 - 17x - 13x + 221 = 0$ x(x-17) - 13(x-17) = 0(x - 17)(x - 13) = 0lf x - 17 = 0x = 17 So their age 30 - 17 = 13 year If x - 13 = 0x = 13 So their age = 30 - 13 = 17 year 12. Ans.(B)

Let, Radha's present age is x years and Sudha's present age is 2x years. According to guestion -4(x-6) = (2x + 4) $\Rightarrow 4x - 24 = 2x + 4$  $\Rightarrow 4x - 2x = 28$  $\Rightarrow 2x = 28$  $\Rightarrow x = 14$  $\therefore$  Sudha's age 2 years ago = 2x - 2 $= 2 \times 14 - 2$ = 28 - 2 = 26 year and Radha's age 2 years ago = 14 - 2 = 12 year 13. Ans.(A) Let, Kiran's age = x year then brother Abhi's age = (x - 4) year  $\therefore \quad x + x - 4 = 32$  $\therefore 2x = 36, x = 18$ Kiran's age (x) = 18 year Abhi's age = (x - 4) year = 18 - 4 = 14 year 14. Ans.(A) Let age of father be y and age of son be x vears. According to guestion -7(x-7) = (y-7)7x - 49 = y - 7 $7x - y = 42 \dots (i)$ and 3(x + 3) = (y + 3)3x + 9 = y + 3 $3x - y = -6 \dots (ii)$ Subtracting equation (i) to (ii) 4x = 48x = 12 From equation (i) 7x - y = 42 $7 \times 12 - y = 42$ 84 - 42 = yv = 42Hence father's age = 42 year and son's age = 12 year 15. Ans.(C) Let Anu's present age = x year then Ankita's present age = (x - 2) year According to question - $(x + 4) = (x - 2 - 3) \times 2$  $x + 4 = (x - 5) \times 2$ x + 4 = 2x - 10x = 14Ankita's present age = x - 2= 14 - 2 = 12 year Hence present age of Ankita and Anu is 12 years and 14 years respectively. 16. Ans.(A) Let Nitya's present age = a year Satya's present age = b year
According to question a + b = 40 .....(i) ab = 351 $(a-b)^2 = (a + b)^2 - 4ab$  $= (40)^2 - 4 \times 351$ = 1600 - 1404 $a - b = \sqrt{196} = 14$  $a - b = 14 \dots \dots (ii)$ From equation (i) and (ii) a = 27, b = 13 : Their present age will be 27 years and 13 vears. 17. Ans.(C) Let present age of son = x year Present age of father = 4x year According to question -2(x + 20) = 4x + 202x + 40 = 4x + 2040 - 20 = 4x - 2x2x = 20x = 10 year Hence present age of son = 10 year Present age of father =  $4 \times 10 = 40$  year 18. Ans.(C) P: D = 3: 4 = 15: 20D: A = 5: 6 = 20: 24So, P : D : A = 15 : 20 : 24 Let present ages of P, D and A is 15x, 20x and 24x Age after 15 years -Age of P = (15x + 15)Age of D = (20x + 15)According to question -15x + 15 4  $\frac{111}{20x + 15} = \frac{1}{5}$ 75x + 75 = 80x + 605x = 15x = 3Sum of the present age of all three  $= 15 \times 3 + 20 \times 3 + 24 \times 3$ = 45 + 60 + 72 = 177 years 19. Ans.(C) Let present age of Naseema = x year then present age of Wagar = (x + 8) year 30 years ago, age of Naseema = (x - 30) year age of Waqar = (x + 8 - 30) year = (x - 22) year On condition -4(x - 22) = 5(x - 30)4x - 88 = 5x - 1505x - 4x = 150 - 88x = 62∴ present age of Naseema = 62 year present age of Wagar = 62 + 8

= 70 year sum of present age of both = 62 + 70= 132 year 20. Ans.(A) Gradual age of seven children =  $x_1(x +$ 1), (x + 2)(x + 3), (x + 4), (x + 5), (x + 6) year The sum of ages of eldest three children = 93 (x + 4) + (x + 5) + (x + 6) = 933x + 15 = 933x = 93 - 153x = 78x = 26then. The sum of ages of the youngest three children = x + (x + 1) + (x + 2)= 3x + 3put the value of x.  $= 3 \times 26 + 3$ = 78 + 3= 81 year 21. Ans.(C) : Let gradual age of seven children = x, (x +1), (x + 2), (x + 3), (x + 4), (x + 5), (x + 5)6) year The sum of ages of eldest three children = (x + 4) + (x + 5) + (x + 6)63 = 3x + 153x = 48x = 16The sum of ages of the youngest three children = x + (x + 1) + (x + 2)= 3x + 3 $= 16 \times 3 + 3$ = 51 year 22. Ans.(C) The ratio of the present ages of X and Y is 3: 8 and the ratio of the present ages of Y and Z is 4: 5. The ratio of present age of X: Y: Z will be = 12 : 32 : 40 Let present ages of x and y be 12x and 32x. 12x - 21  $\frac{1}{32x-2} = \frac{1}{3}$ 36x - 6 = 32x - 24x = 4x = 1Sum of present ages of X, Y and Z = 12 + 32 + 40= 84 year 23. Ans.(B)

Let A's present age be x months and B's present age be y months.

According to question x - 28 = 3.5(y - 28)x - 3.5y = 28 - 98 $x - 3.5y = -70 \dots (i)$ After 4 months x + 4 = 2.5(y + 4)x - 2.5y = 10 - 4 $x - 2.5y = 6 \dots (ii)$ subtracting equation (i) from (ii) x - 3.5y = -70-x - 2.5y = 6-y = -76v = 76From equation (ii)  $x - 2.5 \times 76 = 6$  $x - 190 = 6 \Rightarrow x = 196$ Sum of present ages of A and B = x + y = 76 + 196 = 272 months = 22 years 8 months Ans.(D) teertha : Pradeep = 2:3Pradeep : Umar = 4:5Teertha : Pradeep : Umar 2:3-3 4-4:5 8:12:15 Let, The present ages of Teertha, Pradeep and Umar are 8x, 12x and 15x years. four years ago, Age of Teertha = (8x - 4) years Age of Pradeep = (12x - 4) years According to question,  $\frac{8x-4}{12x-4} = \frac{5}{8}$ 64x - 32 = 60x - 204x = 12x = 3The sum of all three in present  $= 8 \times 3 + 12 \times 3 + 15 \times 3$ = 24 + 36 + 45 = 105 years Ans.(D) Let present age of Sunil = x year  $\therefore$  Present age of Chavan =  $\frac{3}{5}x$  years Then present age of Pavan =  $\frac{(x-2)}{3}$  years According to guestion - $\frac{3}{5}x - 15 = 4\left(\frac{(x-2)}{3} - 15\right)$  $\frac{3x - 75}{5} = 4\left(\frac{x - 2 - 45}{3}\right)$ 3(3x - 75) = 20(x - 47)9x - 225 = 20x - 94020x - 9x = 940 - 22511x = 715715  $x = \frac{1}{11}$ x = 65

24.

25.

The sum of present age of all three  $= x + \frac{3}{5}x + \frac{(x-2)}{3}$  $= \frac{15x + 9x + 5x - 10}{20x - 15}$  $=\frac{29x-10}{15}$  $=\frac{29\times65-10}{15}=\frac{1885-10}{15}$  $=\frac{1875}{15}=125$  years Ans.(C) Let, 9 months ago -Yavan's age = x month  $\therefore$  Rishabh's age = (x + 4) month Trisha's age =  $(x + 4) \times 3$ = (3x + 12) month In present, Yavan's age = (x + 9) month Rishabh's age = (x + 13) month Trisha's age (3x + 21) month According to question, after 25 months –  $(3x + 46) \times 9 = (x + 34) \times 20$ 27x + 414 = 20x + 6807x = 266 x = 38Hence present age of Yavan = x + 9= 47 month Rishabh's present age = x + 13 = 51 month Trisha's present age = 3x + 21 = 135 month Sum of all present age = 233 month = 19 year 5 month Ans.(C) 10 months ago, Let, age of Shravan = x month  $\therefore$  age of Rishi = (x + 15) month age of Tiyasha =  $(x + 15) \times 2.5 = (2.5x + 15$ 37.5) months In present, age of Shravan = (x + 10) months age of Rishi = (x + 25) months age of Tiyasha = (2.5x + 47.5) months According to question -

26.

27.

After 30 months  $(x + 10 + 30) \times 16 = (2.5x + 47.5 + 30) \times 7$   $(x + 40) \times 16 = (2.5x + 77.5) \times 7$  16x + 640 = 17.5x + 542.5 1.5x = 97.5 x = 65Hence present age of Shravan = (x + 10) = 75 month present age of Rishi = (x + 25) = 90 month present age of Tiyasha = (2.5x + 47.5) = 210 months Sum of all present age = 75 + 90 + 210= 375 months

375 months = 31 years 3 months 28. Ans.(B) Let, Shubham's age = x year Kaveri's age =  $\frac{x}{2}$  years Amir's age =  $\left(\frac{x}{2} + 10\right)$  years Biju's age = y years According to guestion y = 3x - 28 $3x - y = 28 - \cdots$  $16 + \left(\frac{x}{2} + 10\right)\frac{4}{5} = x$  $16 + \frac{2x}{5} + 8 = x$  $24 = x - \frac{2x}{5}$  $24 = \frac{5x - 2x}{5}$  $24 = \frac{3x}{5}$ x = 40 years Putting the value of x in eq. (i) 3x - y = 28 $3 \times 40 - y = 28$ y = 92 years Shubham's age = x years = 40 years Kaveri's age =  $\frac{x}{2} = \frac{40}{2} = 20$  years Amir's age =  $\frac{x}{2} + 10^{-} = \frac{40}{2} + 10 = 30$  years Biju's age = y years = 92 years Sum of ages of all = 40 + 20 + 30 + 92 = 182 year 29. Ans.(C) Let, present age of Mauma = a years present age of Saumi = b years y years ago,  $a - y = (b - y)\frac{1}{5}$ 5a - 5v = b - v $5a - b = 4y \dots (i)$ After y years,  $a + y = (b + y)\frac{1}{4}$ 4a + 4y = b + y $4a - b = -3y \dots (ii)$ On solving eq.(i) and (ii) -5a - b = 4y4a - b = -3y- + + a = 7y

So,

5a - b = 4y $5 \times 7v - b = 4v$ b = 35v - 4vb = 31ya:b = 7y:31ySo a:b = 7:3130. Ans.(A) Let, Ruby's age y years ago = x year Juthika's age =  $\frac{x}{4}$  years present age of Ruby = (x + y)and present age of Juthika =  $\left(\frac{x}{4} + y\right)$ According to question,  $\left(\frac{x}{4} + y\right) + y = \frac{1}{3}[(x + y) + y]$  $\frac{x + 4y + 4y}{4} = \frac{x + 2y}{3}$ 3x + 12y + 12y = 4x + 8y3x - 4x = 8y - 12y - 12yx = 16y $\therefore$  present age of Ruby = (16y + y) = 17y and present age of Juthika =  $\left(\frac{16y}{4} + y\right)$  = 5vHence the ratio of present age of Juthika and Ruby – 5y:17y = 5:1731. Ans.(D) Let, present age of father = 2x year present age of son = x year According to question,  $2x \times x = 200$  $2x^2 = 200$  $x^2 = 100$ x = 10Ratio of their age after 5 years - $\frac{2x+5}{x+5} = \frac{2 \times 10+5}{10+5} = \frac{25}{15} = 5:3$ 32. Ans.(B) : Daughter's age Father's age 10 years ago  $\rightarrow$  x years (let) 3x years Present  $\rightarrow$  (x + 10) yrs (3x + 10) yrs According to question, 2(x + 20) = (3x + 20)2x + 40 = 3x + 20x = 20present age of daughter = 20 + 10 = 30 year present age of father =  $3 \times 20 + 10 = 70$  year ∴ Intended ratio = 70: 30 = 7: 3 33. Ans.(A) Let, present age of son is 'y' years and present age of mother is 'x' years. Then according to question,

(x - 10) = 3(y - 10) x - 10 = 3y - 30 x - 3y = -30 + 10  $x - 3y = -20 \dots (i)$ their age after 10 years - (x + 10) = 2(y + 10) x + 10 = 2y + 20 x - 2y = 20 - 10 x - 2y = 10 - - - (ii)On solving eq. (i) and (ii), x = 70 y = 30Intended ratio =  $\frac{x}{y} = \frac{70}{30} = 7:3$ 

### 34. Ans.(D)

Let, Murali's present age is x years and his son Satish's present age is y years. According to question, 10 years ago – (x - 10) = 3(y - 10)x - 10 = 3y - 30x - 3y = -20 - - -(i)After 10 years, x + 10 = 2(y + 10)x - 2y = 10 - - - -(ii)On olving both equations – x = 70 and y = 30ratio of present age of Murali and Satish  $= \frac{x}{y} = \frac{70}{30} = \frac{7}{3} = 7:3$ 

35. Ans.(D)

Monica's father's age when Monica's four – year – old younger sister was born = 38 + 4 = 42 year At the same time his mother's age = 36 year  $\therefore$  Difference in age of mother – father = 42 - 36 = 6 year

#### 36. Ans.(D)

Let, Raghav's present age = x year Raghav's age after 11 years = (x + 11) year Raghav's age 5 years ago = (x - 5) year According to question,  $(x + 11) = (x - 5) \times 5$ x + 11 = 5x - 2536 = 4xx = 9 $\therefore$  Raghav's present age = 9 year Area (C)

#### 37. Ans.(C)

Let, Ragini's age = x year Rani's age = (x + 2) year Naag's age =  $\frac{x}{2}$  year According to question –  $x + x + 2 + \frac{x}{2} = 27$ 2x + 2x + 4 + x = 545x = 50x = 10 year

### 38. Ans.(C)

39.

40.

41.

42.

Let, Vishal's age = x year Arya's age = (x + 20) year According to question - $(x + 20 + 12) = (x + 12)\frac{5}{4}$  $x + 32 = \frac{5x + 60}{4}$ 4x + 128 = 5x + 60x = 68Hence Arya's present age = x + 20 $\Rightarrow 20 + 68 = 88$  year Ans.(C) Let daughter's present age = x year Then mother's present age = (50 - x) year Mother's age after 5 years = (50 - x + 5) year = (55 - x) year daughter's age after 5 years = (x + 5) year So condition -(55 - x) = 4(x + 5)55 - x = 4x + 20 $55 - 20 = 4x + x \Rightarrow 5x = 35$  $\Rightarrow x = 7$ Hence the present age of the son = 7 year Ans.(A) Let Son's age = x year And Aneesh's age = 3x year 3x + x = 48x = 12hence Aneesh's age =  $3 \times 12 = 36$  year Ans.(C) Let mother's age 5 years ago = x year  $\therefore$  Mother's present age = (x + 5) year And son's age 5 years ago = x/3 year  $\therefore$  Son's present age =  $\left(\frac{x}{3} + 5\right)$  year According to question  $x + 5 + \frac{x}{3} + 5 = 70$  $\frac{4x}{3} + 10 = 70$ 4x + 30 = 2104x = 180x = 45Mother's present age = x + 5 year = 45 + 5 = 50 year hence, present age of mother is 50 years. Ans.(C) Let Nikhil's age 18 years ago = x year Cyrus's age 18 years ago = 2.5 x year Age of Nikhil in present = (x + 18) year

Age of Cyrus in present = (2.5 x + 18) year

According to question -

(x + 18) + (2.5x + 18) = 923.5x + 36 = 923.5x = 92 - 363.5x = 5656 x =3.5 560  $x = \frac{35}{35}$ x = 16Nikhil's present age = x + 18 = 16 + 18= 34 year 43. Ans.(B) Let Robin's present age = x year Robin's father's present age = 2.8x year Robin's age 6 years ago = (x - 6) year Father's age 6 years ago = (2.8x - 6) year According to guestion -(2.8x - 6) = 4(x - 6)2.8x - 6 = 4x - 242.8x - 4x = -24 + 6-1.2x = -18180  $x = \frac{1}{12}$ x = 15Hence Robin's age = 15 year 44. Ans.(B) Let son's present age = x year  $\therefore$  father's present age = 5x year According to question - $(5x + 6) = (x + 6) \times 3$ 5x + 6 = 3x + 182x = 12x = 6father's present age  $\rightarrow 5x = 5 \times 6$ = 30 year Father's age after 2 years = 30 + 2 = 32 year Son's age after 2 years = 6 + 2 = 8 year = 8 year 45. Ans.(D) let Ritika's age = x year Priyamvand's present age = (2 x + 5) year According to question - $\left(1 + \frac{50}{100}\right)(x + 16) = 2x + 5 + 16$  $\frac{3}{2}(x + 16) = 2x + 21$  $\frac{3x + 48}{x = 6} = 4x + 42$ Priyamvand's present age  $= 2x + 5 = 2 \times 6 + 5 = 17$  year 46. Ans.(D) Let my present age = x year and cousin's present age = y year then according to first condition -

 $x \times \frac{3}{7} = y \times \frac{4}{5}$  $15x = 28y \dots \dots (i)$  $\therefore$  Three years ago my age = (x - 3) year  $\therefore$  cousin's age after 10 years from now = (y + 10) vear According to second condition -(y + 10) = (x - 3)x = y + 13putting in eq. (i) x = y + 13, 15(y + 13) = 28y15y + 195 = 28y13y = 195Or y = 15 years Now my present age = x = 15 + 13 = 28 years 47. Ans.(C) Let present age of Udlak = x year  $\therefore$  present age of Shan = (1.6 x - 4) years  $\therefore$  age of Udlak 26 years ago = (x - 26)  $\therefore$  age of Shan 26 years ago = 1.6 x - 4 - 26 = (1.6 x - 30)According to question - $\frac{1.6x - 30}{2} - 1 = x - 26$ 1.6x - 30 - 2 = 2x - 520.4x = 52 - 320.4x = 20 $20 \times 10$ x = -4 x = 50∴ present age of Shan  $50 \times 1.6 - 4 = 80 - 4 = 76$  years 48. Ans.(D) Let present age of Patra = x years  $\therefore$  present age of Yuzeen = (54 – x) years After 3 years, age of Patra = (x + 3) years age of Yuzeen = (54 - x + 3)= (57 - x) years According to question, 3(57 - x) - 4 = x + 3171 - 3x - 4 = x + 34x = 164x = 41 years Hence present age of the Patra = 41 years 49. Ans.(B) Let present age of Soham = x years present age of Prth = (x + 10) years Soham's age 8 years ago = (x - 8)Parth's age 8 years ago = x + 10 - 8 = (x + 2)According to guestion, 3(x-8) = 2(x + 2) + 43x - 24 = 2x + 4 + 4x = 32 years present age of Soham = 32 years

50. Ans.(B) Let present age of Bharti = x years present age of Nilanjan = (x - 11) years According to question -(x + 15) = (x - 11 + 15)1.2 $(x + 15) = (x + 4) \times 1.2$ (x + 15) = 1.2x + 4.815 - 4.8 = 0.2x10.2 = 0.2xx = 51 years present age of Nilanjan = 51 - 11 = 40 years 51. Ans.(A) Let present age of daughter = x years present age of Shrinivas = 4x years According to question -9(x-5) = 4x-59x - 45 = 4x - 55x = 40x = 8Hence present age of daughter = 8 years 52. Ans.(A) Let age of Arpt 8 years ago = x years age of Adhrin = (3 x - 1) years present age of Arpit = (x + 8) years and present age of Adhrin = (3x + 7) years According to question -(3x + 7 - 6) = 2(x + 8 - 6) + 13x + 1 = 2x + 4 + 1x = 4present age of Arpit x + 8 = 4 + 8 = 12 years age of Arpit after 7 years = 12 + 7 = 19 years 53. Ans.(D) Let Anand's age 7 years ago = x years Let Vinod's age 7 years ago = 4x years present age of Anand = (x + 7) years present age of Vinod = (4 x + 7) years According to question, 2(x + 7 + 19) = (4x + 7 + 19)2x + 52 = 4x + 262x = 26x = 13present age of Vinod =  $4x + 7 = 4 \times 13 + 13$ 7 = 59 year 54. Ans.(D) Let present age of Rohit = x years present age of Rohan = y years As a first condition –  $(x-5) = (y-5) \times \frac{2}{3}$ 3x - 15 = 2y - 103x = 2y + 5 $x = \frac{2y + 5}{3} \dots \dots \dots \dots \dots (i)$ As a second condition –

 $\frac{5}{4} \times (x + 5) = (y + 5)$ 5x + 25 = 4y + 205x - 4y = -5or, 5x = 4y - 5 $x = \frac{4y-5}{5} \dots \dots (ii)$ From eq. (i) and (ii) - $\frac{2y+5}{3} = \frac{4y-5}{5}$ 10y + 25 = 12y - 152y = 40y = 20 year Putting the value of y in eq. (i),  $x = \frac{2 \times 20 + 5}{3}$  $x = \frac{45}{3} = 15$  year Hence the present age of Rohit = 15 years 55. Ans.(A) Let Akash's father's present age is 'x' years and Akash's age is 'y' years. According to guestion -(x-1) = 9(y-1)x - 1 = 9y - 9 $x - 9y = -8 \dots (i)$ Again after three years (x + 3) = 5(y + 3)x + 3 = 5y + 15 $x - 5y = 12 \dots \dots (ii)$ On solving both eq. (i) and (ii) 4y = 20y = 5Hence next year age of Akash = 5 year + 1 year = 6 year 56. Ans.(A) Let Son's present age = x year  $\therefore$  Father's present age = 9x year By question -(9x + 2) = 6(x + 2) - 19x + 2 = 6x + 12 - 19x - 6x = 12 - 1 - 23x = 9x = 3Father's age =  $9x = 9 \times 3 = 27$  year Son's age = x = 3 year 57. Ans.(A) Let Neetu's present age = x year then Daliya's present age = (20 + x) year According to question -[(20 + x) + 2] = 2(x + 2)22 + x = 2x + 4x = 18Hence present age of Neetu = x = 18 year

58. Ans.(D) Let Kaveri's present age = x year and Sindhu's present age = y year According to question -From first position y-5 = 3(x-5)y - 5 = 3x - 153x - y = 15 - 5 $3x - y = 10 \dots \dots (i)$ From second position -(y + 10) $\frac{1}{2} = (x + 10)$ 2 v + 10 = 2x + 202x - y = 10 - 20 $2x - y = -10 \dots \dots (ii)$ Subtracting (ii) from equation (i) -3x - y = 102x - y = -10- + + 3x - 2x = 20x = 20Kaveri's present age = 20 year After 5 years, age of Kaveri = 20 + 5 = 25 year 59. Ans.(D) Let Deniyal's present age = x year And Dinara's present age = y year As a first condition  $x + y = 115 \dots \dots \dots (1)$ As a second condition - $3(x-5) = (y-5) \times 2$ 3x - 15 = 2y - 103x - 2y = -10 + 15 $3x - 2y = 5 \dots (2)$ Multiplying equation (1) by 2 and adding it to equation (2) -2x + 2y = 230 $\frac{3x - 2y}{2} = 5 = 235$ 5xx = 47Again from eq. (1) y = 115 - 47v = 68Hence present age of Dinara = y = 68 year Ans.(B) 60 According to question -Father + mother =  $7.5 \times \text{Son's age....(i)}$ mother's age = 35 year .....(ii) Father's age =  $4 \times$  Son's age.....(iii) Putting the value of equation (ii) and (iii) in equation (i) - $4 \times \text{Son's age} + 35 = 7.5 \times \text{Son's age}$  $(7.5 - 4) \times \text{Son's age} = 35$  $3.5 \times \text{Son's age} = 35$ Son's age = 35/3.5 = 10 year

#### 61. Ans.(C)

Let present ages of both person are x and y years According to question x + y = 7(x - y)x + y = 7x - 7y6x = 8y $\frac{x}{y} =$ 8 6  $\frac{x}{y} = \frac{4}{3}x = 4k, y = 3k$ According to guestion -(x + 5) + (y + 5) = 9[x + 5 - (y + 5)]x + y + 10 = 9(x + 5 - y - 5)x + y + 10 = 9(x - y)9x - x - 9y - y = 108x - 10v = 10Putting the value of x and y - $\therefore x = 4k$ y = 3k32k - 30k = 102k = 10k = 5x = 4k $= 4 \times 5$ = 20 years v = 3k $= 3 \times 5$ = 15 years Hence age of older person = x = 20 years 62. Ans.(C) Let age of Anusha = x years age of Nilima = y years According to question,  $x \times y = 240 \dots (i)$ x + 4 = 2y $y = \left(\frac{x+4}{2}\right) \dots \dots (ii)$ Putting the value of y in eq. (i)  $x \times \left(\frac{x + 4}{2}\right) = 240$  $\begin{array}{rrrr} x^2 + 4x &= 480 \\ x^2 + 4x - 480 &= 0 \end{array}$  $x^2 + (24 - 20)x - 480 = 0$  $x^2 + 24x - 20x - 480 = 0$ x(x + 24) - 20(x + 24) = 0(x + 24)(x - 20) = 0x = -24,20Hence the age of Anusha = x = 20 years 63. Ans.(A) Let my present age is x years and cousin's age is v vears. According to question,

 $\frac{2x}{3} = \frac{3y}{4}$  $8x - 9y = 0 \dots \dots (i)$ x - 3 = y + 1 $x - y = 4 \dots \dots (ii)$ Multiplying 9 in equation (ii) and subtracting it from equation (i) 8x - 9y = 09x - 9y = 36-x = -36x = 36 years 64. Ans.(B) Raghu's present age = 17 years Sita's present age = 41 years 5 years ago ratio of both ages =  $\frac{17-5}{41-5} = \frac{12}{36}$ = 1:3 Hence Raghu's age was one third of Sita's age. 65. Ans.(D) Let after x years, the age of britin will be 1.5 times the age of cousin. (x + 18) = 1.5(x + 7)x + 18 = 1.5x + 10.50.5x = 7.5x = 1566. Ans.(A) : Daughter's present age = 12 years then mother's present age =  $3 \times 12$ = 36 years father's present age = 36 + 5 = 41 years hence, the age of the father at the birth of the daughter = 41 - 12 = 29 years 67. Ans.(A) Let father's age at birth of son = x years So present age of son = x years Given, father's present age = 40 years  $\Rightarrow (40 - x) = x$ 40 = 2xx = 20 years  $\therefore$  5 years ago son's age = 20 - 5 = 15 years hence, 5 years ago, son's age was 15 years. 68. Ans.(B) Let a person's wife's age at marriage = x vears And person's age = (x + 6) years : Age of person after 12 years = x + 6 + 12 = (x + 18) years According to question,  $x + 18 = (x + 12) \times 1.2$ x + 18 = 1.2x + 14.40.2x = 3.6x = 18Hence age of person's wife = x = 18 years and age of person = (x + 6) = (18 + 6)

= 24 years **69**. Ans.(A) Sita's age =  $\frac{\text{Ram} + \text{Mohan} + \text{Sita}}{2} \times 2$ 3 given, Mohan = 5 years  $3 \times \text{Sita} = (\text{Ram} + 5 + \text{Sita}) \times 2$  $3 \times \text{Sita} = 2 \times \text{Ram} + 10 + 2 \times \text{Sita}$ Sita =  $2 \times Ram + 10.....(1)$ Age of Ram  $\frac{\text{Ram} + \text{Mohan} + \text{Sita}}{3} \times \frac{1}{2}$ 3  $6 \times \text{Ram} = \text{Ram} + 5 + \text{Sita}$  $5 \times \text{Ram} = 5 + \text{Sita}$ Sita =  $5 \times \text{Ram} - 5 \dots (2)$ Subtracting equation (1) from equation (2) Age of ram = 5Age of sita = 20Age of Mohan = 5 So average age =  $\frac{\text{Ram} + \text{Sita} + \text{Mohan}}{2}$  $=\frac{5+5+20}{3}=10$  years 70. Ans.(B) Let six years ago ages of P and Q were 3x and 2x. Present age of P and Q (3x + 6) years and (2x + 6) years According to question,  $3x + 10^{-1}$ 8  $\frac{1}{2x+10} = \frac{1}{7}$ 21x + 70 = 16x + 805x = 10x = 2P's present age =  $(3x + 6) = 3 \times 2 + 6 = 12$ years 71. Ans.(B) Let age of Deepika and her mother are 3x and 11x years respectively. According to question, 3x + 31  $\frac{11x + 3}{11x + 3} =$ 3  $\Rightarrow$  9x + 9 = 11x + 3  $\Rightarrow 2x = 6$  $\Rightarrow x = 3$ Hence Deepika's age =  $3 \times 3 = 9$  years 72. Ans.(D) Let present ages of X and Y are 3x and 4x years respectively. Age ratio of five years ago = 5:73x - 55  $\frac{1}{4x-5} = \frac{1}{7}$ 21x-35 = 20x-25 21x - 20x = -25 + 35x = 10So the present age of  $Y = 4x = 4 \times 10$ = 40 years

73. Ans.(D) Let Suraj's present age is x years, and Neeraj's present age is x/2 years. According to question,  $5\left(\frac{x}{2}-8\right) = (x + 5)$  $\Rightarrow \quad \frac{5x}{2} - 40 = x + 5$  $\Rightarrow \quad \frac{5x}{2} - x = 5 + 40$  $\frac{3x}{2} = 45$ ⇒ x = 30 years ⇒ before two years Suraj's age = 30 - 2= 28 years before two years Neeraj's age = 15 - 2= 13 years 74. Ans.(A) Let present age of mother and daughter is 8x years and 3x years. According to question, 8x + 122  $\frac{-}{3x + 12} =$ 1 8x + 12 = 6x + 242x = 12x = 6∴ present age of (mother + daughter) = (8x + 3x) = 11x $= 11 \times 6 = 66$  years 75. Ans.(A) Let age of Q is x years and age of P is 2x years. According to question, 2x + 5 + x + 5 = 703x = 60x = 20sum of ages of P and Q = 2x + x = 40 + 20= 60 years 76. Ans.(D) P's present age = 15 years let present age of Q = x years According to question, x + 6 = 26x = 20 years present age of Q = 20 years The ratio of present ages of P and Q = 15: 20 = 3: 4 77. Ans.(D) Mother's age = 43 years, Son's age = 43 - 21 = 22 years Father's age = 46 years Difference in age of father and son after 4 years = 50 - 26 = 24 years 78. Ans.(A) Let tom's present age = x years then Tom's father's present age = 3x years

According to question, 7(x-10) = (3x-10)7x - 70 = 3x - 104x = 60, x = 15 years Hence present age of Tom (x) = 15 years 79 Ans.(D) Let my present age is x years. According to guestion, 3(x + 3) - 3(x - 3) = x3x + 9 - 3x + 9 = xx = 18 years 80. Ans.(D) Let Son's age = x years  $\therefore$  Father's age = 3 x years and mother's age  $=\frac{8}{3}x$  years According to question,  $3x - \frac{8}{3}x = 4$ 9x - 8x = 12x = 12 years Hence son's age = 12 years 81. Ans.(A) Five years ago -Chetna's age = x years Mahim's age =  $\frac{x}{3} - 1 = \left(\frac{x-3}{3}\right)$  years After 17 years,  $x + 5 + 17 = \left(\frac{x - 3}{3} + 5 + 17\right) \times 2$  $x + 22 = \left(\frac{x-3}{3} + 22\right) \times 2$  $x + 22 = \frac{2x - 6}{3} + 44$  $x - \frac{2x - 6}{3} = 22$ 3x - 2x + 6 = 66x = 60Ans.(B) 82. Let first brother's present age = x years (elder brother) then second brother's present age = (54 - x) years 11 years ago, both will be respectively (x -11) years, (54 - x - 11) years i.e. (43 - x)vears. On condition  $x - 11 = (43 - x) \times 3$ x - 11 = 129 - 3x4x = 140x = 35 years hence, present age of elder brother will be 35 years. 83. Ans.(B) Let present age of person = x years

Present age of person's brother = (x + 3)vears Present age of person's sister = (x + 3 + 6)= (x + 9) years : According to question  $x + x + 3 + x + 9 = 3 \times 14$  $3x + 12 = 3 \times 14$ x + 4 = 14x = 10 years  $\therefore$  sister's age = 10 + 9 = 19 year 84. Ans.(A) Let Grandson's age = x year Grandfather's age = 5x years Total age =  $6 \times years$ Since the numbers divisible by 6 are 54, 72 and 66. Hence option (a) does not support total age. 85. Ans.(B) Let total number of students in the group = xNumber of students under 8 years of age = x/5Number of students over 8 years of age =  $\left(x - \frac{x}{5}\right) \times \frac{2}{5} = \frac{8}{25}x$ Number of 8 year old students  $= x - \left(\frac{x}{5} + \frac{8x}{25}\right) = x - \frac{13x}{25} = \frac{12x}{25}$ Number of exactly 8 years old students =  $\frac{12}{2\pi}$ 86. Ans.(A) According to question -Where, ....(i)  $\begin{cases} N \Rightarrow \text{Neetu} \\ M \Rightarrow \text{Meetu} \\ G \Rightarrow \text{Geetu} \end{cases}$ N = M + 10 $M = G + 7 \dots \dots (ii)$  $N + M + G = 48 \dots (iii)$ From eq. (i), (ii) and (iii) -M + 10 + M + M - 7 = 483M = 45M = 15Meetu is 15 years old, Neetu's age = M + 10 = 25 years 87. Ans.(B) If my present age is x years and my cousin's present age is y years. then according to first condition - $\frac{2x}{3} = \frac{3y}{4}$  $8x - 9y = 0 \dots \dots (i)$ and according to second condition x - 3 = y + 4x - y = 7y = x - 7putting in eq. (i) y = x - 7

8x - 9(x - 7) = 08x - 9x + 63 = 0-x + 63 = 0x = 63 years Ans.(C) Let B's age = x years  $\therefore$  A's age = (16 + x) years According to guestion 6 vears ago -3(x-6) = (16 + x - 6)3x - 18 = x + 102x = 28x = 14hence age of a person who is under age will be 14 years. Ans.(D) Let present ages of Sai and Satish are 5x years, 4x years respectively. According to question -5x + 3 11  $\frac{6x+6}{4x+3} = \frac{11}{9}$  $\Rightarrow 9(5x + 3) = 11(4x + 3)$  $\Rightarrow 45x + 27 = 44x + 33$  $\Rightarrow 45x - 44x = 33 - 27$  $\Rightarrow 6x$ hence present age of Satish =  $6 \times 4 = 24$ vears Ans.(C) If Peter's present age is x years and Preeti's y vears. then.  $x - y = 5 \dots \dots \dots (i)$ 35 years ago according to the question, 4(x-35) = 5(y-35)4x - 140 = 5y - 175(ii)  $4x - 5y = -35 \dots \dots \dots (ii)$ Multiplying equation (i) by 4 and solving equation (ii) 4x - 4y = 204x - 5y = -35y = 55 year Putting y = 55 in equation (i), x - y = 5x = 55 + 5 = 60 years Sum of ages of both in present x + y =60 + 55 = 115 years Ans.(B) Let shriya's age = x years So Charles age will be = (x + 6) years According to question,  $(x-30) \times 5 = (x + 6 - 30) \times 4$ 5x - 150 = 4x - 96

x = 150 - 96

88.

89.

90.

91.

x = 54 year

 $\therefore$  Charles's age = x + 6 = 54 + 6= 60 years Sum of both ages = 60 + 54 = 114 years 92. Ans.(B) Let Bhaswati's present age = x years Pinaki's present age = (x - 9) years Bhaswati's age after 13 years = (x + 13) years Pinaki's age after 13 years = (x - 9 + 13)= (x + 4) years According to guestion, (x + 13) = 1.2(x + 4)x + 13 = 1.2x + 4.80.2x = 8.2 $x = \frac{8.2}{0.2} = 41$ Hence Pinaki's present age = (x - 9) = (41 - 9) = 32 years 93. Ans.(D) Let Sable's present age = x years then Bipul's present age = (x - 16) years Sable's age after 12 years = (x + 12) years Bipul's age after 12 years = (x - 16 + 12)= (x - 4) years According to question, -(x + 12) = 1.5(x - 4)x + 12 = 1.5x - 60.5x = 1818  $x = \frac{1}{0.5}$ x = 36 years hence, Sable's present age will be 36 years. 94. Ans.(B) Let Prabhat's present age = x years Shyam's present age = y years According to question, age of both 15 years ago 2(x-15) = (y-15)2x - 30 = y - 15 $2x - y = 15 \dots (1)$ both age after 5 years from present,  $(x + 5) = \frac{5}{8}(y + 5)$ 8x + 40 = 5y + 25 $8x - 5y = -15 \dots (2)$ Multiplying 5 in equation (1),  $(2x - y)5 = 15 \times 5$  $10x - 5y = 75 \dots (3)$ Substituting equation (3) from equation (2) -8x - 5y = -1510x - 5y = 75 $-\frac{+}{-2x} = -90$ x = 45putting the value of x in equation (1) –

 $2 \times 45 - y = 15$ v = 90 - 15y = 75 years hence, Shyam's present age is 75 years. 95. Ans.(D) Let Jeena's present age = x years Mother's present age = (x + 24) years Jeena's age 8 years = (x + 8) years Mother's age 8 years = (x + 24 + 8) years According to question,  $x + 32 = \frac{3}{3}(x + 8)$ 3x + 96 = 5x + 402x = 56x = 28hence Jeena's present age = 28 years 96. Ans.(B) Let Rihana's present age = x years then Priyankur's present age = (3x - 7) years According to question, - $(3x - 7 + 16) = (x + 16) \times \frac{150}{100}$  $(3x + 9) = (x + 16) \times \frac{3}{2}$ 6x + 18 = 3x + 486x - 3x = 48 - 183x = 30x = 10Priyankur's present age = 3x - 7 $= 3 \times 10 - 7$ = 30 - 7 = 23 years 97. Ans.(A) Let Jeremi's present age = x years According to question, -Father's present age = (x + 26) years So, 2(x + 8) - 2 = (x + 26 + 8)2x + 16 - 2 = x + 34x = 34 - 14x = 20 years 98. Ans.(A) let Son's age = x years then father's age = (60 - x) years age of 6 years ago 5(x-6) = (60 - x - 6)5x - 30 = 54 - x6x = 84x = 14Son's age,after 6 years = 14 + 6 = 20 years **99**. Ans.(B) Let Sai's age = x years Gautam's age = 2x years and Satish's age = (2x + 2) years According to question, -

x + 2x + 2x + 2 = 275x = 27 - 25x - 25 = 5 $x = \frac{25}{5} = 5$ hence Gautam's age  $= 2x = 2 \times 5 = 10$  years 100. Ans.(A) Let John's age is x years and Jill's age is y years. According to question, y - x = 15 .....(i) and (y - 12) = (x - 12) 1.5y - 12 = 1.5 x - 18 $y - 1.5 x = -6 \dots$ (ii) from (i) and (ii) y - x - (y - 1.5x) = 15 - (-6)y - x - y + 1.5x = 15 + 60.5x = 2121 x =0.5 x = 42putting the value of x in equation (i) y - 42 = 15y = 15 + 42 = 57hence, Jill's present age is 57 years. 101. Ans.(A) Let Roshan's present age is x years and Usha's present age is y years. according to first condition x = 1.5 y - 3....(i)according to second condition - $\frac{x-12}{2}$  + 3 = y - 12....(ii) putting the value of x from equation (i) into equation (ii),  $\frac{(1.5y-3)-12}{2} + 3 = y - 12$ 1.5y - 15 + 6 = 2y - 240.5y = 15v = 30y = 30 putting in eq (i)  $x = 1.5 \times 30 - 3$ x = 45.0 - 3x = 42 years hence present age of Roshan = 42 years 102. Ans.(D) If Ram's present age = x years and sunny's present age = y years 13 years ago, age of Ram and Sunny will be (x - 13) and (y - 13) years respectively. According to question, - $(x - 13) = (y - 13) \times 2$ x - 13 = 2y - 26 $x - 2y = -13 \dots (i)$ After three years, the ages of Ram and Sunny will be (x + 3) and (y + 3) years respectively.

 $(x + 3) \times \frac{3}{5} = y + 3 \Rightarrow 3x + 9 = 5y + 15$ or  $3x - 5y = 6 \dots (ii)$ Multiply by 3 in eq. (i) and substract by eq. (ii) 3x - 6v = -393x - 5y = 6y = 4 years Putting the value of y in equation (i),  $x - 2 \times 45 = -13$ x - 90 = -13x = 77 years 103. Ans.(D) Let present age of Dharitri and Eunice is x, y years According to guestion, x + 3 = 2(y + 3) - 8x + 3 = 2y + 6 - 8x + 3 = 2y - 2 $x - 2y = -5 \dots (i)$ and x + y = 61 .....(ii) Substituting eq. (ii) from eq. (i), x - 2y = -5x + y = 61-3y = -66v = 22putting y = 22 in eq. (ii) x + 22 = 61x = 39hence, present age of Dharitri will be 39 vears. 104. Ans.(D) Let Virat's age five years ago = x years Mohindar's age five years ago  $=\left(\frac{2x}{5}-1\right)$  years Virat's present age = (x + 5) years Mohindar's present age =  $\left(\frac{2x}{5} + 4\right)$  years According to question,  $x + 5 + 7 = 2\left(\frac{2x}{5} + 4 + 7\right)$ 5(x + 12) = 4x + 110x = 50Virat's present age = x + 5 = 50 + 5= 55 years 105. Ans.(B) Let after x years Rathin's age will be 1.5 times that of her cousin's age. Rathin's age after x years = (x + 16) years Cousin's age = (x + 7) years  $(x + 16) = (x + 7) \times 1.5$ x + 16 = 1.5x + 10.55.5 = 0.5x5.5  $x = \frac{0.5}{0.5}$ 

x = 11 years 106. Ans.(D) If Cynthia's present age is x years and Brittany's y years. then, x + y = 94 years .....(i) their ages 15 years ago are (x - 15) years and (y - 15) years respectively. then, (x - 15) = 3(y - 15)x - 15 = 3y - 45 $x - 3y = -30 \dots (ii)$ Multiplying equation (i) by 3 and adding equation (ii) -3x + 3y = 282x - 3y = -304x = 252x = 63 years Brittany's y present age  $\Rightarrow$  63 + y = 94 or y = 94 - 63 = 31 years107. Ans.(B) Let ages of Kavita, Rajita and Harita are 4x, 7x, 9x years respectively. According to question, -(4x-8) + (7x-8) + (9x-8) = 5620x - 24 = 56x = 4hence Kavita's present age =  $4x = 4 \times 4$ = 16 years Rajita's present age =  $7x = 7 \times 4 = 28$  years Harita's present age =  $9x = 9 \times 4$ = 36 years 108. Ans.(A) Let eldest sister is x years old then, age of the other four sisters born at gap of 3 years will be (x - 3), (x - 6), (x - 9) and (x - 12) years respectively. According to question, x + x - 3 + x - 6 + x - 9 + x - 12 = 505x = 50 + 305x = 80x = 16 years 109. Ans.(B) Let Pujitha's present age = x years Pujitha's age 3 years ago = (x - 3) years Pujitha's age after 2 years = (x + 2) years According to question, - $\left(\frac{x-3}{3}\right) + \left(\frac{x+2}{2}\right) = 20$  $\frac{2x-6+3x+6}{2} = 20$ 6  $\frac{5x}{6} = 20$  $x = 6 \times 4$ x = 24 years Pujitha's present age = 24 years

110. Ans.(D)

Let my present age = x years Cousin's age = y years According to question, -3x 5y= 5 6 18x = 25y $18x - 25y = 0 \dots \dots (I)$ x - 10 = y + 4 $x - y = 14 \cdots (II)$ from eq. (II)  $\times$  25 – eq. (I) – 25x - 25y = 35018x - 25y = 0- + -7x = 350x = 50 years So my present age is 50 years. 111. Ans.(D) Father's age = 54 years  $\therefore$  Mother's age = 54 - 2 = 52 years  $\frac{\text{Mother's age}}{\text{Mother's age}} = \frac{52}{2}$ Younger sister's age = -= 26 years elder sister's age - younger sister's age = 4 years elder sister's age -26 = 4 $\therefore$  elder sister's age = 4 + 26 = 30 years 112. Ans.(D) Let elder sister's age = x years then younger sister's age = (x - 2) years Father's age = 52 years Mother's age = 52 - 2 = 50 years Mother's age = elder sister's age 2 50 = x2 elder sister's age x = 25 years younger sister's age = x - 2 = 25 - 2= 23 years 113. Ans.(D) Let second child's age = x years then third child's age = (x - 4) years and first child's age = (x + 5) years according to question x - 4 + x + x + 5 = 223x + 1 = 223x = 21x = 7eldest child's age = x + 5= 7 + 5= 12 years 114. Ans.(A) Let both brothers are 5x and 8x years of age respectively.

according to question -

8x - 5x = 12  $3x = 12 \Rightarrow x = 4$ hence, age of both brothers is 20 years and 32 years.

115. Ans.(C) Let Sunita's present age = x years Sheela's present age = (x - 12) years according to question – x - 9 = 4(x - 12 - 9) x - 9 = 4(x - 21) x - 9 = 4x - 84 4x - x = 84 - 9 3x = 75 x = 25Sunita's present age = x = 25 years Sheela's present age = x - 12 = 25 - 12= 13 years

#### 116. Ans.(C)

Let Vijay's present age = x years Vinay's present age = (x + 20) years according to question – x + 20 - 5 = 5(x - 5)x + 15 = 5x - 254x = 40 $\therefore x = 10$ hence, his present age is 10 and 30 years.

#### 117. Ans.(B)

118.

119.

Let ages of Jai and Jog are 5x and 2x years respectively. according to question – 5x + 2x = 637x = 63x = 9 $\therefore$  Age ratio after 9 years  $= (5 \times 9 + 9): (2 \times 9 + 9)$ = 54:27= 2:1**Ans.(C)** 

Given – The present ages of Seema and Reema are 2x and 3x respectively. according to question – 3x - 2x = 6 x = 6 years So, present ages of Seema and Reema  $= 2 \times 6,6 \times 3$  = 12 years, 18 years ratio of age of Seema and Reema after 6 years = (12 + 6):(18 + 6) = 18:24 = 3:4Ans.(A)

Let present ages of X and Y are 2x and x respectively. according to question –

2x + 1429  $\frac{1}{x + 14} =$ 18 36x + 252 = 29x + 4067x = 154x = 22 $\therefore$  Age difference = 2x - x = x = 22 years 120 Ans.(B) Let father's present age = x years  $\therefore$  Son's present age = (x - 24) years Father's age after 4 years = (x + 4) years Son's age after 4 years = (x - 20) years according to question  $x + 4 = 2 \times (x - 20)$ x + 4 = 2x - 40 $2x - x = 4 + 40 \Rightarrow x = 44$ hence, father's present age is 44 years. 121. Ans.(B) Let present age of Ram's son = x years Ram's present age = 4x years according to guestion -4x + 5 = 3(x + 5) $\Rightarrow 4x + 5 = 3x + 15 \Rightarrow x = 10$ hence, present age of Ram and his son are 40 years and 10 years respectively. 122. Ans.(B) Let 5 years ago Mayank's age is 2x years and father's age is 5x years. then after 5 years -Mayank's age = 5 Father's age 2x + 10 = 3 $\frac{1}{5x + 10} = \frac{1}{5}$ 10x + 50 = 15x + 305x = 20x = 4Hence, Mayank's present age  $= 2x + 5 = 2 \times 4 + 5 = 13$  years 123. Ans.(D) Let present ages of father and son are x and y years respectively. according to guestion  $x - 6 = 5(y - 6) \Rightarrow x - 5y = -24 \dots (i)$ and  $x + 10 = 3(y + 10) \Rightarrow x - 3y$  $= 20 \dots (ii)$ From eq. (i) and (ii) x = 86, y = 22hence, son's present age is 22 years. Ans.(D) 124. Let person's age = x years and son's age = y years

and son's age = y years according to question –  $(x + 2) = (y + 2) \times 4$ x + 2 = 4y + 8 $x = 4y + 6 \dots (i)$ again –

 $(x + 6) = (y + 6) \times 3$ x + 6 = 3y + 18 $x = 3y + 12 \dots \dots (ii)$ From eq. (i) and (ii) -4y + 6 = 3y + 12y = 6 years Putting thye value of y in eq. (i)  $x = 4 \times 6 + 6$ x = 30 years Now let after A year the father's age will be twice that of his son.  $(30 + A) = (6 + A) \times 2$ 30 + A = 12 + 2AA = 18 vears 125. Ans.(A) Let Sapna's age = x year Anubha's age = y year According to question,  $xy = 150 \dots (i)$  $4y = x + 10 \dots \dots (ii)$  $y = \frac{150}{2}$  putting in eq (ii) from eq.(i),  $4 \times \frac{150}{x} = x + 10$  $\begin{array}{l} 600 = x^2 + 10x \\ x^2 + 10x - 600 = 0 \end{array}$  $x^2 + 30x - 20x - 600 = 0$ x(x + 30) - 20(x + 30) = 0(x + 30)(x - 20) = 0x + 30 = 0x = -30(Invalid) x - 20 = 0x = 20Hence Sapna's age = 20 year **126**. Ans.(C) Portion of the children in the age group of 9-12 years = Portion of the children in the age group of (1-12) years - portion of the children in the age group of 1-8 years  $=\frac{2}{3}-\frac{1}{2}=\frac{4-3}{6}=\frac{1}{6}$ Ans.(C) 127. All four children are  $x_1$ ,  $x_2$ ,  $x_3$  and  $x_4$ . let youngest child's age  $(x_1) = x$  years Age of child older than him  $(x_2) = (x + 4)$  years Again, age of child older than the two  $x_3 = (x + x_3)$ 8) years Eldest child's age  $(x_4) = (x + 12)$  years x + x + 4 + x + 8 + x + 12= 48 years 4x + 24 = 48 years  $4x = 24 \Rightarrow x = 6$  years ∴ youngest child's age = 6 years 128. Ans.(B)  $\therefore \text{ Average age of family } = \frac{30 \times 2 + 8 \times 2}{4}$ 

 $=\frac{60+16}{4}=\frac{76}{4}=$  19 years 129. John's age after 5 years from present = 12 + 3 + 5 = 20 vear Shankar's age after 5 years from present = 15 +3+5=23 year Intended average =  $\frac{20 + 23}{2} = \frac{43}{2}$ = 21.5 year 130. Ans.(C) Total sum of age of 27 students =  $27 \times 22$ = 594 year total sum of age of students including the teacher =  $28 \times 23 = 644$  years  $\therefore$  Teacher's age = 644 - 594 = 50 year 131. Ans.(B) total age of 19 members of group =  $19 \times 24$ = 456 year total age of 19 members including faculty  $= 20 \times \left(24 + \frac{4}{12}\right) = 20 \times \frac{73}{3}$  $\therefore \text{ Faculty age} = 20 \times \frac{73}{3} - 456$  $= \frac{1460 - 1368}{3} = \frac{92^{3}}{3} = 30\frac{2}{3}$  year = 30 year +  $\frac{2}{3} \times 12$  month = 30 year 8 month 132 Ans.(A) Let Swati's age is x years and Aparna's age is v years. according to first condition xy = 120 .....(i) according to second condition -3y = x + 2 $y = \left(\frac{x+2}{3}\right)$ Putting the value of y in equation (i)  $x \times \left(\frac{x+2}{3}\right) = 120$  $x^2 + 2x - 360 = 0$  $x^2 + 20x - 18x - 360 = 0$ x(x + 20) - 18(x + 20) = 0(x + 20)(x - 18) = 0x + 20 = 0 or x - 18 = 0x = -20(invalid) or x = 18hence Swati's age = 18 years 133. Ans.(B) Average age of all students total sum of ages of all students = - $= \frac{1}{\frac{1}{20 \times 10 + 25 \times 12}} = \frac{200 + 300}{45}$  $=\frac{500}{45}=11.111$ 

134. Ans.(C) If the present ages of Z and A are x and 2x years. according to question,  $\frac{2x+5}{x+5} = \frac{11}{6}$ 12x+30 = 11x + 55 x = 25After 3 years Z's age = x + 3 = 28 years 135. Ans.(D) Let Naresh's present age = 7xSuparna's present age = 3x After 3 years Naresh's age = (7 x + 3)After 3 years Suparna's age = (3x + 3)according to question,  $\frac{7x+3}{3x+3} = \frac{2}{1} \Rightarrow 7x+3 = (6x+6)$  $\Rightarrow x = 6 - 3$  $\Rightarrow x = 3$ hence Naresh's present age =  $7 \times 3$ = 21 years 136. Ans.(C) Let father's age 5 years ago = 7 x years Son's age 5 years ago = x years Father's present age = (7x + 5) years Son's present age = (x + 5) years according to question, 7x + 5 + 5 = 3(x + 5 + 5)7x + 10 = 3x + 304x = 20x = 5Father's present age  $= 7 \times 5 + 5 = 40$  years Son's present age = 5 + 5 = 10 years Father's age two years ago from now = 40 - 2 = 38 years Son's age two years ago from now = 10 - 2 = 8 years 137. Ans.(A) Let father's present age = x years and son's present age = y years age difference between father and son = 24 years x - y = 24---(i)according to question, x - 2 = 2yx - 2y = 2--- (ii) Substituting equation (i) and (ii) x - y = 24x - 2y = 2y = 22 years Putting the value of y in eq. (i) x - y = 24x - 22 = 24x = 46hence, father's present age = 46 years

#### 138. Ans.(B)

Let daughter's age = 2x years Mother's age = 9x years according to question,  $\therefore$  Mother's age at daughter's birth = 28 years  $\therefore$  Mother's age at daughter's birth = 9x - 2x vears  $\therefore 9x - 2x = 28$ 7x = 28x = 4Daughter's age = 2x $= 2 \times 4$ = 8 years 139. Ans.(C) Let mother's present age is x years and daughter's present age is y years. according to question,  $x - y = 20 \dots \dots (i)$ after 5 years, daughter's age becomes half of mother's present age.  $\Rightarrow \frac{x}{2} = y + 5$  $x - 2y = 10 \dots (ii)$ by subtracting eq. (ii) from eq. (i) x-y = 20x - 2y = 10- + y = 10hence, present age of daughter will be 10 years. 140. Ans.(B) Let younger member's age = y years and elder member's age = x years first condition x + 4 + y + 4 = 64 $x + y = 56 \dots (i)$ second condition *x* – 4  $\frac{1}{v-4} = \frac{1}{1}$ x - 4 = 3y - 12x - 3y = -8 ..... (*ii*) from eq. (i) and (ii) x + y = 56x - 3y = -8 $\frac{-+}{4y} = 64$ y = 16hence younger member's age = y = 16 years 141. Ans.(C) Let older child's age = x year and young child's age = y year according to question,  $x + y = 33 \dots (i)$ 

 $x - y = 3 \dots \dots (ii)$ from eq. (i) and (ii) -

x + y = 33x - y = 32x = 36x = 18hence older child's age = 18 year 142 Ans.(C) Let first person's present age = 4x year second person's present age = 7x year third person's present age = 9x year eight years ago, sum of ages of all three persons = 564x - 8 + 7x - 8 + 9x - 8 = 5620x = 80x = 4hence eldest person's present age = 9x = 9x4 = 36 year 143. Ans.(D) Let father's age at son's birth = 2x year Age at birth of son = x year If son's present age = 20 year then father's present age = 40 year 144. Ans.(D) let Q's age = x year P's age = (x + 2) year R's age = (x + 4) year By question -(x + x + 2 + x + 4) = 273x + 6 = 273x = 21x = 7Hence Q's age is 7 years. 145. Ans.(B) let A's present age = 3x year B's present age = 2x year according to guestion, 3x + 10 + 2x + 10 = 805x = 60x = 12A's present age =  $3 \times 2 = 36$  year B's present age =  $2 \times 12 = 24$  year 146. Ans.(D) Let present age of both sisters is x years and y years  $x + y = 12 \dots$  (i) according to question, *x* – 1 2  $=\frac{1}{3}$  $\overline{v-1}$  $\Rightarrow 3x - 3 = 2y - 2$  $\Rightarrow 3x - 2y = 1 \dots$  (ii) From eq. (i) and (ii),  $[x + y = 12] \times 2$  [Multiplying by 2 in eq. (i)] 3x - 2y = 15x = 25 x = 5putting the value of x in eq. (i) -

x + y = 125 + y = 12v = 7Hence his present age = 5 year and 7 year 147. Ans.(A) Let age of both brothers = x, y year according to question, x + y $= \frac{1}{1}$ x - yx + y = 5x - 5y6v = 4x $y = \frac{2}{3}x$ Then, xy = 96 $x \times \frac{2}{3}x = 96$  $x^2 = 96 \times \frac{3}{2}$  $x = \sqrt{144}$ x = 12Putting the value of x - $12 \times y = 96$ v = 8Hence, they will be 8,12 years old. 148. Ans.(A) Let father's age = 3x year Son's age = x year according to question,  $3x \times x = 147$  $x^2 = 49$ x = 7sum of age of father and son = 3x + x = 4x $= 4 \times 7 = 28$  year 149. Ans.(D) Let mother's present age is 12x years and daughter's present age is 5x years. according to question, after 10 years, the mother's age doubles the daughter's age. - $12x + 10 = 2 \times (5x + 10)$ 12x + 10 = 10x + 202x = 10x = 5Sum of his age at present = 12x + 5x= 17x $= 17 \times 5$ = 85 years 150. Ans.(A) Let B's age = a years A's age = 2a years 2a + a = 603a = 60a = 20

Sum of his age after 5 years = 2a + 5 + 5a + 5 $= 2 \times 20 + 5 + 20 + 5$ = 40 + 30 = 70 years 151. Ans.(A) Let A's age = 3x years and B's age = 5x years according to question, 5x - 3x = 62x = 6x = 3A's age =  $3 \times 3 = 9$  years B's age =  $5 \times 3 = 15$  years Sum of age of both = 9 + 15 = 24 years 152. Ans.(B) Let A's age = 2x years B's age = 4x years C's age = 5 x years according to question, 2x + 4x + 5x = 7711x = 77x = 7: Ratio of ages of A and B after 10 years = 2x + 10: 4 x + 10 $= 2 \times 7 + 10: 4 \times 7 + 10$ = 24:38= 12:19153. Ans.(A) Let father's present age = x years  $\therefore$  daughter's present age = x/4 years according to question,  $\frac{1}{3}(x + 5) = \left(\frac{x}{4} + 5\right)$  $\frac{x}{3} + \frac{5}{3} = \frac{x}{4} + 5$  $\frac{x}{12} = \frac{10}{3}$ x = 40 years (Father's age) Daughter's age =  $\frac{x}{4} = \frac{40}{4} = 10$  years Age of both after 10 years = 40 + 10 = 50 years and 10 + 10 = 20 years Daughter's age : Father's age = 20: 50 = 2:5 154. Ans.(D) A G (7 years ago) 5x 7x $\downarrow\downarrow\downarrow$ (present age) (5x + 7)(7x + 7)according to guestion, (5x + 7)(7x + 7) = 616 $35x^2 + 35x + 49x + 49 = 616$  $35x^2 + 84x - 567 = 0$  $5x^2 + 12x - 81 = 0$  $5x^2 + 27x - 15x - 81 = 0$ x(5x + 27) - 3(5x + 27) = 0(5x + 27)(x - 3) = 0x = 3

present age ratio =  $\frac{5x+7}{7x+7} = \frac{5\times3+7}{7\times3+7} = \frac{22}{28}$ 11 = 14 155. Ans.(D) let age of A, B and C = 2x, 3x, 4x years By question -2x + 3x + 4x = 1089x = 108x = 12After 12 years their age ratio = 2x + 12:3x + 12:4x + 12= 24 + 12:36 + 12:48 + 12= 36:48:60Their age ratio = 3: 4: 5 156. Ans.(A) let son's age = x years Father's age = 3x years Son's age after 8 years = (x + 8)Father's age after 8 years = (3x + 8)By question -3x + 8 = 2.5(x + 8)3x + 8 = 2.5x + 200.5x = 1212  $x = \frac{1}{0.5}$ x = 24Father's age after 8 years = 3x + 8 $= 3 \times 24 + 8 = 72 + 8 = 80$ Son's age after 8 years = x + 8 = 24 +8 = 32Intended ratio = 80:32 = 5:2157. Ans.(C) let 10 years ago son's age = x years  $\therefore$  Mother's age 10 years ago = 3x years son's age in present = (x + 10) years mother's age in present = (3x + 10) years according to question, 3x + 10 + 10 = 2(x + 10 + 10)3x + 20 = 2x + 40x = 20.: The ratio of age of both at present  $=\frac{3x+10}{x+10}$  $\frac{3 \times 20 + 10}{20 + 10} = \frac{70}{30}$ = 7:3158. Ans.(D) Let age of B 4 years ago = x year And age of A = 2x year A's present age = (2 x + 4) year B's present age = (x + 4) year according to question, after 4 years,

 $\frac{2x + 4 + 4}{x + 4 + 4} =$  $\frac{3}{2}$ 2x + 8 $\frac{2x}{x+8} = \frac{3}{2}$ 4x + 16 = 3x + 24x = 8A's present age = 2x + 4 $= 2 \times 8 + 4 = 20$  year  $B's \ present \ age = x + 4$ = 8 + 4 = 12 year present age ratio = A: B = 20: 12 = 5:3159. Ans.(D) let Pooja's present age = x year and Deepa's present age = y year First condition. x - 4 = y + 4 $x - y = 8 \dots (i)$ Second condition, *x* + 4 3  $\frac{x}{y-4} = \frac{3}{1}$ x + 4 = 3y - 12 $x - 3y = -16 \dots (ii)$ Fro eq. (i) and (ii) x - y = 8x - 3y = -16 $-\frac{+}{2y} = 24$ y = 12putting the value of y in equation (i) x = 20 hence, the ratio of age of Pooja and Deepa = 20:12=5:3 **160**. Ans.(B) Let the present age of P = x year present age of Q = (x + 4) year According to question, x 6  $\frac{x}{x+4} = \frac{0}{7}$ 7x = 6x + 24x = 24P's present age = 24 year Q's present age = 24 + 4 = 28 year After 4 years, the ratio of age of P and Q - $\frac{24+4}{28+4} = \frac{28}{32} = \frac{7}{8} = 7:8$ 161. Ans.(D) Let 5 years ago the age of P = 7x year age of Q = 9x year P's present age = (7x + 5) year Q's present age = (9x + 5) year P's age after 10 years = (7x + 5 + 10) year = (7 x + 15) yearAge of Q after 10 years = (9x + 5 + 10) year = (9 x + 15) yearaccording to question,

7x + 155  $\frac{5}{9x + 15} =$ 6 42x + 90 = 45x + 753x = 15x = 5P's present age = 7x + 5 $=\dot{7}\times5+5$ = 40 Q's present age = 9x + 5 $= 9 \times 5 + 5$ = 50 present age ratio -P:Q = 40:50= 4:5162. Ans.(B) Let Age of four people = x, 3 x, 4 x and 6xvears. Average age of 4 people = 42 years Age of four people =  $42 \times 4 = 168$  years x + 3x + 4x + 6x = 16814x = 168168 x =14 x = 12Eldest person in age = 6x  $= 6 \times 12$ = 72 years youngest person = 12 year difference of age of both = 72 - 12 = 60 year 163. Ans.(B) Let the present age of Asha = x year Father's present age = (x + 38) year Brother's present age = (x - 4) year Mother's present age = (36 + x - 4)= (32 + x) year Age difference of mother - father = (x + 38) - (32 + x)= 6 year 164. Ans.(A) Let the present age of Rajan = x year Then sister's present age = (x - 10) year According to question,  $x - 8 = \frac{5}{6}x$  $x - \frac{5}{6}x = 8$  $\frac{x}{6} = 8$ x = 48 year Hence the present age of sister = 48 - 10= 38 year 165. Ans.(C) Let Raja's age = 3x year Arun's age = x year By question -(3x-3) = 4(x-3)3x - 3 = 4x - 12

x = 9Present age of king =  $3 \times 9 = 27$  year 166. Ans.(C) Let the present age of mother = x year Son's present age =  $\frac{2x}{5}$  year ∴ By question –  $\frac{2x}{5} + 8 = \frac{x+8}{2}$  $\frac{2x + 40}{5} = \frac{x + 8}{2}$ 4x + 80 = 5x + 40x = 40 years Mother's present age = 40 year 167. Ans.(A) The present age of brother and sister is 4x, 3x years respectively. Sister's age after 3 years = (3 x + 3) year According to question,  $(3x + 3) = 3x \times 2$ 3x + 3 = 6x3 = 3xx = 1Brother's present age =  $4x = 4 \times 1$ = 4 year 168. Ans.(A) Let present age of son = x year Father's present age = (45 - x) year Son's age five years ago = (x - 5) year Father's age five years ago = (40 - x) year According to question, (x-5)(40-x) = 4(40-x)x - 5 = 4x = 9Father's present age = 45 - x = 45 - 9= 36 year 169. Ans.(C) Let present age of son = x year Father's present age = 5x year Son's age five years ago = x - 5Father's age five years ago = 5 x - 5By question -5x - 5 = 6(x - 5)5x - 5 = 6x - 30x = 25hence, son's age will be 25 years. **170**. Ans.(A) Let the present age of B = x year A's present age = (x + 9) year According to question x + 9 + 10 = 2(x - 10)x + 19 = 2x - 20x = 39Hence the present age of A = x + 9= 39 + 9 = 48 year 171. Ans.(A)

 $P + Q = 24 \times 2 \dots \dots \dots (i)$  $P + O + R = 22 \times 3 \dots \dots (ii)$ Subtracting equation (i) from (ii) -R = 66 - 48 = 18 years The different ages of P and Q are not known, so the data is insufficient to answer the auestion. 172. Ans.(C) let father's age = x year And son's age = y year x + y = 50....(i) According to question - $(x-6) = (y-6) \times 3 + 6$ x - 6 = 3y - 18 + 6x - 3y = -6 ......(*ii*) From eq.(i) and (ii) x + y = 50x - 3y = -6- + + 4y = 56v = 14putting the value of y in equation (i), x = 36hence, father's age after 6 years = 36 + 6= 42 year 173. Ans.(D) According to question -Father's age = 38 year .: mother's age during birth of 4 years younger brother = 36 year  $\therefore$  Mother's age at priva's birth = 36 - 4= 32 year  $\therefore$  Father's Age – Mother's Age = 38 – 32 = 6 year 174. Ans.(C) let all three children are A, B and C. A = x, B = x + 2, C = x + 4According to question - $\frac{x + x + 2 + x + 4}{2} = 8$ 3 x + x + 2 + x + 4 = 243x = 18x = 6hence, the age of eldest child = x + 4= 6 + 4 = 10 years 175. Ans.(B) Let the age of 5 childrens are x, (x +4), (x +8), (x +12),(x +16) sum of the age of all the children = 80 years x + (x + 4) + (x + 8) + (x + 12) + (x + 16) = 805x + 40 = 805x =40 x = 8

the age of the eldest child is 24 years.

176. Ans.(D)

let younger brother is 7x years old and elder brother is 15x years old. According to question -LCM of numbers 7x and 15x = 105x105x = 210x = 2Elder brother's age =  $15x = 15 \times 2$ = 30 years 177. Ans.(C) let son's age = x year then, father's age = 2x year HCF of x and  $2x = \frac{x}{2x} = \frac{x \times 1}{2x}$ hence HCF = xHence son's age = x year = 22 year 178. Ans.(A) let x years ago their age ratio was 3: 2. According to question - $\frac{50-x}{40-x} = \frac{3}{2}$ 100 - 2x = 120 - 3xx = 20 year 179. Ans.(A) Let both sisters be 4x, 5x years old According to guestion -4x + 5x = 819x = 81x = 9Age of first sister =  $4x = 4 \times 9 = 36$  year Second sister's age

 $= 5x = 5 \times 9 = 45$  years So the first sister is 9 years younger than the second.

### 180. Ans.(D)

let grandfather's age = x year According to question – daughter's age = 5 year  $\therefore$  son's age = 11 year  $\frac{x-4}{5} = 11$  x-4 = 55 x = 59 year Ans.(D)

181. Ans.(D) According to question –

Grandfather's age = 9x year  
Granddaughter's age = 2x year  
$$9x + 2x = x^2$$
  
 $11x = x^2$   
 $x = 11$ 

Grandfather's age =  $9x = 9 \times 11 = 99$  year Granddaughter's age =  $2x = 2 \times 11 = 22$  year

## 182. Ans.(C)

According to question – A + B = B + C + 12 A = C + 12Hence it is clear that C is 12 years younger than A.

## 17. Average

7.

1. The four numbers W, X, Y and Z are arranged in ascending order. The smallest three number's average is 22, while the largest three number's average is 28. Find the range of data?

 RRB Group-D - 10/10/2018 (Shift-II)

 (A) 19
 (B) 18

 (C) 17
 (D) 16

The average of the three numbers is 7. The first two averaged 5, while the last 2 averaged 8. What are the three numbers (respectively)?
 RRB Group-D - 15/10/2018 (Shift-I)

	up-D - 13/10/2010 (Shint
(A) 3, 7 and 9	<b>(B)</b> 2, 8 and 8
(C) 5, 5 and 11	(D) 4, 6 and 10

**3**. Putting the four digits in ascending order, their order is w, x, y and z. The smallest three digit's average is 25.5 while the largest three digit's average is 29.5. Find the range of data.

RRB Group-D - 08/10/2022 (Shift-I)

- (A) 13 (B) 12 (C) 10 (D) 11
- 4. The average of the three numbers is 28. If 2 is added to the smallest number and 5 is subtracted from the largest number, the middle number becomes the arithmetic mean, while the range of this new set of figures becomes 36. What is the largest number of the original set of these three numbers?

	RRB Group-D - 01/12/2018 (Shift-II)	
<b>(A)</b> 50	<b>(B)</b> 48	
(C) 47	<b>(D)</b> 45	

5. The average of the three numbers is 28. If 7 is added to the smallest number and 10 is subtracted from the largest number, then the middle number becomes the arithmetic mean and the range of this new set of figures becomes 20. What is the largest number of the original set of these three numbers?

	RRB Group-D - 24/10/2018 (Shift-III)
<b>(A)</b> 47	<b>(B)</b> 40
<b>(C)</b> 45	<b>(D)</b> 50

6. The four numbers a, b, c and d are such that their total average is 39. The average of a and b is 29.5. What will be the average of c and d?

	RRB NTPC - 09/2022 (Shift-II)
<b>(A)</b> 48.5	<b>(B)</b> 48
(C) 49.5	<b>(D)</b> 47.5

The average of the marks obtained in a test of 18 boys in a class is 16, while the average of the total 30 students of the class is 18.1. What is the average of girls' scores?

RRB Group-D-25/ 09/ 2018(Shift-II)

- (A) 21.25
   (B) 20.5
   (C) 20.75
   (D) 21
- 8. The number of students in three groups  $G_1$ ,  $G_2$  and  $G_3$  of a college is 20, 40 and 60 respectively. The average marks obtained by the groups  $G_1$ ,  $G_2$  and  $G_3$  are 50%, 60% and 70% respectively. What is the average marks of all college students?

 RRB Group-D - 19/11/2022 (Shift-II)

 (A) 62%
 (B) 61%

 (C) 60%
 (D) 63%

**9.** In a class of 40 students, the ratio of boys to girls is 7:3. The average marks of boys is 65 and that of girls is 72. What is the average score for the whole class?

	RRB Group-D - 31/10/2018 (Shift-II)	
(A) 67.1	<b>(B)</b> 68.4	
<b>(C)</b> 68.3	<b>(D)</b> 68.2	

**10.** In a class of 45 students, the ratio of boys to girls is 4: 5. The average marks of boys is 75 and that of girls is 82. What is the approximate average score for the whole class?

 RRB Group-D - 05/11/2018 (Shift-I)

 (A) 78.6
 (B) 78.5

 (C) 78.9
 (D) 79.0

**11.** The average test score of 18 boys in a class was 15, while the overall 25 students in the class averaged 16.12. What was the average score of the girls?

	RRB Group-D - 01/11/2018 (Shift-II)		
(A) 18.5	<b>(B)</b> 19.5		
<b>(C)</b> 19	<b>(D)</b> 18.8		

**12.** The average marks obtained by a student in 5 subjects is 75. The average of his first 2 subjects is 65. The average of his last 2

subjects is 85. How many marks has he got in the third subject?

RRB Group-D - 12/12/2018 (Shift-I)

(A) 80 marks	<b>(B)</b> 65 marks
<b>(C)</b> 75 marks	<b>(D)</b> 70 marks

In a class of 50 students, the ratio of boys to girls is 2: 3. Boys have an average score of 60 and girls have an average score of 70. What is the average score of the whole class?

	RRB Group-D - 12/11/2018 (Shift-
<b>(A)</b> 65	<b>(B)</b> 66
(C) 67	<b>(D)</b> 64

14. The average marks obtained by Reena in 16 examinations is 26. The average of marks obtained by Shreya so far is 24, but she has given only 12 exams so far. In order to perform like Reena, how many marks should Shreya score on average in the remaining 4 exams?

	RRB Group-D - 06/12/2018 (Shift-III)	
( <b>A)</b> 28	<b>(B)</b> 32	
( <b>C)</b> 30	<b>(D)</b> 26	

**15.** There were 9 boys and some girls in one class. In an examination, boys scored 13 average marks while the average marks obtained by girls was 15. If the total average of the marks is 14.28, then what will be the total number of students in the class?

	RRB Group-D - 18/11/2022 (Shift-I)
<b>(A)</b> 24	<b>(B)</b> 25
<b>(C)</b> 26	<b>(D)</b> 27

**16.** The average of the marks of three students in an examination of 25 marks is 16. Two new students participated in the examination. In order to increase the average score of all five students to 19, the new student, who scores less than the other new student, has to score at least how many marks?

	RRB Group-D - 01/11/2018 (Shift-II	
<b>(A)</b> 22	<b>(B)</b> 21	
<b>(C)</b> 20	<b>(D)</b> 23	

**17.** The average of the marks of three students in an examination with a total of 45 marks is 38. Two new students participated in the examination. What is the lowest number of marks that can be scored by a new student who has scored less than another new student, making the total average of the marks of five students to be 40?

RRB Group-D - 19/11/2022(Shift-II)

<b>(A)</b> 41	<b>(B)</b> 42
<b>(C)</b> 40	<b>(D)</b> 43

**18.** The average score obtained by Raghuveer in 12 tests is 25. Rumella has an average of 23 marks so far, but has competed in only 8 Tests. What average will Rumela have to earn in the remaining 4 Tests to be equal to Raghuveer's average?

	RRB Group-D -22/11/2022 (Shift-I)
<b>(A)</b> 27	<b>(B)</b> 29
<b>(C)</b> 26	<b>(D)</b> 28

**19.** A group of five students took an exam. Another student later joined the group after taking the exam. By adding his scores, the average score of the group increased by 2 points. How many more points did this student get than the average score without including it?

	RRB Group-D - 26/11/2022 (Shift-I)
<b>(A)</b> 18	<b>(B)</b> 14
<b>(C)</b> 12	<b>(D)</b> 15

**20.** There were 28 boys and some girls in one class. The average marks obtained by boys in an examination was 12.5, while girls scored 14.5 average marks. If the overall average was 13.1, what was the total number of students in the class?

	RRB Group-D - 19/11/2022 (Shift-I)
<b>(A)</b> 42	<b>(B)</b> 40
<b>(C)</b> 44	<b>(D)</b> 38

**21.** A group of nineteen students took an exam, another student later joined the group taking the exam. The inclusion of his scores increased the group's average score by 1.5 points. How many more points did this student get from the average score without including it.

 RRB Group-D - 12/10/2018 (Shift-II)

 (A) 25
 (B) 30

 (C) 24
 (D) 28.5

22. The average marks obtained by Suvir in 15 examinations is 29. Ruchira has so far maintained an average of 27, but has given only 11 exams so far. How much does Ruchira score on the remaining four exams to match Suvir's performance?

	RRB Group-D - 04/10/2018 (Shift-I)
<b>(A)</b> 35	<b>(B)</b> 34.5

(C) 36 (D) 35.5

23. The group of seven students took an exam. After the exam, another student joined the group. By adding new student scores, the group's average scores increased to 2. How many more marks did this student get than the average marks of the initial seven students?

	RRB Group-D - 01/10/2018 (Shift-II)
<b>(A)</b> 16	<b>(B)</b> 18
<b>(C)</b> 14	<b>(D)</b> 20

24. In the group of 5 people, ratio of the average of the ages of the first three and the last two is 9:7. If their average age difference is 12, what will be the average age of the five people?

 RRB Group-D - 19/11/2022 (Shift-II)

 (A) 46.8
 (B) 49.2

 (C) 48.4
 (D) 64.8

**25.** The average of 81 results is 54. If the average of the first 59 results is 52 and the average of the last 21 results is 60, then calculate the 60th result.

 RRB Group-D - 11/12/2018 (Shift-I)

 (A) 52
 (B) 60

 (C) 46
 (D) 62

**26.** The average weight of 25 items is 50kg. If the weight of another object X is included, the average weight increases to 500g. What is the weight of object X?

 RRB Group-D - 25/11/2022 (Shift-II)

 (A) 28kg
 (B) 36kg

 (C) 82kg
 (D) 63kg

**27**. The mean weight of six children is 17.5 kg. If the individual weights of five of these children are 14, 19, 23, 21 and 13 kg respectively, find the weight of the sixth child.

RRB Group-D - 05/11/2018 (Shift-III)

<b>(A)</b> 1/k	<b>(B)</b> 15kg
<b>(C)</b> 16kg	<b>(D)</b> 18kg

**28.** After 11 innings, the average score per innings of a batsman is 52. After 13 innings, the average rose to 54. If the batsman has scored 16 runs more than the previous innings in the 13th innings, then how many runs did he score in the 12th innings?

	RRB Group-D - 25/11/2022 (Shift-III)
<b>(A)</b> 54	<b>(B)</b> 57
<b>(C)</b> 56	<b>(D)</b> 55

**29**. One group of 12 members had an average score of 8, while another group of n members

had an average score of 10. If the combined average was 9.2, find the value of n.

	RRB Group-D - 24/10/2018 (Shift-II)
<b>(A)</b> 18	<b>(B)</b> 24
<b>(C)</b> 16	<b>(D)</b> 30

**30.** The average of runs scored by a batsman in five matches is 125. The average of runs scored by him in the first two matches is 150. The average of runs scored in the last two matches is 110. How many runs were scored by the Batsman in the third match?

	<b>RRB Group-D</b>	- 03/12/2018 (Shift-III)
(A) 115	run	(B) 125 run
(C) 105	run	(D) 95 run

**31.** Based on the following table, what is the average number of screws manufactured in the unit in a given 6 months?

Month	Number manufactur	of ed	screws
January	200		
February	300		
March	250		
April	250		
May	250		
June	250		
RRB Group-D -2 8/11/2022 (Shift-II)			

( <b>A)</b> 300		( <b>B</b> ) 200			
( <b>C)</b> 250		( <b>D</b> ) 150			
	A private	swimming	pool	provides	different

**32.** A private swimming pool provides different time slots for its users, and the following table shows the number of pool visitors of the week.

Day	Number of pool visitors
Monday	8
Tuesday	4
Wednesday	15
Thursday	15
Friday	20
Saturday	25
Sunday	25

On average, how many visitors came on a single day of that week?

	RRB Group-D - 15/10/2018 (Shift-I)
<b>(A)</b> 12	<b>(B)</b> 16
<b>(C)</b> 14	<b>(D)</b> 15

**33.** Two football teams, Team A and Team B played in the tournament and scored the following goals in 6 matches.

Game	Goal by Team A	Goal by Team B
Game 1	2	3
Game 2	1	0
Game 3	0	1
Game 4	4	5
Game 5	3	2
Game 6	2	1

**RRB Group-D - 26/11/2022 (Shift-III)** (A) The average scores of Team A and Team B are same.

(B) Team A's average score is higher than B.

(C) Team A is more compatible than Team B.

(D) Team B's average score is higher than Team A.

**34.** The number of people going through the shop is recorded for four different quarters. The following data is given for this.

- 2			
	Quarter	Number of people	
	Quarter 1	2000	
	Quarter 2	1000	
	Quarter 3	3500	
	Quarter 4	5500	

What is the average number of people going through the shop in all the quarters?

RRB Gr	oup-D - 22/10/2018 (Shift-III)
<b>(A)</b> 12, 000	<b>(B)</b> 4, 000
<b>(C)</b> 10, 000	<b>(D)</b> 3, 000

**Direction (35-37):** The given table shows the marks obtained by four students, W, X, Y and Z in four subjects, P, C, B and M, with a maximum of 100 marks in each subject.

Students/Subject	Ρ	С	В	Μ
W	70	90	50	85
Х	55	80	95	60
Y	60	20	90	40
Z	90	80	40	65

**35.** Subject C has average marks of all four students:

RRE	3 Group-D - 12/12/2018 (Shift-I)
<b>(A)</b> 67.5	<b>(B)</b> 67
( <b>C)</b> 67.75	<b>(D)</b> 67.25

**36**. What is the average marks in M of four students:

	RRB ALP & Tec. (31-08-18 Shift-I)
<b>(A)</b> 62	<b>(B)</b> 62.25
(C) 62.75	<b>(D)</b> 62.5

37. What is the average marks of the four students in P?

()

**(C)** 44

	C 1 C C . (23-00-10	01111-111
<b>A)</b> 68.5	<b>(B)</b> 68	
<b>C)</b> 68.75	<b>(D)</b> 68.25	

- 38. Find the average of 3/4, 5/8, 7/12, 15/16. RRB RPF SI - 05/01/2019 (Shift-II) (A) 139 / 192 (B) 135 / 64 (C) 11 / 32 (D) 21 / 64
- 39. The average of five consecutive even numbers is 40. Find the value of the smallest of these numbers.
   RRB RPF Constable 19/01/2019 (Shift-II) (A) 35 (B) 36
- **40.** The average of the four numbers a, b, c and d is 26. If the average of a and b is 19.5 then the average of c and d will be:

RRB RPF Co	onstable - 18/01/2019 (Shift-I)
<b>(A)</b> 33	<b>(B)</b> 35.5
<b>(C)</b> 31.5	<b>(D)</b> 32.5

(D) 48

**41.** The average marks in an examination of 3 students of a class is 18 out of 25. Two new students take the exam. What is the minimum marks that can be obtained by a new student and it is less than the other students and the total average of the five students should reach 20?

	RRB RPF SI - 06/01/2019 (Shift-II)
<b>(A)</b> 23	<b>(B)</b> 20
<b>(C)</b> 21	<b>(D)</b> 22

**42.** In a class of 10 students, the average age was 16 years. When two students left the class, the average age of the remaining students was 16.25 years. What was the total age of the leaving students?

 RRB RPF Constable - 20/01/2019 (Shift-III)

 (A) 32 years
 (B) 30 years

 (C) 34 years
 (D) 28 years

**43.** A person received 4 packets in January with an average weight of 300g, and 8 packets in February with an average weight of 400g. What will be the average weight (in gm) of all the packets received by the person in both months?

RR	B RPF SI - 10/01/2019 (Shift-I)
<b>(A)</b> 350 g	<b>(B)</b> 366.67 g
<b>(C)</b> 412.67 g	<b>(D)</b> 376.67 g

44. The average score of a group of cricketers was 42. A new player joins and scores 250% of the average of the group members. This results in a 30% increase in the overall average. What was the number of cricketers in the group before the new player joined? RRB RPF Constable - 22 /01/ 2019 (Shift-II)

(A) 3 (B) 5 (C) 6 (D) 4

**45.** The sales volume in the shop is recorded for four different quarters. Following is the data-

	0
Quarter	Sales volume
Quarter 1	200
Quarter 2	100
Quarter 3	350
Quarter 4	550

What is the average sale per quarter?

 RRB RPF SI - 12/01/2019 (Shift-III)

 (A) 300
 (B) 500

( )	( )
<b>(C)</b> 250	<b>(D)</b> 350

**46.** After 10 innings, the average score per innings of a batsman was 52. The average score increased to 54 after 12 innings. If the batsman has scored 16 runs more in the 12th innings than the previous one innings, then how many runs did he score in the 11th innings?

	RRB ALP & Tec. (14-08-18 Shift-I)
<b>(A)</b> 55	<b>(B)</b> 56
<b>(C)</b> 54	<b>(D)</b> 53

**47**. What is the mean (average) of the first 50 natural numbers?

#### RRB NTPC 23/07/2022 Shift -3

<b>(A)</b> 26.5	<b>(B)</b> 25.5
<b>(C)</b> 26	<b>(D)</b> 25

**48.** The sum of 7 numbers is 1050. The average of the first three numbers is 120, the fourth number is 126, then find the average of the last three numbers.

RRB NTPC 10/08/2022Shift : 2(A) 200(B) 165(C) 188(D) 173

- 49. Find the average of 8, 5, 6, 3, 7, 4, 3, 9.
   RRB NTPC 23/07/2022 Shift :2
   (A) 5.63
   (B) 5.64
   (C) 5.65
   (D) 5.66
- 50. Find the average of 1, 9, 7, 3, 5, 5, 6, 4, 2, 8. RRB NTPC 10/08/2022Shift : 3

- (A) 3 (B) 4 (C) 5 (D) 6
- **51.** Find the average of the first 20 multipliers of 7.

	RRB NTPC 10/08/2022 Shift : 3
<b>(A)</b> 66.5	<b>(B)</b> 67.5
<b>(C)</b> 73.5	<b>(D)</b> 74.5

52. Find the average of the first 20 multiples of 8. RRB NTPC 10/08/2022 Shift : 1

<b>(A)</b> 78	<b>(B)</b> 80
(C) 84	( <b>D</b> ) 82

**53**. What is the average of the first 30 coefficients of 9?

	RRB NTPC 09/05/2022 Shift :1
<b>(A)</b> 142	<b>(B)</b> 138.5
(C) 139.5	<b>(D)</b> 143.5

**54**. Three numbers are given in which the second number is three times the first and 2 times the third. If the average of all three numbers is 66. Find the first number.

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 36	<b>(B)</b> 54
<b>(C)</b> 108	<b>(D)</b> 72

55. The average of 5 consecutive numbers is 50. Find out the difference between the product of the largest number and the smallest number and the product of fourth and second number. RRB NTPC 12/08/2022Shift : 1

	RRB NIPC 12/08/20
<b>(A)</b> 3	<b>(B)</b> -3
( <b>C</b> ) 0	<b>(D)</b> 10

**56**. The average of five consecutive numbers is 10, so what will be the middle number?

	RRB NTPC 12/08/2022Shift :
<b>(A)</b> 10	<b>(B)</b> 11
( <b>C)</b> 8	<b>(D)</b> 9

**57**. The average of 5 consecutive numbers is 100, find the first number.

	RRB NTPC 23/07/2022 Shift : 1
<b>(A)</b> 98	<b>(B)</b> 99
<b>(C)</b> 100	<b>(D)</b> 101

**58**. The average of 5 consecutive numbers is 100, then the difference between the squares of the largest and the smallest numbers will be:

### RRB NTPC 23/07/2022 Shift: 2

3

<b>(A)</b> 800	<b>(B)</b> 990
( <b>C)</b> 900	<b>(D)</b> 1000

**59**. The average marks obtained by 35 students in a class is 63. If two more students whose average is 85.5 are added to this, then what will be the new average of the class?

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 64.20	<b>(B)</b> 67.90
( <b>C)</b> 63.62	<b>(D)</b> 65.35

**60**. The average score obtained by James in Mathematics, Science and History is 89. If its language marks are also added, the average decreases to 88.25. Find out the marks obtained by him in the language.

RRB NTPC 23/07/2022 Shift : 3

<b>(A)</b> 90	<b>(B)</b> 82
( <b>C</b> ) 86	( <b>D</b> ) 83

**61.** The average age of 40 students is 30 years, the average age of 25 students is 36 years. Find the average age of the remaining students.

	RRB NTPC 10/08/2022Shift : 2
<b>(A)</b> 20	<b>(B)</b> 15
<b>(C)</b> 25	<b>(D)</b> 18

**62.** If the average age of 40 students in class I is 10 years and the average age of 30 students in class II is 12 years. Find the average age (in years) of all the students.

( ,	RRB NTPC 12/08/2022Shift : 2
<b>(A)</b> 11	<b>(B)</b> 10.54
<b>(C)</b> 10.58	<b>(D)</b> 10.85

**63.** The average of 11 results is 50. The average of the first 6 results is 49 and the average of the last 6 results is 52. So what will be the value of the sixth result?

	RRB NTPC 10/08/2022 Shift: 3
<b>(A)</b> 48	<b>(B)</b> 51
(C) 56	<b>(D)</b> 49

64. The average of 45 results is 23. The first 22 average is 18 and the last 22 average is 21. What is the value of the 23rd result? RRB NTPC 18 04 2016 Shift : 3

	RRB NTPC 18.04.2016 Shift : 3
<b>(A)</b> 172	<b>(B)</b> 190
<b>(C)</b> 177	<b>(D)</b> 187

**65**. The average weight of 42 boys in a class is 41 kg. A boy weighing 39 kg joins the class. The weight of an already present boy was

counted at 34 kg instead of 43 kg. What is the new average?

**RRB NTPC 26.04.2016 Shift : 1** (B) 40.74

(A) 39.81
(B) 40.74
(C) 41.16
(D) 40.92

**66**. The average weight of 5 persons is 76 kg. Four of them weigh 72, 74, 75 and 81 kg. The weight of the 5th person will be in kg-

0	<b>RRB NTPC 26.04.2016 Shift: 3</b>
<b>(A)</b> 77	<b>(B)</b> 78
<b>(C)</b> 79	<b>(D)</b> 80

**67**. The average weight of 30 students in a class is 25 kg. If the weight of the class teacher is also included in it, then the average weight increases by 2 kg. What is the weight of the class teacher?

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 86	<b>(B)</b> 84
(C) 81	<b>(D)</b> 87

**68**. The average weight of 29 students in a class is 48 kg. If the weight of the class teacher is added, the average weight increases by 1/2 kg. What is the weight (in kg) of the class teacher?

	RRB NTPC 12/08/2022Shift : 3
<b>(A)</b> 63	<b>(B)</b> 65
( <b>C)</b> 60	<b>(D)</b> 68

**69**. The average weight of 30 students in a class is 15 kg. If the weight of the class teacher is included, then the average weight increases by 1 kg. What is the weight (in kg) of the class teacher?

	RRB NTPC 23/07/2022 Shift : 1
<b>(A)</b> 46	<b>(B)</b> 45
(C) 16	<b>(D)</b> 92

**70.** In a football tournament, Real Madrid scored 33 goals and 22 goals against it. Calculate the average number of goals scored for each Real Madrid player?

	RRB NTPC 23/07/2022 Shift : 2
<b>(A)</b> 1	<b>(B)</b> 2
<b>(C)</b> 3	<b>(D)</b> 0

**71.** A person's expenditure has increased by Rs 10,000 each month in February and March. If his expenditure in January was Rs. 10,000, then find his average expenditure (in rupees) from January to March.

### RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> 20000	<b>(B)</b> 15000
<b>(C)</b> 10000	<b>(D)</b> 25000

**72**. A person's expenditure has increased by Rs 50,000 each month in February and March. If his expenditure in January was Rs. 50,000, then find his average expenditure (in rupees) from January to March.

 RRB NTPC 12/08/2022Shift : 3

 (A) 100000
 (B) 150000

 (C) 75000
 (D) 50000

**73**. The average of the three numbers is 8. The average of the first two numbers is 6 and the

average of the last two numbers is 9. Find those three numbers.

 RRB Paramedical - 20/07/2018 (Shift-III)

 (A) 4, 9, 9
 (B) 4, 8, 12

 (C) 5, 7, 12
 (D) 6, 6, 12

74. After 12 innings, the average score per innings of a batsman was 55. His average score increased to 60 after 14 innings. If the batsman had scored 20 runs more than the previous innings in the 14th innings, how many runs did he score in the 13th innings? RRB Paramedical - 21/07/2018 (Shift-I)

<b>(A)</b> 90	<b>(B)</b> 85
<b>(C)</b> 80	<b>(D)</b> 75

## Solution

4.

5.

Ans.(B) 1. Let the numbers be w<x<y<z.  $w + x + y = 22 \times 3$  ....(i)  $x + y + z = 28 \times 3....$ (ii) Range = Largest number - Smallest number Substituting eq. (i) from eq. (ii)  $\Rightarrow z - w = 84 - 66 = 18$ 2. Ans.(C) Let the numbers be x, y, z. According to question - $\Rightarrow \frac{x + y + z}{3} = 7 \dots \dots (i)$  $\Rightarrow \frac{x + y}{2} = 5 \dots \dots \dots (ii)$  $\Rightarrow \frac{y+z}{2} = 8 \dots \dots \dots (iii)$  $\Rightarrow$  from eq. (i) and (ii)  $\Rightarrow z = 21 - 10 = 11, z = 11$  $\Rightarrow$  putting the value of z in eq. (iii) –  $\Rightarrow y = 16 - 11 = 5, y = 5$  $\Rightarrow$  putting the value of y in eq. (ii) –  $\Rightarrow x = 10 - 5 = 5, x = 5$ Hence the number is 5, 5 and 11. 3. Ans.(B) Four digit ascending order - w, x, y, z According to question - $\frac{w + x + y}{3} = 25.5$ w + x + y = 76.5....(1) $\frac{x + y + z}{3} = 29.5$ x + y + z = 88.5....(2)Substituting equation (1) from equation (2) z - w = 12hence range = Largest Digit - Smallest Digit z - w = 12

Ans.(A) Let the three numbers be x, y, z and x < y < z.  $x + y + z = 28 \times 3$  $x + y + z = 84 \dots (i)$ According to condition - $\frac{(x+2) + y + (z-5)}{3} = y$ x + y + z = 3y + 3 $x - 2y + z = 3 \dots \dots (ii)$ same condition as the range z - 5 - (x + 2) = 36 $z - x = 43 \dots \dots (iii)$ Subtracting equation (ii) from equation (i)y = 27 from eq.(i) x + y + z = 84x + z = 84 - 27x + z = 57z - x = 432z = 100z = 50hence the largest number of original sets = 50 Ans.(A) : Let the first, second and third numbers be x, y and z respectively and x < y < z According to guestion -Sum of all three numbers =  $28 \times 3$  $x + y + z = 84 \dots (i)$  $::\frac{z-10 + y + x + 7}{3} = y$ x + y + z - 3 = 3y $x + z - 2y = 3 \dots$  (ii) z - 10 - x - 7 = 20 $z - x = 37 \dots$  (iii) from eq. (i),(ii) and (iii)

x + y + z = 84 $z - 37 + \frac{2z - 40}{2} + z = 84$ 2z - 74 + 2z - 40 + 2z = 1686z = 168 + 1146z = 282z = 47Ans.(A) The total sum of the numbers (a + b + c + d)= 39 ×4 = 156 The total sum of the number (a + b)  $= 29.5 \times 2 = 59.0$ Total sum of (c + d) = [(a + b + c + d) - (a + b)]b)1 = [156 - 59 = 97 : Average of number (c + d) =  $\frac{97}{2}$  = 48.5 Ans.(A) Average of marks obtained in 18 boys test = 16 total marks = 16× 18 = 288 Total 30 students average = 18.1 total marks  $= 18.1 \times 30 = 543$ total marks of 12 girls = 543 - 288 = 255 total average of 12 girls =  $\frac{255}{12}$  = 21.25 Ans.(D) According to question total marks of  $G_1 = 20 \times 50 = 1000$ total marks of  $G_2 = 40 \times s 60 = 2400$ total marks of  $G_3 = 60 \times 70 = 4200$ total marks of G1, G2 and G3 = 1000 + 2400 + 4200 = 7600total students = 20 + 40 + 60 = 120Average marks of all students =  $\frac{7600}{120}$  $= 63.3\% \approx 63\%$ Ans.(A) Ratio of boys and girls 7: 3 total marks of boys =  $65 \times 7 = 455$ total marks of girls =  $72 \times 3 = 216$ total marks = 671 number = 10Hence the average of the whole class  $=\frac{671}{10}=67.1$ 10. Ans.(C) Let The number of boys and girls in a class of 45 students is 4 x, 5 x respectively.  $\therefore 4x + 5x = 45$ 9x = 45x = 5Number of boys  $4 \times 5 = 20$  $5 \times 5 = 25$ Number of girls total marks of boys  $75 \times 20 = 1500$ total marks of girls  $25 \times 82 = 2050$ total marks of boys and girls = 1500 + 2050

6.

7.

8.

9.

= 3550

total marks of class =  $\frac{3550}{45}$  = 78.88 = 78.9

#### 11. Ans.(C)

12.

Number of girls = 25 - 18 = 7Hence the average test score of girls  $25 \times 16.12 - 18 \times 15$  $\frac{403 - 270}{403 - 270} = \frac{133}{100} = 19$ 

$$=\frac{103^{\circ} 270}{7} = \frac{133}{7}$$
  
Ans.(C)

Average marks obtained by the student in 5 subjects = 75Total marks obtained by the students =  $75 \times 5$ = 375: average of first 2 subjects = 65 Sum of first 2 subjects =  $65 \times 2 = 130$  $\therefore$  Average of last 2 subjects = 85 Sum of last 2 subjects =  $85 \times 2 = 170$ Marks obtained in third subject = Sum of five subjects - (Sum of first 2 subjects + Sum of the last 2 subjects) = 375 - (130 + 170)= 375 - 300= 75 Hence, marks obtained in third subject = 75

#### 13. Ans.(B)

Given -The ratio of boys and girls is 2: 3. Number of boys =  $\frac{50\times2}{5}$  = 20 Number of girls =  $\frac{50\times3}{5}$  = 30 average score of whole class =  $\frac{60 \times 20 + 30 \times 70}{50}$  $=\frac{1200 + 2100}{50} = \frac{3300}{50} = 66$ 

#### 14. Ans.(B)

Average of marks obtained by Reena in 16 exams = 26 $\therefore$  Total marks = 26  $\times$  16 = 416 Average of marks obtained by Shreya in 12 exams = 24 $\therefore$  Total marks = 24  $\times$  12 = 288 Total difference of Reena and Shreya's marks = 416 - 288 = 128Difference between two exams = 16 - 12 = 4Average score of 4 examinations of Shreya  $=\frac{128}{4}=32$  marks Hence, Shreya got average marks in 4 exams for performing like Reena = Must bring 32.

#### 15. Ans.(B)

Let number of girls = xAccording to question -

 $9 \times 13 + 15 \times x = 14.28(x + 9)$ 117 + 15x = 14.28x + 128.520.72x = 11.521152  $x = \frac{1}{72}$ x = 16hence the number of girls = 16Total number of students = x + 9 = 16 + 9= 25 16. Ans.(A) Let there be three boys x, y and z. According to guestion –  $x + y + z = 48 \dots (i)$ Let, two newly inducted students are A and B. Then the sum of the marks obtained by five students = x + y + z + A + B =95 .....(*ii*) From eq.(i) and (ii), A + B = 95 - 48 $A + B = 47 \dots \dots (iii)$ Integer for A + B = 25 + 25 = 50 marks If we give the highest marks to A, then the minimum marks obtained by B = 47 - 25= 22 marks 17. Ans.(A) Sum of marks of all 5 students =  $40 \times 5 = 200$ Sum of marks of first three students =  $38 \times 3$ = 114 Sum of marks of remaining two new students = 200 - 114 = 86Maximum marks in the exam = 45 Hence.One of the two new students can get a maximum of 45 marks. And the second student will be able to score a minimum of 86 - 45 = 41 marks. 18. Ans.(B) Sum of total marks in 12 tests by Raghuveer  $= 12 \times 25 = 300$ Sum of total marks in 8 tests by Rumela  $= 8 \times 23 = 184$ 4 marks required to be equal to Raghuveer = 300 - 184 = 116Intended average =  $\frac{116}{4}$  = 29 19. Ans.(C) let five students are A, B, C, D, E and their average = xAccording to question - $\Rightarrow A + B + C + D + E = 5x$ .....(i) Let new involved student = F  $\Rightarrow A + B + C + D + E + F = 6(x + 2) =$ 6x + 12 .....(ii) From eq. (i) and (ii)  $\Rightarrow 6x + 12 - 5x = F$  $\Rightarrow F = x + 12$ Hence, the marks of newly inducted students are 12 more than the average marks.

### 20. Ans.(B)

21.

22.

23.

24.

Let number of girls = xAccording to guestion - $28 \times 12.5 + x \times 14.5$ 13.1 = 28 + x366.8 + 13.1x = 350 + 14.5x1.4x = 16.8x = 12number of students = 28 Number of girl students = 12 Total number = 28 + 12 = 40Ans.(B) let average marks of 19 students = x student + student + --- + student-x10 student<sub>1</sub> + student<sub>2</sub> + - - - - + student<sub>19</sub> = 19x - - - - - (i)New student joining - $\frac{student + student + --- + student}{2} x + 1.5$ 20  $student_1 + student_2 + - - - - - - + +$  $student_{20} = 20x + 30 - - - - (ii)$ Substituting eq. (i) into eq. (ii) student<sub>20</sub> = 20x + 30 - 19x= x + 30It is clear that the new student in the group has get 30 marks more than the average. Ans.(B) Given, Suvir's average marks in 15 exams = 29 Suvir's total score =  $29 \times 15 = 435$ Ruchira's average marks in 11 exams = 27 Ruchira's total marks = 27 ×11 = 297 Total marks required in the remaining 4 examinations of Ruchira = 435 - 297 = 138 Hence the average marks required by Ruchira =  $\frac{138}{4}$  = 34.5 Ans.(A) let average score of seven students = x : Total marks obtained by seven students = 7x Let again ew student marks = y According to question - $\frac{7x + y}{8} = (x + 2)$ 7x + y = 8x + 16y = x + 16Hence the student scored 16 marks more than the average. Ans.(B) Average age of 3 people = 9x year Average age of group of 2 people = 7x year Difference of average age of both groups = 12 :.9 x - 7 x = 122x = 12x = 6

Average age of 3 people =  $9 \times 6 = 54$  year Average age of 2 people =  $7 \times 6 = 42$  year Total age of 3 people =  $3 \times 54 = 162$  year Total age of 2 people =  $2 \times 42 = 84$  year Total age of 5 people = (162 + 84) = 246 year Average age of 5 people =  $\frac{246}{5}$  = 49.2 year 25. Ans.(C) Total sum of 81 results =  $81 \times 54 = 4374$ Total sum of first 59 results =  $59 \times 52 = 3068$ Total sum of last 21 results =  $21 \times 60$ = 1260 60th result = 4374 - 3068 - 1260 = 46 26. Ans.(D) Total weight of 25 items =  $25 \times 50 = 1250$ kg Total average weight if weights of new item X = (50 + .5) kg = 50.5 kghence total weight of 26 items =  $50.5 \times 26$ = 1313kg weight of X = 1313 - 1250 = 63kg27. Ans.(B) : Let the weight of sixth child be x kg  $\therefore 17.5 = \frac{14 + 19 + 23 + 21 + 13 + x}{6}$ 105.0 = 90 + xx = 15Hence, weight of sixth child = 15kg 28. Ans.(B) Total score after 11 innings =  $52 \times 11 = 572$ Total score of 13 innings =  $54 \times 13 = 702$ 12th innings + 13th innings score = Score of 13 innings – Score of 11 innings = 702 - 572= 130 According to question let the run in 12th innings = xrun in 13th innings = x + 16then. x + (x + 16) = 1302x = 130 - 162x = 114x = 5729. Ans.(A) Sum of the group of 12 members =  $12 \times 8$ = 96 Sum of group of n members =  $10 \times n = 10 n$ : Combined average = 9.2 : According to question - $9.2 = \frac{96 + 10n}{(12 + n)}$  $(12 + n) = \frac{960 + 100n}{92}$ 1104 + 92n = 960 + 100n144 = 8n $n = \frac{144}{8} = 18$  $\therefore n = 18$ 

### 30. Ans.(C)

Total runs scored in five matches =  $125 \times 5$ = 625 Total runs scored in first two matches =  $150 \times$ 2 = 300Total runs scored in last two matches =  $110 \times$ 2 = 220: Total runs scored in third match = 625 -(300 + 220) = 625 - 520 = 105 run 31. Ans.(C) Average =  $\frac{\text{Sum of terms}}{\text{number of terms}}$ Screw average =  $\frac{200 + 300 + 250 + 250 + 250 + 250}{6}$ 6  $=\frac{1500}{6}=250$ 32. Ans.(B) Number of visitors in whole week = 8 + 4 + 15+ 15 + 20 + 25 + 25 = 112 Average =  $\frac{112}{7}$  = 16 Hence, an average of 16 visitors arrived throughout the week. 33. Ans.(A) Team A's average score  $=\frac{2+1+0+4+3+2}{6}=\frac{12}{6}=2$ Team B's average score =  $\frac{3+0+1+5+2+1}{6} = \frac{12}{6} = 2$ 34. Ans.(D) average number =  $\frac{2000 + 1000 + 3500 + 5500}{4}$  $=\frac{12000}{4}=3000$ 35. Ans.(A) Average marks of all four students in Subject  $C = \frac{90 + 80 + 20 + 80}{4} = \frac{270}{4} = 67.5$ Ans.(D) 36. Average marks in M of all four students  $=\frac{85+60+40+65}{4}$  $=\frac{250}{4}=62.5$ 37. Ans.(C) Average marks of all the four students in P  $=\frac{70^{\circ}+55+60+90}{4}=\frac{275}{4}=68.75$ 38. Ans.(A) Sum of terms Average =  $\frac{\text{Sum of terms}}{\text{number of terms}}$ Average =  $\frac{\frac{3}{4} + \frac{5}{8} + \frac{7}{12} + \frac{15}{16}}{\frac{4}{36} + 30 + 28 + 45}$ Average =  $\frac{\frac{36 + 30 + 28 + 45}{48}}{4}$ 

 $=\frac{139}{48\times4}=\frac{139}{192}$ Average =  $\frac{137}{192}$ 39. Ans.(B) let five consecutive even numbers are x, x + 2, x + 4, x + 6 and x + 8According to question x + x + 2 + x + 4 + x + 6 + x + 85 = 405x + 20 = 2005x = 180x = 36Hence the smallest number x = 3640. Ans.(D) First condition,  $\frac{a+b+c+d}{4} = 26$  $\therefore a + b + c + d = 104 \dots (i)$ Second condition, average of a and b = 19.5a + b = 39 .....(ii) putting the value of a + b of eq. (ii) in eq. (i)  $\therefore a + b + c + d = 104$ 39 + c + d = 104c + d = 104 - 39c + d = 65Hence the average of c and d =  $\frac{c+d}{2}$  $=\frac{65}{2}=32.5$ 41. Ans.(C) Total marks of three students =  $25 \times 3$ = 75 marksand the sum of their digits =  $18 \times 3$ = 54 marksTotal marks of 5 students =  $20 \times 5$ = 100 marks marks obtained by 2 students = 100 - 54 = 46That is, one student can get 25 (maximum marks) while the other student can get 21 (minimum marks). Hence minimum 21 marks can be obtained by a student. 42. Ans.(B) Total age of 10 students =  $16 \times 10 = 160$ Total age of remaining 8 boys =  $8 \times 16.25$ = 130.00Total age of dropout students = 160 - 130= 30 year 43. Ans.(B) In January, the total weight of 4 packets  $= 4 \times 300 = 1200g$ In February, the total weight of 8 packets  $= 8 \times 400 = 3200g$ 

Average weight of total packets Sum of total weight Number of total packets 1200 + 320012  $=\frac{4400}{12}=\frac{1100}{3}$ = 366.67 gAns.(D) Let number of cricketers in the group = x, and average = 42 Then, total score = 42xNumber of cricketers when a player joins the group = x + 1New average =  $\frac{42 \times 130}{100}$  = 54.6 New player's score =  $\frac{42 \times 250}{100}$  = 105 now total score = (105 + 42x)hence, total = average  $\times$  numbers 105 + 42x = 54.6(x + 1)105 - 54.6 = 54.6x - 42x50.4 = 12.6x $x = \frac{50.4}{12.6} = 4$ 

Hence, number of cricketers in the first group (x) = 4

### 45. Ans.(A)

44.

Ave	erage	sales	per	qua	rte	r
_	(200 -	+ 100	+	350	+	550)
			4			
	1200	_ 200	<b>`</b>			
	4	= 300	)			
-						

### 46. Ans.(B)

According to question, Total score of 10 innings =  $10 \times 52 = 520$ Total score of 12 innings =  $12 \times 54 = 648$ Let, X runs in the 11th inning. According to question, x + x + 16 = 648 - 520 2 x = 128 - 16 2 x = 112 x = 56 run Hence, the batsman makes 56 runs in the 11th innings.

## 47. Ans.(B)

48.

∴ Average of first n natural numbers =  $\frac{n+1}{2}$ ∴ Average of first 50 natural numbers =  $\frac{50 + 1}{2}$  = 25.5 Ans.(C) Sum of the first three numbers =  $120 \times 3$ = 360

- Sum of last three numbers
- = 1050 (360 + 126)

= 1050 - 486= 564 average of last three numbers =  $\frac{564}{3}$  = 188 49. Ans.(A) average =  $\frac{8+5+6+3+7+4+3+9}{8}$  $=\frac{45}{8}=5.625=5.63$ 50. Ans.(C) average =  $\frac{1+9+7+3+5+5+6+4+2+8}{10}$  $=\frac{50}{10}=5$ 51. Ans.(C) Sum of the first n coefficients of  $K = \frac{K[n(n+1)]}{2}$ Sum of the first 7 coefficients of 20  $= \frac{7 \times [20(20 + 1)]}{\frac{2}{2}}$  $= \frac{7 \times 20 \times 21}{\frac{2}{2}}$  $= \frac{1470}{average} = \frac{Contribution}{n}$ average =  $\frac{1470}{20}$ average = 73.5 52. Ans.(C) 8, 16, 24 ... ... 160 Sum of terms =  $\frac{n}{2}(a + \ell)$  $=\frac{20}{2}(8+160) = 10 \times 168 = 1680$  $\therefore \text{ average } = \frac{1680}{20} = 84$ Sum of the first N coefficients of K =  $\frac{K[N(N+1)]}{2}$   $\therefore$  Sum of the first 30 coefficients of 9 =  $\frac{9[30(30+1)]}{2}$ 53.  $\frac{9 \times 30 \times 31}{2} = \frac{9 \times 30 \times 31}{2}$ = 4185 average =  $\frac{4185}{30} = 139.5$ 54. Ans.(A) Let second number = x $\therefore$  First number = x/3 third number = x/2∴ By question,  $\frac{\frac{x}{3} + x + \frac{x}{2}}{3} = 66$  $\Rightarrow \frac{2x + 6x + 3x}{6 \times 3} = 66$  $\Rightarrow \frac{11x}{18} = 66$  $\Rightarrow x = 6 \times 18 = 108$ 

 $\therefore \text{ First number } \left(\frac{x}{3}\right) = \frac{108}{3} = 36$ 

55. **Ans.(B)**  
Let 5 consecutive numbers are x, x + 1, x + 2,  
x + 3 and x + 4.  

$$\therefore \frac{x + (x + 1) + (x + 2) + (x + 3) + (x + 4)}{5}$$
  
= 50  
 $5x = 240$   
 $x = 48$   
 $\therefore$  By question,  
 $x(x + 4) - (x + 1)(x + 3)$   
 $= x^2 + 4x - (x^2 + 4x + 3)$   
= -3  
56. **Ans.(A)**  
let 5 consecutive numbers are x, x + 1, x + 2,  
x + 3 and x + 4.  
total sum -  
 $x + (x + 1) + (x + 2) + (x + 3) + (x + 4)$   
 $= 10 \times 5$   
 $5x + 10 = 50$   
 $5x = 40$   
 $x = 8$   
 $\therefore$  Middle number =  $(x + 2) = 8 + 2 = 10$   
57. **Ans.(A)**  
Let 5 consecutive numbers -  
 $x, x + 1, x + 2, x + 3, x + 4$   
 $\therefore \frac{x + x + 1 + x + 2 + x + 3 + x + 4}{5} = 100$   
 $5x + 10 = 500$   
 $5x = 490$   
 $x = 98$   
Hence the first number is 98.  
58. **Ans.(A)**  
let 5 consecutive numbers are x, x + 1, x + 2,  
x + 3 and x + 4.  
According to question,  
 $\frac{x + x + 1 + x + 2 + x + 3 + x + 4}{5} = 100$   
 $\frac{5x + 10}{5} = 100$   
 $5x + 10 = 500$   
 $5x = 490$   
 $\frac{x - 98}{100}$   
Largest number = x + 4 = 98 + 4 = 102  
Smallest number = x = 98  
Hence the difference between the squares of  
the largest and the smallest numbers  
 $= (102)^2 - (98)^2 = (102 + 98)(102 - 98)$   
 $= 200 \times 4$   
 $= 800$   
59. **Ans.(A)**  
Total marks of 35 students = 35 × 63  
 $= 2205$ 

By question -

new class average =  $\frac{2205 + 2 \times 85.5}{35 + 2}$ =  $\frac{2205 + 171}{37}$  =  $\frac{2376}{37}$  = 64.21  $\cong$  64.20 60. Ans.(C Marks obtained by him in language =  $4 \times$ 88.25 - 3 × 89 = 353 - 267 = 86 61. Ans.(A) Average age of remaining students  $40 \times 30 - 25 \times 36$ 40 - 251200 - 900  $= \frac{15}{\frac{300}{15}} = 20 \text{ years}$ 62. Ans.(D) Total age of 40 students =  $10 \times 40 = 400$  year Total age of 30 students =  $12 \times 30 = 360$  year Average age of all students =  $\frac{400+360}{72}$  $=\frac{760}{70}=10.85$  year Ans.(C) 63. 6th result = total of first 6 results + sum of the last 6 results - total of 11 results  $= 6 \times 49 + 6 \times 52 - 11 \times 50$ = 294 + 312 - 550= 606 - 550 = 5664. Ans.(C) Total value of 45 results =  $45 \times 23 = 1035$ Average of first 22 results =  $22 \times 18 = 396$ Average of last 22 results =  $22 \times 21 = 462$ Value of 23rd result = 1035 - (396 + 462)= 1035 - 858 = 177**65**. Ans.(C) total weight of 42 boys =  $42 \times 41 = 1722$ New weight when 39 kg boy joins = 1722 + 39 = 1761 According to question, New average =  $\frac{1761 + 43 - 34}{43} = \frac{1770}{43} = 41.16$ 66. Ans.(B) Total weight of 5 people =  $76 \times 5 = 380$ Weight of 4 people = 72 + 74 + 75 + 81 = 302 5th person's weight = 380 - 302 = 78kg 67. Ans.(D) weight of teacher in class =  $31 \times 27 - 30 \times 25$ = 837 - 750 = 87 kg. **68**. Ans.(A) Total weight of 29 students =  $29 \times 48 = 1392$ When the weight of the class teacher is added. Then total weight =  $30 \times 48.5 = 1455$ kg  $\therefore$  weight of class teacher = 1455 – 1392 = 63 kg **69**. Ans.(A) Total weight of 30 students in class

 $= 30 \times 15 = 450$ Total weight if class teacher is also included  $= 31 \times 16 = 496$ Hence, weight of class teacher = 496 - 450= 46ka Ans.(C) Real Madrid average number of goals scored for each player Number of goals in Real Madrid Number of football players  $=\frac{33}{11}$ = 3Ans.(A) expenses of the person for january = Rs.10000 Expenses for the month of February = 10000 + 10000 = Rs. 20000 And expenses for the month of March = 20000 + 10000 = Rs. 30000 Average spending from january to march 10000 + 20000 + 30000 3  $=\frac{60000}{3}=Rs.20000$ Ans.(A) Spend in january = Rs. 50000 : There is an increase of Rs.50000 in the months of February and March. : Expenses for the month of February = 50000 + 50000 = Rs. 100000 Expenses for the month of march = 100000 +50000 = Rs. 150000 Hence the average expenditure from January to March = 50000 + 100000 + 150000 3  $=\frac{300000}{3}$  = Rs. 100000 Ans.(D) Let there be three numbers a, b and c. According to question,  $\frac{a+b+c}{3} = 8$  $a + b + c = 24 \dots \dots \dots (i)$  $\frac{a+b}{2} = 6$  $a + b = 12 \dots \dots \dots (ii)$ and  $\frac{b+c}{2} = 9$ b + c = 18 .....(iii) From eq. (i), (ii) and (iii) a = 6, b = 6 or c = 12 $\therefore c = 24 - 12 = 12$ Hence, the three numbers are 6, 6, 12 respectively.

70.

71.

72.

73.

average score of 12 innings = 55  $\therefore$  total score = 55 ×12 = 660 average score of 14 innings = 60  $\therefore$  total score = 14 × 60 = 840 total score of 12th and 14th innings = 840 - 660 = 180Let the score of 13th innings be x. Then 14th innings score = x + 20According to question,  $\therefore x + 20 + x = 180$  $2x = 160 \Rightarrow x = 80$ 

# 18.(Speed, Time & Distance)

8.

9.

1. Kishan cycled 96 km at a fixed speed. If he cycled 4 kilometers per hour slower, he takes an additional time of 2 hours to reach the destination. What is the speed at which Kishan actually cycled in kilometers/hour?

 RRB Group-D-11/10/2018 (Shift-II)

 (A) 12
 (B) 18

 (C) 16
 (D) 15

2. A person has to cover a distance of 40 km. He covers a distance of 16 km by walking at a speed of 4 km/hr and the rest of the distance is covered by horse cart. If he had covered the distance of 16 km by horse cart and the rest at the speed of 4 km/hr, he would have taken 1 hour more than usual time. Find the speed of horse cart.

	RRB Group-D -	20/09/2022	(Shift-III)
(A) 12	2 km/hr	(B) 8 km/hr	
(C) 16	3 km/hr	(D) 10 km/h	r

**3.** In a 200m long run, runner A beats runner B by 3s. If there is a difference of 1.5 m/s in the speed of A and B, find the speed of A in m/s.

**RRB Group-D - 15/11/2018 (Shift-III)** 10.778 **(B)** 10.5

<b>(A)</b> 10.778	( <b>B)</b> 10.5
(C) 8.728	<b>(D)</b> 9.728

4. A foggy carriage passed a person who was walking in the same direction at a speed of 3 km/hr. The person could see the car for a distance of 100 m for 4 min. What was the speed of the car?

 RRB Group-D - 12/11/2018 (Shift-I)

 (A) 9/2 km/hr
 (B) 7/2 km/hr

 (C) 5 km/hr
 (D) 5/2 km/hr

5. The two cars A and B started at the same time, moving in opposite direction and after crossing each other, reach their destination after 5 hours and 6 hours respectively. If the speed of car A is 55 km/h, what will be the speed of car B?

RRB Group-D - 05/11/2018 (Shift-I)

<b>(A)</b> 66√12km/hr	<b>(B)</b> 110√3km/hr
(C) $\frac{55}{6}\sqrt{30}km/hr$	(D) $\frac{110}{\sqrt{6}} km/hr$

6. Parvez belongs to Town A and Gautam belongs to Town B. They begin their journey towards each other's cities by the same route at the same time. They meet somewhere along the way and continue their journey. After meeting Gautam, Parvez takes 12 hours to reach the destination while Gautam takes another 3 hours to reach Parvez's city. If Parvez travels at a speed of 60 km/h, tell Gautam's speed in km/h.

 RRB Group-D - 11/12/2018 (Shift-I)

 (A) 120
 (B) 105

 (C) 90
 (D) 125

7. Two people are cycling in the same direction, from there a train traveling at a fixed speed passes. The train crosses the first in 8 seconds and the second in 8.4 seconds, the first one was cycling at a speed of 9 km/h while the second one was cycling at a speed of 12 km/h. What is the speed of the train in km/h?

 RRB Group-D - 11/12/2018 (Shift-II)

 (A) 66
 (B) 75

 (C) 81
 (D) 72

Geeta travels from Hyderabad to IIT Roorkee, traveling 120 km by steamer, 450 km by train and 60 km by scooter. The total journey takes 13 hours 30 min and the speed of the train is three times the transit of the scooter and  $1\frac{1}{2}$ times the steamer. What is the speed of the train?

 RRB Group-D - 04/12/2018 (Shift-III)

 (A) 60 km/hr
 (B) 70 km/hr

 (C) 65 km/hr
 (D) 54 km/hr

Sabrina traveled 8 km/h on foot and 13 km/h on bicycle. He covered a distance of 84 km in 8 hours. For how many hours did she ride a bicycle?

	RRB Group-D - 27/11/2022 (Shift-I)
<b>(A)</b> 4	<b>(B)</b> 3
<b>(C)</b> 5	<b>(D)</b> 2
**10.** A rectangular lawn is 60 meters long and 40 meters wide. How long will a person take to cross its diagonal at a speed of 3 km/h?

RRB G	Group-D - 27/11/2018 (Shift-I)
(A) 92.8 sec	<b>(B)</b> 81.5 sec
(C) 84.5 sec	<b>(D)</b> 86.5 sec

**11.** How long will it take for a student to take a round of 25 hectares field at a speed of 10 km/hr?

RRB GI	oup-D - 15/10/2018 (Shift-III)
<b>(A)</b> 8 min	<b>(B)</b> 16 min
<b>(C)</b> 10 min	<b>(D)</b> 12 min

**12.** I walk a certain distance and return by vehicle. It takes a total of 13/2 hours. While it takes 31/4 hours to walk on both sides. How long will it take to get to the vehicle on both sides?

RRB Group-D - 19/11/2022 (Shift-II)

<b>(A)</b> 6 hr 15 min	<b>(B)</b> 5 hr 55 min
<b>(C)</b> 4 hr 15 min	<b>(D)</b> 5 hr 15 min

**13**. Kiran has to cover a distance of 300 km in 5 hours. He travels for some time at a speed of 75 km/hr and the remaining time at a speed of 55 km/hr. How long did Kiran travel at high speed?

RRB Group-D - 10/10/2018 (Shift-II)

<b>(A)</b> 1 hr 10 min	<b>(B)</b> 1 hr 25 min
(C) 1 hr 15 min	<b>(D)</b> 1 hr 35 min

**14.** The two cars start from opposite ends of the road and travel towards each other at speeds of 24 km/h and 30 km/h respectively. The distance between the starting position of the cars is 86.4 km. When the two cars meet each other, an approximate time will be-

RRB Group-D-10/10/2018 (Shift-I) (A) 14.4 hr (B) 2.88 hr

	<b>``</b>
<b>C)</b> 1.6 hr	<b>(D)</b> 3.6 hr

**15.** Rahman takes 10 hours to walk to a certain place and return by ride. However, he could have saved 5 hours if he had traveled both ways by ride. How long will it take to travel on both sides by walking?

 RRB Group-D - 27/11/2022 (Shift-III)

 (A) 15 hr
 (B) 10 hr

 (C) 5 hr
 (D) 20 hr

**16.** Ankit leads the bicycle to the church and returns by car to the starting point. He takes a total of 5 hours for this journey. In this journey, using the car on both sides, will save

him 3 hours. If he rode on both sides, how long would it take?

 RRB Group-D - 01/09/2022(Shift-III)

 (A) 5 hr
 (B) 7 hr

 (C) 8 hr
 (D) 9 hr

**17.** Train A departs from station X at 5 am and arrives at station Y at 9 am. Another train B departs from station Y at 6:30 am and reaches station X at 10 am, at what time do the two trains meet?

RRB Gro	oup-D - 01/09/2022(Shift-III)
(A) 7: 40 am	<b>(B)</b> 7 am
(C) 8 am	<b>(D)</b> 7: 30 am

**18.** The Pallava cycling at a speed of 12 km/hr and walking at a speed of 3.5 km/hr, the Pallava takes 8 hours to cover a distance of 45 km. How many hours did he ride a bicycle?

	RRB Group-D - 23/10/2018 (Shift-III)
<b>(A)</b> 5	<b>(B)</b> 2
<b>(C)</b> 4	<b>(D)</b> 3

**19.** You are driving from a point A to point B at a speed of 45 km/hr. Your friend is driving from point B to point A at a speed of 55 km/hr. If the distance between the two points is 1029 km and both of you start at the same time, then how many hours will it take you to cross each other?

RRB Group-D - 11/10/2018 (Shift-I)(A) 10.5(B) 9.5(C) 10.29(D) 11

**20.** Mark had to travel 220 km in 4.5 hours. He completed the journey by a train running at a speed of 60 km/hr or by a bus running at a speed of 40 km/hr or a combination of these two. How long did he travel by bus?

RRB Group-D - 28/11/2022 (Shift-II)		
<b>(A)</b> 1 hr	<b>(B)</b> 2 hr	
<b>(C)</b> 1 hr 30 min	<b>(D)</b> 2 hr 30 min	

**21.** Pritish has to travel 420 km in 7.5 hr by a train that runs at a speed of 60 km/hr or by a bus that runs at a speed of 40 km/hr or by both. How long did he travel by bus?

RRB Group-D	- 29/10/2018 (Shift-III)
(A) 1 hr 30 min	( <b>B</b> ) 2 hr
<b>(C)</b> 1 hr	<b>(D)</b> 2 hr 30 min

22. Mahima has to travel at a speed of 54 km/h instead of 45 km/h to reach the destination on time due to her journey starting 12 min late. What is the distance traveled during the journey?

#### RRB Group-D - 19/11/2022 (Shift-II)

<b>(A)</b> 75 km	<b>(B)</b> 54 km
<b>(C)</b> 67.5 km	<b>(D)</b> 90 km

**23**. A person travels 480 km in 4 hours, some of which he travels by plane and some train. If he takes the entire journey by airplane, he saves 4/5 time in comparison to the train and arrives at his destination 2 hours earlier. Find the distance traveled by train –

RRB Group-D - 19/11/2022 (Shift-I)

(A) 90 km	<b>(B)</b> 120 km
<b>(C)</b> 80 km	<b>(D)</b> 110 km

**24.** A person driving at a speed of 42 km/h reaches office 2 min earlier, while he reaches a delay of 5 min driving at a speed of 36 km/h. What distance (in km) does he cover?

RRB Group-D - 30/10/2018 (Shift-III)

<b>(A)</b> 30.8	<b>(B)</b> 29.6
<b>(C)</b> 30.4	<b>(D)</b> 29.4

**25.** Sachin completes a distance of 360 km from Delhi to Hyderabad in 4 hours, some by plane and some by train. If he had traveled his entire journey by plane, he would have saved 4/5 of his train time and reached his destination 2 hours earlier. Find the distance traveled by train?

RRB Group-D - 05/11/2018 (Shift-II)

<b>(A)</b> 45 km	<b>(B)</b> 75 km
<b>(C)</b> 50 km	<b>(D)</b> 90 km

**26.** A woman driving at a speed of 40 km/h arrives at the office 4 min earlier while she would have arrived 5 min late if she had been driving at a speed of 32 km/h. What is the distance (in km) covered by him?

 RRB Group-D - 08/10/2022 (Shift-II)

 (A) 32
 (B) 24

 (C) 28
 (D) 30

**27.** Raghu goes to college at a speed of 4 km/hr and returns at a speed of 3 km/hr. If he takes 5.95 hrs, what is the distance between his home and college?

 RRB Group-D - 19/11/2022 (Shift-I)

 (A) 10 km
 (B) 10.5 km

 (C) 20 km
 (D) 10.2 km

**28.** A person arrives at his office 1 min before travelling at a speed of 42 km/hr, while at a speed of 36 km/hr, the person reaches office with a delay of 3 min. How much distance (in km) does that person cover?

	RRB Group-D - 08/10/2018 (Shift-II)
(A) 12.9	<b>(B)</b> 16.8
(C) 15.4	<b>(D)</b> 18.2

**29.** Chetana went from her home to the city at a speed of 8 km/hr but returned home at the speed of 5 km/hr by the same route. It took him  $19\frac{1}{2}$  hours to travel round-trip. What is the distance of the city from the house of Chetana?

RRB	Group-D - 15/10/2018 (Shift-I)
<b>(A)</b> 45 km	<b>(B)</b> 60 km
<b>(C)</b> 52.5 km	<b>(D)</b> 37.5 km

**30.** If Raj drives 10 km/hr faster, he reaches his village 90 min earlier. If Raj drives 10 km/hr slow than usual, he reaches his village 150 min late. Find the total distance traveled by him.

	RRB Group-D	- 16/10/2018 (Shift-III)
(A) 600	km	(B) 500 km
(C) 400	km	<b>(D)</b> 300 km

**31.** A man travels by train and car to reach his office. If he covers a distance of 10 km by car and travels the rest by train, he arrives at his office in t hours. If he does the exact opposite, he arrives in office (t + 0.5) hours. If the speed of the train and the car are 50 km/h and 40 km/h respectively, then how much distance does he cover to reach his office.

RRB Gr	oup-D - 17/11/2022 (Shift-III)
<b>(A)</b> 100 km	<b>(B)</b> 80 km
(C) 120 km	<b>(D)</b> 140 km

**32.** Two men X and Y, cover a distance of 21 km between P and Q at 3 km/h and 4 km/h respectively. Upon reaching Q, Y immediately returns and meets X at R, what is the distance between P to R?

 RRB Group-D - 26/11/2022 (Shift-II)

 (A) 16 km
 (B) 17.5 km

 (C) 17 km
 (D) 18 km

**33.** A bus crosses two persons cycling at a speed of 9.6 km/hr and 12 km/hr respectively, in the same direction as the bus in 4.5 seconds and 9 seconds respectively. What is the length of bus?

	RRB Group-D - 26/11/2022 (Shift-III)
(A) 6 m	<b>(B)</b> 8 m
(C) 7 m	<b>(D)</b> 4 m

34. The distance between the two points is covered by a speed of 60 km/h while going and 40 km/h during the return journey. If it took a total of 5 hours, then what is the distance between the two points on one side? RRB Group-D - 27/11/2022 (Shift-III)

(A) 120	km	<b>(B)</b> 135 km
(C) 150	km	<b>(D)</b> 180 km

35. Jatin travels 7.5 km more if he walks 9 km instead of 4 km per hour. What exactly is the distance traveled by him in km?

	RRB Group-D - 10/10/2018 (Shift-III)
<b>(A)</b> 7	<b>(B)</b> 5
8 <b>(C)</b>	<b>(D)</b> 6

36. A car covers a certain distance in 8 hr. It covers half the distance at a speed of 40 km/hr and another half at a speed of 60 km/hr. Find the distance traveled.

> RRB Group-D - 16/10/2018 (Shift-II) (A) 384 kms (B) 368 kms (D) 388 kms (C) 344 kms

37. The distance between the two points is covered at a speed of 72 km/h and 54 km/h on the return. If it takes total 7 hours to cover the distance, what is the distance between the two points on one side?

RRB Group-D -22/10/2018 (Shift-II) (A) 324 km **(B)** 180 km (C) 189 km (D) 216 km

38. Traveling at a speed of 57 km/hr, Manav reached the destination 3 min earlier. If he had traveled at the speed of 51 km/hr. he would have reached with a delay of 1 min. What is the distance covered by Manav?

RRB Group-D - 26/10/2018 (Shift-III)

<b>(A)</b> 31.5 km	<b>(B)</b> 32.3 km
(C) 31.9 km	(D) 32.8 km

39. A woman driving at a speed of 45 km/h arrives at the office 5 min earlier while driving at a speed of 27 km/h she reaches 7 min late. How much distance (in km) did she cover?

RRB Group-D - 03/12/2018 (Shift-III)

<b>(A)</b> 18	<b>(B)</b> 16.5
<b>(C)</b> 15	<b>(D)</b> 13.5

40. Ram and Laxman travel the same distance at speeds of 32 km/hr and 40 km/hr respectively. Ram takes an hour more than Laxman to cover the distance. What is the distance traveled by Laxman?

RRB Group-D - 15/11/2018 (Shift-III)

<b>(A)</b> 160 km	<b>(B)</b> 200 km
<b>(C)</b> 120 km	<b>(D)</b> 100 km

41. Traveling at a speed of 66 km/h, Piali reaches a place 5 min early. If she traveled at a speed of 54 km/hr, she would have been delayed by 3 min. How far did Pivali travel? PPR Group-D - 15/10/2018 (Shift-II)

RRB Grou	ו-חות: (Sultt-i
(A) 39.2 km	<b>(B)</b> 40.2 km
(C) 39.6 km	<b>(D)</b> 40.8 km

42. Rahim started his journey with a delay of 15 min, due to which he had to drive at a speed of 54 km/h instead of 45 km/h to reach his destination on time. Find the distance covered during this journey.

RRB Gro	oup-D - 23/11/2022 (Shift-II)
<b>(A)</b> 75.5 km	<b>(B)</b> 90 km
<b>(C)</b> 67.5 km	<b>(D)</b> 13.5 km

43. An object moves 15m in 4s and the next 16m in 2s. What is the average speed of that object?

RRB Group-D - 25/11/2022 (Shift-I)		
<b>(A)</b> 6.17ms <sup>-1</sup>	<b>(B)</b> 5.17 <i>m</i>	
(C) $5.17s^{-1}$	<b>(B)</b> $5.17ms^{-1}$	

44. An object covers a distance of 18 m in the first 4s and 16 m in the next 2s. What is the average speed of that object?

RRB Gr	oup-D - 19/11/2022 (Shift-II)
<b>(A)</b> 5.67 <i>m</i>	<b>(B)</b> 5.67 <i>s</i> <sup>-1</sup>
<b>(C)</b> 5.67ms <sup>-1</sup>	<b>(D)</b> 6.67ms <sup>-1</sup>

45. A man covers the distance from point A to B at a speed of 40 km/hr and returns from B to A at a speed of 60 km/hr. What is his average speed during the entire journey?

RRB Group-D - 20/09/2022 (Shift-II) (A) 48 km/hr (B) 55 km/hr (C) 50 km/hr (D) 45 km/hr

46. An object travels the first 25 m in 4s and then the next 15m in 2s. What is the average speed of the object?

F	RRB Group-D	- 08/10/2022	(Shift-II)
(A) 6.67 I	m	<b>(B)</b> 6.67 <i>s</i> <sup>-1</sup>	
(C) 6.67 <i>n</i>	$is^{-1}$	<b>(D)</b> 6.67 <i>ms</i> <sup>1</sup>	

47. Ram floats in a 72 m long pond. He travels a distance of 144m in one min by swimming from one end to the other and coming back the same way, find his average speed.

#### RRB Group-D - 26/11/2022 (Shift-I)

<b>(A)</b> 3.67ms <sup>-1</sup>	<b>(B)</b> 2.60ms <sup>−1</sup>
<b>(C)</b> 2.04ms <sup>-1</sup>	<b>(D)</b> 2.4ms <sup>-1</sup>

**48.** Ram floats in a 95 m long pond. He travels a distance of 190m in one min by swimming from one end to the other and coming back the same way, find his average speed.

RRB Group-D - 26/11/2022 (Shift-I)

<b>(A)</b> 2.05ms <sup>-1</sup>	<b>(B)</b> 3.17ms <sup>-1</sup>
(C) $2.00ms^{-1}$	<b>(D)</b> $3.10ms^{-1}$

**49.** Ram floats in an 80m long pool. He travels a distance of 160m in one min by swimming from one end to the other and coming back the same way. Find his average speed.

RRB Group-D - 28/11/2022 (Shift-II)

<b>(A)</b> 2.67ms <sup>-1</sup>	$2.07 m s^{-1}$
(C) 3.67ms <sup>-1</sup>	$2.60 m s^{-1}$

**50.** In 9 hours, Eddie covers 1 km less than the distance traveled by Fred in 7 hours. In 5 hours, Eddie travels 2 km less than the distance Fred has covered in 4 hours. What is the average speed in km/hr of Eddie?

	RRB Group-D - 30/10/2018 (Shift-I)
<b>(A)</b> 10	<b>(B)</b> 12
(C) 9	<b>(D)</b> 11

51. An athlete runs a distance of 500m in 25s. The average speed of an athlete is \_\_\_\_\_. RRB Group-D - 26/11/2022 (Shift-III)

	RRB	Group-D - 26/11/2022 (Shift-II
(A)	$20ms^{-2}$	<b>(B)</b> 20ms <sup>-1</sup>
(C)	$20ms^1$	(D) $20ms^2$

**52.** An object travels 25m in 3s and then 15m in 2s. What is the average speed of the object?

	RRB Group-I	D - 26/11/2022 (Shift-III)
<b>(A)</b> 6	$5.67s^{-1}$	<b>(B)</b> 6.67ms <sup>-1</sup>
(C) 8	$8.0 m s^{-1}$	<b>(D)</b> 8.0 <i>m</i>

**53.** The object travels 14m in 4s and then another 16m in 2s. What is the average speed of the object?

**RRB Group-D - 27/11/2022 (Shift-III)** (A)  $6.17ms^{-1}$  (B)  $5.0s^{-1}$ (C)  $5.0ms^{-1}$  (D) 5.0m

**54.** An object travels 18m in 6s and then 18m in 4s again. What is the average speed of an object?

RRB Group-D - 27/11/2022 (Shift-III)(A)  $2.1ms^{-1}$ (B)  $2.6ms^{-1}$ (C)  $3.6ms^{-1}$ (D)  $3.1ms^{-1}$ 

**55.** A person reaches his office in 2 hours from his home. He covers 1/4 of the total distance by cycling at a speed of 15 km/hr, 1/2 of the total distance by bus with a speed of 30 km/hr

and the rest by walking at a speed of 5 km/hr. What is the average speed of this person?

RRB Group-D - 10/10/2018 (Shift-I)

**(D)** 3

<b>(A)</b> 15 km/hr	<b>(B)</b> 12 km/hr
<b>(C)</b> 10 km/hr	<b>(D)</b> 14 km/hr

- **57.** An object covers a distance of 24 m in the first 6 seconds and a distance of 16 m in the second 4 seconds. What is the average speed of an object?

(C) 3.8

RRB Group-D - 01/09/2022 (Shift-II)

<b>(A)</b> 4ms <sup>-1</sup>	<b>(B)</b> 6ms <sup>−1</sup>
( <b>C</b> ) 8ms <sup>-1</sup>	<b>(D)</b> 10ms <sup>-1</sup>

**58.** Aditi runs on a circular path of 800 m and reaches the starting point in 50 s. Calculate the average velocity.

RRB	Group-D - 12/12/2018 (Shift-I)
<b>(A)</b> 0ms <sup>-1</sup>	<b>(B)</b> 8.5ms <sup>-1</sup>
<b>(C)</b> 16ms <sup>-1</sup>	<b>(D)</b> 10ms <sup>-1</sup>

**59.** An object travels 25 meters in 8 seconds and then 29 meters in 10 seconds. What is the average speed of the object?

RF	<b>XB Group-D - 11/12/2018 (Shift-III)</b>
<b>(A)</b> 3ms <sup>-1</sup>	<b>(B)</b> 3ms <sup>1</sup>
(C) 4ms <sup>1</sup>	<b>(C)</b> 4ms <sup>-1</sup>

**60.** The car's odometer states 3,000 km at the start of the journey and 3,400 km at the end of the journey. If the journey takes 8 hours, find the average speed of the car (*in*  $ms^{-1}$ ).

RRB Group-D - 10/12/2018 (Shift-I)

- (A)  $13.9ms^{-1}$  (B)  $15.9ms^{-1}$ (C)  $14.9ms^{-1}$  (D) 12.9ms
- **61.** The odometer of a bus displays 3000 km at the beginning of a journey and 3600 km at the end of the journey. If the journey took a total of 8 hours, then the average speed of the bus is ......

RRB G	roup-D - 26/10/2018 (Shift-II)
<b>(A)</b> 75kmh <sup>-2</sup>	<b>(B)</b> 75kmh <sup>2</sup>
(C) 75kmh <sup>-1</sup>	<b>(D)</b> 75kmh <sup>1</sup>

**62.** An object covers a distance of 20 m in 6 s and then 30 m in 4 s. What is the average speed of the object?

RRB Gr	oup-D - 08/10/2018 (Shift-III)
<b>(A)</b> 5ms <sup>1</sup>	<b>(B)</b> 6ms <sup>-1</sup>
<b>(C)</b> 5ms <sup>-1</sup>	<b>(D)</b> 6ms <sup>1</sup>

**63.** The total distance between the two stations is 390 km. A train completes 182 km of this distance at 56 km/hr and 108 km at 72 km/hr. The remaining distance is completed by train in  $1\frac{1}{4}$  hours. Find the average speed of the train during the entire journey.

### RRB Group-D - 18/11/2022 (Shift-III)

<b>(A)</b> 65 km/hr	<b>(B)</b> 75 km/hr
<b>(C)</b> 60 km/hr	<b>(D)</b> 70 km/hr

**64.** Mary takes 30 min to take a round of a rectangular garden. It takes 45 min for Silla to take a round of the same garden. One day at 9 am, both of them started walking in the same direction from the same point. At what time will the two meet again at the starting point?

RRB Gro	up-D - 11/10/2018 (Shift-II)
(A) 10: 45 am	<b>(B)</b> 10: 00 am
(C) 11: 00 am	(D) 10: 30 am

**65.** A car covers a certain distance at a speed of 50 km/h in 8 hours. How much should its speed increase to cover the same distance in 5 hours?

RRB RPF Cons	table - 19/01/2019 (Shift-III)
<b>(A)</b> 50 km/hr	<b>(B)</b> 40 km/hr
(C) 30 km/hr	(D) 80 km/hr

66. The speed of 14 meters per second is the same as .....

RRB R	PF SI - 05/01/2019 (Shift-I)
(A) 46.6 km/hr	<b>(B)</b> 50.4 km/hr
(C) 70 km/hr	(D) 28 km/hr

**67.** Two buses from a house run at a speed of 25 km/h at a 15 min interval. How much more speed (km/h) will a woman coming from the opposite side of the house have to walk so that the both the bus can cross her at an interval of 10 min?

 RRB RPF SI - 06/01/2019 (Shift-III)

 (A) 12
 (B) 12.25

 (C) 12.5
 (D) 12.75

**68**. Prithvi is going to Delhi by Rajdhani Express which is delayed by six min. The driver increases its speed by 4 Km/hr. By doing this,

the train arrives on time at the next station which is 36 km away. Find the actual speed of the train?

 RRB RPF Constable - 17/01/2019 (Shift-I)

 (A) 20 km/hr
 (B) 26 km/hr

 (C) 36 km/hr
 (D) 30 km/hr

**69.** Mark had to travel 260 km in 4.5 hours using a train traveling at a speed of 70 km/h or a bus traveling at a speed of 48 km/h, or using both these modes of transport. Find the travel time by his bus.

RRB RPF Constat	ole - 25/01/2019 (Shift-III)
<b>(A)</b> 2 hr	<b>(B)</b> 1 hr
(C) 1 hr 30 min	(D) 2 hr 30 min

**70.** Raima covered some distance at a speed of 7 km/h on foot and some distance at a speed of 12 km/h on a bicycle, he covered a distance of 64 km in 7 hours. How many hours did he travel on a bicycle?

	RRB RPF SI - 11/01/2019 (Shift-I)
<b>(A)</b> 2	<b>(B)</b> 3
(C) 5	<b>(D)</b> 4

**71**. Rahi had to travel 360 Km in 8 hours. During the journey, he traveled at an average speed of 60 km/hr, but took two breaks in between, with the longer break doubling the short time brake. For how many min was the short break taken?

 RRB RPF Constable - 22/01/2019 (Shift-III)

 (A) 30
 (B) 45

 (C) 40
 (D) 35

**72.** Nidhi takes 3 hours 45 min to walk from one place and cycle back to the same place. It takes 4 hours and 20 min to walk. So how much time will it take by bicycle?

RRB RPF	SI - 12/01/2019 (Shift-III)
<b>(A)</b> 3 hr 10 min	(B) 3 hr 35 min
<b>(C)</b> 3 hr 45 min	<b>(D)</b> 3 hr 15 min

73. Hema takes 9 hours 55 min to walk a certain distance and return by bicycle. She takes 12 hours 30 min to go there and return by walking both side. How long does it take to go by bicycle and return by bicycle?

RRB RPF Constabl	le - 24/01/2019 (Shift-III
(A) 7 hour 20 min	(B) 7 hour 15 min
(C) 7 hour 35 min	<b>(D)</b> 7 hour 45 min

**74.** Two horses cover the same distance at speeds of 10 km/hr and 15 km/hr respectively. If the first horse takes 12 min more than the second, then the distance covered was-

#### RRB RPF SI - 16/01/2019 (Shift-III)

(A) 8 km	<b>(B)</b> 6 km
<b>(C)</b> 4 km	<b>(D)</b> 2 km

**75.** Apoorva covers equal distances at different speeds of 10 km/h, 20 km/h and 6 km/h and takes a total of 19 min to complete the journey. Find out total distance traveled by her.

 RRB RPF Constable - 18/01/2019 (Shift-III)

 (A) 3
 (B) 1

 (C) 2
 (D) 4

**76.** Azhar can complete a journey in 10 hours. He covers half the journey at a speed of 21 km/h and the rest travels at a speed of 24 km/h. How many km is the total distance traveled?

	RRB RPF SI - 12/01/2019 (Shift-II)
<b>(A)</b> 234	<b>(B)</b> 225
(C) 224	<b>(D)</b> 232

77. Sindhu travels  $20\frac{2}{3}$  km by  $7\frac{3}{4}$  hours. So how many km per hour did she travel?

RRB RPF Constable - 20/01/2019 (Shift-II)

(A) $\frac{2}{3}km$	<b>(B)</b> $3\frac{2}{3}km$
<b>(C)</b> 4km	<b>(B)</b> $2\frac{2}{3}km$

**78.** The average speed of a car on a certain distance road is 50 km/h. On a particular day, the average speed was 1/10 less than the normal average speed, so time taken was 18 min more to finish the journey. What is the distance of the road in kilometers?

	RRB RPF SI - 10/01/2019 (Shift-II)
<b>(A)</b> 135	<b>(B)</b> 120
(C) 125	<b>(D)</b> 140

**79.** One cart covers the first 10 km at a speed of 4 km/h and the other 10 km at a speed of 2 km/h. Find the average speed of that cart in km/h.

RRB RPF SI - 16/01/2019 (Shift-III)

<b>(A)</b> 2.67 km/hr	<b>(B)</b> 3.33 km/hr
(C) 2 km/hr	<b>(D)</b> 5.54 km/hr

An object travels 24m in 3s and 15m in 2s.
 What is the average speed of the object?
 RRB RPF SI - 11/01/2019 (Shift-I)

( <b>A)</b> 6.67ms <sup>-1</sup>	<b>(B)</b> 7.8ms <sup>-1</sup>
( <b>C</b> ) $7.8S^{-1}$	<b>(D)</b> 8.0m

81. An object travels 23m in 3s and then 15m in 2s. What is the average speed of the object? RRB RPF Constable -22/01/2019 (Shift-II)

<b>(A)</b> 7.6ms <sup>-1</sup>	<b>(B)</b> 7.6 <i>s</i> <sup>−1</sup>
<b>(C)</b> 7.6 <i>m</i>	( <b>D</b> ) 8.0ms <sup>-1</sup>

82. Kiran swims from one end to the other in a 90 m long pool and then swims back the same straight path, covering a distance of 360 m in twice. Find the average velocity of kiran -

RRB R	PF SI - 10/01/2019 (Shift-III)
<b>(A)</b> 0ms <sup>-1</sup>	<b>(B)</b> 3ms <sup>-1</sup>
(C) 5ms <sup>-1</sup>	(D) $4ms^{-1}$

- 83. An object travels 10 m in 4s and then 14 m in 2 s. What is the average speed of the object? RRB RPF Constable - 25/01/2019 (Shift-III) (A)  $4s^{-1}$  (B) 4m(C)  $4.5ms^{-1}$  (D)  $4ms^{-1}$
- **84.** A bus covers some distance at a certain speed. If a person covers one third of that distance in three times of time taken by bus, then the the ratio of speed of the person to the speed of the bus is:

	RRB RPF SI - 13/01/2019 (Shift-II)
<b>A)</b> 1: 3	<b>(B)</b> 3: 1
<b>C)</b> 1: 9	<b>(D)</b> 9: 1

**85.** Krishna covered a distance of 90 km with a bicycle. If he had covered this distance at 3 km/h less than his speed, it would have taken 5 hours more to reach the destination. What was Krishna's actual speed in kilometers per hour?

	RRB ALP & Tec. (17-08-18 Shift-III)
<b>A)</b> 7.5	<b>(B)</b> 9
<b>C)</b> 18	<b>(D)</b> 15

86. Peter is from Town A and Pal is from Town B. They start their journey at the same time on the same path towards each other's town. They meet at one place on the way and continue their journey. After meeting Paul, Peter arrives at the destination in 13.5 hours while Paul arrives in Peter's town in 6 hours. If Peter travels at a speed of 30 km/hr, what will Paul's speed be in km/h?

	RRB ALP & Tec. (13-08-18 Shift-II)
(A) 42.5	<b>(B)</b> 40
<b>(C)</b> 45	<b>(D)</b> 47.5

87. The distance between the two places can be completed in  $3\frac{1}{2}$  hours at a speed of 62 kilometers per hour. If the speed is increased by 8 kilometers per hour, how much time will be saved?

R	RB ALP & Tec. (31-08-18 Shift-I)
<b>(A)</b> 24 min	<b>(B)</b> 20 min
<b>(C)</b> 30 min	<b>(D)</b> 15 min

**88.** Raj covers a certain distance at a speed of 51 kilometers per hour in  $2\frac{1}{3}$  hours. How long will it take Kiran to cover the same distance at a speed of 68 kilometers per hour?

RRB ALP & Tec. (31-08-18 Shift-III)

(A) $1\frac{2}{3}$ hr	( <b>B</b> ) $1\frac{3}{4}$ hr
<b>(C)</b> 2 hr	<b>(D)</b> 1 $rac{1}{2}$ hr

**89.** A car can cover a distance of 350 km in 4 hours. If its speed is reduced by  $12\frac{1}{2}$  kilometers per hour, then how much time will the car take to cover a distance of 450 kilometers?

	RRB ALP & Tec. (14-08-18 Shift-III)
<b>(A)</b> 7 hr	<b>(B)</b> 4 hr
(C) 5 hr	<b>(D)</b> 6 hr

**90.** Jai travels from his home to school at a speed of 10 kilometers per hour, then reaches 5 min late. If he increases his speed by 3 kilometers per hour, he reaches school 4 min early. What is the distance between his home and school?

 RRB ALP & Tec. (29-08-18 Shift-III)

 (A) 2 km
 (B) 6.5 km

 (C) 4.8 km
 (D) 2.5 km

**91.** A mini van is going in the same direction in which two people are going at the speed of 4.8 kmph and 6 kmph. The mini van crosses both in 4.5 seconds and 9 seconds respectively. How long is the mini van?

 RRB ALP & Tec. (20-08-18 Shift-I)

 (A) 3.5 meter
 (B) 3 meter

 (C) 4 meter
 (D) 2 meter

**92.** The 150 m long train runs at a speed of 54 km/h and crosses a platform in 42 sec. What will be the length of the platform?

 RRB ALP & Tec. (10-08-18 Shift-I)

 (A) 540 m
 (B) 630 m

 (C) 780 m
 (D) 480 m

**93.** The radius of a wheel is 0.35 m, it rotates 450 in a min. Its speed (in km/h) is:

RRB NTPC 23/07/2022 Shift : 2

(A) 59.40(B) 59.04(C) 48.05(D) 56.40

**94.** Two cars start traveling from the same house at a speed of 20 km/h at an interval of 10 min. With what speed does a woman come in the opposite direction towards the house if she gets cars within an interval of 8 min.

	RRB NTPC 23/07/2022 Sh	ift – 1
<b>(A)</b> 5	<b>(B)</b> 6	
(C) 7	<b>(D)</b> 4	

**95.** Car A has a speed of 80 km/h. It covers a certain distance in 6 hours and B covers 60 km less than car A in that time. What is the speed of car B?

	RRB NTPC 12/08/2022Shift: 1
) km/hr	<b>(B)</b> 70 km/br

<b>(A)</b> 50 km/hr	<b>(B)</b> 70 km/hr
<b>(C)</b> 60 km/hr	<b>(D)</b> 55 km/hr

**96.** The speed ratio of the two buses is 11: 9. If the second bus covers a distance of 270 km in 15 hours, what is the speed of the first bus?

	RRB NTPC 18.04.2016 Shift :
(A) 23 km/hr	<b>(B)</b> 11 km/hr
<b>(C)</b> 2 km/hr	<b>(D)</b> 22 km/hr

**97.** Two cycles from a house ran at a speed of 24 km/h with a 15-min interval. How much more speed (km/h) will a woman coming from the opposite side of the house have to walk so that she can get a cycle at an interval of 10 min?

# RRB NTPC 02/02/2021Shift : 1 (A) 13 (B) 11 (C) 12 (D) 14

**98.** The two jeeps run from a house at a speed of 20 km/h at an interval of 10 min. How much speed (km/h) will a woman coming from the opposite direction of the house have to walk so that she can meet the second jeep at an interval of 6 min?

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> 13	<b>(B)</b> $13\frac{2}{3}$
(C) $13\frac{1}{3}$	<b>(D)</b> 13.5

**99.** Two mini buses run from one house at a speed of 22 km/h at 10 min intervals. How much more speed (km/h) will a person coming from the opposite direction of the house have

to walk so that he can cross both buses at an interval of 6 min? RRB NTPC 11/08/2022Shift

<b>(A)</b> 14	<b>(B)</b> 14 $\frac{1}{3}$
(C) $14\frac{2}{3}$	<b>(D)</b> 14.5

**100.** The two bicycles start simultaneously from a house at an interval of 10 min and run at a speed of 6 km/hr. What should be the speed (km/hr) of a woman coming from the opposite direction so that she crosses both the cycles at an interval of 8 min?

	RRB NTPC 19.01.2017 Shift : 1
( <b>A)</b> 1.7	<b>(B)</b> 1.6
( <b>C)</b> 1.5	<b>(D)</b> 1.4

**101.** A car covers a distance of 240 km in 6 hours. How much should the speed of the car be increased to cover a distance of one and a half times in the same time?

	RRB NTPC 26.04.2016 Shift : 1
A) 15 km /hr	<b>(B)</b> 20 km /hr
<b>C)</b> 25 km /hr	(D) 30 km /hr

**102.** Two vehicles from a house moved at a speed of 25 km/h with an interval of 20 min. How much more speed (km/h) will a woman coming from the opposite side of the house have to walk so that she gets a vehicle at an interval of 18 min?

	RRB NTPC 26.04.2016 Shift : 1
<b>(A)</b> 2	<b>(B)</b> $2\frac{5}{9}$
(C) 2 <sup>7</sup> / <sub>9</sub>	<b>(D)</b> $2\frac{8}{9}$

**103.** Two vans from a house ran at a speed of 20 km/h at an interval of 16 min. How much more speed (km/h) will a woman coming from the opposite direction of the house have to run so that the van can be found at an interval of 12 min.

RRB NTPC 26.04.2016 Shift : 3(A) 6(B)  $6\frac{1}{3}$ (C)  $6\frac{2}{3}$ (D) 6.5

**104.** A thief drives his motorcycle at a speed of x km/h. 4 hours later, a policeman starts chasing him in a jeep and captures him in 4 hours. If the average speed of a policeman's jeep is 40 km/h, find the speed of the thief's motorcycle in km/h.

-	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 30	<b>(B)</b> 36
<b>(C)</b> 45	<b>(D)</b> 20

**105.** A thief drives his motorcycle at a speed of X km/h. A soldier started following him in a jeep 6 hours later and caught him after 4 hours. If the average speed of a soldier is 90 km/h, find the speed (km/h) of the thief's motorcycle?

	RRB NTPC 23/07/2022 Shift : 2
<b>(A)</b> 30	<b>(B)</b> 36
<b>(C)</b> 45	<b>(D)</b> 60

**106.** Mrs. Vijaya takes 9 hours and 50 min to walk from her starting place to a certain destination and return to her starting point running. It takes 12 hours and 20 min walking both side. In how much time will she run this distance on both sides?

#### RRB NTPC 19.01.2017 Shift: 3

<b>(A)</b> 7 hr 45 min	<b>(B)</b> 7 hr 20 min
(C) 7 hr 15 min	<b>(D)</b> 7 hr, 20 min

**107.** Kirthana takes 9 hours 20 min to walk back from the same place and ride to the same place. If it takes 11 hours and 15 min to walk on both sides, how much time will it take to ride both side?

#### RRB NTPC 02/02/2021Shift : 2

<b>(A)</b> 7 hr 25 min	<b>(B)</b> 7 hr 35 min
(C) 7 hr 45 min	(D) 7 hr 15 min

**108.** A trip from Mumbai to Poona takes 4 hours and 30 min to travel at a speed of 60 km/hr. How long will it take at a speed of 15 m/s?

# RRB NTPC 18.01.2017 Shift: 2

(A) $3\frac{3}{4}$ hr	<b>(B)</b> 5 hr
(C) $4\frac{2}{3}$ hr	<b>(D)</b> 4hr

**109.** Bhanu takes a total of 6 hours 50 min to walk from one place to another and run back to the starting place. He covers both sides walking in 8 hours and 30 min. The time taken by him to run on both sides is-

#### RRB NTPC 23/07/2022 Shift-3

- (A) 5 hours 35 min
   (B) 5 hours 15 min
   (C) 5 hours 10 min
   (D) 5 hours 45 min
- **110.** The distance between two points A and B was fixed in  $5\frac{1}{2}$  hours at a speed of 50 km/h. If the speed is increased by 5 km/h, how much time can be saved?

	RRB NTPC 10/08/2022 Shift: 1
<b>A)</b> 5 min	<b>(B)</b> 15 min
<b>C)</b> 50 min	<b>(D)</b> 30 min

**111.** Shavya takes 8 hours 20 min to walk from one place to the same place. (Walking and returning from the vehicle). She can do it both

ways in 10 hours 15 min. The time it takes for him to come back both ways is-

<b>RRB NTPC</b>	11/08/202	2Shift : 1
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( <b>A)</b> 6 hr 25 min	<b>(B)</b> 6 hr 35 min
(C) 6 hr 45 min	(D) 6 hr 15 min

**112.** Namrata takes 4 hrs 15 mins to walk from one place and come back to the same place (by walking and coming back from the vehicle). She can cover both ways walking in 5 hours and 30 min. The time it takes for her to travel both ways by vehicle is ...

	RRB NTPC 11/08/2022Shift: 3
<b>(A)</b> 3 hr	<b>(B)</b> 3 hr 35 min
(C) 3 hr 45 min	<b>(D)</b> 3 hr 15 min

**113.** A bus runs at 80 km per hour and reaches its destination 10 min late. If it had gone at a speed of 90 kilometers per hour, it would have reached only 8 min late. The right time to complete your journey by bus is:

	RRB NTPC 02/02/2021Shift: 1
(A) 8 min	<b>(B)</b> 10 min
<b>(C)</b> 12 min	<b>(D)</b> 15 min

**114.** Neelam and Manisha start running from the same place at the speed of 7 km/h and 9 km/h respectively. If they move in the same direction, how much time will they take to travel 16 km away from each other?

	RRB NTPC 02/02/2021Shift: 1
<b>(A)</b> 7 hr	<b>(B)</b> 8 hr
<b>(C)</b> 10 hr	<b>(D)</b> 12 hr

**115.** Divya takes 4 hours 45 min to walk from one place and ride back to the same place. She can walk the distance on each side in 5 hours 55 min. How long will it take for him to riding on both sides?

RRB NTPC 26.04.2016 Shift: 2

(A) 3 hr 35 min	<b>(B)</b> 3 hr 55 min
(C) 3 hr 45 min	<b>(D)</b> 3 hr 15 min

**116.** A man starts walking at 6:30 am and wants to cover a distance of 30 km. His initial speed is 6 km per hour and after covering 3/5 distance he reduces his speed to 2 km per hour. What time does he end his journey?

RRB NTPC 12/08/2022Shift: 2

<b>(A)</b> 11.00 am	<b>(B)</b> 12.30 pm
<b>(C)</b> 11.30 pm	<b>(D)</b> 12.00 pm

**117.** Vishnu covers the same distance at speeds of 10 km/h, 30 km/h and 8 km/h and takes a total of 15.5 min on the entire journey, then

find the total distance (in km) of the journey he has taken.

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 1	<b>(B)</b> 3	
<b>(C)</b> 4	<b>(D)</b> 2	

118. P travels in 70 hours. He covers half of his journey at 30 km/h and the remaining half at 40 km/h. Find the total distance of his journey. RRB NTPC 10/08/2022 Shift : 3

	RRB NTPC 10/08/2022 Shif
<b>(A)</b> 2000 km	<b>(B)</b> 2400 km
<b>(C)</b> 2720 km	<b>(D)</b> 2160 km

**119.** M and N cover the same distance at a speed of 160 km/h and 200 km/h respectively. If M takes 30 min longer than N, then the distance traveled by each is-

-	RRB NTPC 10/08/2022 Shift : 3
(A) 120 km	<b>(B)</b> 200 km
(C) 320 km	<b>(D)</b> 400 km

**120.** Anjaya and Jakob start running in the opposite directions from the same point at a speed of 7 m/s and 5 m/s. How far will they be from each other after 42 min?

RRB NTPC 10/08/2022 Shift : 1

<b>(A)</b> 30.24 km	<b>(B)</b> 504 km
(C) 8.4 km	<b>(D)</b> 69.5 km

**121.** A person walks at a speed of 3 kilometers per hour. He doubles his speed after reaching the halfway point. It lasts for 5 hours. Find the total distance traveled by him.

	RRB NTPC 30.03.2016 Shift : 1
<b>(A)</b> 18 km	<b>(B)</b> 15 km
(C) 20 km	<b>(D)</b> 9 km

**122.** If Lalita leaves for her school by car from her home at a speed of 45 kmph, she takes 5 min longer than driving a car at a speed of 60 km/h. What is the distance from home to school?

	RRB NTPC 18.01.2017 Shift : 2
<b>(A)</b> 18 km	<b>(B)</b> 15 km
<b>(C)</b> 14 km	<b>(D)</b> 10 km

**123.** If Ram completes 4 / 9th part of the total journey by bus, 5 / 18th part by rail and the remaining part by walking 10 km, find the total distance.

	RRB NTPC 11/08/2022 Shift: 2
<b>(A)</b> 42 km	<b>(B)</b> 90 km
<b>(C)</b> 36 km	<b>(D)</b> 18 km

**124.** A runner covers a distance of 60 km in 3 hours and 45 min. How much should he increase the average speed (in km/h) to cover this distance 45 min earlier?

	RRB NTPC 18.04.2016 Shift :
(A) 16 km/hr	<b>(B)</b> 20 km/hr

3

<b>(C)</b> 6 km/hr	<b>(D)</b> 4 km/hr
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**125.** Mohan travels a fixed distance from his car in 12 hours at a uniform speed. When the speed is increased by 5 km/h, the same distance can be covered in 9 hours. What is the total distance?

	RRB NTPC 18.04.2016 Shift : 3
<b>(A)</b> 108 km	<b>(B)</b> 90 km
(C) 190 km	<b>(D)</b> 180 km

**126.** A bus is running at a speed of 90 km/h. How much distance will it cover in 20 seconds?

RRB NTPC 09/05/2022 Shift : 1

(A) 500 meter	(B) 450 meter
(C) 180 meter	(D) 600 meter

**127.** Chandan covers equal distances at speeds of 3 km/h, 4 km/h and 8 km/h respectively and takes a total time of 42.5 min. Find the total distance in km.

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 4	<b>(B)</b> 2
<b>(C)</b> 1	<b>(D)</b> 3

**128.** P travels 35 hours. He covers half the journey at 30 km/h and the rest at 40 km/h. Find the total distance.

	RRB NTPC 10.04.2016 Shift: 3
(A) 1000 km	<b>(B)</b> 1200 km
(C) 1360 km	<b>(D)</b> 1080 km

**129.** Rajneesh covers an equal distance with the speed of 6 km/h, 4 km/h and 8 km/h respectively and takes a total time of 32.5 min. Find the total distance in km.

	RRB NTPC 11/08/2022Shift: 3
<b>(A)</b> 4	<b>(B)</b> 2
(C) 1	<b>(D)</b> 3

**130.** Two buses X and Y run from the same place in the same direction at speeds of 20 km/h and 50 km/h respectively. But Y runs 6 hours after X leaves. After how much distance from starting point will both buses meet?

### RRB NTPC 19.01.2017 Shift : 2

<b>(A)</b> 100 km	<b>(B)</b> 200 km
<b>(C)</b> 150 km	<b>(D)</b> 300 km

**131.** Monal Kumar covers equal distances at speeds of 3 km/h, 5 km/h and 8 km/h respectively and takes a total of 395 min. Find the total distance in kilometers.

### RRB NTPC 02/02/2021Shift : 2

<b>(A)</b> 40	<b>(B)</b> 20
<b>(C)</b> 10	<b>(D)</b> 30

**132.** A thief is 400 meters ahead of a policeman. The thieves run away and the policemen start the chase together. Suppose the speed of the thief is 10 km/h and the speed of the policeman is 15 km/h, then calculate (in meters) the distance covered by the thief before the policeman gets caught?

#### RRB NTPC 12/08/2022Shift : 2

(A) 750 meter	(B) 800 meter
(C) 850 meter	(D) 900 meter

**133.** A car travels at a speed of 62 km/h for  $2\frac{1}{2}$  hours and 68 km/h for  $1\frac{1}{4}$  hours. What will be its average speed in total distance traveled?

#### RRB NTPC 09/05/2022 Shift: 1

<b>(A)</b> 65	<b>(B)</b> 64
<b>(C)</b> 63	<b>(D)</b> 61

**134.** Ramlal runs 18 km at a speed of 9 km/h. At what speed does he need to run in the next 3 hours to get an average speed of 6 km/h throughout the race season?

#### RRB NTPC 02/02/2021Shift: 3

<b>(A)</b> 6 km/hr	<b>(B)</b> 12 km/hr
(C) 4 km/hr	<b>(D)</b> 9 km/hr

**135.** Rupa comes to office at half the speed with which she returns from her office. The average speed during the entire journey is 24 km/h so what was her speed when Rupa was going to her office?

	RRB NTPC 02/02/2021Shift: 3
(A) 18 km/hr	<b>(B)</b> 72 km/hr
<b>(C)</b> 9 km/hr	<b>(D)</b> 24 km/hr

**136.** The speed of a car from A to B is 60 km/h and the speed of return is 40 km/h. Find the average speed (in km/h) of the car.

# RRB NTPC 02/02/2021Shift :

<b>(A)</b> 50	<b>(B)</b> 45
<b>(C)</b> 48	<b>(D)</b> 52

(A) = 0

**137.** P moves at a speed of 50 km/h in the first hour and 70 km/h in the next two hours. What is the average speed of P?

### RRB NTPC 10/08/2022 Shift: 1

(A) 60 km/hr	<b>(B)</b> 63.33 km/hr
(C) 59.33 km/hr	<b>(D)</b> 62 km/hr

138. If P travels the first half of his journey at 40 km/h and the remaining distance at 50 km/h. what will be the average speed of his total travel?

RRB	NTPC 10/08/2022 Shift : 2
<b>(A)</b> 44.44 km/hr	<b>(B)</b> 53.33 km/hr
<b>(C)</b> 45 km/hr	<b>(D)</b> 60 km/hr

139. A car completes the first half distance at a speed of 50 km/h and the remaining half distance at a speed of 60 km/h. What is the average speed of the car during the entire journey?

RRB NTPC 10/08/2022 Shift: 3

<b>(A)</b> 54.54 km/hr	<b>(B)</b> 36.36 km/hr
<b>(C)</b> 50.5 km/hr	<b>(D)</b> 45.45 km/hr

140. If a cyclist travels 8 km at 15 km/h and 4 km at 20 km/h, what is his average speed?

RRB NTPC 23/07/2022 Shift: 2

<b>(A)</b> 16.8	<b>(B)</b> 16.36
<b>(C)</b> 15.71	<b>(D)</b> 17.50

141. A person covers the first 176 kilometers at a speed of 16 kilometers / hour and the next 64 kilometers at a speed of 32 kilometers / hour. What would be the approximate average speed for the first 240 kilometers of the journey?

	RRB NTPC 11/08/2022 Shift:
(A) 13 km/hr	<b>(B)</b> 27 km/hr
(C) 18.5 km/hr	(D) 21 km/hr

142. A car travels 30 km at a speed of 60 km/h and the next 20 km at 80 km/h, find its average speed.

RRB NTPC 06.04.2016 Shift: 1

3

<b>(A)</b> 65.67 km/hr	<b>(B)</b> 65.33 km/hr
(C) 66.33 km/hr	<b>(D)</b> 66.67 km/hr

143. Car P covers a certain distance at a speed of 66 km/h in 11 hours. Car Q covers 242 km more distance than Car P in the same time. Find the average speed of car Q. 2

RRB	NTPC 19.01.2017 Shift : 2
<b>(A)</b> 718 km/hr	<b>(B)</b> 77 km/hr
(C) 88 km/hr	<b>(D)</b> 83 km/hr

144. Arjun travels 1000 km from Pune to Goa at a speed of 4 km/h and a return journey at a speed of 3 km/h. What was his average speed throughout his journey?

RRB NTPC 09/05/2022 Shift: 2

(B) 3.43 km/hr (A) 3 km/hr (C) 3.5 km/hr (D) 5.4 km/hr

145. Car I covers a certain distance in a given time. Car II covers half the distance in double the time. Find the ratio of their relative speeds. DDD NTDO 00/07/0000 OL '(( 0

	RRB NIPC 23/0//2022	Shift-2
<b>(A)</b> 1: 2	<b>(B)</b> 1: 4	
(C) 2: 1	<b>(D)</b> 4: 1	

146. Two buses run in opposite directions of each other at the same time from two stations Mumbai and Pune, which is 300 km and cross each other at a distance of 220 km from one station. What is the ratio of their speed? PPR NTPC 02/02/2021Shift: 2

	RRB NIPC 02/02/20
<b>(A)</b> 13: 9	<b>(B)</b> 10: 3
(C) 11: 4	<b>(D)</b> 14: 5

147. Rahul invested Rs. X for 3 years at y% interest rate. Shyam invested the same amount at the same rate for 12 years. Find the ratio of simple interest earned by Rahul to simple interest earned by Shvam.

-	RRB NTPC 09/05/2022 Shift: 3
<b>A)</b> 1: 3	<b>(B)</b> 1: 4
<b>C)</b> 2: 3	<b>(D)</b> 4: 1

148. If Vinay had run at 2 km/h more than his speed, he would have taken 10 min less to cover 4 km, find the speed of Vinav?

RRB Paramedical 20/07/2018 (Shift-III)

- (A) 7 km/hr (B) 5 km/hr (C) 4 km/hr (D) 6 km/hr
- 149. A car travels from Chennai to Coimbatore in 8 hours. The first half distance of the journey has been covered at a speed of 73 km/h and the second half distance is covered at 81 km/h. What is the distance from Chennai to Coimbatore?

RRB Paramedical 21/07/2018 (Shift-III) (A) 614.34 km **(B)** 600 km (C) 592 km (D) 632.65 km

150. How much time does a 110 meter long train running at a speed of 72 kilometers/hour take to cross a 132 meter long bridge?

RRB JE - 23/05/2019 (Shift-II)

(A) 14.3 sec	<b>(B)</b> 9.8 sec
(C) 12.1 sec	<b>(D)</b> 12.42 sec

151. In a 200-meter run, P beats Q by 35 meters or 7 seconds. Find the time taken by P during the race.

RRB JE - 24/05/2019 (Shift-I)

( <b>A)</b> 36 sec	<b>(B)</b> 33 sec
( <b>C)</b> 40 sec	<b>(D)</b> 47 sec

152. A person arrives at his workplace 15 min late, following the <sup>3</sup>/<sub>4</sub> of his normal speed. How many min does it usually take to reach the workplace?
PRR IF - 24/05/2019 (Shift-III)

	RRB JE - 24/05/2019 (Shift-III
(A) 42 min	<b>(B)</b> 30 min
<b>(C)</b> 45 min	<b>(D)</b> 60 min

**153.** In a 300-meter run, P beats Q by 22.5 meters or 6 seconds. Find the time taken by Q to complete the race.

	RRB JE - 27/05/2019 (Shift-II)
(A) 86 sec	<b>(B)</b> 78 sec
<b>(C)</b> 76 sec	<b>(D)</b> 80 sec

**154.** P and Q run around a circular track 240 meters long at 15 m / min and 20 m / min respectively. If they start running together, after how long will they meet again at the starting point?

	RRB JE - 29/05/2019 (Shift-I)
<b>(A)</b> 25 min	<b>(B)</b> 36 min
<b>(C)</b> 30 min	<b>(D)</b> 48 min

**155.** A thief rides a bike at a speed of 100 km/h running from the police. The police immediately started chasing at a speed of 75 km/h. An hour later the engine of the police car broke down, which took 30 min to repair. Subsequently, the speed of the car increased to 120 km/h. How long will the thief be caught?

	RRB JE - 02/06/2019 (Shift-I)
(A) 2hr 45 min	<b>(B)</b> 3hr 40 min
(C) 5hr 15 min	<b>(D)</b> 2hr 30 min

**156.** After meeting two friends, at the same time at some point, between city P to Q and city Q to P, they reach their respective destinations in 54 and 24 min respectively. In what time did the friend who went from Q to P finish their journey?

RRB JE - 26/06/2019 (Shift-III)

	20/00/2013
<b>(A)</b> 48 min	<b>(B)</b> 36 min
<b>(C)</b> 72 min	<b>(D)</b> 60 min

**157.** A thief runs a car at a speed of 60 km/h towards a city located 400 km away. After just 30 min, the police start chasing at a speed of 80 km/h. What is the distance covered by the police till the thief is caught?

RRB	JE -	23/05/2019	(Shift-I)
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<b>(A)</b> 70 km	<b>(B)</b> 85 km
<b>(C)</b> 90 90 km	<b>(D)</b> 120 km

**158.** A man walks from P to Q at a speed of 5 km/h and comes back from Q to P at a speed of 3 km/h. What is his average speed throughout the journey?

RRB JE - 22/05/2019 (Shift-III)

(A) 8 km/hr	<b>(B)</b> 3.25 km/h
(C) 3.75 km/hr	(D) 3.5 km/hr

**159.** A person travels from P to Q in 30 min at a speed of 50 km/h. He then increases his speed to 60 km/h and reaches his destination R in 20 min. Find his average speed during the entire journey.

	RRB JE - 26/05/2019 (Shift-III)
(A) 55km /hr	<b>(B)</b> 54km/hr
<b>(C)</b> 65km/hr	<b>(D)</b> 70 km/hr

160. A certain distance is covered by a certain speed. If half the distance is covered in double time, find the ratio of both the moves. RRB JE - 23/05/2019 (Shift-I)

<b>(A)</b> 2: 1	<b>(B)</b> 1: 3
<b>(C)</b> 4: 1	<b>(D)</b> 3: 2

**161.** When traveling a certain distance, the ratio of the speed of two persons is 18: 12. Find the ratio of the time taken by them to cover the distance.

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 2: 1	<b>(B)</b> 2: 5
<b>(C)</b> 2: 3	<b>(D)</b> 3

**162.** A motor cyclist covers a distance of 192 km at a speed of 32 km/h. A car starts running from the same place 2.5 hours after the motorcycle driver leaves, but covers that distance 0.5 hours earlier. What is the ratio of speed of car and motorcycle?

	RRB JE - 28/05/2019 (Shift-I)
<b>(A)</b> 3: 1	<b>(B)</b> 4: 3
(C) 2: 1	<b>(D)</b> 1: 2

**163.** Two motorists traveling in opposite directions meet at some point in between. After this they take 9 and 16 hours respectively to reach their destination. What is the ratio of their speed?

	RRB JE - 28/05/2019 (Shift-I)
<b>(A)</b> 4: 7	<b>(B)</b> 4: 3
<b>(C)</b> 5: 3	<b>(D)</b> 5: 4

# **Solution**

5.

1. Ans.(C)

Let actual speed = x km/hr Distance = 96 km New speed = (x - 4) km/hr According to question - $\frac{\frac{96}{x-4} - \frac{96}{x}}{\frac{48}{x-4} - \frac{48}{x}} = 2$  $48\left(\frac{1}{x-4}-\frac{1}{x}\right) = 1$  $48\left(\frac{x-x+4}{x(x-4)} = 1\right)$  $48 \times 4 = x(x-4)$  $x^2 - 4x - 192 = 0$  $x^2 - 16x + 12x - 192 = 0$ x(x-16) + 12(x-16) = 0(x + 12)(x - 16) = 0So, x - 16 = 0 $x = 16x \neq -12$ actual speed = 16 km/hr Ans.(B) Let speed of horse cart = x km/hr Distance = 40 km According to question -

$$\left(\frac{16}{x} + 6\right) - \left(\frac{24}{x} + 4\right) = 1$$
  

$$\Rightarrow \frac{16}{x} + 6 - \frac{24}{x} - 4 = 1$$
  

$$\Rightarrow \frac{16}{x} - \frac{24}{x} = 1 - 2$$
  

$$\Rightarrow \frac{16 - 24}{x} = -1$$
  

$$\Rightarrow -8 = -x$$
  

$$x = 8km/hr$$

4.

2.

Ans.(A) Let the speed of B = x m/s $\therefore$  speed of A = (x + 1.5) m/s According to question - $\frac{200}{200} - \frac{200}{200} = 3$ x (x + 1.5) $\frac{200x + 300 - 200x}{200x} = 3$  $x^2 + 1.5x$  $x^2 + 1.5x - 100 = 0$  $x^2 + 10.778x - 9.278x - 100 = 0$ x(x + 10.778) - 9.278(x + 10.778) = 0(x - 9.278)(x + 10.778) = 0x = 9.278m/shence speed of A = (9.278 + 1.5) =10.778m/sAns.(A) Let train speed x km/h According to question - $\left\{ \text{Relative speed } = \frac{\text{Distance}}{\text{Time}} \right\}$ 

 $\therefore x - 3 = \frac{\frac{100}{1000}}{\frac{4}{50}} \{ \because 100 \text{ m.} = \frac{100}{1000} km \text{ and } 4 \text{ m.} \}$  $=\frac{4}{60}hr$  $x - 3 = \frac{15}{10}$  $x = \frac{3}{2} + 3$  $x = \frac{\overline{9}}{2} km/hr$ Ans.(C) Given, t 5h → B 6h Time taken to reach destination after meeting A = 5 hrTime taken to reach destination after meeting B = 6 hrSpeed of A = 55 km/hr Speed of B = x km/hr  $\therefore \frac{S_B}{S_A} = \sqrt{\frac{t_A}{t_B}}$  $\frac{x}{55} = \sqrt{\frac{5}{6}}$  $x = 55 \times \sqrt{\frac{5}{6}}$  $x = 55 \times \sqrt{\frac{5 \times 6}{6 \times 6}}$  $x = \frac{55}{6} \times \sqrt{30}$  $x = \frac{55}{6}\sqrt{30}km/hr$ 

6. Ans.(Å)

7.

 $\frac{v_1}{v_2} = \sqrt{\frac{t_2}{t_1}}$   $\frac{60}{v_2} = \sqrt{\frac{3}{12}} \{:: v_1 = 60 km/h, t_1 = 12, t_2 = 3\}$   $\frac{60}{v_2} = \sqrt{\frac{1}{4}}$   $v_2 = 120 km/h$ Ans.(D)

Let speed of train is V km/hr. The train is running in directions of both person. distance = speed × time (For the first person) distance =  $(V - 9) \times \frac{8}{3600}$ (For the second person) distance =  $(V - 12) \times \frac{8.4}{3600}$   $\therefore$  The distance traveled by train in crossing both persons will be the same.

$$\therefore (V - 9) \times \frac{8}{3600} = (V - 12) \times \frac{8.4}{3600}$$

$$8V - 72 = 8.4V - 100.8$$

$$100.8 - 72 = 0.4V$$

$$28.8 = 0.4V$$

$$V = \frac{288}{4} = 72km/h$$
**Ans.(A)**
According to question -  
let train speed = x km/hr  
Train speed = 3 × Scooter speed  
Scooter speed = x/3 km/h  
Train speed = 3/2 × Steamer speed  
Steamer speed = 2x/3  
 $\therefore$  speed = distance /time,  
By question -  

$$\frac{120}{\frac{2x}{3}} + \frac{450}{x} + \frac{60}{\frac{x}{3}} = 13hr 30m$$

$$\frac{180}{x} + \frac{450}{x} + \frac{180}{x} = \frac{27}{2}$$

$$\frac{810}{x} = \frac{27}{2}$$

$$x = 30 \times 2$$

$$x = 60km/hr$$
Hence the speed of the train = 60 km/hr  
**Ans.(A)**  
let Sabrina cycled for t time  
According to question -  

$$8(8 - t) + 13t = 84$$

$$64 - 9t + 12t = 94$$

64 - 8t + 13t = 84

5t = 20

t = 4 hence Sabrina cycled for 4 hours.

### 10. Ans.(D)

8.

9.



Length of rectangular lawn (AB) = 60m width (AD) = 40m diagonal (DB) = ? From Pythagoras theorem,  $BD^2 = AB^2 + AD^2$  $BD^2 = (60)^2 + (40)^2$  $BD^2 = 3600 + 1600$  $BD^2 = 5200$  $BD = \sqrt{5200}$ BD = 72.11(aprox 72)Diagonal length = 72m time = ?

speed =  $3km/h = 3 \times \frac{5}{18} = \frac{5}{6}m/sec$ time =  $\frac{\text{distance}}{\text{speed}} = \frac{72}{\frac{5}{2}} = \frac{72 \times 6}{5} = 86.4$ (aprox 86.5) sec Ans.(D) :: 1 hectare = 10,000 Square m.  $\therefore$  25 hectare = 250,000 Square m.  $= (500 \times 500)$  Square m. So the shape of the field is square.  $\therefore a = 500 \text{ m}$ perimeter  $= 4a = 4 \times 500 =$ Ground 2000m. Time taken for 1 round =  $\frac{\text{total distance}}{.}$ speed  $= \frac{2000 \text{ m.}}{10 \text{ km/hr}} = \frac{2000 \text{ m.}}{10 \times \frac{1000}{60} \text{ m./min}} = 12 \text{ min}$ Ans.(D) Time taken by walking (P) and vehicle(w) =  $\frac{13}{2}$  hr Time to walk (P) on both sides =  $\frac{31}{4}$  hr  $P + w = \frac{13}{2}, P + P = \frac{31}{4}$  $2P = \frac{31}{4} \Rightarrow \boxed{P = \frac{31}{8}hr}$ Putting a value of P –  $\frac{31}{8} + w = \frac{13}{2}$  $w = \frac{13}{2} - \frac{31}{8}$  $w = \frac{21}{8}$ hr Hence time taken by vehicle =  $\frac{21}{8}$  hr and time it took to return from vehicle =  $\frac{21}{8}$ hr Therefore, the time taken by the vehicle on both sides  $\frac{21}{8} + \frac{21}{8} = \frac{42}{8}$  $\Rightarrow 5\frac{2}{8}$ hr Or 5 hours 15 min Ans.(C) It takes t hours to travel at the speed of 75 km/hr. - $75 \times t + 55 \times (5 - t) = 300$ 75t + 275 - 55t = 30020t = 25 $t = \frac{25}{20} = \frac{5}{4}$ t = 1 hr 15 minhence at maximum speed Kiran traveled for 1 h 15 min. Ans.(C)

Given –

11.

12.

13.

14.

total distance = 86.4kmRelative speed = 24km/h + 30km/h= 54 km/htime =  $\frac{\text{distance}}{\text{speed}}$  =  $\frac{86.4km}{54km/h}$  = 1.6h time = 1.6 hr aprox 15. Ans.(A) Time taken for walking = tx travel time by ride = tv According to question tx + ty = 10tv + tv = 52ty = 5 $ty = \frac{5}{2}$  $tx + \frac{5}{2} = 10$  $tx = \frac{15}{2}$ Time to walk on both sides tx + tx = 2tx $= 2 \times \frac{15}{2}$ = 15 hr Ans.(C) 16. Let the speed of cycle v and speed of the car  $\frac{d}{x} + \frac{d}{y} = 5 \dots \dots$  (i)  $\frac{2d}{y} = 2$  (When traveling on both sides by car.)  $\frac{d}{y} = 2 \text{ (W)}$   $\frac{d}{y} = 1 \dots$   $\frac{d}{x} + 1 = 5$   $\frac{d}{x} = 4 \text{ hr}$ = 1 .....(ii) If he cycled on both sides it would take 8 hours. 17. Ans.(A) The time taken by train A to reach station Y from station X = 9 - 5 = 4 hr The time taken by train B to reach station X from station Y =  $10 - 6.30 = \frac{7}{2}$  hr Let distance between stations = d km Hence the speed of train  $A = \frac{d}{4}$  किमी/घंटे speed of train B =  $\frac{d}{7/2} = \frac{2d}{7}$  km/hr Distance covered by train A in 3/2 hours =  $\frac{d}{4} \times \frac{3}{2} = \frac{3d}{8} \text{ km}$ Again, now the distance between two stations  $= d - \frac{3d}{8} = \frac{5d}{8} \text{ km}$  d = 2dRelative speed of both trains =  $\frac{d}{4} + \frac{2d}{7} =$ 7d + 8d $=\frac{\frac{28}{15d}}{\frac{15d}{28}}$  km/hr

Relative time =  $\frac{\text{distance}}{\text{Relative speed}} = \frac{5d \times 28}{8 \times 15d}$  $=\frac{28}{24}$  hr or 1 hr 10 min Hence, the meeting time of both trains = 6:30+ 1: 10 = 7: 40 am Ans.(B)

18.

let the Pallavas cycled x hours distance = speed × Time Distance traveled by bicycle =  $12 \times x$ Time to walk 8 - x hence the distance traveled =  $3.5 \times (8 - x)$ According to question -12x + 3.5(8 - x) = 4512x + 28.0 - 3.5x = 458.5x = 45 - 288.5x = 17or 85x = 170 $x = \frac{170}{85} = 2 \text{ hr}$ Ans.(C) → 45 km hour B Δ

Time taken to cross each other distance

- relative speed (sum of speed)
- $=\frac{1029}{100}=10.29$  hr

20. Ans.(D)

19.

Let time taken by bus to travel = t hr According to question -

60(4.5-t) + 40t = 220270 - 60t + 40t = 220270 - 20t = 220

20t = 50 $t = \frac{5}{2} = 2$  hr 30 min

#### 21. Ans.(A)

Let Pritish traveled for t hours by bus : distance = speed × Time  $60 \times (7.5 - t) + 40 \times t = 420$ 450 - 60t + 40t = 420 $\begin{array}{rcl} 30 &=& 20t \\ t &=& \frac{30}{20} = \frac{3}{2} \ \text{hr} \end{array}$ t = 1 hr 30 min

#### 22. Ans.(B)

If the distance traveled by Mahima during the journey is x then -According to question time = distance / time here is the same in both cases -

 $\frac{x}{45} = \frac{x}{54} + \frac{12}{60}$ or,  $\frac{x}{45} - \frac{x}{54} = \frac{12}{60}$ 

or, 
$$\frac{54x-45x}{45\times54} = \frac{12}{60}$$
  
or,  $\frac{9x}{45\times54} = \frac{1}{5}$   
or,  $\frac{x}{54} = 1$   
 $x = 54$ 

23.

Ans.(B) total time = 4 hr total distance = 480 km Let the distance traveled by train = x km. And if the total distance traveled by train, then the total time taken = t hr According to question -Time taken if you cover the total distance from the plane =  $t - \frac{4t}{5} = \frac{t}{5}$  $\frac{t}{5} = (4-2) = 2$  hr  $\frac{t}{5} = 2$  $t = 10 \, \text{hr}$ Hence speed of the train  $=\frac{480}{10} = 48km/hr$ and speed of the plane  $=\frac{480}{2} = 240km/hr$ distance traveled by train x km Then the distance traveled by plane = (480 x) km. Hence,  $\frac{x}{48} + \frac{(480 - x)}{240} = 4$  $\frac{10x + 960 - 2x}{10x + 960 - 2x} = 4$ 400 960

26.

27.

28.

29.

$$8x = 1920 - x = 120 \, km$$

#### 24. Ans.(D)

Let the distance traveled by person is x km. According to guestion –

$$\frac{x}{42} - \frac{2}{60} = \frac{x}{36} + \frac{5}{60}$$

$$\frac{x}{36} - \frac{x}{42} = \frac{7}{60}$$

$$\frac{x}{36} - \frac{x}{42} = \frac{7}{60}$$

$$\frac{42x - 36x}{36 \times 42} = \frac{7}{60}$$

$$\frac{6x}{36 \times 42} = \frac{7}{60}$$

$$x = \frac{7 \times 42 \times 6}{60}$$

$$x = \frac{7 \times 42}{10}$$

$$x = 29.4km$$
Ans.(D)

Let the distance traveled by train is a km and the time taken by train is x hr.

$$\frac{4x}{5} = 2$$

25.

$$x = 2.5$$

5 hr The time taken by the ship is 2 hours less than the entire journey. So took time = 4 - 2 =2 hr

Ship speed = 
$$\frac{360}{2}$$
 = 180 km/hr

According to question - $\frac{360-a}{2.5} + 2.5 = 4$ 180  $\frac{360-a}{360-a} = 1.5$ 180 360 - a = 270hence distance (a) = 90 kmAns.(B) Let actual time to reach office = t hr Then took time to go =  $\left(t - \frac{4}{60}\right)hr$ when speed 40 km/hr Time to go back =  $\left(t + \frac{5}{60}\right)hr$ , when speed 32 km/hr { distance = speed × time } -40  $\left(t - \frac{4}{60}\right)$  = 32  $\left(t + \frac{5}{60}\right)$  $40\left(t-\frac{1}{15}\right) = 32\left(t+\frac{1}{12}\right)$  $40t - \frac{40}{15} = 32t + \frac{32}{12}$  $40t - 32t = \frac{32}{12} + \frac{40}{15}$  $8t = \frac{8}{3} + \frac{8}{3}$  $8t = \frac{\frac{16}{3}}{t}$  $t = \frac{2}{3}$ total distance  $= 40\left(\frac{2}{3} - \frac{1}{15}\right) \Rightarrow 40 \times \frac{9}{15} = 24km$ Ans.(D) let distance between home and college = xkm According to question Time to leave + Time to arrive = 5.95 hr  $\frac{x}{4} + \frac{x}{3} = 5.95$  $\frac{7x}{12} = 5.95$  $x = 0.85 \times 12$  $x = 10.2 \, km$ Ans.(B) Let time taken to reach office = t hr According to question - $42 \times \left(t - \frac{1}{60}\right) = 36 \times \left(t + \frac{3}{60}\right)$   $\Rightarrow 42t - \frac{42}{60} = 36t + \frac{108}{60}$   $42t - 36t = \frac{108}{60} + \frac{42}{60}$  $6t = \frac{15}{\frac{6}{6}}$  $6t = \frac{15}{\frac{15}{6}}, t = \frac{5}{12}$ Distance = Speed × Time  $= 36 \times \left(\frac{5}{12} + \frac{3}{60}\right)$  $= 36 \times \frac{\frac{28}{60}}{\frac{28}{60}} = \frac{\frac{6}{28}}{\frac{10}{10}} = \frac{\frac{168}{10}}{\frac{10}{10}}$ Distance = 16.8kmAns.(B)

Let distance of the city from the house of Chetna = x kmAccording to guestion –

According to c  

$$\frac{x}{8} + \frac{x}{5} = \frac{39}{2}$$
  
 $\frac{5x + 8x}{40} = \frac{39}{2}$   
 $\frac{13x}{40} = \frac{39}{2}$   
 $x = \frac{39 \times 20}{13}$ 

x = 60km30. Ans.(D)

Let the normal speed of Raj = x km/hrBoth the given positions are taken for a fixed distance.

Therefore, from 
$$v_1 t_1 = v_2 t_2$$
,  
 $\therefore (x + 10) \times \frac{90}{60} = (x - 10) \times \frac{150}{60}$   
 $(x + 10) \times \frac{3}{2} = (x - 10) \times \frac{5}{2}$   
 $3x + 30 = 5x - 50$   
 $2x = 80 \Rightarrow x = 40 km/h$   
Let again certain time = t hr  
Then -  
 $(40 + 10) (t - \frac{90}{60}) = (40 - 10) (t + \frac{150}{60})$   
 $50 \frac{(2t-3)}{2} = 30 \frac{(2t+5)}{2}$   
 $100t - 150 = 60t + 150$   
 $40t = 300 \Rightarrow t = \frac{15}{2}$  EUC

Hence Intended distance =  $40 \times \frac{15}{2} = 300$  km

### 31. Ans.(C)

Let the man travel a distance of D km to reach the office. According to question –  $\frac{10}{40} + \frac{(D-10)}{50} = t$  ......(i) and  $\frac{10}{50} + \frac{(D-10)}{40} = t + 0.5$ .....(ii) From eq. (ii) and eq. (i)  $\frac{10}{50} + \frac{D-10}{40} - \frac{10}{40} - \frac{D-10}{50} = t + 0.5 - t$  $\frac{1}{5} + \frac{D-10}{40} - \frac{1}{4} - \frac{D-10}{50} = 0.5$  $\frac{40 + 5D - 50 - 50 - 4D + 40}{200} = 0.5$ D - 20 = 100D = 120 km Ans.(D)

32. Ans.(D)

Let the distance between P and R be = x km  $\therefore$  The time taken by both will be equal. Time taken by y = x द्वारा लिया गया समय Time taken by x =  $\frac{21+21-x}{4} = \frac{x}{3}$ (42 - x) × 3 = 4x 126 - 3x = 4x 7x = 126 x = 18  $\therefore PR = 18km$ 

#### 33. Ans.(A)

Let the length of bus = x m.  $\frac{x}{9.6 \times \frac{5}{18}} + 4.5 = \frac{x}{12 \times \frac{5}{18}} + 9$  $\frac{18x}{48} + 4.5 = \frac{18x}{60} + 9$  $\frac{18x}{48} - \frac{18x}{60} = 9 - 4.5$  $\frac{1080x - 864x}{2880} = 4.5$ 2880 216x = 1296 $x = \frac{1296}{216} = 6m$ 34. Ans.(A) d 60 km/h 40 km/h  $V_1 = \frac{d}{t_1}V_2 = \frac{d}{t_2}$  $t_1 = \frac{d}{v_1}$  and  $t_2 = \frac{d}{v_2}$  $\therefore$  Total time to come and go =  $t_1 + t_2 =$  $\because 5 = \frac{d}{v_1} + \frac{d}{v_2}$  $5 = \frac{d}{v_1} + \frac{d}{v_2} \\ 5 = \frac{d}{60} + \frac{d}{40}$  $5 = d\left(\frac{4+6}{240}\right)$  $5 = d \times \frac{10}{240}$  $d = 5 \times 24 = 120 km$  $\therefore d = 120km$ 35. Ans.(D) More distance covered from 4 km/hr to 9 km/hr speed = 7.5 km  $\therefore 9km/hr - 4km/hr = 7.5km$ or, 5km/hr = 7.5km $\therefore$  time  $=\frac{7.5}{5}hr$  $\therefore$  distance =  $\frac{7.5}{5} \times 4$  (distance = speed  $\times$  time)  $= 6 \, \text{km}$ hence, total distance traveled = 6 km 36. Ans.(A) Let the distance covered by the car in 8 hr be d km. : Distance traveled at a speed of 40 km/  $hr = \frac{d}{2}km$  $\therefore$  took time  $= \frac{d}{40 \times 2} = \frac{d}{80}hr$ : Distance traveled at a speed of 60 km/hr =  $\frac{d}{2}km$ 

 $\therefore$  took time  $= \frac{d}{60 \times 2} = \frac{d}{120}hr$ 

$$\therefore \text{ total time} = 8hr.$$
  

$$\therefore \frac{d}{80} + \frac{d}{120} = 8$$
  

$$\therefore \frac{d}{8} + \frac{d}{12} = 80$$
  

$$\frac{3d+2d}{24} = 80 \Rightarrow 5d = 80 \times 24$$
  

$$d = \frac{80 \times 24}{5} = 384km$$

37. Ans.(D)

Let the distance between the two points be x km.

According to question -

 $\frac{x}{72} + \frac{x}{54} = 7 \quad \left(:: \text{ time } = \frac{\text{distance}}{\text{speed}}\right)$  $\frac{3x + 4x}{216} = 7$  $7x = 7 \times 216$ x = 216kmHence the distance between the two points is 216 km.

### 38. Ans.(B)

Let the total distance be D, and t is normal time so  $\frac{D}{57} = t - \frac{3}{60} \dots (1)$ 

$$\begin{array}{l} \text{SO} \frac{D}{57} = t - \frac{1}{60} \dots (1) \\ \text{and } \frac{D}{51} = t + \frac{1}{60} \dots (2) \\ \text{Subtracting eq. (1) from eq. (2)} \\ \frac{D}{51} - \frac{D}{57} = \frac{1}{60} + \frac{3}{60} \\ \frac{6D}{51 \times 57} = \frac{4}{60} = \frac{1}{15} \\ D = \frac{51 \times 57}{6 \times 15} = 32.3 km \\ \text{Ans.(D)} \end{array}$$

39.

40.

The distance traveled by the woman in both positions will be same.

{: Time taken to reach right time }  $v_1 t_1 = v_2 t_2$ 

$$45 \times \left(t - \frac{5}{60}\right) = 27 \times \left(t + \frac{7}{60}\right)$$

$$\frac{5(60t - 5)}{60} = \frac{3(60t + 7)}{60}$$

$$5(60t - 5) = (60t + 7) \times 3$$

$$300t - 25 = 180t + 21$$

$$120t = 46$$

$$t = \frac{46}{120} = \frac{23}{60} \text{ hr}$$
putting the value of t -
$$\therefore \text{ distance } = 45 \times \left(\frac{23}{60} - \frac{5}{60}\right)$$

$$= 45 \times \frac{18}{60}$$

$$= \frac{135}{10} = 13.5km$$
Ans.(A)

Let distance = D km. speed of Ram = 21 km/hr speed of Lakshman = 40 km/hr According to question –  $\frac{\frac{D}{32} - \frac{D}{40}}{\frac{100 - 32D}{1280}} = 1$  $\frac{8D}{D} = 1280$ D = 160 km

### 41. Åns.(Ĉ)

Let time taken for Piyali to decide the journey = t hr

 $\therefore \text{ Distance to first condition} = 66km/hr \left(t - \frac{5}{60}\right) \dots \dots \dots (i)$ Distance to second condition =  $54km/hr \left(t + \frac{3}{60}\right) \dots \dots (ii)$ On solving equations (i) and (ii) - $66 \left(t - \frac{5}{60}\right) = 54 \left(t + \frac{3}{60}\right)$  $11 \left(t - \frac{5}{60}\right) = 9 \left(t + \frac{3}{60}\right)$  $11t - \frac{55}{60} = 9t + \frac{27}{60}$  $11t - 9t = \frac{27}{60} + \frac{55}{60}$  $2t = \frac{82}{60}$  $t = \frac{41}{60}$ Putting the value of t in equation (i), Distance traveled by Piyali  $66 \left(\frac{41}{60} - \frac{5}{60}\right)$  $= 66 \times \frac{36}{60}$  $= \frac{11 \times 18}{5} = 39.6km$ **Ans.(C)** 

### 42. Ans.(C)

Let the distance traveled during the journey = d km  $\,$ 

According to question –

time = 
$$\frac{1}{\text{speed}}$$
,  
 $\frac{d}{45} - \frac{d}{54} = \frac{15}{60}$   
 $\Rightarrow \frac{6d-5d}{270} = \frac{1}{4}$   
 $d = \frac{270}{4} = 67.5km$ 

43. Ans.(D)

44.

Average speed =  $\frac{\text{total distance}}{\text{total time}}$ =  $\frac{15+16}{4+2} = \frac{31}{6}$ 

=  $5.17ms^{-1}$ Ans.(C) Distance traveled

Distance traveled in first four seconds = 18 meter Distance traveled in the next two seconds = 16 meters total distance traveled = 18 + 16 = 34 meter

Total time taken = 4 + 2 = 6 second

Average speed of object =  $\frac{\text{Total distance traveled}}{\text{Total time taken}}$ 

Average speed =  $\frac{34}{6}$  = 5.67 meter /second 45. Ans.(A) Speed from point A to B = 40 km/hrReturn speed from point B to A. = 60 km/hr Average speed =  $\frac{2xy}{x+y}$  $=\frac{2\times40\times60}{40+60}$ Average speed = 48 km/hr 46. Ans.(C) distance traveled in 4 seconds = 25 m. distance traveled in 2 seconds = 15 m. Average speed =  $\frac{\text{total distance}}{\text{total time}}$  $=\frac{25+15}{4+2}$  $=\frac{40}{6}$  $= 6.67 m s^{-1}$ 47. And.(D) Average speed =  $\frac{\text{total distance}}{\text{total time}} = \frac{144}{60}$  $=\frac{12}{5}=2.4ms^{-1}$ Ans.(B) 48. Average speed =  $\frac{\text{total distance}}{\text{total time}}$  =  $\Rightarrow \frac{190m}{60sec} = \frac{19}{6} = 3.1666$ 190*m* 1*min*  $= 3.17 m s^{-1}$ 49. Ans.(A) Average speed =  $\frac{\text{total distance}}{\text{total time}}$ Average speed =  $\frac{160}{60}$  $=\frac{8}{3}=2.67m/s$  $= 2.67 m s^{-1}$ 50. Ans.(A) Let speet of Eddie =  $V_1$ speet of Fred = V<sub>2</sub> According to question - $7V_2 - 9V_1 = 1$  .....(i)  $4V_2 - 5V_1 = 2$  .....(ii)  $\frac{eq. (i) \times 4_{-} - eq. (ii) \times 7}{\frac{28V_2 - 36V_1 = 4}{-V_1 = -10}} = \frac{35V_1}{28m}$  $V_1 = 10 km/h$ Or, average speed of Eddie (V1) - 10 km/h 51. Ans.(B) distance = 500m, time = 25s speed =  $\frac{\text{distance}}{\frac{\text{time}}{25}}$  = 20*m*/sec = 20*ms*<sup>-1</sup> 52. Ans.(C) Average speed =  $\frac{\text{total distance}}{\text{total time}}$ =  $\frac{25+15}{3+2} = \frac{40}{5} = 8m/s = 8ms^{-1}$ Ans.(C) 53.

 $\therefore$  Average speed =  $\frac{\text{total distance}}{\text{total time taken}}$ : Average speed =  $\frac{(14+16)m}{(4+2)s}$  $= \frac{30}{6}m/s$ = 5m/s54. Ans.(C) average speed =  $\frac{18m + 18m}{6s + 4s}$  $=\frac{36}{10}m/s$  $= 3.6ms^{-1}$ 55. Ans.(B) Let tatal distance = x km By question –  $\frac{x}{4\times 15} + \frac{x}{2\times 30} + \frac{x}{4\times 5} = 2$  $\frac{x+x+3x}{60} = 2$ 5x = 120x = 24kmAverage speed =  $\frac{\text{total distance}}{\text{total time}} = -$ 24km2h= 12km/h56. Ans.(B) Average speed =  $\frac{\text{total distance}}{\text{total time}} = \frac{7}{\frac{3}{a} + \frac{2}{a} + \frac{2}{a}} =$ 7×24  $\frac{\frac{1}{49}}{\frac{168}{10}} = 3.428$ = 3.43 km/hr57. Ans.(A) Total distance traveled by the object, (S) = 24 + 16 = 40 m.And total time taken, (t) = 6 + 4 = 10 से. Average speed of object (V) ? Average speed =  $\frac{\text{total distance}}{\text{total time}}$  $=\frac{40}{10}=4$  m.sec<sup>-1</sup> Thus, the average speed of the object is 4 m.sec<sup>-1</sup>. Ans.(A) 58. speed =  $\frac{\text{Displacement}}{...}$  = time Displacement in a circle on the circumference of the circle  $=\frac{0}{50}=0ms^{-1}$ 59. Ans.(A) Average speed =  $\frac{\text{total distance}}{\text{total time}}$  $=\frac{(25+29)m}{(10+8)sec}$ 

 $= \frac{54m}{18sec} = 3m/sec$ 

60. Ans.(A)

Total distance traveled by car = 3400 – 3000 = 400 km

Time taken for travel = 8 hr Average speed =  $\frac{\text{total distance}}{\text{total time}} = \frac{400}{8} =$ 50km/h $= 50 \times \frac{5}{18} m/s$  $=\frac{250}{18}=13.9m/s$ 61. Ans.(C) Total distance traveled by bus = 3600 - 3000 = 600 km $\therefore \text{ Average speed } = \frac{\text{total distance}}{\text{total time}}$  $=\frac{600}{8}=75 km/h$ 62. Ans.(C) Average speed (v) =  $\frac{\text{Total distance covered}(D)}{\text{total time }(t)}$ total distance (D) =  $D_1 + D_2 = 20 + 30 = 50m$ total time  $(t) = t_1 + t_2 = 6 + 4 = 10Sec$ .  $v = \frac{D}{t}$  $v = \frac{50}{10}$ v = 5m/s63. Ans.(A) Total distance = 390 km First distance traveled by train = 182 km speed = 56 km/hr Second distance traveled by train = 108 km speed = 72 km/hr Remaining distance = 390 - (182 + 108)= 100 km time  $=\frac{5}{4}$  hr formula – Average speed =  $\frac{\text{total distance}}{\text{total time}}$  $= \frac{390}{\frac{182}{72} + \frac{108}{72} + \frac{5}{4}}$  $= \frac{390}{\frac{13}{4} + \frac{6}{4} + \frac{5}{4}}$  $= \frac{390 \times 4}{13 + 6 + 5}$  $=\frac{\frac{13}{390\times 4}}{\frac{24}{24}}$ = 65 km/hr64. Ans.(D) Mary took time to take a round of the rectangular garden = 30 min Silla took time to complete one round of the garden = 45 min Time to start walking = 9 : 00 AM Again, meeting time at the starting point together = 9:00AM + L.C.M.of 30 and 45  $= 9:00AM + 90 \min$  $= 9:00AM + \frac{90}{60}hr$ = 10:30AM65. Ans.(C)

Let the distance = x km According to question speed =  $\frac{\text{distance}}{\text{time}}$  $50 = \frac{x}{8}$  $x = 400 \, km$ 400 km distance covered in 5 hours speed  $=\frac{400}{5} = 80 km/h$ then, Speed increase = 80 - 50 = 30 km/hAns.(B) The speed of 14 meters per second is the same as 50.4 km/h. 1 m./sec = 18/5 km/hr  $14 \text{ m./sec} = \frac{18}{5} \times 14 = 50.4 \text{ km/hr}$ Ans.(C) bus speed = 25 km/hr let woman's speed = x Distance = D Time = 15 min =  $\frac{15}{60} = \frac{1}{4}$  hr Then time after woman's speed = 10 min =  $\frac{10}{60} = \frac{1}{6}$  hr Then relative speed (S) =  $\frac{D}{T}$  $\Rightarrow D = S \times T$ From eq. (i) and eq. (ii) - $\frac{25+x}{6} = \frac{25}{4}$  $25 + x = \frac{150}{4}$  $x = \frac{150}{4} - 25$   $x = \frac{150 - 100}{4}$   $x = \frac{50}{4}$ Woman's speed x = 12.5 km/hr Ans.(C) let train speed = x km/h Distance between two stations = 36 Km. According to question - $\frac{36}{x+4} = \frac{36}{x} - \frac{6}{60}$  (time = distance/speed)  $\Rightarrow 36\left(\frac{1}{x} - \frac{1}{x+4}\right) = \frac{1}{10}$  $\Rightarrow 36\left(\frac{x+4-x}{x(4+x)}\right) = \frac{1}{10}$  $\Rightarrow 36 \times 4 \times 10 = x^2 + 4x$  $\Rightarrow x^2 + 4x - 1440 = 0$  $\Rightarrow x^2 + 40x - 36x - 1440 = 0$  $\Rightarrow x(x + 40) - 36(x + 40) = 0$  $\Rightarrow (x + 40)(x - 36) = 0$  $\therefore x = 36Km/h$ 

66.

67.

**68**.

69. Ans.(D) Let time taken by bus = t Time taken by train = (4.5 - t)According to question - $260 = 48 \times t + 70 \times (4.5 - t)$  $260 = 48t + (70 \times 4.5 - 70t)$ 260 = 48t + 315 - 70t22t = 55or t = 2.5t = 2 hr 30 min70. Ans.(B) Let Raima cover x1 distance from bicycle in t hours. so the distance traveled by bicycle  $(x_1)$  $= 12 \times t$ And walking distance  $(x_2) = 7 (7 - t)$ then,  $x_1 + x_2 = 64$  km 12t + 49 - 7t = 645t = 64 - 495t = 15t = 3 hrAns.(C) 71. Let the short break was taken for x min during the journey. Time taken while taking both breaks = x + 2x= 3x min Actual speed of traveler =  $\frac{360}{8} = 45 km/hr$ and average speed = 60 km/hr According to question - $\frac{\frac{360}{45} - \frac{360}{60}}{\frac{360}{45} - \frac{360}{60}} = \frac{3x}{\frac{3x}{60}} \ln r$  $15 = \frac{3x}{8}$ 3x = 120 min  $x = 40 \min$ Hence the time taken during the short break x = 40 min 72. Ans.(A) Walking time on one side by Nidhi + Time to cycle to the other side = 3 hr 45 min  $\Rightarrow 3 + \frac{45}{60} = 3 + \frac{3}{4} = \frac{15}{4}$ The time it took him to walk both ways = 4 hours 20 min= 4 +  $\frac{20}{60} = \frac{13}{3}$ The time it took him to walk 1 way =  $\frac{13}{3} \times \frac{1}{2} = \frac{13}{6}$ The time it took him to cycle 1 way =  $\frac{15}{4} - \frac{13}{6}$  $=\frac{45-26}{12}=\frac{19}{12}$  hour Time taken by bicycle =  $\frac{19}{12} \times 2 = \frac{19}{4}$ = 3hr10 min73. Ans.(A)

The time taken to travel and reach a certain distance by foot and bicycle = 9 hours 55 min. And the total time taken for walking both side = 12 hr 30 min. Time taken for walking only = 6 hours 15 min.

So, Time taken to cycling both side  $= (9.55 - 6.15) \times 2 = 7$  hour 20 min.

#### 74. Ans.(B)

The speed of both the horses is 10 km/hr and 15 km/hr respectively.

Let the distance be x km time = distance

speed

time taken from 1<sup>st</sup> horse =  $\frac{\text{distance}}{\text{speed}} = \frac{x}{10}$ 

Time taken by another horse =  $\frac{3}{1}$ 

According to question,  $\frac{x}{x}$   $\frac{x}{x}$   $\frac{12}{x}$ 

$$\frac{10}{10} - \frac{1}{15} = \frac{1}{60}$$
$$\frac{3x - 2x}{30} = \frac{12}{60}$$

 $\frac{x}{30} = \frac{12}{60}$ x = 6km75. Ans.(A)

> Let total distance 3 Dkm time = 19 min : According to question,

$$\frac{\frac{19}{60}}{\frac{19}{60}} = \frac{\frac{D}{10} + \frac{D}{20} + \frac{D}{6}}{\frac{19}{60}} \quad \text{[time} = \frac{\text{distance}}{\text{speed}}$$
$$\frac{\frac{19}{60}}{\frac{19D}{60}} = \frac{\frac{6D + 3D + 10D}{60}}{19D} = 19$$

D = 1kmhence total distance =  $3D = 3 \times 1 = 3km$ 

#### 76. Ans.(C)

Let the total distance covered by Azhar = x kmBy question  $\frac{x/2}{21} + \frac{x/2}{24} = 10 \left[ \because time = \frac{distance}{speed} \right]$  $\Rightarrow \frac{x}{21} + \frac{x}{24} = 20$  $\Rightarrow \frac{x}{7} + \frac{x}{8} = 20 \times 3 = 60$  $\Rightarrow \frac{8x + 7x}{56} = 60$  $\Rightarrow 15x = 60 \times 56$  $x = \frac{60 \times 56}{15} = 4 \times 56, x = 224 \text{ km}$ 

77. Ans.(D)

> Distance covered by Sindhu =  $20\frac{2}{3}km$  =  $\frac{62}{3}km$ and time =  $7\frac{3}{4}$  hr =  $\frac{31}{4}$  hr formula – speed =  $\frac{\text{distance}}{\text{time}}$  $\therefore \text{ speed } = \frac{\frac{62}{3}}{\frac{31}{4}} \Rightarrow = \frac{62}{3} \times \frac{4}{31} = \frac{8}{3} km/hr$  $= 2\frac{2}{2}km/h$

78. Ans.(A)

First position – let road distance = x km Normal average speed of the car 50 km / h time =  $\frac{x}{50}h$ Second position Special day average speed =  $50 - 50 \times \frac{1}{10}$ = 45km/hthus,time =  $\frac{x}{45}$  hr now according to question –  $\frac{x}{45} - \frac{x}{50} = \frac{18}{60}$   $20x - 18x = 18 \times 15$   $2x = 18 \times 15$   $x = 9 \times 15$ Hence distance of the road = 135 km

### 79. Ans.(A)

When one travels a fixed distance at a speed of x km/h and an equal distance at a speed of y km/h, then,

Average speed throughout the journey

$$= \frac{2xy}{(x+y)} km/h$$
$$= \frac{2\times 4\times 2}{4+2} km/h$$
$$= \frac{8}{3} = 2.67 km/h$$

80. Ans.(B)

Average speed = 
$$\frac{\text{total distance}}{\text{total time}}$$
$$= \frac{(24+15)}{(3+2)} = \frac{39}{5} = 7.8m/sec$$
$$= 7.8ms^{-1}$$

Average speed =  $\frac{\text{total distance}}{\text{total time}}$ =  $\frac{23+15}{3+2} = \frac{38}{5} = 7.6 m s^{-1}$ Ans (A)

82. Ans.(A)

Since Kiran is coming back from where she walks. So, its displacement will be zero. Therefore the average velocity = 0 m/s

### 83. Ans.(D)

Total distance traveled by the object = 10m + 14m = 24mAnd total time to cover that distance  $4 \sec + 2 \sec = 6 \sec$ Average speed of object = ?

Average speed = \_\_\_\_\_

$$= \frac{d_1 + d_2}{t_1 + t_2}$$

$$= \frac{(10 + 14)m}{(4 + 2)sec}$$

$$= \frac{24}{6} = 4ms^{-1}$$
Total time taken

Thus, the average speed of the object is  $4ms^{-1}$ .

## 84. Ans.(C)

Let the bus d distance is covered in t time. speed of bus  $= \frac{d}{t}$ By question – speed of person  $= \frac{d/3}{3t} = \frac{d}{9t}$ Intended ratio  $= \frac{d}{9t} : \frac{d}{t} = 1:9$ 

85. /

Ans.(B)  
Let actual speed = x  
According to question –  

$$\frac{90}{(x-3)} - \frac{90}{x} = 5$$
  
 $\Rightarrow \frac{90[x-x+3]}{x^2-3x} = 5$   
 $\Rightarrow \frac{18\times3}{x^2-3x} = 1$   
 $\Rightarrow 54 = x^2 - 3x$   
 $\Rightarrow x^2 - 3x - 54 = 0$   
 $\Rightarrow x^2 - 9x + 6x - 54 = 0$   
 $\Rightarrow x(x-9) + 6(x-9) = 0$   
 $\Rightarrow (x-9)(x+6) = 0, x = -6($  Invalid)  $x$   
 $= 9$  Valid  
hence actual speed = 9 km/hr  
Ans (C)

86. Ans.(C)

then 
$$-\frac{405}{x} = \frac{6x}{30}$$
  
 $\Rightarrow 6x^2 = 405 \times 30$   
 $\Rightarrow x^2 = 2025$  km/hr or  $x = 45$  km/hr

- 87. Ans.(A)
  - Distance = Speed × Time =  $62 \times \frac{7}{2}$ =  $31 \times 7 = 217$  km Time taken to increase 8 km/h speed  $\frac{217}{(62+8)} = \frac{217}{70} = \frac{31}{10} = 3\frac{1}{10}$ Remaining time =  $3\frac{1}{2} - 3\frac{1}{10}$ =  $\frac{7}{2} - \frac{31}{10} = \frac{35-31}{10} = \frac{4}{10} = \frac{2}{5}$  hr =  $(\frac{2}{5} \times 60)$  min = 24 min

### 88. Ans.(B)

Total distance covered by Rajan  $51 \times 7 = 110 \text{ km}$ 

= 
$$51 \times \frac{1}{3}$$
 = 119 km  
Time taken by Kiran to cover a distance of  
119 km  
=  $\frac{119}{68}$  hr  
=  $\frac{7}{4} = 1\frac{3}{4}$  hr

89. Ans.(D)

initial speed of the car =  $\frac{350}{4}$  = 87.5 km/hr

speed of car  $12\frac{1}{2} = 12.5$  km/hr on reducing = 87.5 - 12.5 = 75 km/hr Hence the time taken by the car to cover 450  $km = \frac{450}{75} = 6 hr$ 

#### 90. Ans.(B)

let distance traveled = d :: d = v tAccording to question  $d = 10 \times \left(t + \frac{5}{60}\right)$ .....(i) and,  $d = 13 \times \left(t - \frac{4}{60}\right)$  .....(ii) from eq. (i) and (ii)  $10 \times \left(t + \frac{5}{60}\right) = 13 \times \left(t - \frac{4}{60}\right)$  $10t + \frac{50}{60} = 13t - \frac{52}{60}$  $\frac{50}{60} + \frac{52}{60} = 13t - 10t$  $\frac{102}{60} = 3t$  $t = \frac{34}{60}$ Putting the value of t in equation (i)  $d = 10 \times \left(\frac{34}{60} + \frac{5}{60}\right)$  $d = 10 \times \frac{39}{60} \Rightarrow d = 6.5 km$ 

#### 91. Ans.(B)

Let the length of the van be a meter and the speed of the van is x km/h. According to question -

$$\frac{a}{(x-4.8)\times\frac{5}{18}} = 4.5$$

$$\frac{18a}{5} = 4.5x - 21.6$$

$$\frac{a}{(x-6)\frac{5}{18}} = 9$$

$$\frac{18a}{5} = 9x - 54 \dots (i)$$
From eq. (i) and (ii)
$$x = 7.2 \text{ meter/sec. eq.(ii)}$$

$$\frac{18a}{5} = 9 \times 7.2 - 54$$

$$\Rightarrow \frac{18a}{5} = 10.8 \Rightarrow a = \frac{10.8 \times 5}{18} = 3 \text{ meter}$$
Ans.(D)

92.

93.

let platform length = x meter speed =  $\frac{\text{distance}}{\text{time}}$   $54 \times \frac{5}{18} = \frac{150 + x}{42}$   $\Rightarrow x + 150 = 3 \times 5 \times 42$  $\Rightarrow x + 150 = 630$  $\Rightarrow x = 630 - 150$ x = 480Hence the length of platform = 480 m Ans.(A) circumference of wheel =  $2\pi r = 2 \times \frac{22}{\pi} \times .35$ = 2.2 meter

speed = 
$$\frac{450 \times 2.2}{60} = \frac{450 \times 22}{60 \times 10} \times \frac{18}{5} km/hr$$
  
=  $\frac{594}{10} = 59.4 km/hr$ 

### 94.

95.

96.

97.

98.

99.

Ans.(A) Let the speed of the woman be x km / h and the distance of the woman from the house is I km and woman get first car on t time. then  $x \times t + 20t = l \dots \dots (i)$ and  $\left(t + \frac{8}{60}\right)x + \left(t + \frac{8-10}{60}\right) \times 20 = l$  $xt + \frac{8x}{60} + 20t - \frac{20 \times 2}{60} = xt + 20t$  $\frac{8x}{60} =$ 60 x = 5 km/hrAns.(B) Distance traveled by car A = 80 × 6 = 480 km Distance traveled by car B = 480-60 = 420 km  $\therefore$  speed of car B =  $\frac{420}{6}$  = 70 km/hr Ans.(D) The speeds of the two buses are 11x and 9x respectively. speed of second bus  $=\frac{270}{15} = 18 km/h$  $\Rightarrow 9x = 18km/h$  $\Rightarrow x = 18/9$  $\Rightarrow x = 2km/h$ Hence speed of first bus =  $11x = 11 \times 2 =$ 22km/hAns.(C) Distance covered by cycle in 15 min =  $24 \times \frac{15}{60} = 6 \text{ km}$ Hence speed of woman =  $\frac{6}{\frac{10}{10}} = \frac{6 \times 60}{10}$ = 36 km/hr  $\therefore$  Intended speed = 36 - 24 = 12 km/hr Ans.(C) Let speed of woman = x km/hr

According to question  $x \times \frac{6}{60} = 20 \times \frac{4}{60}$ 

$$x = \frac{40}{3} = 13\frac{1}{3}km/h$$

Let speed of person = x km/hr. According to question - $22 + x = \frac{22 \times 10}{6}$  $22 + x = \frac{220}{6}$  $x = \frac{110}{3} - 22$  $x = \frac{110 - 66}{3} = \frac{44}{3}$  $x = 14\frac{2}{2}km/h$ 

100. Ans.(C) Distance covered by bicycle in 10 min  $= 6 \times \frac{10}{60} = 1 km$ Let speed of woman = x km/hr Then relative speed (6 + x) km/hr.  $6 + x = \frac{1}{\frac{8}{60}} = \frac{60}{8} \Rightarrow x = \frac{60}{8} - 6$  $x = \frac{\frac{60-48}{8}}{\frac{8}{2}} = \frac{12}{8}$  $x = \frac{3}{2} = 1.5 km/h$ 101. Ans.(B) speed =  $\frac{\text{distance}}{\text{time}} = \frac{240}{6} = 40 \text{ km/hr}$ new speed =  $240 \times 1\frac{1}{2} = 240 \times \frac{3}{2} =$ 360 km again, speed =  $\frac{\text{distance}}{\text{time}} = \frac{360}{6} = 60 \text{ km/hr}$ Speed increase = 60 - 40 = 20 km/hr102. Ans.(C) Distance covered by vehicle in 20 min Distance = Speed × Time  $= 25 \times \frac{20}{60} \text{ km}$  $= 25 \times \frac{1}{3} = \frac{25}{3} \text{ km}$ Let the speed of woman = x km/hr: By question,  $\Rightarrow \frac{\frac{25}{3}}{\frac{25}{25} + x} = \frac{18}{60}$  $\Rightarrow \frac{\frac{25}{3(25 + x)}}{\frac{25}{3(25 + x)}} = \frac{18}{60}$  $\Rightarrow \frac{\frac{25}{75 + 3x}}{\frac{25}{75 + 3x}} = \frac{18}{60}$  $\Rightarrow \frac{\frac{25}{75 + 3x}}{\frac{250}{75 + 3x}} = \frac{3}{10}$  $\Rightarrow \frac{250 - 225}{25 - 9x} = 9x$  $\Rightarrow 25 = 9x$  $\Rightarrow x = \frac{25}{9}$ Hence the speed of woman =  $2\frac{7}{2}$  km/hr 103. Ans.(C) Let the woman walk x km/h more, formula -Distance = Speed × Time  $\frac{\frac{16}{60} \times 20}{320} = (x + 20) \times \frac{12}{60}$ 320 = 12x + 240 12x = 80 $x = \frac{80}{12} = \frac{20}{3} = 6\frac{2}{3}$  km/hr 104. Ans.(D) The policeman catches the thief, so the distance traveled by both will be same.  $x \times 8 = 40 \times 4$ x = 20: Bike speed of thief = 20 km/hr 105. Ans.(B)

Let the speed of the thief's motor cycle is x km/h. And distance is d km. Speed of thief's motorcycle  $x = \frac{d}{6+4} = \frac{d}{10}$ Speed of soldier's bike 90 =  $\frac{d}{d}$ le distance (d) =  $90 \times 4 = 360$  km. According to question -Speed of thief's motorcycle  $x = \frac{360}{10}$ x = 36 km/hrAns.(D) By walking + By running = 9 hr 50 minBy walking = 12 hr 20 min By walking = 6 hr 10 minBy running = 9 hr 50 min – 6 ਬਂਟਾ 10 min By running = 3 hr 40 minThen, time taken to cover the distance on both sides =  $2 \times (3 \text{ hr } 40 \text{ min})$ = 6 hr 80 minTotal time = 7 hr 20 min Ans.(A) Let time taken to walk = x Time taken to ride = y Then x + y = 9.33 (1) (9 hr 20 min = 9.33 hr) And x + x = 11.25 (2) (Time taken to walk and arrive) 2x = 11.25 x = 5.625From eq. (i) 5.625 + y = 9.33y = 9.33 - 5.625y = 3.705Then time taken to go and come  $2y = 2 \times 3.705 = 7.41$ Intended time = 7 hr 25 minAns.(B) Let distance = x km Distance covered in 270 min at a speed of 60 km/h  $\Rightarrow 60(\text{ speed}) = \frac{x(\text{ distance})}{\frac{270}{60}(\text{ time})} \Rightarrow 60 = \frac{60x}{270}$ x = 270km $15m/s = 15 \times \frac{18}{5} = 54km/h$ time taken to cover a distance of 270 km at a speed of 54 km/h  $\frac{270}{54} = 5$  hr Ans.(C) Let time taken to by running one side distance = XAnd Time taken to walk = yBy question -

106.

107.

108.

109.

By question –  $x + y = 6\frac{5}{6}h = \frac{41}{6}....(i)$   $2y = 8\frac{1}{2} \Rightarrow y = \frac{17}{4}$ From eq. (i) –

$$x + \frac{17}{4} = \frac{41}{6} \Rightarrow x = \frac{41}{6} - \frac{17}{4}$$

$$x = \frac{82-51}{12} = \frac{31}{12}$$

$$\therefore \text{ Time taken to cover the distance by running both sides}$$

$$= 2 \times \frac{31}{12} = \frac{31}{6} = 5 \text{ hr 10 min}$$
**0. Ans.(D)**

$$S_1 = 50 km/h, t_1 = 5\frac{1}{2} = \frac{11}{2}$$

$$S_2 = (50 + 5) = 55 km/h, t_2 = ?$$
formula  $-S_1t_1 = S_2t_2$  (distance = speed × time)  
 $50 \times \frac{11}{2} = 55 \times t_2$ 
 $t_2 = \frac{275}{55} = 5 \text{ hr}$ 
left time  $= (\frac{11}{2} - 5) = \frac{1}{2} \text{ hr}$ 

$$= 30 \text{ min}$$
**1. Ans.(A)**
The time taken for Shavya to walk from one place to the same place = 8 hours 20 min =  $8 + \frac{20}{60} = 8 + \frac{1}{3} = \frac{25}{3} \text{ hr}$ 
Time taken both ways = 10 hr 15 min =  $10 + \frac{15}{60} = (10 + \frac{1}{4}) \text{ hr} = \frac{41}{4} \text{ hr}$ 

$$\therefore \text{ Time to come back both ways}$$

$$= (2 \times \frac{25}{3} - \frac{41}{4}) \text{ hr} = \frac{50}{4} - \frac{41}{4}$$

$$= \frac{200-123}{12} = \frac{77}{12} = 6\frac{5}{12} \text{ hr}$$
**6** hr  $\frac{5}{12} \times 60 \text{ min} = 6 \text{ hr 25 min}$ 
**2. Ans.(A)**
Let time taken for walking = x hrs.
Time taken by vehicle for come = y hrs. so  $x + y = 4 \text{ hr 15 min}$ 
 $x + y = 4.25 \text{ hrs}$ , time taken to go and come  $x + x = 5.50$ 
 $2x = 5.50$ 
 $x = 2.75$ 
Putting the value of x in eq. (1), 2.75 + y = 4.25
 $y = 4.25 - 2.75$ 
 $y = 1.50$ 
Hence the time taken to return from the

vehicle = 1.50 hrs Then time to come and  $go = 1.50 \times 2 = 3$  hrs.

#### 113. Ans.(A)

11

11

11

Given - $V_1 = 80Km/h.V_2 = 90Km/h$  $t_1 = 10 \min t_2 = 8 \min$ Distance traveled by bus from initial point to destination 2)

distance 
$$= \frac{V_1 \cdot V_2}{V_1 - V_2} \times \frac{(t_1 - t_2}{60}$$
$$= \frac{80 \times 90}{80 - 90} \times \left(\frac{10 - 8}{60}\right)$$

 $= \frac{80 \times 90}{10} \times \frac{2}{60} = 24Km$ Time taken by bus to complete the journey  $=\frac{24}{80} \times 60 - 10 = 18 - 10 = 8 \text{ min}$ Ans.(B) Speed of Neelam = 7 km/hr Speed of Maneesha = 9 km/hr The relative speed of Neelam and Manisha = (9 - 7) km/hHence time taken to go 16 km away from

### each other = speed

$$=\frac{16}{2}=8$$
 hr

#### 115. Ans.(A)

114.

Time taken for Divya to walk from one place and ride back to the same place =  $4 + \frac{45}{60} =$  $\frac{19}{4}$ hr

- Time to walk from both sides
- $= 5 \text{ hr } 55 \text{ min} = 5 \frac{55}{60} = \frac{71}{12} \text{ hr}$

Time to walk from one side  $=\frac{71}{12} \times \frac{1}{2} = \frac{71}{24}$ Ride time on both sides  $=\left(\frac{19}{4} - \frac{71}{24}\right) \times 2$ 

$$= \left(\frac{114-71}{24}\right) \times 2$$
  
=  $\frac{43}{24} \times 2 = \frac{43}{12} = 3$  hr 35 min

#### 116. Ans.(B)

total distance = 30 km. Distance traveled at a speed of 6 km/h = 3/5of total distance

$$= 30 \times \frac{3}{2}$$

Reduction in speed by 2 km/h, (6 - 2) = 4km/h

Hence, the last 12 km distance will run at a speed of 4 km/h. Thus, the time taken to cover the entire distance of 30 km

$$=\frac{18}{6}+\frac{12}{4}=3+3=6$$
 hr

Hence the time to end the journey

$$= 6:30 + 6$$

= 12:30 = 12:30pm

#### 117. Ans.(B)

Let Vishnu has traveled a total distance of x km.

According to question -

 $\frac{\binom{x}{3}}{10} + \frac{\binom{x}{3}}{30} + \frac{\binom{x}{3}}{8} = \frac{15.5}{60}$  $\frac{x}{3}\left(\frac{1}{10} + \frac{1}{30} + \frac{1}{8}\right) = \frac{15.5}{60}$  $\frac{x}{3}\left(\frac{24+8+30}{240}\right) = \frac{15.5}{60}$  $\frac{x}{3}\left(\frac{62}{240}\right) = \frac{15.5}{60}$ 

$$x = \frac{15.5 \times 240 \times 3}{60 \times 62}$$
$$x = \frac{186}{62}$$
$$x = 3$$
 km

Ans.(B) Let total distance traveled = x km By question –  $\frac{x/2}{30} + \frac{x/2}{40} = 70$   $\Rightarrow \frac{x}{30} + \frac{x}{40} = 70 \times 2 = 140$   $\Rightarrow \frac{4x + 3x}{120} = 140$   $\Rightarrow 7x = 140 \times 120$ 

$$\Rightarrow x = \frac{140 \times 120}{7} = 2400 \text{ km}$$

119. Ans.(D)

118.

Let distance traveled by M and N = x km  $\therefore$  According to question –

$$\frac{x}{160} - \frac{x}{200} = \frac{30}{60} = \frac{1}{2}$$
  

$$\Rightarrow \frac{x}{20\times8} - \frac{x}{20\times10} = \frac{1}{2}$$
  

$$\Rightarrow \frac{x}{8} - \frac{x}{10} = \frac{1}{2} \times 20 = 10$$
  

$$\Rightarrow \frac{5x - 4x}{40} = 10$$
  

$$\Rightarrow x = 10 \times 40 = 400 \text{ km}$$

120. Ans.(A)

121.

Distance covered by Jacob in 42 min = 5 m/sec  $\times$  42 min = 5  $\times$  42  $\times$ 60 m. = 12600 m.

### 5 m/s Jacob O Sanjay 7 m/s

Distance covered by Sanjay in 42 min = 7 m/sec × 42 min = 7 × 42 × 60m = 17640m Let, after 42 min desired distance between both = 17640 + 12600 = 30240 meter = 30.24 किमी Ans.(C) Let total distance = x km  $\therefore$  time =  $\frac{\text{distance}}{\text{speed}}$   $\frac{2}{3} + \frac{2}{6} = 5$   $\frac{x}{6} + \frac{x}{12} = 5$   $\frac{2x + x}{12} = 5$  3x = 60 x = 20Total distance = 20 km

#### 122. Ans.(B)

Let distance from home to school = x km then, time taken to cover a distance of x (km) at a speed of 45 km/h =  $\frac{x}{45}$ Time taken to cover a distance of x (km) at a speed of 60 km/h =  $\frac{x}{60}$ 

According to question - $\Rightarrow \frac{x}{45} - \frac{x}{60} = \frac{5}{60}$  $\Rightarrow \frac{4x - 3x}{180} = \frac{1}{12}$  $\Rightarrow x = \frac{180}{12} = 15$ x = 15 kmDistance from home to school = 15 km 123. Ans.(C) Let the total distance be x km. journey covered by bus =  $\frac{4x}{9}$ journey covered by train =  $\frac{5x}{18}$ According to question  $x - \left(\frac{4x}{9} + \frac{5x}{18}\right) = 10$  $\Rightarrow x - \frac{13x}{18} = 10$  $\Rightarrow \frac{5x}{18} = 10$  $\Rightarrow 5x = 10 \times 18$  $\Rightarrow x = \frac{10 \times 18}{5}$  $\Rightarrow x = 36$  km 124. Ans.(D) Given, distance = 60 km, time = 3 hr 45 min  $= 3\frac{45}{60}$  hr  $=\frac{15}{4}$  hr  $\therefore \text{ speed } = \frac{\text{distance}}{\text{time}}$  $= \frac{60}{(15/4)} = 60 \times \frac{4}{15} = 16 km/h$ Let the average speed increase by x km/h. Again,time = 3 hr {Distance to be covered 45 min before.} speed = (16 + x) km/h According to question - $(16 + x) = \frac{60}{3}$  $\Rightarrow 16 + x = 20$  $\Rightarrow x = 20 - 16$  $\Rightarrow x = 4km/h$ 125. Ans.(D) Let total distance be d and speed is 'V'. As a first condition - $V = \frac{d}{12} \dots \dots$ (i) As a second condition –  $(V + 5) = \frac{d}{9}$ ....(ii) From eq. (i) and (ii) –  $\frac{d}{12} + 5 = \frac{d}{9}$  $\frac{d^2}{12} = \frac{d}{9}$  $\Rightarrow 3d + 180 = 4d$  $\Rightarrow d = 180 km$ 126. Ans.(A)

speed of bus = 90 km/hr  $= 90 \times \frac{5}{18}$ = 25 m.sec ∴Distance covered in 20 seconds  $20 \times 25 = 500$  meter 127. Ans.(D) time (t) = 42.5 min =  $\frac{42.5}{60}$  hr let distance =  $d, d = d_1 + d_2 + d_3$ and  $d_1 = d_2 = d_3 = x$ average speed = V  $V_{1} = 3km/hr.V_{2} = 4km/hr.V_{3} = 8km/hr$ average speed = (V) =  $\frac{d_{1} + d_{2} + d_{3}}{\frac{d_{1}}{v_{1}} + \frac{d_{2}}{v_{2}} + \frac{d_{3}}{v_{3}}}$  $V = \frac{\frac{x+x+x}{\frac{x}{3}+\frac{x}{4}+\frac{x}{8}}}{\frac{3x+6x+3x}{24}}$  $V = \frac{\frac{3x}{3x}}{\frac{24}{24}}$  $V = \frac{3x}{\frac{17x}{\frac{24}{24}}}$  $U = \frac{3x}{\frac{3x^24}{24}}$  $V = \frac{3 \times 24}{17} km/hr$ Then. distance = speed × time  $d = \frac{42.5}{60} \times \frac{3 \times 24}{17}$  $d = \frac{425}{600} \times \frac{3 \times 24}{17}$ d = 3km128. Ans.(B) Let total distance = d km time =  $\frac{\text{distance}}{\text{speed}}$ .. According to question - $\frac{d}{\frac{2}{30}} + \frac{d}{\frac{2}{40}} = 35$  $\Rightarrow \frac{d}{60} + \frac{d}{80} = 35$  $\Rightarrow \frac{4d+3d}{240} = 35$  $\Rightarrow 7d = 240 \times 35$  $d = 240 \times 5 = 1200$ 129. Ans.(D) Raineesh covered similar distances Let the distance traveled in a time = x km d = distance v = speedthen average speed  $(v) = \frac{d_1 + d_2 + d_3}{\frac{d_1}{v_1} + \frac{d_2}{v_2} + \frac{d_3}{v_3}}$  $= \frac{x + x + x}{\frac{x}{6} + \frac{x}{4} + \frac{x}{8}} = \frac{3x}{\frac{4x + 6x + 3x}{24}}$  $=\frac{72x}{13x}=\frac{72}{13}km/hr$ time =  $32.5 \text{ min} = \frac{32.5}{60} \text{ hr}$ distance = speed × time =  $\frac{72}{13} \times \frac{32.5}{60} = 3km$ 130. Ans.(B)

Suppose y will hold x after t hours. distance traveled by x in 6 hours = 120 km According to question -Relative speed = (50 - 20) = 30 km/hrTotal distance between = 120 km Time to catch =  $\frac{\text{total distance}}{\text{Relative speed}} = \frac{120}{30} = 4 \text{ hr}$ then - $\Rightarrow$  Distance traveled by y in 4 hours =  $4 \times 50 = 200 km$  $\Rightarrow$  Distance traveled by x in 4 hours =  $4 \times 20 = 80 km$  $\Rightarrow$  total distance traveled by x = 80 + 120 = 200 km  $\Rightarrow$  The two settlements will then meet at a distance of 200 km from their starting point. Ans.(D) let the total distance is 3d km. According to question - $\frac{d}{3} + \frac{d}{5} + \frac{d}{8} = \frac{395}{60}$  $\frac{40d + 24d + 15d}{120} = \frac{395}{60}$  $\frac{79d}{120} = \frac{120}{395}{60}$ d = 10 hence total distance 3d  $= 3 \times 10 = 30 \text{ km}$ Ans.(B) Let the thief cover a distance of x m before the policeman is caught. पलिस चोर x मी. 400 m According to question - $\frac{x + 400}{15 \times \frac{5}{18}} = \frac{x}{10 \times \frac{5}{18}}$  $\Rightarrow \frac{6x + 2400}{25} = \frac{9x}{25}$  $\Rightarrow 3x = 2400$  $\Rightarrow x = 800m$ Ans.(B) Total distance traveled by car =  $62 \times \frac{5}{2}$  +  $68 \times \frac{5}{4}$ (: distance = speed  $\times$  time)  $= 31 \times 5 + 17 \times 5$  $= 155 + 85 \Rightarrow 240 \text{ km}$ Average speed of car = total distance  $= \frac{\frac{240}{5/2 + 5/4}}{\frac{240 \times 4}{15}} \Rightarrow \frac{\frac{240 \times 4}{10 + 5}}{16 \times 4} = 64 \text{ km/hr}$ Ans.(C) Time taken to run 18 km =  $\frac{18}{9}$  = 2 hr According to question,  $6 = \frac{18 + x}{2 + 3}$ 

131.

132.

133.

134.

x = 30 - 18 = 12 km  $\therefore \text{ speed } = \frac{12}{3} = 4 \text{ km/hr}$ 135. Ans.(A) Let the actual speed of Rupa = S km/h Average speed =  $\frac{\text{total distance}}{\text{total time}} = \frac{2V_1V_2}{V_1 + V_2}$  $\therefore 24 = \frac{2 \times S \times \frac{S}{2}}{S + \frac{S}{2}}$  $\Rightarrow 12 = \frac{S^2}{3S}$  $\therefore S = 36 km/h$ Hence: Speed while coming to office =  $\frac{36}{2}$ = 18 km/h136. Ans.(C)  $V_1 = 60 \text{ Km/H}$ \_\_\_\_\_\_\_ B  $V_2 = 40 \text{ Km/H}$ Average speed of car =  $\frac{2V_1V_2}{V_1 + V_2}$  $=\frac{2\times60\times40}{2}$ 60 + 40  $=\frac{4800}{-}$ 100 = 48 km/hr 137. Ans.(B) Distance covered by P in first hour = 50 km Distance covered by P in second hour = 70km Distance covered by P in third hour = 70 km  $\therefore \text{ Average speed} = \frac{\text{total distance}^{"}}{\text{total time}}$  $= \frac{50 + 70 + 70}{1 + 1 + 1} = \frac{190}{3} = 63.33 \text{ km/hr}$ 138. Ans.(A)  $S_{1} = 40 km/hr, S_{2} = 50 km/hr$ Average speed =  $\frac{2 \times S_{1} \times S_{2}}{S_{1} + S_{2}}$ =  $\frac{2 \times 40 \times 50}{40 + 50} = \frac{2 \times 40 \times 50}{90} = \frac{400}{9}$ = 44.44 km/hr139. Ans.(A) Average speed of car =  $\frac{2V_1V_2}{V_1 + V_2}$  $=\frac{2\times50\times60}{50+60}$  $\frac{6000}{110}=54.54 \text{ km/hr}$ 140. Ans.(B) If a person walks A km distance x km / h and B km distance y km per hour Then, average speed =  $\frac{A+B}{\frac{A}{x}+\frac{B}{y}} = \frac{B+4}{\frac{B}{15}+\frac{4}{20}} = \frac{12}{\frac{B}{15}+\frac{1}{5}}$  $= \frac{12}{\frac{8+3}{11}} = \frac{12 \times 15}{11} = 16.36 \, km/hr$ 141. Ans.(C)

The time taken to cover the distance of 176 km =  $\frac{176}{16}$  = 11 hr The time taken to cover a distance of 64 km =  $\frac{64}{32}$  = 2 hr average speed =  $\frac{\text{total distance}}{\text{total time}}$  =  $\frac{176 + 64}{11 + 2}$  =  $\frac{240}{13}$ = 18.5 km/hr (aprox)

#### 142. Ans.(D)

average speed of car =  $\frac{\text{total distance}}{\text{total time}}$ =  $\frac{30 + 20}{\frac{30}{60} + \frac{20}{80}} \left(\because$  time =  $\frac{\text{distance}}{\text{time}}\right)$ =  $\frac{50}{\frac{1}{2} + \frac{1}{4}} = \frac{50}{\frac{2+1}{4}} = \frac{50 \times 4}{3}$ =  $\frac{200}{3} = 66.66 \approx 66.67 (\text{ km/hr})$ 

#### 143. Ans.(C)

Distance covered by P = 66 x 11 = 726 km Average speed of Q =  $\frac{\text{total distance}}{\text{total time}}$ Average speed of Q =  $\frac{726 + 242}{11} = \frac{968}{11} = 88$ Average speed of Q = 88 km/h

### 144. Ans.(B)

Average speed =  $\frac{2V_1V_2}{V_1 + V_2} = \frac{2 \times 4 \times 3}{(4 + 3)}$ =  $\frac{24}{7}$  = 3.43 km/hr

#### 145. Ans.(D)

Let the distance be d and time t. According to question – Speed for car I  $(S_1) = \frac{d}{t}$ Speed for car II  $(S_2) = \frac{d/2}{2t} = \frac{d}{4t}$   $\therefore S_1: S_2 = \frac{d}{t}: \frac{d}{4t}$   $= 1: \frac{1}{4} = 4: 1$ Ans.(C) total distance = 300 km

total distance = 300 kmDistance from a station = 220 kmDistance from second station = 300 - 220 = 80 kmSpeed ratio = 220: 80 = 11: 4

#### 147. Ans.(B)

146.

148.

SI earned by Rahul =  $\frac{P \times \text{distance} \times \text{time}}{100}$  $= \frac{x \times y \times 3}{100} = \frac{3xy}{100}$ SI earned by Shyam =  $\frac{x \times y \times 12}{100} = \frac{12xy}{100}$ ratio =  $\frac{3xy}{100} : \frac{12xy}{100} = \boxed{1:4}$ Ans.(D)

Let speed from beginning = S km/hr. Increased speed = (S + 2) km/hr. distance = 4 km Using the formula –  $\frac{\text{multipule of speed}}{\text{distance}} = \frac{\text{Speed difference}}{\text{Time difference}}$ 

 $\frac{S(S+2)}{4} = \frac{2}{\frac{10}{60}}$  $\frac{S^2 + 2S}{1} = 12$  $S^2^4 + 2S - 48 = 0$  $S^2 + 8S - 6S - 48 = 0$ S(S + 8) - 6(S + 8) = 0(S + 8)(S - 6) = 0 $S + 8 = 0 \Rightarrow S = -8$  $S - 6 = 0 \Rightarrow S = 6 km/hr$ Since the speed is always positive Hence the desired answer = 6 km/hr. 149. Ans.(A) Let the distance is d km. According to question - $\frac{(d/2)}{73} + \frac{(d/2)}{81} = 8$  $\Rightarrow \frac{d}{146} + \frac{d}{162} = 8$  $\Rightarrow 308d = 8 \times 146 \times 162$  $\Rightarrow d = \frac{8 \times 146 \times 162}{308}$  $\Rightarrow d = 614.337$  $\Rightarrow d = 614.34 \text{ km}$ 150. Ans.(C) Let length of rain (I) = 110 meter Train speed = 72 km/hr =  $72 \times \frac{5}{18}$  = 20 mrter/sec time = T = ? $\therefore \text{ speed of train } = \frac{\text{distance}}{\text{time}} = \frac{\ell + \text{Bridge Length}}{T}$  $20 = \frac{110 + 132}{T}$  $T = \frac{242}{20} = \frac{121}{10} = 12.1 \text{ sec}$ 151. Ans.(B Time taken to cover 35m distance = 7 sec : Time taken to cover a distance of 200 m = 40 secThus, the time taken by Q to cover a distance of 200 m = 40 sec Thus the time taken by P to cover a distance of 200 m = 40 - 7= 33 sec 152. Ans.(C) Let the time taken to cover d distance from v speed is t  $v \xrightarrow{d} t$  $\frac{3}{4} \xrightarrow{d} (t+15)$  $v \times t = \frac{3}{4}v(t + 15)$ 4t = 3t + 45

$$4t = 3t + 45$$
  
 $4t - 3t = 45$ 

$$t = 45 min$$
  
Ans.(D)

It is clear that Q runs 22.5 m in 6 seconds.

Time taken by Q to run 300m =  $\left(\frac{6}{225} \times 300\right)$  $=\frac{6\times 3000}{225}$  = 79.99 sec = 80 sec 154. Ans.(D) Time taken by P to run around a 240 m long circular track =  $\frac{240}{15}$  = 16 min The time taken by Q to scramble around a 240 m long circular track =  $\frac{240}{20}$  = 12 min Again meeting time at starting point = 16 And the lcm of 12 = 48 min hence they will meet again at the starting point after 48 min. 155. Ans.(C) Speed of thief = 100 km/hr Distance covered by thief in one hour = 100 km Speed of police = 75 km/hr Distance covered by police in one hour = 75 km1 hour later the distance between the both = 25 km The time it took to recover after the car broke down = 30 min Distance covered by the thief in 30 min = 50km Now the distance between the both = 25 + 50 = 75 km Police took time to catch the thief at a speed of 120 km/h =  $\frac{75}{20(\text{Relative speed })}$  $= 3\frac{15}{20} = 3$  hr 45 min hence the total time taken to catch the thief = 3: 45 + 1: 30 = 5: 15 hr 156. Ans.(D)  $P\frac{24\min}{24y}\cdot\frac{54\min}{0}Q$ Where x and y are the speed of two passengers.  $\sqrt{\frac{t_2}{t_1}} = \frac{x}{y} = \sqrt{\frac{24}{54}}$  $\frac{x}{y} = \frac{2}{3}$  $x = \frac{2y}{2}$ time =  $\frac{24y + 54x}{y} = \frac{24y + 54 \times \frac{2}{3}y}{y}$  $=\frac{60y}{y}=60min$ 

157. Ans.(D)

> Distance covered by the thief in 30 min =  $60 \frac{km}{h} \times \frac{1}{2}h = 30 \text{ km}$ Relative speed =  $(80 - 60)\frac{km}{h} = 20km/h$ Total time to catch the thief =  $\frac{30}{20}h = \frac{3}{2}h$

Distance traveled by police =  $\left(80 \times \frac{3}{2}\right) km$ = 120 km 158. Ans.(C) Average speed =  $\frac{2 \times \text{multipule of speed}}{\text{sum of speed}}$  $= \frac{2 \times 5 \times 3}{5 + 3} = \frac{30}{8} = 3.75 \text{ km/hr}$  **Ans.(B)** 159. Average speed =  $\frac{\text{total distance}}{\text{total time}}$ =  $\frac{50 \times \frac{30}{60} + 60 \times \frac{20}{60}}{\frac{30 + 20}{60}}$ (: distance = speed × time) =  $\frac{25+20}{\frac{5}{6}} = \frac{45\times6}{5} = 54 km/hr$ 160. Ans.(Č) let certain distance = x km According to question time = t h speed =  $V_1$  $V_1 = \frac{x}{t} km/h$  .....(i) Second condition distance = x/2 km time = 2tspeed  $V_2 = \frac{x/2}{2t} = \frac{x}{4t}$ 

$$\frac{v_1}{v_2} = \frac{\frac{x}{t}}{\frac{x}{4t}} = \frac{4}{1}$$
161. Ans.(C)  
Speed ratio = 18: 12  
time ratio =  $\frac{1}{18}: \frac{1}{12}$   
 $= \frac{2:3}{36} = 2:3$ 
162. Ans.(C)  
Time taken by motorcycle to cover a distance  
of 192 km =  $\frac{192}{32} = 6h$   
And time taken by car =  $6 - (2.5 + .5) = 3h$   
So the speed of the car =  $\frac{192}{3} = 64km/h$   
Hence the speed of car : the speed of  
motorcycle =  $64: 32 = 2:1$ 

+ .5) = 3h

#### 163. Ans.(B)

Let the speed be x and y

Speed ratio = 
$$\sqrt{\frac{t_2}{t_1}} = \frac{x}{y}$$
  
 $\frac{x}{y} = \sqrt{\frac{16}{9}}$   
 $\frac{x}{y} = \frac{4}{3}$   
 $x: y = 4:3$ 

# 19. (Train)

1. A train can complete its journey in 10 hours at a speed of 48 km/h. If the same distance is to be completed in 8 hours, what should be speed of the train? . . . . . . 

RRB Gro	up-D - 19/11/2022 (Shift-III)
<b>(A)</b> 50 Km/h	<b>(B)</b> 55 Km/h
(C) 45 Km/h	<b>(D)</b> 60 Km/h

2. A train runs at a normal speed of 70 km/hr. How much distance (in kilometers) will it cover in 24 min?

	RRB Group-D - 26/10/2018 (Shift-III)
<b>(A)</b> 40	<b>(B)</b> 28
<b>(C)</b> 35	<b>(D)</b> 32

3. A train traveled the distance between two points going at 80 km/hr and a returning at 40 km/hr. If the journey took a total of 6 hours, then what is the distance on one side between these two points?

RRB Group-D - 15/11/2018 (Shift-II)		
<b>A)</b> 180 Km	<b>(B)</b> 140 Km	
<b>C)</b> 160 Km	<b>(D)</b> 150 Km	

If a train covers a distance of 152 km in 8/9 4. hours, then find the speed of train?

	RRB NTPC - 09/2022 (Shift-II)
(A) 170 km/ hr	<b>(B)</b> 171 km/ hr
(C) 171 km/ hr	<b>(D)</b> 170 km/ hr

5. An express train runs at a speed of 144 km/h. Calculate the distance traveled by train in 15 min. 110 m long train with a speed of 36 km/h it takes 53 seconds to cross a pole to its end. Find the initial distance of the pole from its front end.

RRB Gro	oup-D - 22/11/2022 (Shift-I)
(A) 640 meter	(B) 420 meter
(C) 530 meter	(D) 1798 meter

6. A 200 m long train with a speed of 60 km/hr, How long will it take to cross a signal post? RRB Group-D - 08/10/2022 (Shift-I)

(A) 1 min	<b>(B)</b> 30 sec
(C) 14 sec	(D) 12 sec

7. A train overtake two persons, who are moving in the same direction of train running at the speed of 2 km/h and 4 km/h and the train pass them in 9 and 10 seconds respectively. Find length and speed of the train-

RRB Group D 31/10/2018 (Shift-II)

(A) 22 km/h, 50 m. **(B)** 22 km/h, 80 m. (C) 32 km/h, 50 m.

(D) 32 km/h, 80 m.

- 8. A train crosses a 410 m long platform at a speed of 66 km/h in 30 seconds. What is length of the train? RRB Group-D - 20/09/2022 (Shift-III)
  - (B) 140 meter (A) 160 meter (D) 180 meter (C) 240 meter
- 9. 162 m long train crosses a platform in 44 sec at a speed of 54 km/hr. What will be length of the platform? ·II)

RRB Gro	oup-D - 25/11/2022 (Shift-
<b>(A)</b> 660 m	<b>(B)</b> 540 m
<b>(C)</b> 822 m	<b>(D)</b> 498 m

10. At a speed of 78 km/h, a train crosses a 450 m long platform in 27 seconds. What is length of the train? 

RRB Grou	p-D - 25/11/2022 (Shift-III)
(A) 120 meter	(B) 135 meter
(C) 130 meter	(D) 125 meter

11. A 153 m long train crosses 747 m long bridge in 40.5 seconds. What is speed of the train? DDB Group D - 26/11/2022 (Shift-II)

KKB Gro	up-D - 26/11/2022 (Snift-II)
<b>(A)</b> 75 Km/h	<b>(B)</b> 85 Km/h
<b>(C)</b> 70 Km/h	<b>(D)</b> 80 Km/h

12. Running at a speed of 66 km/h, train crosses 465 m long bridge in 33 seconds. How long was the train? RRB Group-D - 06/12/2018 (Shift-II)

		Jup-D - 00/12/2010 (01111-
( <b>A)</b> 240	meter	<b>(B)</b> 180 meter

(C) 140 meter (D) 160 meter **13.** A train crosses a 130 meter long platform in 14.5 seconds and a 245 meter long platform in 20.25 seconds. What is speed of the train?

RRB Gro	up-D - 06/12/2018 (Shift-III)
<b>(A)</b> 69 Km/h	<b>(B)</b> 75 Km/h
<b>(C)</b> 66 Km/h	<b>(D)</b> 72 Km/h

**14.** A train running at a speed of 65 km/hr crosses an 815 m long bridge in 54 seconds. What was length of the train?

	RRB Group-D	- 01/12/2018 (Shift-II)
(A)	150 m	<b>(B)</b> 170 m
(C)	160 m	<b>(D)</b> 155 m

**15.** A train runs at the same speed and crosses a 350 m long station in 15 seconds and another 430 m long station in 23 seconds. What is speed of the train in km/h?

RRB G	roup-D - 27/11/2018 (Shift-III)
<b>(A)</b> 18.70	<b>(B)</b> 23.30
<b>(C)</b> 40	<b>(D)</b> 36

**16.** Running at 78 km/h, train crosses a 445 meter long platform in 27 seconds. What is length of the train?

#### RRB Group-D - 12/12/2018 (Shift-I)

<b>(A)</b> 120 m	<b>(B)</b> 140 m
<b>(C)</b> 130 m	<b>(D)</b> 110 m

**17.** A train crosses a 520 meter long platform in 36 seconds. How long did the train run at a speed of 70 km/h?

RRB Group-D - 11/12/2018 (Shift-I) (A) 150 meter (B) 140 meter

(C) 180 meter (D) 160 meter	
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 A 165 m long train crosses 755 m long bridge in 46 seconds. What is speed of the train? RRB Group-D - 12/10/2018 (Shift-I)

	••••••••••••••••••••••••••••••••••••••
<b>(A)</b> 80 km/h	<b>(B)</b> 78 km/h
(C) 75 km/h	<b>(D)</b> 72 km/h

**19.** A train running at a speed of 48 km/hr crosses a 200 m long platform in 27 seconds. What is length of the train?

RRB Group-D - 12/10/2018 (Shift-II)

<b>(A)</b> 180 m	<b>(B)</b> 160 m
<b>(C)</b> 240 m	<b>(D)</b> 140 m

**20.** A 152.5 m long train running at a speed of 57 km/hr, crosses a platform in 39 seconds. What is length of the platform?

RRB Group-D - 01/10/2018 (Shift-I)

(A) 617.5 meter	<b>(B)</b> 480 meter
(C) 590 meter	(D) 465 meter

**21.** A train crosses a 110 m long platform in 13.5 seconds and a 205 m long platform in 18.25 seconds. What was speed of the train?

RRB G	roup-D - 18/11/2022 (Shift-I)
<b>(A)</b> 75 Km/h	<b>(B)</b> 72 Km/h
<b>(C)</b> 69 Km/h	<b>(D)</b> 66 Km/h

**22.** A 200 m long train crosses a 300 m long bridge in 30 sec. How long will it take to cross a person standing in the middle of a 150 m long platform? The speed is same in both cases.

 RRB Group-D - 28/11/2018 (Shift-I)

 (A) 9 sec.
 (B) 11 sec.

 (C) 12 sec.
 (D) 10 sec.

**23.** A train passes the person standing on the platform in 5 seconds and fully crosses the platform in 25 seconds. If length of the platform is 300 meters, what is length of the train?

	<b>RRB Group-D</b>	- 05/11/2018 (Shift-III)
(A) 150	m	<b>(B)</b> 75 m
<b>(C)</b> 110	m	<b>(D)</b> 115 m

**24.** A train crosses a pole in 15 seconds and a 100m long platform in 25 seconds. Find length of the train in meters.

RRB Group-D - 23/10/2018 (Shift-II)

<b>(A)</b> 149 m	<b>(B)</b> 145 m
<b>(C)</b> 150 m	<b>(D)</b> 155 m

**25.** A train runs from a station at a speed of 40 km/hr. Two hours later, another train leaves from same station at a certain speed in same direction. If the second train catches the first train in 4 hours, then what is speed of the second train?

RRB Gr	oup-D - 19/11/2022 (Shift-II)
<b>(A)</b> 60 km/hr	<b>(B)</b> 65 km/hr
<b>(C)</b> 50 km/hr	<b>(D)</b> 55 km/hr

26. A train departs from a station at a speed. From the same station, in the direction of first train, after two hours a second train departs at a speed of 70 km/h and after five hours equivalent of first train. Find speed of the first train in km/h.

RRB Gro	up-D - 19/11/2022 (Shift-III)
<b>(A)</b> 50 Km/h	<b>(B)</b> 40 Km/h
<b>(C)</b> 55 Km/h	<b>(D)</b> 45 Km/h

27. A 250 m long goods train has a speed of 33 km/hr. A 200 m long, parallel train running at a speed of 60 km/hr in the same direction of the goods train, which chases the goods train

and overtakes it after some time. In how much time (in min) did the mail train completely overtake the goods train?

RRB G	iroup-D -30 / 10 / 2018 (Shift-I)
(A) 1 min	<b>(B)</b> 1.5 min
(C) 3 min	<b>(D)</b> 2 min

**28.** Two trains 110 km/hr and 90 km/hr are traveling in the same direction respectively. The fast train crosses a man in a slow train in 18 seconds. What is length of the car?

RRB	Group-D - 15/11/2018 (Shift-I)
<b>(A)</b> 200 m	<b>(B)</b> 250 m

- (C) 100 m (D) 150 m
- **29.** Two trains of length 152.5 m and 157.5 m coming from opposite directions cross each other in 9.3 seconds. Then what will be the combined speed of both trains per hour?

RRB Group-D - 17/11/2022 (Shift-I)

<b>(A)</b> 120 Km/h	<b>(B)</b> 125 Km/h
(C) 130 Km/h	<b>(D)</b> 115 Km/h

**30.** Two trains 132 m and 108 m are running in opposite direction at speeds of 32 km/h and 40 km/h respectively. How long will they take to cross each other after meeting?

 RRB Group-D - 30/10/2018 (Shift-II)

 (A) 12 sec.
 (B) 20 sec.

 (C) 15 sec.
 (D) 32 sec.

**31.** When two trains are running in opposite direction at the speed of 40 km/hr and 32 km/hr respectively, So fast moving train crosses the person sitting on slow moving train in 15 seconds. What is length of the fast train?

RRB G	roup-D - 30/10/2018 (Shift-II)
<b>(A)</b> 200 m	<b>(B)</b> 300 m
<b>(C)</b> 120 m	<b>(D)</b> 100 m

**32.** Two trains, one 153 m long and the other 127 m long, came from opposite directions and crossed each other in 7.2 seconds. How many km/h will the combined speed of two trains be?

 RRB Group-D - 28/11/2022 (Shift-I)

 (A) 70 Km/h
 (B) 140 Km/h

 (C) 105 Km/h
 (D) 280 Km/h

**33.** Distance between two stations is 380 km. From these stations, two trains run simultaneously on parallel tracks to cross each other. One of them has a speed of 7 km/h more than the other. If distance between two trains is 126 km after 2 hours from beginning, then what is the speed of each train?

 RRB Group-D -22 / 10 / 2018 (Shift-II)

 (A) 75 Km/h, 82 Km/h
 (B) 55 Km/h, 62 Km/h

 (C) 58 Km/h, 65 Km/h
 (D) 67 Km/h, 60 Km/h

**34.** Two trains, one of which is 210 m in length and the other of 250 m, running on parallel tracks at speeds of 130 km/hr and 110 km/hr respectively. If they are running in opposite directions, then how long will it take for them to cross each other completely?

RRB Gro	oup-D - 26/10/2018 (Shift-III)
(A) 6.9 sec	<b>(B)</b> 6.3 sec
(C) 6.6 sec	(D) 6.1 sec

**35.** Two trains coming from opposite directions, one 144.5 meters long and the other 165.5 meters long, cross each other in 9.3 seconds. What will be the combined speed of two trains every hour?

RRB G	Froup -D 07/12/2018 (Shift-I)
<b>(A)</b> 120 km	<b>(B)</b> 130 km
<b>(C)</b> 115 km	<b>(D)</b> 125 km

**36**. A 350 meter long train is running at a speed of 54 km/h. In what time will the train cross the person running at a speed of 9 km/h in opposite direction of the train?

RRB G	iroup-D - 27/11/2018 (Shift-I)
(A) 20 sec	<b>(B)</b> 6 sec
(C) 12 sec	(D) 15.6 sec

**37.** A train leaves 5 am from Patna and reaches Bhopal at 9 am. Second train leaves from 6.30 am Bhopal and reaches Patna at 10 am, What time do both trains meet?

RRB Gr	oup-D - 15/11/2018 (Shift-I)
<b>(A)</b> 7: 55 pm.	<b>(B)</b> 7: 55 am.
<b>(C)</b> 7: 40 am.	<b>(D)</b> 7: 40 pm.

**38.** Distance between two stations, Delhi and Amritsar is 450 km. A train leaves Delhi at 4 : 00 pm and runs towards Amritsar at an average speed of 60 km/h. Second train runs from Amritsar at 3:20 pm and runs towards Delhi at an average speed of 80 km/hr. How far and at what time will both trains get from Delhi?

 RRB Group-D - 15/11/2018 (Shift-III)

 (A) 170 km, 4 : 50 pm.
 (B) 110 km,6 : 50 pm.

 (C) 150 km,6 : 50 pm.
 (D) 170 km,6 : 50 pm.

**39.** At 8 am, a train starts its journey from station A to station B at a speed of 40 km/h. After one hour another train starts from station B

towards station A at a speed of 50 km/h. If both stations are 220 km away, then at what time will they cross each other?

RRB Group	-D - 15/10/2018 (Shift-III)
(A) 10: 30 am	(B) 11: 00 am
<b>(C)</b> 10: 00 am	<b>(D)</b> 11: 30 am

**40.** A train completes a journey in 8 hours, The first half of the journey is completed at a speed of 45 km/hr and the second half at 55 km/hr. What is total distance traveled?

RRB G	roup-D - 08/10/2022	(Shift-II)
<b>(A)</b> 395 km	<b>(B)</b> 296 km	
<b>(C)</b> 396 km	<b>(D)</b> 391 km	

**41.** A train crosses a 155 m long platform in 16 s and a 195 m long platform in 18 s. What is average speed of the train?

RRB Group-D - 01/10/2018 (Shift-II)

(A) 66 km/h	. (B) 72 km/h	
(C) 75 km/h	( <b>D)</b> 69 km/h	

**42.** Prithvi is going to Delhi by Rajdhani Express, which is running 6 min late. The driver increased his speed to 4 km/h. At the next station, train arrived on time, 36 km away. What is original speed of the train?

RRB Group-D - 04/12/2018 (Shift-III)		
(A) 20 km/hr	<b>(B)</b> 36 km/hr	
<b>(C)</b> 30 km/hr	<b>(D)</b> 26 km/hr	

**43.** After the accident, a train runs at 4/5 of its speed. Due to which that arrives 30 min late. Find original time of journey ahead of accident area.

	RRB	Group-D - 27/11/2018	(Shift-III)
(1) 400			

(A) 120 min	(B) 90 min
<b>(C)</b> 150 min	<b>(D)</b> 60 min

**44.** A train runs at a speed of 72 km/h. What is the total distance covered by it in 15 seconds?

RRB RPF SI - 05/01/2019 (Shift-I)

(A) 150 meter	(B) 300 meter
(C) 200 meter	(D) 100 meter

**45.** A bullet train completes its journey in 12 hours without stopping. If it travels 30 km/h faster then it will complete the journey in 10 hours 40 min, what was speed of the train when it took 12 hours to complete the journey?

**RRB RPF Constable - 17/01/2019 (Shift-I)** (A) 320 Km/h (B) 180 Km/h

()	()
<b>(C)</b> 320 Km/h	<b>(D)</b> 240 Km/h

**46.** A train is running at a speed of 160 km/h and has a length of 180 m. Find the time taken by train to cross a pillar.

 RRB RPF Constable - 19/01/2019 (Shift-I)

 (A) 4.05 sec
 (B) 5 sec

 (C) 8.2 sec
 (D) 10 sec

**47.** A 110 m long train is running at a speed of 60 km/h. In what time will it cross the person who is running in the opposite direction of train at a speed of 6 km/h?

	RRB RPF SI - 06/01/2019 (Shift-II)
(A) 5 sec	<b>(B)</b> 6 sec
(C) 10 sec	<b>(D)</b> 7 sec

**48.** A train 120 meters long crosses a platform 100 meters long in 10 seconds. Find its speed-

RRB R	PF SI - 16/01/2019 (Shift-I)
(A) 79.2 Km/h	<b>(B)</b> 80 Km/h
(C) 72 Km/h	(D) 100 Km/h

**49.** A train running at a speed of 78 km/h crosses a 455 m long platform in 27 seconds. What is length of the train?

 RRB RPF Constable - 22/01/2019 (Shift-II)

 (A) 110 m
 (B) 130 m

 (C) 120 m
 (D) 100 m

**50**. A train running at a speed of 36 km/h crosses a platform in 80 seconds. The same train takes 24 seconds to cross a person moving at speed of 18 km/h in the opposite direction. Find length of the platform –

RRB RPF Cons	table - 25/01/2019 (Shift-I)
(A) 120 meter	(B) 440 meter
(C) 300 meter	(D) 240 meter

**51.** Two 200 m and 150 m long trains are running on parallel tracks at speeds of 40 km/h and 45 km/h respectively. If they are moving in same direction, then how long will they cross each other?

	RRB RPF SI - 12/01/2019 (Shift-I)
(A) 72 sec	<b>(B)</b> 132 sec
(C) 192 sec	( <b>D</b> ) 252 sec

**52.** Two trains with lengths of 220 m and 270 m start running towards each other at speeds of 135 km/h and 117 km/h respectively. They cross each other at one point. How long will trains cross each other?

RF	RB RPF SI - 10/01/2019 (Shift-III)
(A) 5 sec	<b>(B)</b> 7 sec
(C) 11 sec	<b>(D)</b> 24 sec

**53.** 120 m long train A is moving at a velocity of 20 m/s and 130 m long train B is moving in the opposite direction at a velocity of 30 m/s. What is the time taken by train B to cross train A?

 RRB RPF Constable - 19/01/2019 (Shift-III)

 (A) 5 s
 (B) 25 s

 (C) 10 s
 (D) 50 s

**54.** The uninterrupted average speed of a train is 45 km/h and the constrained average speed is 36 km/h. Find average time of stoppage of the train.

	RRB RPF SI - 11/01/2019 (Shift-III)
<b>(A)</b> 9	<b>(B)</b> 15
(C) 12	<b>(D)</b> 10

**55.** The speed ratio of two trains is 3 : 4. If another train covers a distance of 300 km in 3 hours, then what will be speed of the first train?

 RRB RPF Constable
 - 24/01/2019 (Shift-III)

 (A) 100 km/hr
 (B) 50 km/hr

 (C) 70 km/hr
 (D) 75 km/hr

**56.** A train covers a distance of 338 meters in 50 seconds at a uniform motion. What is its speed?

RRB ALP & Tec. (30-08-18 Shift-III)

(A) 6.76 meter per sec.(B) 7.76 meter per sec.

(**C**) 5.76 meter per sec.

(D) 4.76 meter per sec.

**57.** A 145 meter long train crosses a 655 meter long bridge in 36 seconds. What is speed of the train?

 RRB ALP & Tec. (31-08-18 Shift-I)

 (A) 60 Km/h
 (B) 70 Km/h

 (C) 80 Km/h
 (D) 75 Km/h

**58.** A train crosses a 550 meter long platform in 36 seconds. If it was running at a speed of 70 km/hour, then what was length of the train?

RRB ALP & Tec. (31-08-18 Shift-II)

(A) 525 meter	(B) 160 meter
(C) 140 meter	(D) 150 meter

**59.** A train crosses a 300 meter long platform at speed of 66 km/hr in 24 seconds. How long was the train?

RRB ALP & Tec. (21-08-18 Shift-II)

(A) 140 meter (B) 160 meter (C) 180 meter (D) 240 meter **60.** A train crossed 140 meter long platform in 15 seconds and 180 meter long platform in 17 seconds. What is speed of the train?

RI	B ALP & Tec. (20-08-18 Shift-II)	
(A) 75 Km/h	<b>(B)</b> 72 Km/h	
<b>(C)</b> 66 Km/h	<b>(D)</b> 69 Km/h	

61. Running at a speed of 76 km/hr, a train crosses a 450 meter long platform in 27 seconds. What is length of the train?

	2 & Tec. (17-08-18 Shift-II)
(A) 110 meter	(B) 120 meter
(C) 130 meter	(D) 100 meter

**62.** A train takes 10 seconds to cross a 100 meter long bridge at a speed of 90 km/hr. Find length of the train in meters.

	RRB ALP & Tec. (09-08-18 Shift-I)
<b>(A)</b> 130	<b>(B)</b> 120
<b>(C)</b> 140	<b>(D)</b> 150

63. How much time will be taken by a 180 meter long train running at a speed of 54 km/hr to cross a man standing on a platform? PPB ALP & Tec. (14-08-18 Shift-I)

	RRB ALP & Iec. (14-08-	-18 Shift-I
(A) 10 sec	c. <b>(B)</b> 12 sec.	
(C) 11 sec	c. (D) 13 sec.	

**64.** 150 meters and 130 meters long two trains cross each other in 7.2 seconds running in opposite direction. What will be the speed per hour of both trains?

RRB ALP & Tec. (21-08-18 Shift-I)		
<b>(A)</b> 105 km/h	<b>(B)</b> 70 km/h	
<b>(C)</b> 280 km/h	<b>(D)</b> 140 km/h	

65. A train covers a distance of 435 km in 2 hours 30 min. Find its speed in meters per second. RRB NTPC 09/05/2022 Shift : 1

	RKB NIPC 09/05/20/
<b>(A)</b> 47.4	<b>(B)</b> 45.8
(C) 43.5	<b>(D)</b> 48.3

**66.** A bullet train covers a certain distance in 5 hours at a speed of 240 km/hour. What should be its speed (km/h) to cover the same distance in 2 hours?

RRB NTPC 23/07/2022 Shift : 7	
<b>(B)</b> 540	
<b>(D)</b> 600	

**67.** A train crosses a fixed object in 10 seconds. If the speed of the train is 25 m/s, what is length of the train?

### RRB NTPC 10/08/2022 Shift : 3

(A) 300 meter (B) 250 meter (C) 320 meter (D) 200 meter **68.** A 150 meter long train is running at a speed of 54 km/h. Find the time taken by train to cross a pillar.

	RRB NTPC 12/08/2022Shift : 3
(A) 8 sec	<b>(B)</b> 10 sec
(C) 12 sec	<b>(D)</b> 15 sec

**69.** A train runs at a speed of 80 km/hour. If length of the train is 400 meters, then how long will it take to cross an electric pole?

	RRB NTPC 23/07/2022 Shift : 2
(A) 10 sec	<b>(B)</b> 6 sec
(C) 18 sec	<b>(D)</b> 15 sec

**70.** A train running at a speed of 120 km/hr crosses a pillar in 9 seconds. What is length of the train?

	RRB NTPC 18.01.2017 Shift : 3
<b>(A)</b> 240 m	<b>(B)</b> 300 m
<b>(C)</b> 360 m	<b>(D)</b> 600 m

71. A train crosses a pole in 30 seconds at a speed of 60 km/h. Find length of the train? RRB NTPC 06.04.2016 Shift : 2

	RRB NTPC 06.04.2016 Shif
<b>(A)</b> 250 m	<b>(B)</b> 750 m
<b>(C)</b> 500 m	<b>(D)</b> 450 m

**72.** A train that is 500 meters in length, crosses a 1000 meter long tunnel in 1 min. What is speed of the train?

	RRB NTPC 10/08/2022 Shift : 2
(A) 75 km/hr	<b>(B)</b> 90 km/hr
(C) 87 km/hr	<b>(D)</b> 96 km/hr

**73.** A 250 meter long train crosses an electric pole in 8 seconds. If it takes 20 seconds to cross a platform, then what is length of the platform?

	RRB NTPC 11/08/2022Shift :
(A) 375 meter	<b>(B)</b> 625 meter
(C) 500 meter	(D) 675 meter

2

**74.** A 125 meter long Metro train crosses a 75 meter long station in 10 seconds. What is speed of the train.

RRB NTPC 09/05/2022 Shift : 2 (A) 72 Km/h (B) 36 Km/h

(C) 18 Km/h (D) 90 Km/h	

**75.** A train travels one kilometer at a constant speed of 240 km/h, and the next one kilometer runs at a speed of 80 km/h. What is average speed of the train?

RRB NTPC 10/08/2022 Shift : 3	
<b>(A)</b> 160 Km/h	<b>(B)</b> 180 Km/h
<b>(C)</b> 120 Km/h	<b>(D)</b> 200 Km/h

**76.** Delhi Metro covers a distance in 40 min at an average speed of 48 km/h. If it has to cover the entire distance in 32 min, what should be speed of the train?

RRB NTPC 11/08/2022 Shift : 1

<b>(A)</b> 60 km/hr	<b>(B)</b> 50 km/hr
<b>(C)</b> 70 km/hr	<b>(D)</b> 80 km/hr

77. A train covers the first 40 km at a speed of 80 km/h and the other 30 km at a speed of 60 km/h. Then find its average speed.

	RRB NTPC 12/08/2022Shift : 2
(A) 62 km/hr	<b>(B)</b> 64 km/hr
(C) 65 km/hr	<b>(D)</b> 70 km/hr

**78.** The speed of two trains is in ratio 4 : 5. If the second train covers a distance of 800 km in 8 hours, what is speed of the first train?

RRB NTPC 18.01.2017 Shift : 3

- (A) 95 Km/h (B) 85 Km/h (C) 75 Km/h (D) 80 Km/h
- **79.** A train running at the same speed crosses two people going in the same direction in 6 seconds and 6.4 seconds respectively. The first one was running at a speed of 4.5 km/h while the second one was running at the speed of 6.3 km/h, what was speed of the train in km/h?

 RRB Paramedical - 20/07/2018 (Shift-II)

 (A) 32.6
 (B) 33.3

 (C) 35.6
 (D) 36

**80.** The distance between two stations is 100 km. A train covers a distance of one side at a speed of 80 km/h and a return journey at 3/4 speed of the previous one. What is the average speed of this train?

 RRB Paramedical - 21/07/2018 (Shift-II)

 (A) 68.5 km/h
 (B) 68.6 km/h

 (C) 70.3 km/h
 (D) 70.4 km/h

81. It takes 2 hours less to cover a distance of 300 km by increasing the speed of a train by 5 km/h. Find its normal speed.

	RRB JE - 01/06/2019 (Shift-III)
<b>(A)</b> 30 Km/h	<b>(B)</b> 25 Km/h
<b>(C)</b> 20 Km/h	<b>(D)</b> 35 Km/h

**82.** A 110 meter long train crosses a pole in 12 seconds. Find the speed in km/h of train.

RRB JE	- 2	5/05/	2019	(Shift-I)

<b>(A)</b> 33 Km/h	<b>(B)</b> 27 Km/h
<b>(C)</b> 30 Km/h	<b>(D)</b> 49 Km/h
83. A train running at a speed of 60 km/h crosses a pole in 9 seconds. What is length of the train?

	RRB JE - 25/05/2019 (Shift-II)
(A) 120meter	<b>(B)</b> 180meter
(C) 150meter	(D) 324meter

84. A train crosses a 100 meter long platform at a speed of 45 km/h in 60 seconds. Find the time taken by train to cross the electric pole.

	RRB JE - 27/06/2019 (Shift-I)
(A) 2 min	<b>(B)</b> 8 sec.
(C) 1 min	<b>(D)</b> 52 sec.

85. Trains P and Q run in the same direction on parallel tracks. The train crosses P and Q in 60 seconds, and a passenger in train P crosses train Q in 40 seconds. If speed of the trains is in ratio 2 : 1, find the ratio of their length.

	RRB JE - 23/05/2019 (Shift-III)
<b>(A)</b> 3: 4	<b>(B)</b> 1: 2
(C) 3: 1	<b>(D)</b> 3: 2

86. A train crosses a pole in 20 seconds, and at a speed of 5 km/h it crosses a cyclist coming from the opposite direction in 18 seconds. Find speed of the train-

	RRB JE - 31/05/2019 (Shift-II)
<b>(A)</b> 40 Km/h	<b>(B)</b> 62 Km/h
<b>(C)</b> 45 Km/h	<b>(D)</b> 65 Km/h

87. A 125 m long train crosses a person, going at the speed of 5 km/h in the direction of train, in 10 seconds. How much is speed of the train? RRB IF - 01/06/2019 (Shift-I)

	VVD *	JE - U	1/0	0/201	J 6	SIIII
<b>`</b>		(R)	55	km/h		

	KKD JL - 01/00/2013
<b>(A)</b> 50 Km/h	<b>(B)</b> 55 Km/h
<b>(C)</b> 54 Km/h	<b>(D)</b> 45 Km/h

88. A freight train moves at a speed of 72 km/h and crosses a platform 250 meters long in 26 seconds, then what is length of the freight train?

RRB JE - 29/05/2019 (Shift-I)

(A) 230 meter	(B) 270 meter
(C) 260 meter	(D) 240 meter

89. 300 meter long train crosses a platform in 39 seconds while it crosses a pillar in 18 seconds. What is length of the platform?

RRB JE - 27/05/2019 (Shift-III)

(A) 680 meter	(B) 350 meter
(C) 320 meter	(D) 650 meter

90. A train crosses a platform in 36 seconds and a person standing on the platform crosses in 20 seconds, If speed of the train is 54 km/h, then what is length of the platform?

RRB JE - 23/05/2019 (Shift-I)

(A) 300 meter	(B) 120 meter
(C) 360 meter	(D) 240 meter

91. A train running at 54 km/h crosses a platform and a man standing on the platform in 36 seconds and 20 seconds respectively. Find length of the platform.

	RRB JE - 26/05/2019 (Shift-II)
<b>A)</b> 240 meter	(B) 180 meter
<b>C)</b> 270 meter	(D) 300 meter

92. A person stands on a 70 meter long platform. A train crosses the platform in 5.5 seconds, but crosses the person in 2 seconds. What is length of the train?

	RRB JE - 27/05/2019 (Shift-I)
(A) 80 meter	<b>(B)</b> 45 meter
(C) 60 meter	(D) 40 meter

93. Two trains of equal length take 10 seconds and 15 seconds respectively to cross a telegraph post. If length of each train is 120 meters, then how long will they cross each other traveling in the opposite direction?

## RRB JE - 27/05/2019 (Shift-II)

(A) 12 sec.	<b>(B)</b> 15 sec.
(C) 10 sec.	(D) 20 sec.

94. Two trains of 100 meters and 120 meters long run towards each other at speeds of 18 m/s and 15 m/s respectively. In what time will they cross each other?

	RRB JE - 30/05/2019 (Shift-	
(A) 6.67 sec.	<b>(B)</b> 10 sec.	
<b>(C)</b> 7.2 sec.	<b>(D)</b> 8 sec.	

95. Two trains are running in opposite directions at same speed. If length of each train is 120 meters, and they cross each other in 12 seconds, then find the speed of each train.

	RRB JE - 28/06/2019 (Shift-III)
<b>(A)</b> 72 Km/h	<b>(B)</b> 10 Km/h
(C) 18 Km/h	<b>(D)</b> 36 Km/h

Two trains together started running from the 96. first station P to Q, and the second station Q at a speed of km/h and 95 km/h. If they meet after 12 hours, find the difference of distances traveled by them.

	RRB JE - 28/06/2019 (Shift-III)
<b>(A)</b> 200 km	<b>(B)</b> 15 km
<b>(C)</b> 2100 km	<b>(D)</b> 180 km

# **Solution**

7.

8.

9.

1. Ans.(D) Train speed = 48 km/ hr Took time = 10 hr Then distance = speed  $\times$  time  $= 48 \times 10 = 480$  km The speed required to cover a distance of 480 km in 8 hours =  $\frac{480}{8} = \frac{60km}{hr}$ 2. Ans.(B) According to question -Train speed = 70 km/hr How much distance will cover in 24 min = ? : Distance traveled by train in 60 min = 70 km  $\therefore in 1 minute = \frac{70}{60}$  $\therefore in 24 minute = \frac{70 \times 24}{60}$ Thus Distance = 28 km. 3. Ans.(C) Let the total distance be x km time =  $\frac{\text{distance}}{\text{speed}}$ According to question - $\frac{x}{80} + \frac{x}{40} = 6$  $\frac{x+2x}{80} = 6$  $3x = 6 \times 80$ x = 160 kmAns.(C) 4. time =  $\frac{8}{9}$  hr distance = 152 km  $\left[ \text{speed} = \frac{\text{distance}}{\text{time}} \right]$   $\therefore$  train speed =  $\frac{152}{\left(\frac{8}{9}\right)}$  $= 152 \times \frac{9}{8}$  $= 19 \times 9 = 171$  km/hr 5. Ans.(B) Let the distance of the pole from the front end of the train = x m. Distance = speed  $\times$  time  $(110 + x) = 36 \times \frac{5}{18} \times 53$ 110 + x = 530x = 420 m6. Ans.(D) Train length = 200 m speed = 60 km/h

 $= 60 \times \frac{5}{19} m/s$  $= 10 \times \frac{5}{3} = \frac{50}{3}m/s$ speed =  $\frac{\text{distance}}{\text{time}}$ Hence the time taken to cross a signal post = distance speed  $=\frac{200}{\frac{50}{2}}$  $= 200 \times \frac{3}{50} = 4 \times 3 = 12 \text{ sec}$ Ans.(A) Let the length of train = x m. and speed = y m/sec speed of first person =  $2 \times \frac{5}{18} = \frac{5}{9}$  m/sec speed of second person =  $4 \times \frac{5}{18} = \frac{10}{9}$  m/sec speed of train of relative to first person =  $\left(y - \frac{5}{9}\right)$  m/sec speed of train of relative to second person =  $\left(y - \frac{10}{9}\right)$  m/sec  $y - \frac{5}{9} = \frac{x}{9}, y - \frac{10}{9} = \frac{x}{10}$  $y = \frac{x + 5}{9} \dots (i)$  $y = \frac{x}{10} + \frac{10}{9} = \frac{9x + 100}{90} \dots \dots (ii)$  $\frac{x+5}{9} = \frac{9x + 100}{90}$ -10x + 50 = 9x + 100x = 50 meter and speed  $= \frac{50 + 5}{9} = \frac{55}{9}$  m/sec  $\frac{55}{9} \times \frac{18}{5} = 22$  km/hr Ans.(B) Let the length of the train is x meters. speed =  $66 \times \frac{5}{18} = \frac{55}{3}m/sec$ speed =  $\frac{\text{distance}}{\text{time}}$  $=\frac{55}{3}=\frac{x+410}{30}$ 1650 = 3x + 12303x = 1650 - 12303x = 420x = 140 mTherefore, the length of the train will be 140 meters. Ans.(D)

Let the length of the platform be x m. then  $,\frac{162 + x}{54 \times \frac{5}{18}} = 44$  $\frac{162 + x}{15} = 44$  $162 + x = 44 \times 15$ x = 660 - 162x = 498m10. Ans.(B) let the length of train = Iformula – speed =  $\frac{\text{distance}}{\text{time}}$  $\therefore 78 \times \frac{5}{18} = \frac{450 + \ell}{27}$  $\frac{65}{3} = \frac{450 + \ell}{27}$  $65 \times 27 = 1350 + 3\ell$  $1755 - 1350 = 3\ell$  $\ell = \frac{405}{3}$ Hence the length of the train = 135 m 11. Ans.(D)  $\begin{aligned} &: \text{speed} = \frac{\text{distance}}{\text{time}} \\ &: \text{speed} = \frac{\text{Train length} + \text{Bridge Length}}{\text{total taken time}} \\ &= \frac{153 + 747}{40.5} = \frac{900}{40.5} \end{aligned}$  $=\frac{9000}{405}$  m/sec : On changing speed of train to km/h - $=\frac{9000}{405}\times\frac{18}{5}$  $= \frac{\frac{1800 \times 18}{81 \times 5}}{\frac{200 \times 18}{9 \times 5}} = \frac{200 \times 2}{5} = 80 \text{ km/hr}$ 12. Ans.(C) speed =  $\frac{\text{distance}}{\text{time}}$ Train Length + Bridge length = speed × time Train Length + 465 =  $66 \times \frac{5}{18} \times 33$ Train Length +  $465 = 11 \times 5 \times 11$ Train Length =  $55 \times 11 - 465$ = 605 - 465 = 140mAns.(D) 13. Let length of train = x mTrain speed in first position =  $\frac{130 + x}{14.5}$ .....(*i*) Train speed in second position =  $\frac{245 + x}{20.25}$ ...(*ii*) From eq. (i) and (ii) -

 $\therefore \frac{130 + x}{14.5} = \frac{245 + x}{20.25}$ 20.25(130 + x) = 14.5(245 + x)2632.5 + 20.25x = 3552.5 + 14.5x5.75x = 920x = 160hence speed =  $\frac{130 + 160}{14.5}$  $=\frac{290}{14.5}=20$  m/sec  $= 20 \times \frac{18}{5} = 72$  km/hr 14. Ans.(C) Let the length of the train be x m. time =  $\frac{\text{distance}}{\text{speed}} \left\{ \begin{cases} 65km/hr \\ = 65 \times \frac{5}{18}m/s \end{cases} \right\}$ 54 =  $\frac{(815 + x)}{65 \times \frac{5}{18}}$ 975 = 815 + xx = 975 - 815x = 160Hence the length of train = 160 m 15. Ans.(D) Let the length of the train be x meters. speed of train = Length of second station - Length of first station  $= \frac{(430 - 350)}{(23 - 15)} = \frac{80}{8} = 10m/s$  $= 10 \times \frac{18}{5} = 36$  km/hr 16. Ans.(B) Let the length of the platform be x m. speed =  $78km/h = 78 \times \frac{5}{18}m/s = \frac{65}{3}m/s$ speed =  $\frac{\text{distance}}{\text{time}}$  $\frac{65}{3} = \frac{445 + x}{27}$  $65 \times 9 = 445 + x$ 585 - 445 = xx = 140mHence the length of train = 140 m 17. Ans.(C) time = 36 sec let length of train = x m

Then the total distance covered by the train = (520 + x) m speed =  $70 \times \frac{5}{18}$  m/sec

speed = 
$$\frac{\text{distance}}{\text{time}}$$
,  
time =  $\frac{\frac{\text{distance}}{\text{speed}}}{\frac{36}{70 \times 5}}$   
 $\frac{36}{18} = \frac{520 + x}{350}$   
 $700 = 520 + x$   
 $x = 700 - 520 = 180 \text{ m}$   
**18. Ans.(D)**  
Total distance = Length of train + Length  
bridge  
=  $165 + 755$   
=  $920 \text{ m}$   
hence speed =  $\frac{\text{distance}}{\text{time}} = \frac{920}{46} = 20m/s$   
 $= 20 \times \frac{18}{5} = 72km/h$   
**19. Ans.(B)**  
Let the length of the train be = L m  
time =  $\frac{\text{distance}}{\text{speed}}$   
 $27 = \frac{L + 200}{48 \times \frac{5}{18}} [\because \text{ km/hr } \times \frac{5}{18} = m/s.]$   
 $27 \times \frac{40}{3} = L + 200$   
 $1 = 360 - 200 = 160 \text{ m}$   
**20. Ans.(D)**  
let length of platform = x m  
speed =  $57 \times \frac{5}{18} m/sec$   
total distance =  $152.5 + x$  m, time =  $39 \sec$   
 $\therefore$  speed =  $\frac{\text{distance}}{\text{time}}$   
 $\frac{57 \times 5}{18} = \frac{152.5 + x}{39}$   
 $\frac{285 \times 39}{18} = 152.5 + x$   
 $x = 617.5 - 152.5$   
 $x = 465m$   
**21. Ans.(B)**  
let length of train = x m  
According to question -  
 $\frac{(110 + x)10}{135} = \frac{(205 + x) \times 100}{1825}$   
 $\frac{(110 + x)}{135} = \frac{(205 + x) \times 2}{73}$   
 $8030 + 73x = 11070 + 54x$   
 $73x - 54x = 11070 + 54x$   
 $73x - 54x = 11070 - 8030$   
 $19x = 3040$   
 $x = 160$ 

speed of train =  $\frac{(110 + 160) \times 10}{135} = \frac{270 \times 10}{135}$ =  $20m/s = \frac{20 \times 18}{5} = 72$  km/hr Ans.(C) speed =  $\frac{200 + 300}{30} = \frac{500}{30} = \frac{50}{3}m/s$ Time taken to cross a person =  $\frac{\text{distance}}{\text{speed}} = \frac{200}{\frac{50}{3}} = 12 \text{ sec}$ Ans.(B) Let the length of train be x m – According to question - $\frac{x}{5} = \frac{x + 300}{25}$ 5x = x + 3004x = 300x = 75mhence, the length of the train is 75 m. Ans.(C) Let the length of train = x mHence, the speed of the train while crossing the pole =  $\frac{x}{15}$  m/sec again, speed of train while crossing 100 m long platform =  $\frac{100 + x}{25}$  m/sec According to question –  $\frac{x}{15} = \frac{100 + x}{25}$  $\Rightarrow 25x = 1500 + 15x$  $\Rightarrow 10x = 1500 \Rightarrow x = 150m$ hence length of train = 150 m Ans.(A) First train speed = 40 km/hr. second train speed = ? The second train runs 2 hours after the first train And after 4 hours of running, it catches i.e. the first train will run for (4 + 2) = 6 hours. Hence the distance traveled by the first train  $= 40 \times 6 = 240$  km The second train will also run 240 km in 4 hours. Hence speed of second train  $=\frac{240}{4}=\ 60 km/hr$ Ans.(A) Let the speed of first train = x km/hrspeed of second train = 70 km/hr Distance covered by second train in 5 hours  $= 70 \times 5 = 350$  km The first train started running 2 hours before the second train. : Distance covered by first train in 7 hours = 350 km Hence the speed of the first train  $=\frac{350}{7}=50$  km/hr

22.

23.

24.

25.

26.

of

27. Ans.(A) speed of freight train = 33 km/h Speed of mail train = 60 km /hr  $\therefore (60 - 33) \times \frac{5}{18} = \frac{250 + 200}{T}$  $27 \times \frac{5}{18} = \frac{450}{T}$  $\frac{9\times5}{6} = \frac{450}{T}$  $\frac{45}{6} = \frac{450}{T}$  $T = 60 \sec$  $= 1 \min$ 28. Ans.(C) Relative speed of car = (110 - 90)km/hr = 20 km/hr $= 20 \times \frac{5}{18} m/sec$ time = 18 sec Distance = Speed × Time  $= 20 \times \frac{5}{18} \times 18 = 100m$ Hence the length of fast running car = 100 m 29. Ans.(A) Length of both trains = 152.5 + 157.5 = 310 m time = 9.3 sec speed =  $\frac{\text{distance}}{\text{time}}$ speed  $=\frac{310}{9.3}=\frac{100}{3}m/sec$ On changing to km/h =  $\frac{100}{2} \times \frac{18}{5}$ = 120 km/hr 30. Ans.(A) Total length of train = 132 + 108 = 240 m total speed of train =  $32 + 40 = 72 \times \frac{5}{18}$ = 20m/shence time =  $\frac{\text{distance}}{\text{speed}}$ time =  $\frac{240}{20}$  = 12sec 31. Ans.(B) speed of first train = 40 km/hr speed of second train = 32 km/hr The speed of the train of a person sitting on a slow train = 32 km/hr On the opposite side, Composite speed = 40 + 32 = 72 km/hr

$$= 72 \times \frac{3}{18} = 20m/s$$

Hence length of train =  $20 \times 15 = 300$  m

# 32. Ans.(B)

Total distance covered = 153 + 127 = 280 m

Time taken by trains in which they cross each other = 7.2 sec (speed) =  $\frac{(\text{distance})}{(\text{time})} = \frac{280}{7.2} = \frac{2800}{72}$  m/sec But asked in speed km/hour, then - $=\frac{2800}{72}\times\frac{18}{5}=140$  km/hr Ans.(D) Let the speed of first train be x km/h.  $\therefore$  Speed of second train = (x + 7) km/hr Distance covered by both trains in 2 hours = 380 - 126 = 254 $\Rightarrow 2x + 2(x + 7) = 254$  $\Rightarrow 2x + 2x + 14 = 254$  $\Rightarrow 4x = 240$  $\Rightarrow x = 60 \text{ km/hr}$ Hence the speed of first train = x= 60 km/hrspeed of second train = (x + 7) km/hr = (60 + 7) = 67 km/hrAns.(A) Sum of length of both trains = 210 + 250 = 460 mIf both runs in opposite direction, then the sum of their run = 130 + 110 = 240 km/hr or  $240 \times \frac{5}{18}m/s = \frac{200}{3}m/s$ Time taken to cross each other =  $\frac{\text{distance}}{2}$  $= \frac{460}{200} \times 3$  $= 2.3 \times 3$ = 6.9secAns.(A) Distance = Length of first train + Length of second train = 144.5 + 165.5 = 310.0 m time = 9.3 sec Desired speed =  $\frac{\text{distance}}{\text{time}} = \frac{310}{9.3} = \frac{100}{3}$  m/sec On converting to km / hr =  $\frac{100}{3} \times \frac{18}{5} = 120$ km Ans.(A) Note - 1. When the train and the person run in the same direction, the speed of the train relative to the person = Speed of train speed of person 2. When the train and the person run in the opposite direction, the speed of the train relative to the person = Speed of train + speed of person According to question speed in the opposite direction = (54 + 9)km/hr

33.

34.

35.

36.

$$= \left[63 \times \frac{5}{18}\right] = \frac{35}{2} \text{ m/sec}$$

Time taken to cover a distance of 350 m at a speed of 35/2 m/s =  $\frac{350}{\frac{35}{35}}$  =  $\frac{350 \times 2}{35}$  = 20 sec Ans.(C) let total distance = x km Speed of train, running from Patna =  $\frac{x}{4} km/h$ Distance covered in 1: 30 hours =  $\frac{x}{4} \times \frac{3}{2}$  $=\frac{3x}{8}km$ Remaining distance =  $x - \frac{3x}{8} = \frac{5x}{8}km$ To cover the remaining dista Relative speed =  $\frac{2x}{7} + \frac{x}{4} = \frac{15x}{28} km/hr$ Time to meet =  $\frac{\frac{5x}{8}}{\frac{15x}{15 \times 8}} = \frac{5 \times 28}{15 \times 8} = \frac{7}{6}$  hr So visit time = 6: 30 + 1 : 10 = 7 : 40 am Ans.(D) Difference in running time of both trains  $= (4:00 - 3:20) = 40 \min = \frac{2}{3} hr$ Let the distance traveled by the first train at a speed of 60 km /h in  $\left(t-\frac{2}{3}\right)$  hours  $60 \times \left(t-\frac{2}{3}\right)$  $\left(\frac{2}{3}\right) = 60 \times \left(\frac{3t-2}{3}\right) = (60t - 40)km$ Distance covered by second train at a speed of 80 km/h in t hours = 80 km  $\Rightarrow 80t + 60t - 40 = 450$ 140t = 490 $t = \frac{490}{140} = \frac{7}{2}$  hr = 3 hr 30 min Hence, the time of arrival of both trains = 3 : 20 + 3 : 30 = 6 : 50 pm Distance covered by the first train between (6: 50 - 4:00) pm =  $60 \times 2$  hr 50 min  $= 60 \times 2 \frac{50}{60}$  $= 60 \times \frac{17}{6}$ = 170 kmTherefore, both trains will be meet at a distance of 170 km at 6: 50 pm. Ans.(B) ← 220 km

37.

38.

39.

 $\begin{array}{c|c}
220 \text{ km} & & \\
40 \text{ km} & & 180 \text{ km} & \\
A & & & \\
8:00 & 9:00 & & 9:00 \\
40 \text{ km/h} & & & 50 \text{ km/h}
\end{array}$ 

Relative speed = 40 + 50 = 90 km/hr The time taken for both trains to meet =  $\frac{180}{90} = 2$  hr

: Both will cross each other =

(9:00 + 2:00) AM = 11:00 AM

# 40. Ans.(C)

Average speed =  $\frac{2a \cdot b}{a + b}$ =  $\frac{2 \times 45 \times 55}{45 + 55}$ = 49.5km/hr Total time taken = 8 hr Total distance = time x speed = 8 × 49.5 = 396 km

# 41. Ans.(B)

Let the length of the train be I meter and speed of train = x m/sec

$$l + 155 = x \times 16 \dots (i)$$
  

$$l + 195 = x \times 18 \dots (ii)$$
  
from eq. (i) ÷ eq. (ii) –  

$$\frac{l + 155}{l + 195} = \frac{16x}{18x}$$
  

$$\frac{l + 155}{l + 195} = \frac{8}{9}$$
  
9l + 1395 = 8l + 1560  

$$l = 165 \text{ m}$$
  
from eq. (i),  

$$x = \frac{l + 155}{16} = \frac{165 + 155}{16} = 20 \text{ m/sec}$$
  

$$= 20 \times \frac{18}{5} = 72 \text{ km/hr}$$

# 42. Ans.(B)

According to question – Let the original speed of the train is x km/h. speed =  $\frac{\text{distance}}{\text{time}}$   $\frac{36}{x} - \frac{36}{x+4} = \frac{6}{60}$   $36\left(\frac{x+4-x}{x^2+4x}\right) = \frac{1}{10}$   $x^2 + 4x - 1440 = 0$   $x^2 + 40x - 36x - 1440 = 0$ x(x + 40) - 36(x + 40) = 0

$$(x + 40)(x - 36) = 0$$
  
 $x - 36 = 0 \Rightarrow x = 36 km/h$ 

# 43. Ans.(A)

44.

Let the speed of the train be x km/hr. and the correct time taken by him is t hour. According to question –

$$xt = \frac{4x}{5}\left(t + \frac{30}{60}\right)$$
$$t = \frac{4t}{5} + \frac{2}{5}$$
$$\frac{t}{5} = \frac{2}{5}$$
$$t = 2 \text{ hours or } 120 \text{ minutes}$$
Ans.(B)

speed of train = 72 km/hr

 $= 72 \times \frac{5}{18}$  m/sec = 20 m/sec : Distance covered in 15 seconds  $= 20 \times 15 = 300$  m 45. Ans.(D) Let the speed of the train be x km/h. According to guestion - $(x + 30) \times \left(10 + \frac{40}{60}\right) = x \times 12$  $(x + 30) \times \frac{32}{3} = 12x$ 32x + 960 = 36x $\Rightarrow 4x = 960$  $x = \frac{960}{4} = 240$  km/hr Ans.(A) 46. speed of train =  $160km/h = 160 \times \frac{5}{18}$ Intended time =  $\frac{\text{Train length}}{\text{train speed}}$ =  $\frac{180}{160 \times \frac{5}{18}} = \frac{180 \times 18}{160 \times 5} = 4.05$ 47. Ans.(B) Relative speed = (60 + 6) km/hr Relative speed =  $66 \times \frac{5}{18} = \frac{55}{3}m/s$ time =  $\frac{110m}{\frac{55}{3}m}$   $\frac{110 \times 3}{55} = 6 \sec c$ 48. Ans.(A) speed =  $\frac{\text{distance}}{1}$ speed = Train length + Platform length  $=\frac{120+100}{10}$  $= \frac{\frac{10}{22 \times 18}}{\frac{396}{5}} = 79.2 \text{ km/hr}$ 49. Ans.(B) Let the length of the train is x m. : time = distance/speed  $\therefore 27 = \frac{455 + x}{78 \times \frac{5}{18}}$ 585 = 455 + x $x = 130 \,\mathrm{m}$ **50**. Ans.(B) Let the length of the train = x mlength of the platform = y m According to question - $\frac{36 \times 5}{18} = \frac{x + y}{80}$ x + y = 800m....(i)Relative speed = 36 + 18 = 54 k./hr Second condition -

 $\frac{54 \times 5}{18} = \frac{x}{24}$  $15 \times 24 = x$ x = 360mlength of the platform (y) = 800 - x = 800 - x360 = 440 m51. Ans.(D) Relative speed = 45 - 40 = 5 km/hr Intended time =  $\frac{200 + 150}{5 \times \frac{5}{18}}$  $=\frac{350 \times 18}{25}$ 25  $= 14 \times 18 = 252 \text{ sec}$ 52. Ans.(B) Relative speed of trains = (135 + 117) km/h =  $252 \times \frac{5}{18}m/sec$  $= 14 \times 5 = 70m/sec$ Time taken for trains to cross each other =  $\frac{220 + 270}{70} = \frac{490}{70} = 7sec$ 53. Ans.(A) speed of train A = 20 m/s Length of train A = 120 mspeed of train B = 30 m/s Length of train B = 130 m  $\therefore \text{ speed} = \frac{\text{distance}}{\text{time}}$  $20 + 30 = \frac{120 + 130}{\text{time}}$  $50 = \frac{250}{\text{time}}$ time  $=\frac{250}{50}=5$  sec Hence the time taken by train B to cross train A = 5 sec54. Ans.(C) by question, average time of stop the train =  $\frac{45-36}{45} \times 60$  $=\frac{9}{45}\times 60$ = 12 min 55. Ans.(D) Let the speed of the trains be 3x and 4x km/h respectively.  $\therefore 4x = \frac{300}{3}$ 4x = 100x = 25: Speed of first train =  $3 \times 25 = 75$  km/hr 56. Ans.(A) by question, distance = 338 m time = 50 sec speed =  $\frac{\text{distance}}{\text{time}}$  = 338 m 50 sec speed = 6.76 m/sec57. Ans.(C)

Let the speed of the train be x m/s. According to guestion - $= \frac{145 + 655}{x} = 36$ x =  $\frac{800}{36}$  m/sec  $x = \frac{800}{36} \times \frac{18}{5}$  km/hr x = 80 km/hr Ans.(D) 58. let the length of the train = x mspeed =  $70km/h = 70 \times \frac{5}{18}m/sec$ then  $70 \times \frac{5}{18} = \frac{550 + x}{36}$  $70 \times 5 \times 2 = 550 + x$ 700 = 550 + xx = 150 meter Hence the length of train = 150 m 59. Ans.(A) Let the length of train = x mTotal distance traveled = (x + 300) m time = 24 sec speed =  $66km/h = 66 \times \frac{5}{18}m/sec$ now 66 ×  $\frac{5}{18} = \frac{x + 300}{24}$  $\frac{11 \times 5}{3} = \frac{x + 300}{24}$  $11 \times 5 \times 8 = x + 300$ x = 440 - 300, x = 140m 60. Ans.(B) Distance difference = 180 - 140 = 40 m Time difference =  $17 - 15 = 2 \sec \theta$ Train speed =  $\frac{\text{distance}}{\text{time}} = \frac{40}{2}$ = 20 m/sec  $\Rightarrow 20 \times \frac{18}{5} = 72$  km/hr 61. Ans.(B) Let length of train = x mspeed of train = 76 km/h According to question –  $\frac{x + 450}{76 \times \frac{5}{18}} = 27 \left[ \text{ time } = \frac{\text{distance}}{\text{speed}} \right]$  $x + 450 = 27 \times 76 \times \frac{5}{18} = 570$ x = 570 - 450x = 120m62. Ans.(D) Let length of train = x mAccording to question - $\Rightarrow 90 \times \frac{5}{18} = \frac{100 + x}{10}$  $\Rightarrow 25 \times 10 = 100 + x$ x = 150 meter Hence the length of the train is 150 m.

63. Ans.(B)

given: 54 km/hr =  $54 \times \frac{5}{18}$  m/sec = 15 m/sec speed =  $\frac{\text{distance}}{\text{time}}$ time  $=\frac{180}{15} = 12 \text{ sec}$ hence the train will cross the man in 12 seconds. 64. Ans.(D) Let the speed of both trains be equal = x km/hrAccording to question sum of speed of both trains Sum of lengths of both trains  $= \frac{1}{150 + 130}$  $x \times \frac{5}{18} = \frac{150 + 130}{7.2}$  $5x = \frac{2800}{4}$  $x = \frac{2800}{20}$ x = 140 km/hr65. Ans.(D) By question speed =  $\frac{\text{distance}}{\text{time}} = \frac{435}{2\frac{1}{2}} km/h$  $=\frac{435\times2}{5}\times\frac{5}{18}m/s$  $=\frac{435}{9} \Rightarrow 48.3m/s$ Hence the speed of the train = 48.3 m/s 66. Ans.(D) Distance = Speed × Time = 240 × 5 = 1200 km speed =  $\frac{\text{distance}}{\text{time}} = \frac{1200}{2}$ = 600 km/hr67. Ans.(B) Let the length of the train = x m: By question - $\frac{x}{25} = 10 \Rightarrow x$  $= 250 \text{ m} \left( \text{speed} = \frac{\text{distance}}{\text{time}} \right)$ Note - In order for a train to cross an object or particle or man etc., the train has to walk (walk) its own length. 68. Ans.(B) speed of train =  $\frac{54km}{h}$  =  $54 \times \frac{5}{18}$  = 15 m/sec Time taken to cross the pillar by train =  $\frac{\text{lengthof train}}{\text{speed of train}}$  =  $\frac{150}{15}$  = 10 sec 69. Ans.(C)

speed of train = 80 km/hr  $= 80 \times \frac{5}{18} = \frac{400}{18}$  m/sec length of train = 400 m Time taken to cross the pole  $=\frac{400}{400} = \frac{400}{400} \times \frac{18}{1} = 18$ 70. Ans.(B) 120 km/h =  $120 \times \frac{5}{18}m/s$ length of train =  $120 \times \frac{5}{18} \times 9$  (distance = speed × time)  $\Rightarrow 60 \times 5 = 300 \text{ m}$ length of train = 300 m71. Ans.(C) speed of train = 60 km/hr  $= 60 \times \frac{5}{18}m/sec = \frac{50}{3}m/sec$ Hence the length of the train  $=\frac{50}{2} \times 30$ = 500m72. Ans.(B) let speed of train = x km/hr Bv auestion distance = (500 + 1000) m = 1.5 km time =  $1 \min = 60 \sec \theta$  $\frac{1.5km}{x} = \frac{1}{60}h$ x = 90 km/hr73. Ans.(A) let length of platform = x mand speed of train = y m/sec By question -250  $\frac{200}{8} = y \dots \dots \dots (i)$ again by question - $\frac{250 + x}{20} = y \dots \dots \dots (ii)$ from eq. (i) and (ii) - $\frac{250}{8} = \frac{250 + x}{20}$ 5000 = 2000 + 8x $8x = 3000 \Rightarrow x = 375 \text{ m}$ Hence length of the platform = 375m 74. Ans.(A) Distance traveled by train = 125 + 75 = 200 m time = 10 sec speed of train  $=\frac{200}{10}=20$  m/sec  $= 20 \times \frac{18}{5}$  km/hr = 72Km/h75. Ans.(C) Average speed of train =  $\frac{2ab}{a+b}$ 

 $=\frac{2\times240\times80}{240\,+\,80}\,=\,\frac{2\times240\times80}{320}$ = 120 km/hr76. Ans.(A) distance covered =  $48 \times \frac{40}{60} = 32$  km if time = 32 min =  $\frac{32}{60} = \frac{8}{15}$  hr ∴ speed of train  $=\frac{32}{8} \times 15 = 60$  km/hr 77. Ans.(D) Average speed =  $\frac{40 + 30}{\frac{40}{80} + \frac{30}{60}}$  $\left[ \because \text{ Average speed} = \frac{\text{total distance}}{\text{total time}} \right]$  $= \frac{70}{\frac{1}{2} + \frac{1}{2}} = \frac{70}{1}$ Average speed = 70 km/hr 78. Ans.(D) Let the speed of the first and second train be 4x, 5x respectively. distance speed = time 800  $5x = \frac{-}{8}$ 5 x = 100 x = 20 Hence the speed of the first train =  $4 x = 4 \times$ 20 = 80 km/h79. Ans.(B) Let the speed of the train be V km/h and length d The speed of the train is (V - 4.5)and (V - 6.3 km / h) respectively, relative to the speed of both the persons. now  $V = \frac{d}{t}$ Crosses the first person in 6 sec.  $= \left(\frac{6}{60 \times 60} \text{ hr}\right) = \frac{6}{3600} \text{ hr}$  $V - 4.5 = \frac{3600d}{6}$  $6V - 27 = 3600d \dots$  ii) Similarly, The other person crosses in 6.4 Sec Similarly, the each  $= \frac{6.4}{60 \times 60} = \frac{6.4}{3600}$  hr. so  $V - 6.3 = \frac{3600d}{6.4}$  $6.4V - 40.32 = 3600d \dots \dots \dots (ii)$ On equalizing both the equations -6V - 27 = 6.4V - 40.32 $\begin{array}{l} 6.4V - 6V = 40.32 - 27 \\ 0.4V = 13.32 \end{array}$  $V = \frac{13.32}{0.4}$ V = 33.3 km/hr80. Ans.(B) Average speed of train =  $\frac{2ab}{a+b}$ 

 $a = 80 km/hr, b = 80 \times \frac{3}{4}$ = 60 km/hr (given)Average speed of train  $= \frac{2 \times 80 \times 60}{80 + 60} = \frac{2 \times 80 \times 60}{140}$  $=\frac{9600}{140}$ = 68.6 km/hr81. Ans.(B) Let the normal speed of the train = x km / hAccording to question - $\frac{300}{x} - \frac{300}{x+5} = 2$  $\frac{x}{300(x+5)-300x} = 2$ x(x + 5) $300x + 1500 - 300x = 2x^2 + 10x$  $2x^2 + 10x - 1500 = 0$  $x^2 + 5x - 750 = 0$  $x^2 + 30x - 25x - 750 = 0$ x(x + 30) - 25(x + 30) = 0(x + 30)(x - 25) = 0x - 25 = 0x = 25Hence the normal speed of the train is 25 km/h. 82. Ans.(A) speed of train =  $\frac{\text{length of train}}{\text{time}}$  $=\frac{110}{12}$  m/sec or  $=\frac{110}{12} \times \frac{18}{5}$  km/hr = 33 km/hr83. Ans.(C) Let the length of the train = I m  $60 \times \frac{5}{18} = \frac{l}{9}$  $30 \times 5 = l$  $l = 150 \, {\rm m}$ 84. Ans.(D) let the length of the train = xAccording to question - $\frac{100 + x}{45 \times \frac{5}{18}} = 60$  $2(100 + x) = 60 \times 25$ 200 + 2x = 15002x = 1300x = 650Time taken to cross the electric pole =  $\frac{650}{45 \times \frac{5}{18}} = \frac{650 \times 18}{45 \times 5} = 52 \text{ sec}$ Ans.(B) 85. Let the speed of the trains be 2 x and x. And

the lengths of trains are I<sub>1</sub> and I<sub>2</sub>.

Same direction Opposite direction  $\rightarrow$  $(2x - x)^{\text{Relative}}$ (2x +x)Relative speed speed From first condition - $60 = \frac{l_1 + l_2}{2x - x}$  $60x = \underline{l}_1 + l_2 \dots$  (i) From second condition - $40 = \frac{l_2}{2x - x}$  $40x = l_2 \dots$  (ii)  $l_1 = 60x - l_2$ = 60x - 40x= 20x $l_1: l_2 = 20x: 40x$  $I_1: l_2 = 1:2$ Ans.(C) let speed of train = x km/hr Distance traveled in 20 seconds in cross the  $pole = \frac{x \times 20}{3600} \text{ km}$ Cycle speed = 5 km/hr Cycle + train speed = (x + 5) km/hr Distance traveled to cross the cycle =  $\frac{(x+5)\times 18}{2}$  km  $\frac{\frac{1}{3600}}{\frac{(x+5)\times 18}{3600}} = \frac{x}{180}$ 18x + 90 = 20x2x = 90x = 45 km/hrAns.(A) let car speed = x km/hr speed of car relative to person = (x - 5) km/hr  $= (x-5) \times \frac{5}{18}$  m/sec  $\therefore \frac{125}{(x-5) \times \frac{5}{18}} = 10$  $\frac{125 \times 18}{5x - 25} = 10$ 5x = 225 + 255x = 250x = 50 km/hrAns.(B) Let the length of the goods train = x mBy question - $72 \times \frac{5}{18} = \frac{250 + x}{26}$  $20 \times 26 = 250 + x$ 520 = 250 + xx = 520 - 250x = 270 मीटर

86.

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Therefore, the length of the goods train is 270 meters.

89. Ans.(B) let platform length = x mBy auestion - $\frac{300}{18} = \frac{300 + x}{39}$  $\frac{\frac{18}{300}}{\frac{300}{6}} = \frac{\frac{39}{300} + x}{13}$ 3900 = 1800 + 6x2100 = 6xx = 350 m Ans.(D) 90. let platform length = x m train speed = 54 km/hr  $= 54 \times \frac{5}{18} = 15$  m/sec train length (x) =  $20 \times 15 = 300$  m Has given again time = 36 sec, distance = (300 + x) speed = 15 m/sec  $15 = \frac{300 + x}{36} \Leftrightarrow 540 = 300 + x$ x = 240m91. Ans.(A) let platform length = xTrain length = l [: distance × speed = t] total distance = x + l $x + l = 54 \times \frac{5}{18} \times 36$  $x + l = 540 \dots (i)$ According to question again Distance = Speed × Timel =  $54 \times \frac{5}{18} \times 20$  $l = 300 \dots (ii)$ Subtracting eq (ii) from eq (i) x + l - l = 540 - 300platform length x = 240 m 92. Ans.(D)

let train length = x m According to question  $\frac{x}{2} = \frac{x+70}{5.5}$   $\Rightarrow 2x + 140 = 5.5x$   $\Rightarrow 3.5x = 140$  $\Rightarrow x = \frac{1400}{35} = 40$ 

Hence the length of the train = 40 m 93. Ans.(A) According to question -First train speed =  $\frac{120}{10}$  = 12 m/sec second train speed =  $\frac{120}{15}$  = 8 m/sec  $\therefore$  Relative speed of both trains (x + y) m/sec = distance time Time taken to cross both trains in opposite direction  $= \frac{\text{Length of first train. + Length of second train}}{\text{speed of f. }}$ speed of first train + spee of second train  $\Rightarrow \frac{120 + 120}{10 + 8} = \frac{240}{20} = 12 \text{ sec}$ 94. Ans.(A) speed =  $\frac{\text{distance}}{\text{time}}$ time =  $\frac{\text{Length of first train. + Length of second train}}{\frac{1}{2}$  $\operatorname{ume} = \frac{100 + 120}{\operatorname{speed} \text{ of first train + spee of second train}}$  $= \frac{100 + 120}{18 + 15} = \frac{220}{33} = 6.67 \text{ sec}$ 95. Ans.(D) Let the length of both trains are l<sub>1</sub> and l<sub>2</sub>.  $:: l_1 = l_2 = 120 \text{ m}$ Given, according to Question - $V_1 = V_2 = V$   $\therefore V_1 + V_2 = \frac{l_1 + l_2}{T}$   $V + V = \frac{120 + 120}{12} = \frac{240}{12} = 20$ 2V = 20V = 10 $V = 10 \times \frac{18}{5} = 36 km/h$ 

#### 96. Ans.(D)

Let speed of first train is V<sub>1</sub> and speed of second train is V<sub>2</sub>.  $V_1 = \frac{D_1}{T} \Rightarrow D_1 = 80 \times 12 = 960km$  $V_2 = \frac{D_2}{T} \Rightarrow D_2 = 95 \times 12 = 1140km$ According to question –  $D_2 - D_1 = 1140 - 960 = 180km$ 

# 20. Boat & stream

7.

1. A boat has a speed of 20 km/h in calm water. If the boat covers a distance of 20 km in the opposite direction of the stream in 4 hours. find the speed of the stream.

RRB Group D 23/11/2022 (Shift-I)

<b>(A)</b> 20 km/h	<b>(B)</b> 15 km/h
<b>(C)</b> 25 km/h	<b>(D)</b> 30 km/h

2. The speed of a boat is 12 km/hr in still water. If the boat covers a distance of 38 km in the opposite direction of the stream of water in 4 hours, then the speed of the stream is in km/hr?

	RRB Group-D - 19/11/2022 (Shift-II)
<b>(A)</b> 3	<b>(B)</b> 2.5
(C) 3.17	<b>(D)</b> 6.5

3. In still waters, it takes a total of 15 hours for a boat to reach its destination and return to its starting point from there. The same journey requires 16 hours if the river flows. The difference between the speed of the boat and the river is 15 km/h. Find the speed of river flow.

> RRB Group-D - 17/11/2022 (Shift-III) (A) 10 km/h (B) 6 km/h (C) 4 km/h (D) 5 km/h

4. A rider takes 16 hours to run 100 km against the stream, while it takes only 10 hours to travel the same distance to the stream. What is the speed of the stream?

RRB Group-D - 07/12/2018 (Shift-III) (A) 6.625 km/h (B) 1.875 km/h (C) 6.25 km/h (D) 8.125 km/h

5. The speed of a boat in still water is 20 km/hr. The boat travels 364 kilometers downstream and then travels in the reverse direction to its starting point. The journey takes a total of 40 hours. What is the speed of the stream?

RRB Group-D - 03/12/2018 (Shift-II)

<b>(A)</b> 10 km/h	<b>(B)</b> 8 km/h
<b>(C)</b> 4 km/h	<b>(D)</b> 6 km/h

A person swims 4 km opposite the stream and 6. 16 km in the direction of the stream in every 5 hours. What is the speed of the stream? RRB Group-D - 02/11/2018 (Shift-II)

<b>A)</b> 2.2 km/h	<b>(B)</b> 3.2 km/h
<b>C)</b> 1.2 km/h	<b>(D)</b> 1.5 km/h

A swimmer swimming in still water at a speed of 9 km/h finds that the time he takes to travel a certain distance in the direction of the stream is half the time he takes to cover the same distance in the opposite direction. Find the speed of water.

RRB Group-D - 12/10/2018 (Shift-II)		
<b>A)</b> 10km/h	(B) 3 km/h	
<b>C)</b> 5 km/h	<b>(D)</b> 8 km/h	

The sailor takes 12 hours to cover a distance 8. of 75 km opposite the stream while it takes only 7.5 hours to cover that distance in the direction of the stream. What is the speed of the stream?

RRB Group-D - 18/11/2022 (Shift-III)		
(A) 6.625 km/h	(B) 6.25 km/h	
<b>(C)</b> 8.125 km/h	<b>(D)</b> 1.875 km/h	

9. A boat covers a distance of 35km in the direction of the stream in 5 hours and returns in 7 hours. Find the speed of the boat in still water.

RRB GI	oup-D - 01/11/2018 (Shift-II)
<b>(A)</b> 6 km/h	<b>(B)</b> 5.5 km/h
<b>(C)</b> 10.5 km/h	<b>(D)</b> 7.5km/h

10. A man's speed in still water is 28/3 km/h. In the opposite direction of the stream he takes three times the time taken in the same direction of the stream. What is the speed of the stream?

RRB RPF Constable - 20/01/2019 (Shift-II) (A) 16/3 km/h (B) 20/3 km/h (C) 6 km/h (D) 14/3 km/h

A boat, which has a speed of 15 km/h in still 11. water, goes 30 km in the direction of the stream and returns in the opposite direction of the stream in 4.5 hours. Find the speed of the stream.

	RRB RPF SI - 10/01/2019 (Shift-I)
<b>(A)</b> 4 km/h	<b>(B)</b> 5 km/h
<b>(C)</b> 10 km/ł	າ <b>(D)</b> 6 km/h

**12.** It takes 8 hours for a rider to cover a distance of 60 km upstream of a river while it takes 5 hours to cover the same distance downstream. What will be the speed of the rider in still water?

	RRB RPF	SI - 05/01/2019 (Shift-III)
(A) 9.25 k	m/h	<b>(B)</b> 9.80 km/h
(C) 9.75 k	m/h	<b>(D)</b> 9.5 km/ h

**13.** Arjuna takes 5 hours to swim 40 km in the opposite direction of the stream, while he only takes 2 hours to swim 24 km in the direction of the stream. Find out his speed in still water.

RRB RPF Cor	istable - 17/01/2019 (Shift-I)
<b>(A)</b> 12 km/hr	<b>(B)</b> 10 km/hr
<b>(C)</b> 9 km/hr	<b>(D)</b> 15 km/hr

**14.** A sailor covers a distance of 2 km in the opposite direction of the stream in 1 hour and a distance of 1 km in the direction of the stream in 10 min. Find the speed of the boat in still water.

RRB RPF Constable - 25/01/2019 (Shift-I)

<b>(A)</b> 4 km/h	<b>(B)</b> 2.5 km/h
<b>(C)</b> 3 km/h	<b>(D)</b> 4.5 km/h

**15.** If the time taken in the opposite direction of the current =  $n \times$  the time taken in the direction of the stream and the speed in still water is 'x' and the speed of stream is 'y', find the value of x: y.

RRB RF	PF SI-11 / 01 / 2019 (Shift-II)
<b>A)</b> n/2	<b>(B)</b> (n+1) /(n-1)
<b>C)</b> (n-1) /(n+1)	<b>(D)</b> n /(n-1)

**16.** Suresh covers a distance of 34 kilometers in a direction of a river in 4 hours 15 min by a luxury boat and 19 kilometers in the opposite direction of a river in 3 hours 10 min. What is the speed of river flow at present?

 RRB RPF SI - 12/01/2019 (Shift-II)

 (A) 3 km/h
 (B) 2 km/h

<b>(C)</b> 1 km/h	<b>(D)</b> 5 km/h

**17.** Ramu can ride a boat in still water at a speed of 9 km/h. It takes twice the time to go in the opposite direction of the stream than it goes in the direction of the stream. Find the speed of the stream.

	RRB NTPC 09/05/2022 Shift : 1
(A) 16 km/h	<b>(B)</b> 8 km/h
(C) 3 km/h	<b>(D)</b> 9 km/h

**18.** A man can ride a boat at a speed of 4 km/h. He found that the time taken to move in the opposite direction of the stream is double the

time it takes to go in the direction of the stream. Find the speed of the stream (in km/h).

	RRB NTPC 12/08/2022Shift :1
<b>A)</b> 1.5	<b>(B)</b> 1.3
<b>C)</b> 2	<b>(D)</b> 1

**19.** The speed of a boat is 40 km/h in the opposite direction of the stream and 55 km/h in still water. What will be the speed of the boat in the direction of the stream of the river?

	RRB	NTP	С	10/	08/2	022	Shift	2	2

<b>(A)</b> 75 km/h	<b>(B)</b> 70 km/h
<b>(C)</b> 60 km/h	<b>(D)</b> 65 km/h

**20.** A person travels a distance of 16 km in two hours in the direction of the stream. If he travels half the distance in the opposite direction of the stream at the same time, find the speed of the stream.

	RRB NTPC 12/08/2022Shift : 3
<b>(A)</b> 4 km/hr	<b>(B)</b> 2 km/hr
(C) 3 km/hr	<b>(D)</b> 1 km/hr

21. A boat goes in the opposite direction of the stream from city P to city Q and in the direction of the stream returns from city Q to city P. If the speed of the boat in still water is 35 km/h and the speed of the stream is 5km/h, what is the average speed of the boat in the entire journey?

# RRB NTPC 10/08/2022 Shift : 3

(A) 36.28 km/h	<b>(B)</b> 34.28 km/h
<b>(C)</b> 35 km/h	<b>(D)</b> 33.33 km/h

22. A boat moves from city x to city y against the stream and returns from city y to city x in the direction of the stream. If the boat has 40 km/h in still water and the speed of the stream is 10 km/h, what is the average speed of the boat in the entire journey?

# RRB NTPC 10/08/2022 Shift : 1

<b>(A)</b> 36.5 km/h	<b>(B)</b> 34.5 km/h
<b>(C)</b> 37.5 km/h	<b>(D)</b> 33.33 km/h

**23**. The speed of a boat in still water is 11 km/h. If the boat travels 19 km in the opposite direction of the stream in 2 hours. Find the speed of the stream.

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 20.5	<b>(B)</b> 11.5
<b>(C)</b> 1.5	<b>(D)</b> 3

24. The speed of a boat in still water is 12 km/h, and the speed of the stream is 3 km/h. A

person goes 135 km in the unfavorable direction of the stream by boat and returns to the starting point, in the direction of stream. Find the time taken to cover the entire journey in hours.

	RRB NTPC 18.01.2017 Shift : 1
<b>(A)</b> 24	<b>(B)</b> 48
( <b>C)</b> 36	<b>(D)</b> 30

25. If the speed of the boat in still water is x km/h and the speed of the stream is y km/h and the time taken to reach a place and return from there is 't' hour, find the distance traveled in one direction.

RRB Paramedical - 21/07/2018 (Shift-II)

(A) $\left[ \left( \frac{x^2 + y^2}{2xy} \right) t \right]$ km	<b>(B)</b> $\left[\frac{t(x^2-y^2)}{2x}\right]$ km
<b>(C)</b> $\left[\frac{t(x^2+y^2)}{2x}\right]$ km	<b>(D)</b> $\left[\frac{t(x^2-y^2)}{xy}\right]$ km

**26.** A sailor travels 24 km opposite the stream and 36 km in the direction of the stream and takes 6 hours each time. Find the speed of the stream.

	RRB JE - 26/05/2019 (Shift-II)
<b>(A)</b> 2 km/h	<b>(B)</b> 4 km/h
(C) 1 km/h	<b>(D)</b> 3 km/h

**27.** A boat takes 2 hours to travel 16 km in the direction of the stream and 4 hours to cover the same distance in the opposite direction of the stream. Find the speed of the stream.

 RRB JE - 29/05/2019 (Shift-II)

 (A) 12 km/h
 (B) 2 km/h

 (C) 4 km/h
 (D) 6 km/h

**28.** Ram goes from place A to B cycling at a uniform speed of 12 km/h and then comes back to place A while cycling. His friend Gopi travels by boat from places A to B and comes back to location A, where his speed in still water is 10 km/h and the river flow is 4 km/h. Who will return to position A first?

# RRB JE - 29/05/2019 (Shift-III)

- **(A)** Gopi/
- (B) Ram/
- (C) Both will arrive at the same time
- (D) cannot be determined
- A man's speed in the direction of the stream is 15 km/h and speed of the stream is 2.5 km/h. Find his speed opposite the stream.
   RRB JE 26/06/2019 (Shift-I)

	RRB JE - 26/06/2019 (Shift-
<b>(A)</b> 10 km/h	<b>(B)</b> 9 km/h
<b>(C)</b> 12.5 km/h	<b>(D)</b> 8.5 km/h

30. It takes t<sub>1</sub> and t<sub>2</sub> hours respectively to cover a certain distance opposite the stream and in direction of the stream. The speed of the stream is 'y' km/h. Find the speed in still water.
RRB JF - 31/05/2019 (Shift-I)

RRB	JE - 31/05/2019 (Shift-I
(A) $\left[\frac{(t_1+t_2)2y}{(t_1-t_2)}\right]$ km/h	<b>(B)</b> $\left[ \left( \frac{t_1 - t_2}{t_1 + t_2} \right) y \right]$ km/h
(C) $\left(\frac{t_1^2 - t_2^2}{2y}\right)$ km/h	<b>(D)</b> $\left[\frac{(t_1+t_2)}{(t_1-t_2)}y\right]$ km/h

31. It takes 12 hours for a boat to travel a certain distance in the direction of the stream and 24 hours to return. How long will it take for the boat to cover the same distance in still water? RRB JE - 02/06/2019 (Shift-III)

	RRB JE - 02/06/2019 (Shift-
(A) 15 hours	<b>(B)</b> 10 hours
(C) 18 hours	<b>(D)</b> 16 hours

**32.** The speed of a boat in still water is 13 km/h. The speed of the stream is 4 km/h. How long will it take for the boat to travel a distance of 68 km opposite the stream?

	RRB JE - 22/05/2019 (Shift-I)
(A) 7 hours	(B) 4 hours
(C) 8 hours	<b>(D)</b> 7 hr 33 min

**33.** The speed of a sailor in still water is x km/h and the speed of the stream is y km/h. If a person rides a boat a certain distance opposite the stream and then returns the same distance in the direction of the stream, find his average speed during the journey.

# RRB JE - 28/05/2019 (Shift-II)

(A) 
$$\frac{x^2 + y^2}{xy}$$
 km/h (B)  $\frac{x^2 - y^2}{2xy}$  km/h  
(C)  $\frac{x^2 + y^2}{x}$  km/h (D)  $\frac{x^2 - y^2}{x}$  km/h

**34**. A boat covers a distance of 12 km. The first 4 km distance in the direction of the stream is covered in 15 min. The next 8 km is travelled in the opposite direction of the stream. The speed of the boat in the direction of the stream is twice the speed of the boat in the opposite direction of the stream. Find the average speed of the journey.

# RRB JE - 28/05/2019 (Shift-II) (A) 11.6 km/h (B) 9.6 km/h (C) 10 km/h (D) 10.4 km/h

**35.** A boat running in the opposite direction of the stream takes 8 hours 48 min to cover a distance, while it takes 4 hours to return to the starting point in the direction of the stream. Find the ratio of the speed of the boat in still water to the stream.

	RRB JE - 24/05/2019 (Shift-II)
<b>(A)</b> 3: 2	<b>(B)</b> 8: 3
(C) 4: 3	<b>(D)</b> 2: 1

**36.** The ratio of the time taken by the boat in the opposite direction of the stream and the time taken in the direction of the stream to cover a certain distance is 4: 1. Find the ratio of the speed of the boat in the direction of the stream and in the opposite direction of the stream.

	RRB JE - 25/05/2019 (Shift-I)
<b>(A)</b> 4: 1	<b>(B)</b> 3: 5
<b>(C)</b> 1: 4	<b>(D)</b> 5: 3

**37.** A boat covers a certain distance in the direction of the stream in 4 hours, but takes 6 hours to return to the starting point. What is the ratio of the speed of the stream and the speed of the boat in still water?

 RRB JE - 27/05/2019 (Shift-III)

 (A) 1:5
 (B) 1:4

# 1. Ans.(B)

Boat speed in still water(a) = 20 km/hr Speed of boat against stream

 $=\frac{20}{4}=5km/hr$ 

Let the speed of the stream be b km/hr. then, According to question – Speed of boat against stream = (a - b) km/hr

So, 5 = 20 - b} h = 20 - 5

$$b = 20 - 15$$

hence the speed of the stream = 15km/hr

# 2. Ans.(B)

let speed of the stream = x km/hr, Boat speed in still water = 12 km/hr Then speed opposite the stream = (12 - x) km/hr opposite speed of stream =  $\frac{38}{4} = 9.5 km/hr$ so, 9.5 = 12 - xthen x = 12 - 9.5x = 2.5hence, speed of stream = 2.5 km/hr **Ans.(D)** 

# 3. Ans.(D

Let the distance between the two places = D km speed of boat = (15 + x) km/ hr and speed of stream = x km/hr According to question – Time taken to get and come from boat in still water = 15 hr (C) 5: 1 (D) 4: 3

**38.** A man takes twice as long to steer a boat in the opposite direction than a boat in direction of stream. Find the ratio of the speed of the boat in still water to the speed of stream.

	RRB JE - 28/05/2019 (Shift-II)
<b>(A)</b> 3:2	<b>(B)</b> 4:1
(C) 2:1	<b>(D)</b> 3:1

**39.** In still water, the speed of a boat is x km/h and the speed of a stream is y km/h. If the time taken to cover a distance opposite to the stream is, 't' hours more than the time taken to cover the same distance in the direction of the stream, find the distance covered.

RRB JE - 30/05/2019 (Shift-III)(A) 
$$\left[\frac{(x^2-y^2)t}{2xy}\right]$$
 km(B)  $\left[\frac{(x^2-y^2)t}{2y}\right]$  km(C)  $\left[\left(\frac{x+y}{x-y}\right)t\right]$  km(D)  $\left[\frac{(x+y)t}{2}\right]$  km

<u>Solution</u>

4.

 $\frac{2D}{x+15} = 15 \qquad \dots (i)$ and the time it took to come and go when the water flowed = 16 hr  $\frac{D}{x+15+x} + \frac{D}{x+15-x} = 16$  $\frac{D}{15+2x} + \frac{D}{15} = 16 \dots (ii)$ On solving eq. (i) and (ii) D = 150km and x = 5km/h **Ans.(B)** let speed of boat = x km/ h and the speed of stream = ykm/h According to question  $x - y = \frac{100}{16} = \frac{25}{4} \dots (i)$  $x + y = \frac{100}{10} = 10 \dots (ii)$ On solving eq. (i) and (ii)

x = 8.125y = 1.875 hence speed of stream = 1.875 km/h

# 5. Ans.(D)

let speed of stream = x km/hrspeed in direction of stream = (20 + x) km/ hragainst speed of stream = (20 - x) km/ hrAccording to question –

$$\frac{364}{20 + x} + \frac{364}{20 - x} = 40$$
  

$$\frac{20 - x + 20 + x}{(20 - x)(20 + x)} = \frac{40}{364}$$
  

$$(20 - x)(20 + x) = 364$$
  

$$400 - x^{2} = 364$$
  

$$36 - x^{2} = 0$$
  

$$x^{2} = 36$$
  

$$x = \pm 6$$
  
hence speed of stream = 6km/ h

# 6. Ans.(C)

speed in direction of stream (a) =  $\frac{16}{5} km/h$ speed in opposite direction of the stream (b)

$$=\frac{4}{5}km/h$$

speed of stream 
$$=$$
  $\frac{a-b}{2} = \frac{12}{2}$   
 $=$   $\frac{\frac{12}{5}}{2} = \frac{12}{10} = 1.2 km/h$ 

7. Ans.(B)

8.

Let the speed of water be x km/hr and the distance traveled by the swimmer is D km. And the time taken to cover the distance D km in the direction against the stream = t hr According to question - $D = (9 - x) \times t \dots \dots (i)$  $D = (9 + x) \times \frac{t}{2} \dots \dots (ii)$ from eq. (i) and (ii) - $\Rightarrow (9-x)t = (9+x)\frac{t}{2}$ 18 - 2x = 9 + x3x = 9, x = 3km/hrAns.(D) Let speed of boat = x km/hr speed of stream = y km/hr total distance = 75 km in opposite direction of stream,  $\frac{75}{x-y} = 12$  $x - y = \frac{75}{12} = 6.25 \dots (i)$ in the direction of stream,  $\frac{75}{x+y} = 7.5$  $x + y = 10 \dots \dots (ii)$ Adding eq. (i) and eq. (ii), 2x = 16.25x = 8.125hence from eq.(i) x - y = 6.25

# Ans.(A)

9.

speed of boat in direction of stream =  $\frac{35}{5} = 7km/hr$ 

speed of boat in opposite direction of stream  $=\frac{35}{\pi}=5km/hr$ 

hence speed of boat in still water  $=\frac{7+5}{2}=6km/hr$ 

# 10. Ans.(D)

let speed of stream = Rkm /h speed of man in still water = (28/3)km /h According to question – Time taken in opposite direction of stream = 3 × time taken in direction of stream

$$\frac{x}{\frac{28}{3} - R} = 3 \times \frac{x}{\frac{28}{3} + R}$$

$$\frac{28}{3} + R = 3 \times \frac{28}{3} - 3R$$

$$4R = 28 - \frac{28}{3}$$

$$4R = \frac{56}{3}$$

$$R = \frac{14}{3} km/h$$

11. Ans.(B)

let speed of stream = x km/hr speed of boat in direction of stream = (15 + x) km/hrspeed of boat in opposite direction of stream = (15 - x) km/hrAccording to question - $\frac{30}{(15+x)} + \frac{30}{(15-x)} = 4.5$  $\frac{450 - 30x + 30x + 450}{(15 + x)(15 - x)} = 4.5$  $\frac{900}{225 - x^2} = 4.5$  $\frac{200}{225 - x^2} = 1$  $200 = 225 - x^2$  $x^2 = 25$ x = 5 km/hrAns.(C) Speed in upward direction =  $\frac{60}{8} = \frac{7.5km}{hr}$ Speed in downward direction 60

$$=\frac{60}{5}=12km/hr$$

Speed in still water =  $\frac{12+7.5}{2}$  = 9.75km/hr

# 13. Ans.(B)

12.

speed of Arjun in direction of stream =  $\frac{40}{5} = 8km/hr$ 

y = 8.125 - 6.25y = 1.875 km/hr

8.125 - y = 6.25

speed of Arjun in opposite direction of stream =  $\frac{24}{2} = 12km/hr$   $\therefore$  Arjun's speed in still water =  $\frac{12 + 8}{2} = 10km/hr$ 

# 14. Ans.(Ã)

speed of boat = B\ km/ hr speed of stream = Rkm/ hr let speed of boat in opposite direction of stream = (B - R) km/ hr speed of boat in direction of stream = (B + R)km/ hr According to question –

$$B - R = \frac{2}{1} \dots \dots (i)$$
  

$$B + R = \frac{1}{\frac{10}{60}} = 6 \dots \dots \dots (ii)$$
  
Adding eq. (ii) and eq. (ii)

Adding eq. (i) and eq. (ii) 2B = 8

B = 4

hence the speed of the boat in still water is 4 km/h.

## 15. Ans.(B)

Let the speed of boat and stream be x km/h and y km/h respectively.

$$\frac{D}{(x-y)} = n \times \frac{D}{(x+y)}$$
$$\frac{x+y}{x-y} = n$$
$$x+y = n(x-y)$$
$$x+y = nx-ny$$
$$y(n+1) = x(n-1)$$
$$\frac{x}{y} = \frac{n+1}{n-1}$$

# 16. Ans.(C)

Let the speed of the luxury boat be x km/h and the speed of the stream is ykm/h

$$x + y = \frac{34}{4\frac{15}{60}} = \frac{34 \times 4}{17}$$
$$x + y = 8 \dots \dots (i)$$
$$x - y = \frac{19}{3\frac{10}{60}} = \frac{19 \times 6}{19}$$

$$\begin{array}{l} \Rightarrow x - y = 6 \dots \dots \dots (ii) \\ \text{from eq. (i)} - (ii), \\ 2y = 2 \Rightarrow y = 1 \\ \text{Hence the speed of flow of the river is 1 km/h} \end{array}$$

# 17. Ans.(C)

Speed of boat in still water = 9 km/hr speed of stream = x km/hr and distance = d km speed of boat in direction of stream = (9 + x) km/hr

speed of boat in opposite direction of stream = (9 - x) km/hrdistance

time = 
$$\frac{d}{\text{speed}}$$
  
 $\Rightarrow \frac{d}{9+x} \times 2 = \frac{d}{9-x}$   
 $\Rightarrow 18-2x = 9 + x$   
 $= 3x = 9$   
 $x = 3$   
hence speed of stream = 3 km/hr

## 18. Ans.(B)

let speed of stream = x km/hr

speed of boat in direction of stream = (4 + x) km/hr

speed of boat in opposite direction of stream = (4 - x) km/hr

time = 
$$\frac{\text{distance}}{\text{speed}}$$
$$\frac{d}{4-x} = \frac{2d}{4+x}$$
$$\frac{d}{4+x} = 8 - 2x$$
$$3x = 4$$
$$x = 1.3 \text{ km/br}$$

# 19. Âns.(B)

let speed of boat in direction of stream = x km/hr

speed of boat in still water = 1/2 (speed in direction of stream + speed in opposite direction of stream)

$$55 = \frac{1}{2}(x + 40)$$
  

$$110 = x + 40$$
  

$$x = 110 - 40$$
  

$$x = 70$$
  
hence speed of boat in direction of stream  
= 70 km/ hr

# 20. Ans.(B)

Let the speed of the stream be x km/h and the speed of the person y km/h speed of person in direction of stream = (x + y) km/h speed in opposite direction of stream = (y - x) km/h According to question  $x + y = \frac{16}{2} \Rightarrow x + y = 8 \dots \dots (i)$  $y - x = \frac{8}{2} \Rightarrow y - x = 4 \dots (i)$ Subtracting (ii) from eq. (i)  $2x = 4 \Rightarrow x = 2km/h$ 

# 21. Ans.(B)

speed in opposite direction of stream = 35 - 5= 30 km/hr speed in direction of stream = 35 + 5

= 40 km/hr Average speed of boat =  $\frac{2ab}{a+b}$  $= \frac{2 \times 40 \times 30}{40 + 30}$ =  $\frac{2 \times 40 \times 30}{70}$  = 34.28 km/hr 22. Ans.(C) speed of boat in direction of stream = B + R = 40 + 10 = 50 km/hr speed of boat in opposite direction of stream = B - R = 40 - 10 = 30 km/hr : Average boat speed over the entire journey =  $\frac{2ab}{ab}$  $= \frac{\overline{a+b}}{2 \times 50 \times 30}$  $= \frac{2 \times 50 \times 30}{50 + 30}$  $=\frac{2\times1500}{80}$ = 37.5 km/hr 23. Ans.(C) Speed of boat in still water = 11 km/hr Distance traveled by boat in 2 hours in opposite direction of stream = 19 km speed of boat in opposite direction of stream  $=\frac{19}{2}$  km/hr speed of stream =  $11 - \frac{19}{2}$ =  $\frac{22-19}{2}$  =  $\frac{3}{2}$  = 1.5 km/hr 24. Ans.(A) Let the total time taken is t hours.  $t = \frac{d}{B+R} + \frac{d}{B-R} \qquad (B \to \text{ boa})$   $R \to \text{ stream }$   $t = \frac{135}{12+3} + \frac{135}{12-3}$  $(B \rightarrow \text{boat})$  $t = \frac{135}{15} + \frac{135}{9}$ t = 9 + 15t = 24 hr25. Ans.(B) let total distance = d km speed in direction of stream = (x + y) km/hspeed in opposite direction of stream = (x - y)km/h speed =  $\frac{\text{distance}}{\text{time}}$ =  $\frac{d}{\frac{d}{\frac{d}{x+y} + \frac{d}{x-y}}}$ =  $\frac{d}{\frac{d}{\frac{d}{x+y} + \frac{d}{x-y}}}$  $= \frac{\frac{d}{dx - dy + dx + dy}}{\frac{dx - y(x + y)}{(x - y)(x + y)}}$  $= d \times \frac{x^2 - y^2}{2dx} = \frac{(x^2 - y^2)}{2x}$ Distance traveled in one direction of stream = speed  $\times$  time

$$= \left[\frac{(x^2-y^2)}{2x}\right]t$$
  

$$= \left[\frac{t(x^2-y^2)}{2x}\right]km$$
**Ans.(C)**  
speed of boat = Bkm/hr  
speed of stream = W km/hr  
speed of boat in opposite direction of stream  

$$= (B + W) km/hr$$
speed of boat in direction of stream (B +  
W) =  $\frac{36}{6}$   
 $B + W = 6km/h$  ......(i)  
speed of boat in opposite direction of stream  
 $B - W = \frac{24}{6}$   
 $B - W = 4km/h$  ......(ii)  
On adding eq. (i) and eq. (ii)  
 $B + W = 6$   
 $B - W = 4$   
 $2B = 10$   
speed of boat B = 5km/h  
 $B + W = 6$   
 $5 + W = 6$   
speed of stream V = 1km/h  
**Ans.(B)**  
let speed of stream = R km/hr  
speed of boat = Bkm/hr .....(ii)  
in opposite direction of stream -  
 $B + R = \frac{16}{2} = 8km/hr$ .....(ii)  
from eq (1) and (2) -  
 $2B = 12$   
 $B = 6km/h$   
 $\therefore 6 + R = 8$   
 $\therefore R = 2km/hr$   
**Ans.(B)**  
let distance AB = 84 km( $\therefore$  lcm of 12,14)  
Time taken by Ram to move from A to B at a  
speed of 12km/h =  $\frac{84}{12} = 7h$   
Total time taken by Gopi to Ram = 7 + 7  
 $= 14h$   
Time taken by Gopi to return to A again at  
a speed of (10 - 4) km/h =  $\frac{84}{6} = 14h$ 

Total time taken by Gopi to travel

= 14 + 6 = 20h

26.

27.

28.

Therefore, it is clear that Rama takes less time to travel, hence Rama will return to place A first.

# 29. Ans.(A)

Let the speed of man is x km/hr and speed of stream is y km/hr.

Speed of man in the direction of the stream = (x + y) = 15km/ h speed of stream (y) = 2.5km/h x + y = 15x + 2.5 = 15x = 12.5km/hspeed in opposite direction of stream = x - y =12.5 - 2.5 = 10 km/ h

#### 30. Ans.(D)

speed in still water = x km/hr speed of stream = y km/hr distance = Dkm/hr

$$\frac{D}{t_1} = (x - y) \dots \dots (i)$$

$$\frac{D}{t_2} = (x + y) \dots \dots \dots (ii)$$
from eq. (i) and (ii) -
$$(x - y)t_1 = (x + y)t_2$$

$$t_1x - t_1y = t_2x + t_2y$$

$$x(t_1 - t_2) = y(t_1 + t_2)$$

$$x = \frac{y(t_1 + t_2)}{(t_1 - t_2)} km/hr$$

let total distance = x km Time taken to cover the same distance in still water = t hr

speed =  $\frac{\text{distance}}{\text{time}}$ 

speed of boat in still water = 1/2 (speed of boat in direction of stream + speed of boat in opposite direction of stream)

$$\frac{x}{t} = \frac{1}{2} \left[ \frac{x}{12} + \frac{x}{24} \right]$$
$$\frac{x}{t} = \frac{1}{2} \left[ \frac{6x}{48} \right]$$
$$\frac{1}{t} = \frac{1}{16}$$

 $t = 16 \\ t = 16 hr$ 32. Ans.(D)

33.

Speed of boat in still water = 13 km/hr speed of stream = 4 km/hr  $\therefore$  opposite speed of stream = 13 - 4 = 9 km/hr Time taken to cover 68 km =  $\frac{68}{9}$ = 7 hr 33 min Ans.(D) Sailor's speed = x km/hr speed of stream = y km/hr speed of boat in direction of stream (v<sub>1</sub>) = (x + y) km/hr speed of boat in opposite direction of stream  $(v_2) = (x - y) \text{ km/hr}$ 

:. average speed = 
$$\frac{2v_1v_2}{v_1 + v_2}$$
  
=  $\frac{2(x + y)(x - y)}{x + y + x - y} = \frac{2(x^2 - y^2)}{2x}$   
=  $\frac{x^2 - y^2}{x}$  km/hr

34. Ans.(B)

The distance of 4 km by boat in the direction of the stream is covered in 15 min.

$$\therefore speed = \frac{\frac{4}{15}}{\frac{60}{60}} = \frac{16km}{hr}$$

According to question – speed of boat in opposite direction of stream

 $=\frac{16}{2}=8km/hr$ 

Remaining distance = 12 - 4 = 8km

Time taken to cover a distance of 8 km at a speed of 8 km/hr =  $\frac{8}{8}$  = 1 hr

$$\therefore \text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$
  
Average speed =  $\frac{12}{\frac{15}{60} + 1} = \frac{12 \times 60}{75}$ 

$$=\frac{48}{5}=9.6 km/hr$$

# 35. Ans.(B)

speed of boat in opposite direction of stream = (B - R) km/hr and speed of boat in direction of stream = (B + R) km/ hr By question -(B - R) ×  $8\frac{48}{60}$  = (B + R)4 (B - R) ×  $8\frac{48}{5}$  = (B + R)4 (B - R) ×  $\frac{44}{5}$  = (B + R)4 44B - 44R = 20B + 20R 24B = 64R  $\frac{B}{R} = \frac{64}{24} = \frac{8}{3}$ B: R = 8:3 Appendix 200

## 36. Ans.(A)

Let Certain distance = d speed of boat in opposite direction of stream =  $V_A = \frac{d}{4t}$ 

speed of boat in direction of stream =  $V_B = \frac{d}{t}$  $\therefore$  According to question –

$$\frac{V_B}{V_A} = \frac{\frac{a}{t}}{\frac{d}{4t}} = \frac{4}{1}$$
$$\therefore V_B: V_A = 4:1$$

37. Ans.(A)

let speed of stream = R km/h speed of boat = B km/ h By question –

$$(B + R)4 = (B - R)6$$
  

$$4B + 4R = 6B - 6R$$
  

$$10R = 2B$$
  

$$\frac{R}{B} = \frac{2}{10}$$
  

$$R:B = 1:5$$

38. Ans.(D)

speed of boat in direction of stream = (x + y) km/ h then speed of boat in opposite direction of

stream = (x - y) km/ h Distance = Speed × Time (x + y)t = (x - y)2tx + y = 2x - 2yx = 3y Intended ratio =  $\frac{x}{y}:\frac{3}{1} = 3:1$ 

# 39. Ans.(B)

let distance covered = z km speed of boat in still water = x + y km/hr speed of boat in opposite direction of stream = x - y km/hr According to question - $\frac{z}{x-y} - \frac{z}{x+y} = t$  $z \left[ \frac{x+y-x+y}{(x-y)(x+y)} \right] = t$  $z \left[ \frac{2y}{x^2-y^2} \right] = t$  $z = \frac{(x^2-y^2)t}{2y}$  km

# 21. (Mensuration)

1. The three sides of a triangle are 5cm, 12cm and 13cm A small triangle is formed by connecting the midpoint of the three sides of this triangle. What is the area of the small triangle?

**RRB Group – D – 16/10/2018 (Shift – I)** (A) 15 (B) 30 (C) 7.5 (D) 32.5

2. What is the cost of leveling a triangular portion of land with sides 72m, 30m and 78m respectively at the rate of 20 paise per square meter?

RRB Group – D – 17/11/2022 (Shift – II)

(A) rs. 200	<b>(B)</b> rs. 210
( <b>C)</b> rs. 216	<b>(D)</b> rs. 220

**3**. The sides of the triangle are 16 meters, 12 meters and 20 meters respectively. Find the length of its longest side.

	RRB Group -	- D – 09/10/2018 (Shift – I)
(A)	9.2 meter	(B) 9.6 meter
(C)	9.4 meter	(D) 9.8 meter

4. Find the area of a triangle whose sides are 7.8 cm, 5 cm and 11.2 cm

RRB Gro	oup 'D' 07/12/2018 (Shift – I)
(A) 18cm <sup>2</sup>	<b>(B)</b> 16.8cm <sup>2</sup>
(C) 17.4cm <sup>2</sup>	<b>(D)</b> 12 cm <sup>2</sup>

5. The triangle MNP is identical to the triangle DEF. The area of triangle MNP is 1024 cm<sup>2</sup> and the area of triangle DEF is 144 cm<sup>2</sup>. If the longest side of the triangle MNP is 64 cm, then what is the longest side of the triangle DEF?

 RRB Group - D - 01/09/2022 (Shift - I)

 (A) 32cm
 (B) 28cm

 (C) 20cm
 (D) 24cm

6. The difference between the height and the base of a right triangle is 7cm and the area of that triangle is 30 sq cm Find the perimeter of the triangle.

 RRB Group - D - 05/11/2018 (Shift - II)

 (A) 13 cm
 (B) 12 cm

 (C) 30 cm
 (D) 25 cm

7. The numerical value of the area of an equilateral triangle is twice the numerical value of its perimeter. What is the area of the above triangle?

**RRB Group – D – 12/12/2018 (Shift – I)** (A)  $48 \text{ cm}^2$  (B)  $24\sqrt{3}cm^2$ (C)  $48\sqrt{3}cm^2$  (D)  $36\sqrt{3}cm^2$ 

8. From the three vertices of a larger triangle, three smaller triangles are marked such that each side of each smaller triangle is 2/5 of the side of its adjacent larger triangle. The ratio of the area of the remaining part of the larger triangle to the total area of the three smaller triangles is

RRB Gro	up – D – 31/10/2018 (Shift – I)
(A) 12: 13	<b>(B)</b> 1: 5
(C) 12: 25	<b>(D)</b> 4: 25

**9.** The area of a rhombus is 216 cm<sup>2</sup> and the length of one of its diagonals is 24 cm. What is the length of each side of rhombus?

RRB Group	– D – 20/09/2022	(Shift – II)
(A) 14 cm	<b>(B)</b> 13 cm	
<b>(C)</b> 15 cm	<b>(D)</b> 12 cm	

- 10. What is the area of a piece of metal, which is in the form of a parallelogram, which has a base of 20 m and a height of 5.4m? RRB Group - D - 20/09/2022 (Shift - II) (A) 108 sq.m. (B) 801 sq.m. (C) 180 sq.m. (D) 810 sq.m.
- **11.** The length of each side of a rhombus is 5 m and the length of one of its diagonals is 2.8m. Find the area of this rhombus?

RRB Group –	· D – 20/09/2022 (	Shift – II)
(A) 6.72m <sup>2</sup>	<b>(B)</b> 13.44 m <sup>2</sup>	2
<b>(C)</b> 14 m <sup>2</sup>	<b>(D)</b> 7 m <sup>2</sup>	

**12.** One side of a rhombus is 37 cm and its area is 840 cm<sup>2</sup>. Find the sum of the lengths of its diagonals.

 RRB Group – D – 26/11/2022 (Shift – I)

 (A) 84 cm
 (B) 94 cm

 (C) 42 cm
 (D) 47 cm

**13.** The perimeter of a rhombus is 56 cm and the length of one of its diagonal is 26 cm, find the length of the second diagonal of the rhombus.

RRB Group	– D – 10/10/2018 (Shift – II)
<b>(A)</b> 6√7 cm	<b>(B)</b> 6√2 cm
( <b>C)</b> 6√3 cm	<b>(D)</b> 6√5 cm

**14.** The sides of the parallelogram are 12 m and 17 m respectively. If the length of one of the diagonal is 25 m, then the area of that parallelogram is:

RRB Group – D – 16/10/2018 (Shift – III)(A)  $190 \text{ m}^2$ (B)  $150 \text{ m}^2$ (C)  $160 \text{ m}^2$ (D)  $180 \text{ m}^2$ 

**15.** The diagonals of a rhombus are 12 cm and 16 cm. Find the area of the shape formed by joining the midpoints of all the sides of the rhombus.

**RRB Group – D – 25/11/2022 (Shift – I)** (A) 192 cm<sup>2</sup> (B) 64 cm<sup>2</sup> (C) 48 cm<sup>2</sup> (D) 96 cm<sup>2</sup>

**16.** The area of a rhombus is 216 m<sup>2</sup> and its diagonal has a length of 24m. The length of each side of the rhombus will be:

 RRB Group – D – 25/11/2022 (Shift – III)

 (A) 12 m
 (B) 18 m

 (C) 15 m
 (D) 30 m

**17.** Find the distance between two parallel sides of a trapezium if the area of the trapezium is 150 square meters, and the lengths of the two parallel sides are 10 meters and 15 meters, respectively.

 RRB Group – D – 22/10/2018 (Shift – III)

 (A) 12 m
 (B) 14 m

 (C) 10 m
 (D) 15 m

**18.** When the area of a rhombus is 324 cm<sup>2</sup> and the length of one of its diagonals is 36 cm. What is the length of each side of this rhombus?

RRB Group D - 05 / 12 / 2018 (Shift - III)(A) 10 cm(B)  $18\sqrt{5}$  cm(C)  $9\sqrt{5}$  cm(D)  $8\sqrt{6}$  cm

**19**. One side of the rhombus and one of the two diagonals have a length of 14 cm. Area of rhombus is - - - cm<sup>2</sup>.

RRB Group – D – 03/12/2018 (Shift – III)

<b>(A)</b> 49 √3	<b>(B)</b> 196 √3
( <b>C)</b> 98 √3	<b>(D)</b> 98

**20**. The height of an equilateral triangle is equal to the diagonal of a square. Find the ratio of the area of the triangle and the square.

RRB Grou	ıp – D – 03/12/2018 (Shift – III)
<b>(A)</b> √3: 2	<b>(B)</b> 2 : √3
<b>(C)</b> 3: 4	<b>(D)</b> √3 : √2

**21.** A rhombus was formed from a rectangle with sides 12 cm and 8 cm, whose perimeter was equal to the perimeter of the rectangle and had an angle of 120°. What was the area of rhombus?

RRB Group	– D – 01/10/2018 (Shift – I)
<b>(A)</b> 25√3 cm <sup>2</sup>	<b>(B)</b> 50√3 cm²
<b>(C)</b> 40√3 cm <sup>2</sup>	(D) $\frac{100\sqrt{3}}{3}$ cm <sup>2</sup>

22. The cost of installing a paved floor in a circular room is Rs.1540 at the rate of Rs.10 per sqm. The cost of fencing on this at Rs. 6 per meter will be –

RRB Group	– D – 24/10/2018 (Shift – I)
(A) Rs. 260	<b>(B)</b> Rs. 264
(C) Rs. 250	(D) Rs. 265

**23**. ABCD is a quadrilateral inscribed in a circle (radius = r). The bisectors of the angles DAB and BCD intersect the circle at X and Y respectively. What is the length of the straight line XY?

RRB Group – D – 19/11/2022 (Shift – I)

(A) 2r	<b>(B)</b> (r + 2)
(C) $\frac{\pi r^2}{2}$	(D) $\pi r^2$

24. The circumference of a circle is 15m more than its diameter. Find the radius of the circle

 RRB Group - D - 11 / 10 / 2018 (Shift - II)

 (A) 7 cm
 (B) 3.5cm

 (C) 4 cm
 (D) 8 cm

25. The inner and outer circumference of the spherical ring are 22cm and 44 cm respectively. The thickness of the ring is –
 RRB Group – D – 16/10/2018 (Shift – III)
 (A) 5.5 cm

(A) 5.5 GH	( <b>b)</b> 1.5 GH
<b>(C)</b> 3.5 cm	(D) 2.5 cm

**26**. An outer circular path is built around a circular garden. If the outer and inner perimeter of the path are 220m and 44m respectively, find the area of the path.

RRB Group - D - 26/11/2022 (Shift - III)

(A) 3960 m <sup>2</sup>	<b>(B)</b> 3696 m <sup>2</sup>
(C) 3069 m <sup>2</sup>	(D) 3096 m <sup>2</sup>

**27.** The area of an equilateral triangle inscribed in a circle is  $9\sqrt{3}$  cm<sup>2</sup>. What is the area of the circle?

RRB Group – D – 01/09/2022 (Shift – I)

<b>(A)</b> 16 π	<b>(B)</b> 12 √3
( <b>C)</b> 15√3	<b>(D)</b> 12 π

**28**. A races ground is in the form of a ring whose internal circumference is 88m and outer circumference is 154 m. What is the width of the ground?

 RRB Group – D – 03/12/2018 (Shift – II)

 (A) 12 m
 (B) 15 m

 (C) 16.5 m
 (D) 10.5m

- 29. The diameter of a semi-circular region is 14 m, so what will be the perimeter of that area? RRB Group D 03/12/2018 (Shift III) (A) 44 m (B) 22 m (C) 36m (D) 58m
- **30**. If the wheel of a car has a diameter of 56 cm, how many times will the wheel of the car rotate during a journey of 88 km?

 RRB Group - D - 15/10/2018 (Shift - III)

 (A) 500
 (B) 50, 000

 (C) 5, 000
 (D) 5, 00, 000

31. Kazipet, which has a population of 4000, requires 9 liters of water per person per day. It has a cuboid tank measuring 15m × 8m × 6m. If the tank is full of water, how long will the water in this tank last?

RRB Group-D - 19/11/2022 (Shift-I)		
<b>(A)</b> 20 days	<b>(B)</b> 25 days	
(C) 10 days	<b>(D)</b> 30 days	

**32.** The sum of the lengths of the cube's cores is 3/5 of the perimeter of the square. If the numerical value of the volume of the cube is equal to the numerical value of the area of the square, then the perimeter of the square is –

 RRB Group – D – 19/11/2022 (Shift – II)

 (A) 500 unit
 (B) 360 unit

 (C) 480 unit
 (D) 300 unit

**33.** The center area of a square room of 10 m sides is covered with square tank carpet and the remaining floor is covered with oil cloth. The price of carpet and oil cloth respectively is Rs. 15 and Rs. 6.50 per square meter, and

their total value is Rs. Is 1338.50. What will be the width of the oil cloth border?

RRB Gro	oup – D – 08/10/2018 (Shift – II)
<b>(A)</b> 2m	<b>(B)</b> 5m
<b>(C)</b> 1m	<b>(D)</b> 1/2m

**34**. Four equal circles are formed on the four sides of a square in such a way that each circle touches two other circles. What will be the area outside the perimeter of the circles towards the center of the square? If the measure of each side of the square is 28 cm.

RRB Group	o – D – 30/10/2018 (Shift – II)
(A) 168 cm <sup>2</sup>	<b>(B)</b> 40 cm <sup>2</sup>
(C) 42 cm <sup>2</sup>	<b>(D)</b> 32 cm <sup>2</sup>

**35.** The area of a square ground is 31684 m on which wire is to be tied at 1, 2, 3, 4 m height from the ground. If the required length for each wire is 5% more than the perimeter of the field, what length of wire will be required?

RRB Group -	- D – 22/11/2022 (Shift – III)
(A) 2 <b>09</b> 0 m	<b>(B)</b> 2099 m
(C) 29 <b>09</b> m	<b>(D)</b> 2990.4 m

**36.** A 0.5 cm line segment was cut from each corner of a square with an edge of 3 cm, the severed portion having a vertex. What is the perimeter and the area (respectively) of the octagon thus formed?

RRB Group – D – 10/10/2018 (Shift – I)

- (A)  $10\sqrt{2}$  cm and 8 cm<sup>2</sup>
- (B) 8 cm and 8 cm<sup>2</sup>
- (C)  $8\sqrt{2}$  cm and  $8 \text{ cm}^2$
- **(D)**  $(8 + 2\sqrt{2})$  cm and 8.5 cm<sup>2</sup>
- **37.** The numerical value of the area of a square is equal to half the numerical value of each of its diagonals. What is the numerical value of diagonal?

RRB Group – D – 06/12/2018 (Shift – II) (A) 1 (B)  $\sqrt{2}$ (C) 2 (D)  $\frac{\sqrt{2}}{2}$ 

**38.** The edge of a square farm is 110 meters. Two routes, 5 meters wide, keep its edges in the center, passing parallel to edges, cutting each other. Area of the roads is –

 RRB Group - D - 27/11/2018 (Shift - III)

 (A) 1000 meter<sup>2</sup>
 (B) 1100 meter<sup>2</sup>

 (C) 1075 meter<sup>2</sup>
 (D) 975 meter<sup>2</sup>

**39.** A rectangular park measuring 30 m × 22 m has two pavements 2 m wide. One north to south and the other east to west, and they

both cut each other in the middle of the park. If the cost of construction of the road is Rs. 15 per square meter, then calculate the total cost of construction of the road.

RRB Group	– D – 12/11/2018 (Shift – I)
(A) rs. 1545	<b>(B)</b> rs. 1560
<b>(C)</b> rs. 1490	<b>(D)</b> rs. 1500

**40**. The sum of the lengths of the sides of a cube is equal to twice the perimeter of a square. If the numerical value of the volume of the cube is equal to the numerical value of the area of the square, then the perimeter of the square will be:

RRB Group – D – 12/11/2018 (Shift – III)(A) 10.5 unit(B) 27 unit(C) 13.5 unit(D) 12.5 unit

**41**. Srinesh wants to renovate his office floor which is made of 2,800 marble tiles. Each tile is 3 cm long and 5 cm wide. Calculate the total cost of polishing the floor at the rate of Rs.25 per sqm.

RRB Grou	p – D – 16/10/2018 (Shift – I)
(A) rs.100	<b>(B)</b> rs.115
(C) rs. 125	<b>(D)</b> rs.105

**42**. The sides of the rectangular plot of land are given 35 m and 25 m in the nearest integer. What is the maximum value of the perimeter of a rectangular plot?

RRB Group	0 – D – 29/10/2018 (Shift – III)
<b>A)</b> 60 m	<b>(B)</b> 122 m
<b>C)</b> 120 m	<b>(D)</b> 61m

**43**. The area of the rectangle is 12.46 m<sup>2</sup>. If the length of the rectangle is 3.5 m, find the width (in m) of the rectangle.

RRB Gro	up – D – 10/10/2018 (Shift – I)
(A) 3.56	<b>(B)</b> 3.58
(C) 3.62	<b>(D)</b> 3.54

**44**. The dimensions of the rectangular plot of land, in the nearest integer, are 28 m and 22 m. What is the minimum possible perimeter of a rectangular plot?

 RRB Group – D – 11/10/2018 (Shift – III)

 (A) 49 m
 (B) 100 m

 (C) 50 m
 (D) 98 m

**45**. The ratio of length and width of a rectangular field is 4: 3. If the area of the field is 1452 m<sup>2</sup>, find the cost of constructing boundary boundary of the field at the rate of Rs.12 per meter.

RRB Group - D - 22/10/2018 (Shift - II)

<b>(A)</b> rs. 1, 858	<b>(B)</b> rs.1, 848
<b>(C)</b> rs. 1, 845	<b>(D)</b> rs. 1, 868

46. The rectangular field of a farmer is 250 m long and 380.5m wide. He expects to sow different types of rice, which will yield 30 quintals per hectare and it can be sell at Rs. 620 per quintal. Calculate his expected income? RRB Group – D – 30/10/2018 (Shift – III)

(A) rs. 716932.5	(B) rs. 179632.5
(C) rs. 176923.5	(D) rs. 176932.5

**47**. A section of a square phulwari is 1 m 80 cm long. It is extended by digging a 20 cm wide border from all sides. Find the area of extended phulwari.

RRB Group ·	– D – 30/10/2018 (Shift – III)
(A) 4.81 m <sup>2</sup>	<b>(B)</b> 4.82 m <sup>2</sup>
(C) 4.84 m <sup>2</sup>	<b>(D)</b> 4.8 m <sup>2</sup>

**48**. The above figure gives five congruent rectangles, each of which has a large side x m. If the total area of the figure is 6, 000 square meters, what will be the value of x?



**49**. A carpet is 5 m long and 1.2 m wide. There is a 30 cm wide printed border on its four sides. What will be the cost of printing the border at the rate of Rs.225 per square meter?

<b>RRB Group</b> -	- D – 01/09/2022	(Shift – III)
rs. 854	<b>(B)</b> rs. 1. 0	27

- (A) rs. 854 (B) rs. 1, 027 (C) rs.756 (D) rs. 902
- **50**. There are five congruent rectangles in the above rectangle. In which each has a large side x m. If the total area of the figure is 7500 m, what will be the value of x?



**51**. The area of a rectangle is  $2x^2 + 3x + 1$  and its length is 2x + 1. Find its width.

RRB Group - D - 05/10/2018 (Shift - II) (A) 2 x + 2 (B) x + 1

(~) ~ ~ ~ ~	
( <b>C</b> ) x − 2	<b>(D)</b> x – 1

**52.** A 150 cm wide carpet is to be laid on the floor of a rectangular hall. If the hall is 20 m long and 18 m wide, what will be the required cost of carpet at the rate of Rs. 12 per meter?

RRB Group –	D – 05/10/2018 (Shift – III)
(A) Rs. 3, 280	<b>(B)</b> Rs. 2, 280
<b>(C)</b> Rs. 2, 880	<b>(D)</b> Rs. 2, 480

**53.** The sum of the lengths of the sides of a cube is equal to one-eighth of the perimeter of the square. If the numerical value of the volume of the cube is equal to the numerical value of the area of the square, then what will be the length of the core of the cube?

RRB Group	- D - 26/11/2022 (Shift - I)
(A) 288 units	<b>(B)</b> 366 units
(C) 432 units	<b>(D)</b> 576 units

**54**. If the sides of a cube are doubled, then its volume increases by - - - - times its actual volume.

RRB Group – D – 10/10/2018 (Shift – II) (A) 3 (B) 4 (C) 8 (D) 6

**55**. The length of the edge of a cube is 80 cm. A circle is painted yellow on each surface of that cube. If the area covered by the circle is as large as possible, what will be the total area of not painted surface of the cube?

RRB Group'D'	' 07/12/2018 (Shift – I)
(A) 8, 200.14cm <sup>2</sup>	<b>(B)</b> 8, 528.57 cm <sup>2</sup>
( <b>C</b> ) 8, 228.57 cm <sup>2</sup>	<b>(D)</b> 8, 127.14 cm <sup>2</sup>

**56**. The length, width and height of a orthogonal parallel hexahedron metal are 3.6 m, 2.5 m and 1.8 m, respectively. This metal was melted to form several cubes, each measuring a side of 0.3 m. How many such cubes were made?

 RRB Group - D - 11/12/2018 (Shift - III)

 (A) 60
 (B) 6000

 (C) 600
 (D) 60, 000

**57**. By halving the sides of a cube, its volume will decrease by - - - - - times.

 RRB Group - D - 11/10/2018 (Shift - I)

 (A) 1/4
 (B) 1/8

 (C) 1/3
 (D) 1/2

**58.** If the edge of a cube is increased by 1 cm, the volume will increase by 169 cubic cm. What is the length of each edge of the cube?

RRB Gro	oup – D – 05/10/2018 (Shift – III)
(A) 8 cm	<b>(B)</b> 7 cm
<b>(C)</b> 6 cm	<b>(D)</b> 9 cm

**59.** The length, width and height of a room are in the ratio 3: 3: 4. If the length is doubled, the width is two-thirds and the height is halved, by what percentage will the cost of painting the four walls of the room be reduced?

RRB Gr	oup – D – 12/11/2018 (Shift – I)
<b>(A)</b> 30 <sup>3</sup> / <sub>4</sub>	<b>(B)</b> 33 <sup>1</sup> / <sub>3</sub>
<b>(C)</b> 32	( <b>D</b> ) $28\frac{1}{4}$

**60.** A square of 0.25 cm<sup>2</sup> area is cut from each corner of a square plate with each side 7 cm. The remaining part is made with a cut to form a cuboid. The volume of this open-top cuboid will be ......

RRB Grou	p – D – 19/11/2022 (Shift – I)
(A) 20 cm <sup>2</sup>	<b>(B)</b> 16 cm <sup>2</sup>
(C) 21 cm <sup>2</sup>	(D) 18 cm <sup>2</sup>

**61.** The measurement of a rectangular box is in the ratio 2: 3: 5, if the total surface area is 6200 square cm, find the dimensions of the cuboid?

RRB Group – D – 19/11/2022 (Shift – III) (A)  $20 \text{ cm} \times 40 \text{ cm} \times 50 \text{ cm}$ (B)  $20 \text{ cm} \times 30 \text{ cm} \times 40 \text{ cm}$ (C)  $30 \text{ cm} \times 40 \text{ cm} \times 50 \text{ cm}$ (D)  $20 \text{ cm} \times 30 \text{ cm} \times 50 \text{ cm}$ 

**62.** Two cubes of 343 cubic cm are added at their edges. What will be the total surface area of the cuboid when the cubes are added?

RRB Group –	D – 08/10/2018 (Shift – II)
(A) 436 sq cm	<b>(B)</b> 466 sq cm
<b>(C)</b> 346 sq cm	<b>(D)</b> 490 sq cm

**63**. A water tank is 5m long, 3m wide and 1m deep. How much liter of water can be filled in it?

RRB Group -	- D – 12/10/2018 (Shift – III)
(A) 810 L	<b>(B)</b> 15, 000L
( <b>C)</b> 729L	<b>(D)</b> 720 L

RRB Group - D - 24/11/2022 (Shift - I)

( <b>A)</b> 184 m <sup>3</sup>	<b>(B)</b> √3024m <sup>3</sup>
( <b>C)</b> 92 m <sup>3</sup>	<b>(D)</b> 160 m <sup>3</sup>

65. From a square plate with each side 9 cm, square pieces with a 0.25 cm<sup>2</sup> area are cut from all its corners and the remaining plate is joined with the cut edges to form an open-top cuboid. The volume of this open-top cuboid will be ..... cm<sup>3</sup>.

RRB Group - D - 01/09/2022(Shift - III)

<b>A)</b> 34	<b>(B)</b> 30
<b>C)</b> 36	(D) 32

66. Two cubes with an area of 216 cm<sup>3</sup> are interlinked. What will be the total surface area of the cuboid formed on addition?

> RRB Group - D - 08/10/2018 (Shift - III) (A) 360 cm<sup>2</sup> (B) 380 cm}<sup>2</sup> (C) 330 cm<sup>2</sup> (D) 340 cm<sup>2</sup>

67. To measure the volume of an irregularly shaped stone, Peter placed the stone in a 5cm radius box filled with water. If the water level in the box increases from 10 cm to 17 cm, what is the volume of the stone?

RRB Group – D – 25/10/2018 (Shift – II) (A) 500 cm<sup>3</sup> (B) 450 cm<sup>3</sup> (C) 550 cm<sup>3</sup> **(D)** 400 cm<sup>3</sup>

68. A 42 cm diameter solid metal sphere is melted and a wire is formed that has a diameter of 7 mm. Find the length of the wire.

RRB Group - D - 28/11/2022 (Shift - III) (A) 1008 meter **(B)** 1008 cm (C) 2016 cm (D) 2016 meter

69. The diameters of the hemispheres connected at both ends of the cylinder with a height of 10 cm and a diameter of 7 cm are the same. Find the surface area of this solid figure.

RRB Group - D - 27/11/2022 (Shift - III)

(A) 374 cm <sup>2</sup>	<b>(B)</b> 1056 cm
(C) 594 cm <sup>2</sup>	(D) 836 cm <sup>2</sup>

70. The outer and inner diameters of a hollow sphere are 12 cm and 8 cm, respectively. It was melted and shaped into a cylinder, whose base diameter is 16 cm. What will be the height of the cylinder?

RRB Group – D – 01/09/2022 (Shift – I)

<b>(A)</b> 3.33 cm	<b>(B)</b> 4.33 cm
( <b>C)</b> 3.17 cm	<b>(D)</b> 4.17 cm

71. The capacitance of a cylindrical tank is 20790 m<sup>3</sup>. If its radius is 10.5 m, find its depth?

RRB Grou	ıp – D – 03/12/2018 (Shift - III)
<b>(A)</b> 60m	<b>(B)</b> 120 m
<b>(C)</b> 30 m	<b>(D)</b> 75 m

72. The radius of a sphere is three times the radius of the base of a cylinder. The height of the cylinder is nine times the radius of its base. If numerical values of the total surface area of the cylinder and the volume of the sphere are equal, then what is the height of the cylinder?

RRB Group - D - 10/12/2018 (Shift - I) (A) 3 unit (B) 4.5 unit (C) 5 unit (D) 2.25 unit

73. The rectangular aluminum sheet of 22 m and 10 m is folded cylindrical in such a way that its short side becomes its length. What will be the volume of the cylinder made in this way?

RRB Group - D - 08/10/2018 (Shift - III) (B) 370 m<sup>3</sup> (A) 385 m<sup>3</sup> (C) 380 m<sup>3</sup> (D) 375 m<sup>3</sup>

74. The height and slant height of a Elliptical cone are 24 cm and 25 cm respectively. Assuming the value of  $\pi$  to be **22**/7, find the curved surface area of the cone.

> RRB Group - D - 17/11/2022 (Shift - II) (A) 572 cm<sup>2</sup> (B) 528 cm<sup>2</sup> (C) 539 cm<sup>2</sup> **(D)** 550 cm<sup>2</sup>

75. The diameter and slant height of the conical tent are 16m and 5.6m respectively. If the width is to be kept 4m, how much fabric will be required for the construction of the tent?

RRB Group	– D – 24/11/2022 (Shift – I)
( <b>A)</b> 35 m	<b>(B)</b> 32 m
( <b>C)</b> 32.5 m	<b>(D)</b> 35.2 m

76. The curve surface area of cone X is five times the curve surface area of cone Y. The slant height of cone Y is five times the slant height of cone X. What will be the ratio of the area of base of cone X and cone Y:

	RRB Group – D –	01/09/2022	(Shift - III)
A)	5: 1	<b>(B)</b> 125: 1	
C)	625: 1	(D) 25: 1	

77. The slant height and diameter of a cone are 15 cm and 28 cm respectively. Volume of the cone is:

RRB Group - D - 04/12/2018 (Shift - III)

(A) $\frac{616}{3}\sqrt{29}cm^3$	(B) $\frac{308}{3}\sqrt{43}cm^3$
(C) $\frac{616}{3}\sqrt{43}cm^3$	(D) $\frac{308}{3}\sqrt{29}cm^3$

**78**. A solid round metal ball of diameter 36 cm is melted, and small solid cones 12 cm in diameter and 12 cm high are made. What is the number of cones made using this molten metal?

 RRB Group – D – 11/12/2018 (Shift – III)

 (A) 52 cones
 (B) 60 cones

 (C) 48 cones
 (D) 54 cones

**79**. A tent is such that its lower part is like a cylinder of 24 m height, which is 126 m in diameter. Its top is cone-like with a base of the same diameter of 126 m and is 80 m slant high. Its canvas is 8 m wide. Calculate the length of the canvas needed to make the tent.

RRB Grou	o – D – 10/12/2018 (Shift – I)
(A) 3296 m	<b>(B)</b> 3020m
<b>(C)</b> 3168 m	<b>(D)</b> 3190m

80. The following structure is formed by connecting two vertical cones with their bases. The radius of the base of each is 5 cm. And the total length of this structure is 24 cm. What will be the total volume of this structure in cubic centimeters?



**81**. A solid cylinder made of glass is 1 m high and its base diameter is 1.5 m wide. It is melted and turned into a solid sphere. The diameter of the sphere is:

 RRB Group - D - 30/10/2018 (Shift - I)

 (A) 1.5m
 (B) 1 m

 (C) 0.5 m
 (D) 2.5m

82. How many balls of radius 1 cm can be made from a steel sphere with a radius of 6 cm?
6 cm की त्रिज्या वाले स्टील के एक गोले से 1 cm त्रिज्या वाली कितनी गेंदे बनायी जा सकती है?

RRB Group – D – 28/11/2022 (Shift – I)

<b>(A)</b> 64	<b>(B)</b> 216
( <b>C)</b> 27	<b>(D)</b> 126

**83.** The base of the pyramid is a rectangle, whose length and width are 16 cm and 12 cm respectively. If the length of all the lateral edges passing through the top of a right rectangular pyramid is 26 cm, find the volume of the pyramid in cubic centimeters.

RRB Grou	up – D – 19/11/2022 (Shift – I)
<b>A)</b> 1536	<b>(B)</b> 1024
<b>C)</b> 718	<b>(D)</b> 2072

**84.** The ratio of the bases of an right triangular prism is 8: 15: 17. If the height of the prism is 21m and the sum of the area of the lateral surfaces is 840 cm<sup>2</sup>, find the volume of the prism in cubic centimeters?

 RRB Group – D – 12/10/2018 (Shift – II)

 (A) 1200
 (B) 1260

 (C) 1280
 (D) 1240

**85**. A right-angled spherical cylinder jar with a diameter of 14 cm has some water. If a spherical ball with a diameter of 5.6 cm is thrown into water and immersed completely in water, the water will rise to approximately what height in the jar?

RRB Group – D –	19/11/2022	(Shift -	III)
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(A) 1.2 cm	<b>(B)</b> 1.1 cm
( <b>C)</b> 9.0 cm	<b>(D)</b> 1.0 cm

**86**. How many bricks of size 20cm × 10 cm would be required for a 16 m long and 10 m wide hall floor?

RRB Group – D – 20/09/2022		(Shift – III)
<b>(A)</b> 8400	<b>(B)</b> 9000	
(C) 8500	<b>(D)</b> 8000	

**87**. If the perimeter of a circular plot is equal to the perimeter of a square plot, what will be the ratio of their areas?

RRB Group – D –	22/11/2022 (Shift – I)
( <b>A)</b> 6: 11	<b>(B)</b> 14: 11
( <b>C)</b> 12: 11	<b>(D)</b> 7: 11

**88**. A brick measures 20 cm × 12 cm × 8 cm. How many bricks will be required to build a 16.8 m high, 2.5 m wide and 12 cm thick wall?

# RRB Group – D – 26/11/2022 (Shift – I)

<b>(A)</b> 2652	<b>(B)</b> 6252
( <b>C)</b> 5262	<b>(D)</b> 2625

**89**. A wooden crate, which is 1.8 m long, 1.5 m wide and 1.2 m high, is filled with iron cubes that are 6 cm wide. Find the number of iron cubes that can fit in the crate.

RRB Group – D – 28/11/2022 (Shift – II)

<b>(A)</b> 13, 500	<b>(B)</b> 15, 000
<b>(C)</b> 14, 500	<b>(D)</b> 14, 000

**90**. The volume of an elliptical cone, whose radius of the base is one-third of its height, and is similar to the volume of a semi-circle. Then the ratio of the radius of the cone and the hemisphere is.

## RRB Group – D – 28/11/2022 (Shift – II)

<b>(A)</b> 2: 3	<b>(B)</b> <sup>3</sup> √2: <sup>3</sup> √3
( <b>C</b> ) <sup>3</sup> √3: <sup>3</sup> √2	<b>(D)</b> <sup>3</sup> √2:1

**91**. The upper part of the rocket is shaped like an elliptical cone with a height of 3m while its lower is cylindrical with a radius of 3m and height of 10m. The rocket's base is cut in a semicircular form from the inside to make room for the engine. Whose radius is also 3 m. Find the total volume of the rocket in cubic meters.

RRB Group – D – 29/10/2018 (Shift – III)(A)  $72 \pi$ (B)  $90 \pi$ (C)  $100 \pi$ (D)  $81 \pi$ 

**92**. What will be the ratio of the area of a hexagon and the area of a square with same perimeter?

RRB Group – D – 28/11/2022 (Shift – I)

<b>(A)</b> 2: 3	<b>(B)</b> 1:√3
<b>(C)</b> 4: 3 √3	<b>(D)</b> √3: 2

**93**. A company plans to pack spherical thin hollow balls in long circular cylinders, where there is no lid on either side of the box. If the ball and the box are made of the same material, then calculate the ratio of the material used in the sphere and the box.

RRB Group – D – 07/12/2018 (Shift – III) (A)  $\frac{\pi}{2}$  (B) 1 (C)  $\pi$  (D) 2  $\pi$ 

**94**. A tent is such that its lower part is like a cylinder of 12 m height, which is 112 m in diameter. Its apex is like a cone (cone) with a base of the same diameter of 112 m and is 60 m slant hight. His canvas is 4 m wide. Calculate the required length of canvas to make the tent.

RRB Group – I	D – 04/12/2018 (Shift – III)
) 3276 meter	(B) 3696 meter

- (A) 3276 meter (B) 3696 meter (C) 4686 meter (D) 4096 meter
- **95**. A solid sphere of radius 5 cm is melted to form the maximum possible number of solid balls of radius 1cm. If the balls are optimally placed in a cubicle box, what percentage of the space in the box will be unused?

RRB Group	– D – 01/12/2018 (Shift – II)
(A) 52.38%	<b>(B)</b> 55.76%
(C) 72.53%	<b>(D)</b> 47.62%

**96**. The area of the transverse cut of a pipe is 10.4 cm and water flows through it at a rate of 54 km/hr. If the pipe is always filled with 60% flow, then in 5 min find the volume (in liters) of water going through the pipe.

 RRB Group – D – 28/11/2018 (Shift – I)

 (A) 2808
 (B) 2008

 (C) 2010
 (D) 2101

**97**. The height of an equilateral triangle is equal to one third of the diagonal of a square. What is the ratio between the areas of the triangle and the square:

**RRB Group – D – 01/09/2022(Shift – III)** (A)  $\sqrt{3}:\sqrt{2}$  (B)  $2:9\sqrt{3}$ (C)  $3:4\sqrt{3}$  (D)  $\sqrt{3}:6$ 

**98**. If the ratio of the area of two squares is 1: 3, what will be the ratio of the perimeter of these squares?

RRB Gro	up – D – 16/11/2018 (Shift – III)
<b>(A)</b> 1: √3	<b>(B)</b> 1: 4
(C) 1: 3	<b>(D)</b> 1: 2

**99.** In the given figure, a rectangle is formed by cutting two pairs of equal isosceles triangles from the square ABCD. The total area of the severed part is 288m<sup>2</sup>. What will be the length of PR?

RRB Grou	p – D – 12/11/2018 (Shift – I)
<b>(A)</b> 24	<b>(B)</b> √288
( <b>C</b> ) √512	<b>(D)</b> 48

100. A wall 4.84m long and 3.1 m high is covered with 22 cm × 10 cm tiles. If the value of each tile is Rs. 1.50, find the total value of the tiles? RRB Group – D – 05/11/2018 (Shift – III)
(A) rs 1 025
(B) rs 1 023

<b>(A)</b> rs. 1, 025	<b>(B)</b> rs. 1, 023
<b>(C)</b> rs. 1, 022	<b>(D)</b> rs. 1, 020

**101.** A cylindrical container with no lid is to be made from a rectangular sheet of metal measuring  $2.2m \times 2.1$  m. The diameter and height of the containers to be made are the same. The cost of manufacturing a container is Rs. 50. If the diameter of the container is to be made 14 cm, find the total cost (in Rs) used to make the full container.

RRB Grou	p – D – 02/11/2018 (Shift – II)
<b>A)</b> 3, 000	<b>(B)</b> 5, 000
<b>C)</b> 3, 750	<b>(D)</b> 2, 500

102. The circumference of an equilateral hexagon is 72 cm. What is its area in cm<sup>2</sup>?
 RRB Group – D – 02/11/2018 (Shift – II)

ккь Group	D = D = 02/11/2016 (Shift =
<b>(A)</b> 144 √3	<b>(B)</b> 216 √3
<b>(C)</b> 108√3	<b>(D)</b> 36 √3

103. The 4 cows are tied on four corners of a 35m square area so that they can reach each other. Which part of the area is left to graze?
RRB Group - D - 12/11/2018 (Shift - II)
(A) 252.5 sq m
(B) 162.5 sq m

<b>(C)</b> 262.5 sq m	<b>(D)</b> 260.5	ō sq m	
In a right – angled	triangle, from	the base,	the

104. In a right – angled triangle, from the base, the length of prependicular is 4 cm and the hypotenuse is 4 cm larger, calculate the length of the hypotenuse. RRB RPF Constable 18/01/2019 (Shift – III)

(A) 12 cm (B) 10 cm (C) 20 cm (D) 8 cm

- 105.The vertex of an equilateral triangle is 15 cm<br/>What will be the area of this triangle?<br/>RRB RPF SI 11/01/2019 (Shift III)<br/>(A) 60 cm²<br/>(B)  $75\sqrt{3}cm^2$ <br/>(C) 90 cm²<br/>(D)  $60\sqrt{3}cm^2$
- **106**. If the ratio of the identical sides of two identical triangles is 2: 3, then what will be the ratio of their identical heights?

 RRB RPF SI – 06/01/2019 (Shift – II)

 (A) 2: 3
 (B) 3: 2

 (C) 4: 9
 (D) 16: 81

**107**. The length of the hypotenuse of a right triangle is 2 meters less than the two times of length of the shortest side. If the third side is 2 meters longer than the shortest side, then what is the length of the hypotenuse of the triangle?

 RRB RPF SI – 05/01/2019 (Shift – I)

 (A) 10 meter
 (B) 13 meter

 (C) 12 meter
 (D) 7 meter

108. The perimeter of a rectangle with dimensions 4cm and 5 cm is equal to the perimeter of an equilateral triangle. What will be the area of equilateral triangle?
 RRB RPF Constable – 18/01/2019(Shift – I)

<b>(A)</b> 9√3 <i>cm</i> <sup>2</sup>	<b>(B)</b> 3√3 <i>cm</i> <sup>2</sup>
( <b>C)</b> 6√3 <i>cm</i> <sup>2</sup>	( <b>D</b> ) $\frac{9}{4}\sqrt{3}cm^2$

- **109**. The perimeter of a rectangle with dimensions 4 cm and 2 cm is equal to the perimeter of an equilateral triangle. What will be the area of equilateral triangle? **RRB RPF Constable – 20/01/2019(Shift – II) (A)**  $4\sqrt{3}cm^2$  **(B)**  $6\sqrt{3}cm^2$ **(C)**  $\frac{9}{4}\sqrt{3}cm^2$  **(D)**  $2\sqrt{3}cm^2$
- 110. The base of a parallelogram is twice its height. If the area of a parallelogram is 392 square meters, what will be its height?
  RRB RPF Constable 22/01/2019 (Shift III)
  (A) 14 meter
  (B) 28 meter
  (C) 12 meter
  (D) 24 meter
- **111**. A quadrilateral has two sides 16 cm and 12 cm and the angle between them is 90°. Its other two sides are 25/2 cm each. The other three angles of the quadrilateral are not right angles. What is the area of the quadrilateral?
  - RRB RPF SI 10/01/2019 (Shift III)(A)  $202 \text{ m}^2$ (B)  $151 \text{ m}^2$ (C)  $193 \text{ m}^2$ (D)  $171 \text{ m}^2$
- **112**. If one side of a rhombus and one of the two diagonals are each 16 cm, then what is the area of the rhombus?

RRB RPF Constable 20/01/2019 (Shift – II)(A)  $64\sqrt{3}$ (B)  $256\sqrt{3}$ (C) 128(D)  $128\sqrt{3}$ 

**113.** The area of a circle is 616 square meters. Find its diameter. ( $\pi = 22/7$ )

RRB RPF SI – 13/01/2019 (Shift – III		
(A) 7 meter	<b>(B)</b> 14 meter	
(C) 28 meter	<b>(D)</b> 56 meter	

(-)	•
(C) 72 cm (D) 44 cm	

**115**. What will be the radius of the inner circle of a triangle whose lengths are 7cm, 24cm and 25cm?

RRB F	PF SI – 12/01/2019 (Shift – I)
(A) 4 cm	<b>(B)</b> 2.5 cm
( <b>C)</b> 3.5 cm	<b>(D)</b> 3 cm

- 116. The sum of the lengths of the sides of a cube is equal to four times the perimeter of a square. If one quarter of the numerical value of the volume of the cube is equal to the numerical value of the area of the square, then the length of the side of the square is:
  RRB RPF Constable –17/01/2019 (Shift III) (A) 27 units (B) 10.5 units (C) 9/4 units (D) 27/16 units
- **117.** The perimeter of one square is 32m and the other is 24m. Find the diagonal of the square whose area is equal to the area of both these squares.

RRB RPF SI – 16/01/2019 (Shift –		
<b>(A)</b> 2 √10 m	<b>(B)</b> 20m	
<b>(C)</b> 10 √4m	<b>(D)</b> 10 √2m	

**118.** Find the length in cm of the diagonal of a rectangle whose length is 9 cm and width is 5 cm.

RRB RPF SI – 10/01/2019 (Shift – II)(A)  $\sqrt{106}$ (B)  $\pm \sqrt{106}$ (C)  $2\sqrt{14}$ (D)  $\pm 2\sqrt{14}$ 

- 119. The difference in length and width of a rectangle is 6 meters. If its perimeter is 64 meters, find its area.
  RRB RPF Constable 19/01/2019 (Shift III) (A) 256 sq meter (B) 247 sq meter (C) 264 sq meter (D) 238 sq meter
- **120**. The diagonal of a rectangular closet floor is 7.5 feet. The small side of the closet is 4.5 feet. Find the area of the closet in square feet.

 RRB RPF SI – 05/01/2019 (Shift – II)

 (A) 27 feet<sup>2</sup>
 (B) 13.5 feet<sup>2</sup>

 (C) 37 feet<sup>2</sup>
 (D) 5.25 feet<sup>2</sup>

- 121.Find the length of the diagonal of a rectangle<br/>of 5 cm length and 6 cm width in cm.RRB RPF Constable24/01/2019 (Shift III)<br/>(A)  $\sqrt{61}$ <br/>(C)  $\sqrt{11}$ (A)  $\sqrt{61}$ <br/>(C)  $\sqrt{11}$ (B)  $\pm \sqrt{61}$ <br/>(D)  $\pm \sqrt{11}$
- **122.** In a rectangular park of 72 m × 48 m, 2 m wide two ways Nehru Road and Zu Park Road intersect each other at right angles to the

center of the park. Each path is parallel to one of the dimensions of the park. What will be the cost of constructing the route at the rate of Rs.150 per square meter?

RRB RPF	<sup>7</sup> SI – 12/01/2019 (Shift – I)
(A) rs. 35, 300	<b>(B)</b> rs. 35, 350
<b>(C)</b> rs. 35, 395	<b>(D)</b> rs. 35, 400

**123.** If the length of each side of a cube is increased three times, then its volume is equal to ----- the actual volume.

RRB RPF	SI – 11/01/2019 (Shift – I)
(A) Gets 9 times	(B) Gets 2 times
(C) Gets 3 times	(D) Gets 27 times

- 124. Find the volume of the cuboid whose length is 24 cm, width 18 cm and height 16 cm.
   RRB RPF Constable 20/01/2019 (Shift III) (A) 7142 m<sup>3</sup> (B) 5184 m<sup>3</sup>
   (C) 7089 m<sup>3</sup> (D) 6912 m<sup>3</sup>
- 125. The dimensions of a box are 80 cm 60 cm and 40 cm. How many square cm of fabric will be required to cover the box?
   RRB RPF SI 06/01/2019 (Shift II)
   (A) 10400 sq meter
   (B) 20800 sq meter
  - (C) 20400 sq meter (D) 20800 sq meter (D) 10200 sq meter
- 126. Find the volume of a cylinder whose radius is one-third of the radius of a circle with an area of 1386 cm, and the height is twice its radius. RRB RPF Constable 18/01/2019 (Shift III) (A) 3246 m<sup>3</sup> (B) 3562 m<sup>3</sup>
  (C) 2156 m<sup>3</sup> (D) 2584 m<sup>3</sup>
- 127. A solid cylindrical metal, 14 cm in diameter and 15 cm in height, is melted to form a solid wire, which is 60 m in length. Find the diameter of the wire.
  RRB RPF Constable 22/01/2019 (Shift II) (A) 0.7 cm (B) 14 cm (C) 3.5 cm (D) 35 cm
- **128.** Find the radius of the cylinder whose volume is 3850 cm<sup>3</sup> and height is 25 cm?

RRB RPF	<sup>-</sup> SI – 12/01/2019 (Shift – II)
<b>(A)</b> 7 cm	<b>(B)</b> 14 cm
<b>(C)</b> 3.5 cm	<b>(D)</b> 10.5 cm

**129**. Find the total surface area of the cone with slant height '2I' and radius 'r / 2'.

	RRB RPF SI – 11/01/201	9 (Shift – II)
<b>(A)</b> 2πrl	<b>(B)</b> πr[l +	-(r/4)]
(C) 2πr(	$(l + r)$ (D) $\pi r(l + r)$	- r)

**130**. Some circular cone-shaped chocolates were made from a circular solid chocolate of 6 cm radius. Both the radius and height of the base of this cone are 2 cm. The chocolates were placed in a  $12 \times 9$  (ie 12 rows and 9 columns) configuration in a square box. The height of the box is 2 cm. The box was filled with honey to keep the chocolates edible for a long time. The volume of honey in the box is what percent of the total volume?

R	RB RPF SI – 13/01/2019 (Shift – III)
(A) 73.81	<b>(B)</b> 75.46
(C) 70.45	<b>(D)</b> 71.23

- **131.** A solid cylinder, whose radius of base was 6 cm and height was 9 cm, is melted to form a solid ball. The radius of this sphere is - cm. **RRB RPF Constable 24/01/2019 (Shift – III)** (A)  $3\sqrt[3]{9}$  (B)  $4\sqrt[3]{3}$ (C)  $3\sqrt[3]{3}$  (D) 27
- How much material is wasted when a cone of 24 cm height and 8 cm radius is made from a solid cylinder of 6 cm radius and 6 cm height? RRB RPF SI – 16/01/2019 (Shift – II)
   (A) 57 8%
   (B) 37 5%

<b>(A)</b> 57.8%	<b>(B)</b> 37.5%
( <b>C</b> ) 52%	<b>(D)</b> 64%

**133**. The capacity to fill water in a drum is 0.6. When 38 liters of water is taken out, it remains 0.125 full. What will be the capacity (in liters) of the drum?

 RRB RPF Constable 19/01/2019 (Shift – III)

 (A) 40
 (B) 120

 (C) 80
 (D) 160

**134**. The ratio of length, width and height of a room is 5: 3: 2. If the length is doubled, the width is one-third and the height is halved, then what will be the percentage reduction in the expenditure on painting the four walls of the room?

 RRB RPF SI – 13/01/2019 (Shift – III)

 (A) 32
 (B) 28.75

 (C) 31.25
 (D) 30.75

**135**. The volume of a long circular cone, whose radius of the base is equal to 5/9 of its height, is equal to the volume of the sphere. The ratio of the radius of the cone and the sphere is:

RRE	3 RPF SI – 12/01/2019 (Shift – II)
<b>(A)</b> <sup>3</sup> √4: <sup>3</sup> √3	<b>(B)</b> <sup>3</sup> √4: <sup>3</sup> √2
<b>(C)</b> 1: 1	<b>(D)</b> <sup>3</sup> √60: 3

**136**. Three triangles are formed from the three corners of a larger triangle in such a way that each side of each smaller triangle is one quarter of the corresponding side of the larger triangle. What is the ratio between total area of the three smaller triangles and remaining area of the larger triangle?

RRB ALP	& Tec. (31 – 08 – 18 Shift – I)
(A) 3: 13	<b>(B)</b> 1: 5
(C) 3: 16	<b>(D)</b> 4: 15

**137**. If both equal angles of an isosceles triangle are twice the third angle, what is the measure of the third angle?

RRB AL	.P & Tec. (31 – 08 – 18 Shift – I)
<b>(A)</b> 90 <sup>0</sup>	<b>(B)</b> 72 <sup>0</sup>
(C) 45 <sup>0</sup>	<b>(D)</b> 36 <sup>0</sup>

**138**. Three small triangles are formed at the vertices of a larger triangle in such a way that each side of the smaller triangle is equal to one third of the length of the side of its own larger triangle. What will be the ratio of the sum of the areas of the three smaller triangles and the area of the larger triangle?

RRB AL	P & Tec. (21 – 08 – 18 Shift – I)
<b>(A)</b> 3: 1	<b>(B)</b> 1: 3
<b>(C)</b> 1: 9	<b>(D)</b> 1: 2

**139**. The side of an equilateral triangle ABC is 6 cm. If a circle of radius 1 cm is made with edges inside the triangle, then the triangle made up of the center points of the circle will be an equilateral triangle with the side of

RRB ALP &	& Tec. (14 – 08 – 18 Shift – III)
<b>(A)</b> 4 cm	<b>(B)</b> (6 − 2√3) cm
<b>(C)</b> 5 cm	<b>(D)</b> $(3 + \sqrt{3})$ cm

**140.** The area of a rhombus is 24 m<sup>2</sup> and the length of one of its diagonals is 8 m. What will be the length of each side of rhombus?

RRB ALP & Tec. (21 – 08 – 18 Shift – III)		
<b>(A)</b> 5 m	<b>(B)</b> 10 m	
<b>(C)</b> 4 m	<b>(D)</b> 6 m	

**141**. Find the length of one side of a rhombus whose area is 24 square centimeters and the sum of the lengths of its diagonals is 14 cm.

RRB ALP	& Tec. (17 - 08 - 18 Shift - II)
(A) 3 cm	<b>(B)</b> 6 cm
(C) 4 cm	<b>(D)</b> 5 cm

**142**. The length of each side of a rhombus is 25 m and the length of a diagonal is 14 m. What is the area of rhombus?

RRB ALP & Tec	. (14 – 08 – 18 Shift – III)
(A) 175 sq meter	(B) 336 sq meter
(C) 168 sq meter	(D) 350 sq meter

**143**. One side of a rhombus is 41 centimeters and its area is 720 square centimeters. What will be the sum of the lengths of its diagonals?

 RRB ALP & Tec. (13 – 08 – 18 Shift – I)

 (A) 82 cm
 (B) 90 cm

 (C) 98 cm
 (D) 80 cm

**144**. If a side of a rhombus is 13 cm and its diagonal is 10 cm, then what will be the length of its second diagonal?

RRB ALP	' & Tec. (13 – 08 – 18 Shift – I)
( <b>A)</b> 24 cm	<b>(B)</b> 23 cm
( <b>C)</b> 25 cm	<b>(D)</b> 22 cm

**145.** The length of one side of a rhombus is 17 cm and its diagonal is 16 cm long. Find the length of the second diagonal.

 RRB ALP & Tec. (31 – 08 – 18 Shift – II)

 (A) 30 cm
 (B) 20 cm

 (C) 32 cm
 (D) 16 cm

**146**. The length of one side of a rhombus is 61 centimeters and its area is 1320 square centimeters. Find the sum of the lengths of its diagonals.

 RRB ALP & Tec. (30 – 08 – 18 Shift – I)

 (A) 120 cm
 (B) 122 cm

 (C) 142 cm
 (D) 71 cm

**147**. A rhombus with the same perimeter is formed from a rectangle of dimensions 10 cm and 6 cm with an angle of 60°. What is the area of rhombus in square centimeters?

RRB ALP & Tec. (29 – 08 – 18 Shift – I)

<b>(A)</b> 24 √3	<b>(B)</b> 8 √3
( <b>C)</b> 16 √3	<b>(D)</b> 32 √3

**148**. The center of a circle in the figure is 'O'. The area of section OAPB is 5/18 of the area of the circle. Find x.



RRB ALP & Tec. (31 - 08 - 18 Shift - III)

<b>(A)</b> 120°	<b>(B)</b> 100°
(C) 125°	<b>(D)</b> 115°

**149**. The length of an arc of a circle is 2/9 the circumference of the circle. What will be the measure (in degrees) of the angle drawn by the arc at the center of the circle?

 RRB ALP & Tec. (21 – 08 – 18 Shift – I)

 (A) 50
 (B) 80

 (C) 60
 (D) 30

**150**. A square is made by turning a copper wire, whose area is 121 square centimeters. If a circle is made by turning this wire, what will be the area of the circle?

$$\begin{pmatrix} \pi = \frac{22}{7} \\ \text{RRB ALP & Tec. (09 - 08 - 18 Shift - III)} \\ \text{(A) } 154 \text{ cm}^2 & \text{(B) } 140 \text{ cm}^2 \\ \text{(C) } 152 \text{ cm}^2 & \text{(D) } 148 \text{ cm}^2 \\ \end{cases}$$

**151**. The sum of the lengths of the sides of the cube is equal to half the perimeter of a square. If the numerical value of the volume of the cube is equal to 1/6 of the numerical value of the area of the square, then what is the length of one side of the square?

RRB ALP &	Tec. (31 – 08 – 18 Shift – II)
(A) 18 Units	(B) 36 Units
(C) 31.5 Units	<b>(D)</b> 27 Units

**152**. The sum of the lengths of the cores of a cube is half the perimeter of a square. If the volume of the cube is equal to the area of the square, then what is the length of one side of the square?

RRB ALP &	& Tec. (29 – 08 – 18 Shift – I)
(A) 108 unit	<b>(B)</b> 36 unit
(C) 216 unit	<b>(D)</b> 288 unit

**153**. The area of a square farm is 196 square meters. The length of each of its side is:

RRB ALP &	Tec. (10 – 08 – 18 Shift – II)
(A) 16 meter	(B) 17 meter
(C) 14 meter	<b>(D)</b> 13 meter

**154.** The sum of all the cores of a cube is equal to the perimeter of a square. If the volume value of the cube is equal to the area of the square, then what is the measure of one side of the square?

RRB ALP & <sup>-</sup>	Гес. (21 – 08 – 18 Shift – III)
(A) 30 unit	<b>(B)</b> 9 unit
(C) 27 unit	<b>(D)</b> 12 unit

**155**. If the edge of a cube is increased by 3 centimeters, its volume will increase to 657 cubic centimeters. What is the original length of each edge of the cube?

 RRB ALP & Tec. (20 – 08 – 18 Shift – II)

 (A) 7 cm
 (B) 8 cm

 (C) 6 cm
 (D) 9 cm

**156.** The areas of three surfaces of a cuboid are 20  $m^2$ , 32  $m^2$  and 40  $m^2$ . What is the volume of the cuboid?

RRB ALP & Tec. (09 – 08 – 18 Shift – II)(A) 92 m³(B)  $\sqrt{3024}$  m ³(C) 160 m³(D) 184 m³

**157**. The top part of a circular glass vessel is cylindrical with a length of 7 cm and width 4 cm. The diameter of the spherical part is 21 cm. What is the amount of water required to fill it completely?

RRB ALP &	Tec. (17 – 08 – 18 Shift – III)
(A) 4932cm <sup>3</sup>	<b>(B)</b> 4939 cm <sup>3</sup>
(C) 4930 cm <sup>3</sup>	<b>(D)</b> 4929 cm <sup>3</sup>

**158.** The area of the base of a cone is  $64\pi$  square centimeters while its slant height is 17 centimeters. This cone has been remodeled to obtain a solid ball. What will be the radius of this sphere?

RRB ALP & Tec. (14 – 08 – 18 Shift – II)

<b>(A)</b> 2∛ <u>30</u> cm	<b>(B)</b> 2∛ <u>40</u> cm
( <b>C)</b> 8 <sup>3</sup> √30 cm	<b>(D)</b> 6.5 cm

**159**. The base of a triangle is one-third of the base of a parallelogram of equal area. What will be the ratio of the corresponding height of the triangle with the parallelogram?

 RRB ALP & Tec. (29 – 08 – 18 Shift – I)

 (A) 3: 2
 (B) 4: 1

 (C) 3: 1
 (D) 6: 1

**160**. The base of a triangle is 5/6 of the base of a parallelogram with the same area as the triangle. What will be the ratio of the corresponding heights of the triangle and the parallelogram?

 RRB ALP & Tec. (29 – 08 – 18 Shift – III)

 (A) 12: 5
 (B) 5: 12

 (C) 5: 3
 (D) 6: 5

**161**. A well is dug, having a diameter of 3 meters and a depth of 14 meters. Soil is extracted from it, and spread around the well. A circular shape circle is made 4 meters wide to form an embankment. What will be the height of the embankment?

RRB ALP &	. Tec. (21 – 08 – 18 Shift – II)
(A) 1/8 meter	(B) 9/8 meter
(C) 7/8 meter	(D) 3/8 meter

**162**. The length of the arm of a solid cube is 7 cm, from which a conical shape with a height 7 cm and radius 3 cm is drawn. Find the volume of the remaining solid.

RRB ALP &	& Tec. (20 – 08 – 18 Shift – I)
(A) 270 cm <sup>3</sup>	( <b>B</b> ) 277 cm <sup>3</sup>
(C) 300 cm <sup>3</sup>	<b>(D)</b> 272 cm <sup>3</sup>

**163**. The volume of a circular cone, whose radius of the base is half its height, is equal to the volume of a hemisphere. What is the ratio of the radius of the cone to the radius of the hemisphere?

RRB ALP	& Tec. (20 – 08 – 18 Shift – I)
<b>(A)</b> √2: 1	<b>(B)</b> <sup>3</sup> √2: 1
( <b>C)</b> 1: 1	<b>(D)</b> 2: 1

**164**. A circular cone whose radius of the base is equal to its height, the volume of the cone is equal to the volume of a sphere. What is the ratio of radius of cone and sphere?

RRB ALP	& Tec. (14 – 08 – 18 Shift – III)
<b>(A)</b> 1: 1	<b>(B)</b> <sup>3</sup> √4: 1
(C) $\sqrt{2}$ : 1	<b>(D)</b> <sup>3</sup> √3: <sup>3</sup> √2

**165**. The volume of a circular cone, whose radius of the base is one-third of its height, is equal to the volume of a sphere. What is the ratio of the radius of the cone to the radius of the sphere?

RRB ALP	& Tec. (09 – 08 – 18 Shift – I)
<b>(A)</b> 1: 1	<b>(B)</b> <sup>3</sup> √3: <sup>3</sup> √2
<b>(C)</b> <sup>3</sup> √4:1	<b>(D)</b> <sup>3</sup> √4: <sup>3</sup> √3

**166**. The area of two identical triangles is 169 cm and 121 cm If the largest side of the larger triangle is 26, then the largest side of the second triangle is –

# RRB NTPC 23/07/2022 Shift – 2

(A) 26 cm	<b>(B)</b> 18 cm
(C) 28 cm	(D) 22 cm

**167**. An equilateral triangle is constructed in such a way that the two vertices of the triangle lie on the diameter of a circle. If the area of the circle is  $64\pi$ , what will be the side of the triangle?

### RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> 16	<b>(B)</b> 8
( <b>C)</b> 16 √3	<b>(D)</b> 8 √3

**168**. The perimeter of a triangle is 100 cm If its two sides are equal and the third side is 10 more than the equal sides, what is the length of the third side?

RRB NTPC	10/08/2022	Shift : 3
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<b>(A)</b> 30	<b>(B)</b> 25
<b>(C)</b> 40	<b>(D)</b> 36

**169**. The area of a right triangle is 30 square meters. If its height is 7 m more than the base, find its base.

RRB NTPC 10/08/2022 Shift : 1

(A) 5 meter	(B) 12 meter
(C) 7 meter	(D) 9 meter

**170**. The perimeter of a triangle is 200 cm If its two sides are equal and the third side is 20 cm more than the equal sides, then what will be the length of the third side?

RRB NTPC 10/08/2022	Shift : 2
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<b>(A)</b> 60	<b>(B)</b> 50
<b>(C)</b> 80	<b>(D)</b> 70

**171.** If the side of an equilateral triangle is 4 units, then find its area.

**RRB NTPC 30.03.2016 Shift : 2** (A)  $16/\sqrt{3}$  sq unit (B)  $4\sqrt{3}$  sq unit

(C) $2/\sqrt{3}$ sq unit	<b>(D)</b> √3 sq unit
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**172**. Find the area of the triangle whose sides are 5 cm, 12 cm and 13 cm

	RRB NTPC 18.01.2017 Shift : 1
(A) 46 sq cm	<b>(B)</b> 42 sq cm
(C) 30 sq cm	<b>(D)</b> 38 sq cm

173. The area of a triangle is 456 square cm, its height is 24 cm, then the length of its base is:

	RRB NIPC 06.04.2016 Shift : A
<b>(A)</b> 32	<b>(B)</b> 36
(C) 34	<b>(D)</b> 38

**174**. The area of two identical triangles is 121 sq m and 64 sq m respectively. If the median of the first triangle is 12.1 m, then the median of the second triangle will be –

 RRB NTPC 19.01.2017 Shift : 2

 (A) 6.4 meter
 (B) 8.4 meter

 (C) 8.8 meter
 (D) 9.2 meter

**175**. In a right triangle, the hypotenuse is 4 cm more than the perpendicular, which is 4 cm

more than the base. Find the length of the perpendicular.

	RRB NTPC 12/08/2022Shi
(A) 12 cm	<b>(B)</b> 16 cm
(C) 20 cm	<b>(D)</b> 8 cm

**176**. Find the area of a triangle with sides of 11 cm, 7 cm and 14 cm

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 7√22	<b>(B)</b> 11√8
<b>(C)</b> 12√10	<b>(D)</b> 13√3

**177**. In a right triangle, the hypotenuse is 2 cm more than the perpendicular and the perpendicular is 2 cm more than the base. Find the length of the base –

	RRB NTPC 12/08/2022Shift : 2
(A) 6cm	<b>(B)</b> 9cm
(C) 10 cm	(D) 8 cm

**178**. In a right angled triangle, the hypotenuse is 2 cm longer than the perpendicular and the perpendicular is 2 cm longer than the base. Find the length of the long.

	RRB NTPC 12/08/2022Shift : 3
(A) 6 cm	<b>(B)</b> 9 cm
(C) 10 cm	<b>(D)</b> 8 cm

**179**. What is the ratio of the radius of its incircle and circumcircle to an equilateral triangle with area of  $16\sqrt{3}$  square unit?

	RRB NTPC 23/07/2022	Shift : 2
<b>(A)</b> 1/2	<b>(B)</b> 1/4	
<b>(C)</b> 1/3	<b>(D)</b> 2/3	

**180.** The height of a parallelogram is 7 cm and the area is 161 square cm. Find the length of its base –

	RRB NTPC 10/08/2022Shift : 2
<b>(A)</b> 25 cm	<b>(B)</b> 23 cm
(C) 21 cm	<b>(D)</b> 19 cm

**181.** The area of a trapezium is 18 square cm. Its height and base are 3 cm and 5 cm respectively. Find the length of the side parallel to the base.

	RRB NTPC 06.04.2016 Shift : 2
<b>(A)</b> 4 cm	<b>(B)</b> 6 cm
<b>(C)</b> 8 cm	<b>(D)</b> 7 cm

**182**. There is a 3.5 m wide passage around the circular land of 7 m radius. Find the area of the route.  $\left(\pi = \frac{22}{7}\right)$ 

#### RRB NTPC 23/07/2022 Shift – 2

( <b>A)</b> 202 sq m	<b>(B)</b> 154 sq m
( <b>C)</b> 192.5 sq m	<b>(D)</b> 346.5 sq m

- **183**. If the circumference of a circle is  $18\pi$  cm, then the area of the circle is:
  - RRB NTPC 10/08/2022Shift 1(A)  $18\pi$  sq cm(B)  $18\pi^2$  sq cm(C)  $81\pi$  sq cm(D)  $9\pi$  sq cm

			•
184.	If the diameter of a	circle is 7 cm	, find its area.
	RRB	NTPC 10/08/	2022 Shift : 2

( <b>A)</b> 49 cm <sup>2</sup>	(B) 38.5 cm <sup>2</sup>
( <b>C)</b> 154 cm <sup>2</sup>	(D) 98 cm <sup>2</sup>

**185**. If the circumference of a circle is 22 cm, what will be the area of the semicircle?

RRB NTPC 10/08/2022 Shift : 2

(A) 38.5 sq cm	<b>(B)</b> 19.25 sq cm
<b>(C)</b> 44 sq cm	<b>(D)</b> 77 sq cm

**186**. When a square is made by turning a wire, the area of the square is 484 square cm. If the same wire is folded as a circle, then its area will be:

RRB NTPC 10/08/2022 Shift : 3

(A) 264 sq cm	<b>(B)</b> 616 sq cm
(C) 488 sq cm	<b>(D)</b> 492 sq cm

**187**. The largest chord of a circle measures 10 cm and the smallest chord measures 4 cm. Find the radius of the circle.

RRB NTPC 11/08/2022Shift : 2

<b>A)</b> 20 cm	<b>(B)</b> 5 cm
<b>C)</b> 8 cm	<b>(D)</b> 2 cm

**188**. Find the area of a circular field with a circumference of 22 cm.

RRB NTPC 11/08/2022Shift : 2

(A) 22 sq cm	<b>(B)</b> 11 sq cm
(C) 44 sq cm	<b>(D)</b> 38.5 sq cm

**189**. Find the increase in the circumference of a circle of radius 14 cm, if the radius is increased by 7 cm.

$$\left(\pi = \frac{22}{7}\right)$$

....

RRB NTPC 18.01.2017 Shift : 1 (A) 44 cm (B) 22 cm

88 cm

**190**. A piece of wire is folded to give the shape of a square whose sides are 44 cm. Again it was

given the shape of a circle. What is the radius of this circle?
PRB NTPC 18.01.2017 Shift : 3

	RRB NIPC 18.01.2017
(A) 108 cm	<b>(B)</b> 56 cm
<b>(C)</b> 14 cm	<b>(D)</b> 28 cm

**191**. If the circumference of the circle is  $\pi d$ , what will be its area?

	RRB NTPC 02/02/2021Shift : 1
<b>(A)</b> πd²/ 4	<b>(B)</b> 2 πd
<b>(C)</b> πd <sup>2</sup> / 2	<b>(D)</b> $\pi$ d <sup>2</sup>

**192**. A cycle wheel completes 5000 rounds in 44 km. Find the radius of the wheel?

	RRB NTPC 09.04.2016 Shift : 3
<b>(A)</b> 140 cm	<b>(B)</b> 270 cm
<b>(C)</b> 70 cm	<b>(D)</b> 120 cm

**193**. What is the cost of leveling a circular ground of 28 meters diameter if the fee is Rs.125 per square meter? ( $\pi = 22/7$ )

RRB	NTPC 06.04.2016 Shift : 1
(A) rs.76, 000	<b>(B)</b> rs.76, 400
(C) rs.76, 800	<b>(D)</b> rs. 77, 000

**194**. The diameter of a wheel is 84 cm. How many rounds will have to be made to cover a distance of 792 meters? ( $\pi = 22/7$ ) **BBB NTPC 19 01 2017 Shift : 2** 

<b>(A)</b> 298	<b>(B)</b> 300
( <b>C)</b> 312	<b>(D)</b> 256

**195**. If the radius (r) of a circle is increased by 'x' units, how many units will be increased in its circumference.

	RRB NTPC 12/08/2022Shift : 2
<b>(A)</b> π	<b>(B)</b> 2 π
<b>(C)</b> 2 πr	<b>(D)</b> 2π x

**196**. A square with a side of  $120 \pi$  cm is formed from a piece of wire. If a circle is made by turning the same wire, what will be the radius of the circle?

## RRB NTPC 09/05/2022 Shift : 3

(A) 30 cm	<b>(B)</b> 120 cm
(C) 240 cm	(D) 60 cm

**197**. What will be the side of the cube made by melting cubes with edges of 6 cm, 8 cm, and 10 cm?

# RRB NTPC 10/08/2022 Shift : 3

(A) 13	<b>(B)</b> 11
<b>(C)</b> 12	<b>(D)</b> 14

(1) 40

**198**. A wire is in the shape of a rectangle. It has a length of 42.7 meters and a width of 21.8 meters. If this wire is folded again into the shape of a square, what will be the measure of the side of the square?

	RRB NTPC 10/08/2022	Shift :1
(A) 16.125	<b>(B)</b> 32.25	
(C) 11.35	<b>(D)</b> 22.70	

**199**. If the length of the diagonal of a square is  $13\sqrt{2}$  units, then its area will be:

RRB	NTPC 11/08/2022Shift : 3
(A) 104 sq unit	<b>(B)</b> 169 sq unit
(C) 338 sq unit	<b>(D)</b> 676 sq unit

**200**. The length of the diagonal of a square is 26 cm, find the side of the square in cm.

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RF	RB	ΝΤΙ	PC	02	/02	2/2	021	Shift	::	3

<b>(A)</b> 13√2	<b>(B)</b> ±13√2
( <b>C)</b> 13	<b>(D)</b> 26√2

**201**. The length of the diagonal of a square is 24 cm, find the side of the square in cm.

RRB NTPC 11/08/2022Shift : 1

<b>(A)</b> 12√2	<b>(B)</b> ±12√2
<b>(C)</b> 12	<b>(D)</b> 24√2

**202**. The order of rotational symmetry of a square is:

	RRB NTPC 11/08/2022Shift : 3
<b>(A)</b> 2	<b>(B)</b> 6
(C) 4	<b>(D)</b> 8

**203**. Find the area of a square whose diagonal is half of 12 cm.

### RRB NTPC 19.01.2017 Shift : 2

- (A) 18 sq cm (B) 64 sq cm (C) 36 sq cm (D) 72 sq cm
- **204**. Find the area of the square formed on the circumference of a circle of radius 13 cm.

RRB NTPC 26.04.2016 Shift : 1

(A) 169 sq cm	<b>(B)</b> 338 sq cm
<b>(C)</b> 507 sq cm	<b>(D)</b> 676 sq cm

**205**. The area of a square ground is 313600 square meters. How long will it take for a woman to cross the field diagonally at the speed of  $4\sqrt{2}$  m/s?

#### RRB NTPC 09/05/2022 Shift : 3

(A) 3 min	( <b>B)</b> 2 min 20 sec
(C) 2 min 40 sec	(D) 3 min 10 sec

**206**. A portion of a rectangle 5 m long and 2 m wide is shaded by a square of 2 m side. What is the ratio of the shaded square to the area of the unshaded portion of the rectangle?

## RRB NTPC 23/07/2022 Shift - 2

<b>(A)</b> 3: 2	<b>(B)</b> 2: 3
(C) 5: 2	<b>(D)</b> 2: 5

**207**. If the length of the diagonal of the rectangle and its semi-perimeter are 11 cm and 13 cm respectively, what is its area?

	RRB NTPC 10/08/2022Shift - 1
(A) 12 sq cm	<b>(B)</b> 48 sq cm
( <b>C)</b> 36 sq cm	<b>(D)</b> 24 sq cm

**208**. The perimeter of a rectangle is 28 cm. If one side of it is 4 cm, find the length of the other arm.

# RRB NTPC 10/08/2022 Shift : 1

(A) 24 cm	<b>(B)</b> 7 cm
( <b>C)</b> 10 cm	<b>(D)</b> 8 cm

**209**. The area of a rectangle is 42 square cm and its length is 7 cm. Find its perimeter.

## RRB NTPC 10/08/2022 Shift : 2

<b>(A)</b> 14 cm	<b>(B)</b> 21 cm
( <b>C)</b> 26 cm	<b>(D)</b> 24 cm

**210.** The length of a rectangle is 6 times its width. If the perimeter of the rectangle is 56 cm, then what is the area of the rectangle?

## RRB NTPC 10/08/2022 Shift : 3

(A) 48 sq cm	<b>(B)</b> 96 sq cm
(C) 144 sq cm	(D) 64 sq cm

211. If the perimeter of a rectangle is 34 cm and diagonal 13 cm, then its area will be: RRB NTPC 12/08/2022Shift · 1

(A) 987 sq cm	<b>(B)</b> 240 sq cm
(C) 120 sq cm	<b>(D)</b> 60 sq cm

**212**. The length of a rectangular ground is 125 meters and the width is 75 meters and there is a 3 meter wide footpath in the middle of the field, what is the area of the field without the footpath?

## RRB NTPC 12/08/2022Shift : 2

(A) 9375 sq meter	<b>(B)</b> 9000 sq meter
(C) 9750 sq meter	(D) 8625 sq meter

**213**. If the area of a rectangle is 168 square centimeters and the width is 7 cm, find the length of its diagonal.

RRB NTPC 30.03.2016 Shift : 1
( <b>A)</b> 24 cm	<b>(B)</b> 15 cm
( <b>C)</b> 17 cm	<b>(D)</b> 25 cm

**214**. The perimeter of a rectangle is 28 cm. If the length is 5/2 times the width, find the length and width of the rectangle.

	RRB NTPC 11/08/2022Shift : 1	
(A) 90 and 5	<b>(B)</b> 10 and 4	

	(=)
<b>(C)</b> 6 and 7	(D) 11 and 3

**215**. If the perimeter of a rectangle is 24 cm and the length is twice the width, find its area.

#### RRB NTPC 23/07/2022 Shift : 2

(A) 24 sq cm	<b>(B)</b> 32 sq cm
(C) 28 sq cm	<b>(D)</b> 36 sq cm

**216.** Ankita stands at the corner of a rectangular field of 40 meters in length and 30 meters in width. If Ankita runs only along the diagonal and returns to the starting point, then the total distance covered by Ankita is:

RRB	NTPC 23/07/2022 Shift : 3
(A) 100 meter	(B) 80 meter
(C) 140 meter	(D) 120 meter

**217.** The length of a rectangular board is 4 times its width. If the area of the board is 256 square meters, find its length.

	RRB NTPC 18.01.2017 Shift : 1
(A) 8 meter	<b>(B)</b> 16 meter
(C) 24 meter	(D) 32 meter

**218**. The order of rotational symmetry of a rectangle is:

#### RRB NTPC 02/02/2021Shift :1

<b>(A)</b> 1	<b>(B)</b> 4
( <b>C)</b> 2	<b>(D)</b> 0

**219**. Find the length of the diagonal of a rectangle whose length is 5 cm and width is 3 cm:

RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> √34	<b>(B)</b> ±√34
(C) 4	<b>(D)</b> ±4

**220**. The length of a rectangle is 24 cm greater than its width. If the perimeter of the rectangle is 112 cm, what will be its length?

	RRB NTPC 10.04.2016 Shift : 3
<b>(A)</b> 40 cm	<b>(B)</b> 16 cm
(C) 24 cm	<b>(D)</b> 32 cm

**221**. Find the length in cm of the diagonal of a rectangle whose length is 2 cm and width is 4 cm.

#### RRB NTPC 11/08/2022Shift : 2

<b>(A)</b> 2√5	<b>(B)</b> ±2√5
( <b>C)</b> 2√3	<b>(D)</b> ±2√3

**222**. Find the length of the diagonal of a rectangle of 6 cm length and 2 cm width.

#### RRB NTPC 11/08/2022Shift : 3

<b>(A)</b> 2√10	<b>(B)</b> ±2√10
( <b>C)</b> 4√2	<b>(D)</b> ±4√2

**223**. Find the area of the garden, including the pavement of 2.5 meters in width, around a rectangular garden that is 10 meters in length and 8 meters in width.

		FC 00.04.2010 Smit. 1
(A)	130.25 sq meter	(B) 131.25 sq meter
(C)	195.00 sq meter	(D) 162.50 sq meter

**224**. If the side of a rectangle is 12 m and its diagonal is 13 m, find its area.

## RRB NTPC 06.04.2016 Shift : 2

(A) 60 sq meter	(B) 55 sq meter
(C) 50 sq meter	<b>(D)</b> 45 sq meter

**225**. Find the length of the diagonal of a rectangle of length 9 cm and width 6 cm.

#### RRB NTPC 02/02/2021Shift : 2

<b>(A)</b> 3√13	<b>(B)</b> ±3√13
( <b>C)</b> 3√5	<b>(D)</b> ±3√5

**226**. Find the area of a rectangle whose diagonal is 15 meters and width is 9 meters.

### RRB NTPC 26.04.2016 Shift : 1

(A) 42 sq meter	(B) 144 sq meter
(C) 108 sq meter	<b>(D)</b> 225 sq meter

**227**. Find the length of the diagonal of a rectangle whose length is 6 cm and width is 6 cm:

RRB	NTPC	26.	04	2016	Shift	:	3
				<u> </u>			

<b>(A)</b> 6√2	<b>(B)</b> ±6√2
( <b>C)</b> 0	<b>(D)</b> √2

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**228**. The area of a rectangle is 448 square meters. If its length is 12% more than its width, find its width.

	RRB NTPC 12/08/2022Shift : 2
<b>(A)</b> 14 m	<b>(B)</b> 16 m
<b>(C)</b> 18 m	<b>(D)</b> 20m

**229**. Find the maximum area of a rectangular ground enclosed by a 400 m rope.

#### RRB NTPC 12/08/2022Shift : 3

<b>(A)</b> 5000 m <sup>2</sup>	<b>(B)</b> 6250 m <sup>2</sup>
<b>(C)</b> 4000 m <sup>2</sup>	<b>(D)</b> 10000 m <sup>2</sup>

**230**. Find the maximum area of a rectangular ground enclosed by a 40 m rope.

RRB NTPC 23/07/2022 Shift : 2

<b>(A)</b> 160 m <sup>2</sup>	<b>(B)</b> 180 m <sup>2</sup>
( <b>C)</b> 200 m <sup>2</sup>	<b>(D)</b> 100 m <sup>2</sup>

**231**. Four squares of 5 cm side were cut from the corners of a 45 cm long and 35 cm wide rectangular sheet, and an open box was made from the remaining sheet. Find the volume of the box.

RRB NTPC 10/08/2022 Shift : 1
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(A) 1200 cm <sup>3</sup>	<b>(B)</b> 875 cm <sup>3</sup>
(C) 1325 cm <sup>3</sup>	<b>(D)</b> 4375 cm <sup>3</sup>

**232**. There is 42000 liters of water in a rectangular water reservoir. Find the depth of water in the said reservoir if the base (floor) of this reservoir is 6m × 3.5m.

	RRB NTPC 18.01.2017 Shift : 2
<b>(A)</b> 1m	<b>(B)</b> 2.5 m
<b>(C)</b> 3 m	<b>(D)</b> 2 m

**233**. The ratio of length, width and height of a room is 3: 2: 1. If its volume is 3072 cubic meters, find its width.

 RRB NTPC 09.04.2016 Shift : 3

 (A) 18 meter
 (B) 16 meter

 (C) 24 meter
 (D) 12 meter

**234**. What is the volume (in cubic cm) of an elliptical cylinder of radius 1 cm and height 2 cm.

 $\left( \text{Take } \pi = \frac{22}{7} \right)$ 

RRB NTPC 23/07/2022 Shift – 1

(A) 22/7	<b>(B)</b> 22
<b>(C)</b> 44	<b>(D)</b> 44/7

**235.** What will be the volume (cm<sup>3</sup>) of a elliptical cylinder whose radius is 7 cm and height is 2 cm?

 $\left( \text{Take } \pi = \frac{22}{7} \right)$ 

 RRB NTPC 17.01 .2017 Shift – 3

 (A) 308
 (B) 308 / 21

 (C) 308 / 7
 (D) 310

**236.** What will be the volume (in cubic cm) of a elliptical cylinder if its radius is 2.5 cm and height is 2 cm.

 RRB NTPC 19.01.2017 Shift : 1

 (A) 275
 (B) 275 / 21

 (C) 275 / 2
 (D) 275 / 7

**237.** What will be the volume (in cubic cm) of a elliptical cylinder if its radius is 2 cm and height is 2 cm.

$$\begin{pmatrix} \pi = \frac{22}{7} \end{pmatrix}$$
  
**RRB NTPC 19.01.2017 Shift : 3**  
**(A)** 175 / 7  
**(B)** 176 / 21  
**(C)** 176 / 7  
**(D)** 176

238. What is the to surface area of a cone, if r is the radius and I is the slant height? RRB NTPC 12/08/2022Shift : 3

	RRB NTPC 12/08/2022Shif
(A) $\pi r(l + r)$	<b>(B)</b> $2\pi r(l + r)$
<b>(C)</b> πrl	<b>(D)</b> 2πrl <sup>2</sup>

239. The surface area of a sphere of radius 1 cm (in cm<sup>2</sup>) is:

(given that  $\pi = \frac{22}{7}$ )

RRB NTPC 23/07/2022 Shift – 1

Shift - 3

<b>(A)</b> 89/7	<b>(B)</b> 89/21
(C) 88/21	<b>(D)</b> 88/ 7

**240**. What is the surface area of a solid sphere whose radius is 3.5 cm? (given that  $\pi = \frac{22}{7}$ )

	RRB NTPC 23/07/2022
<b>(A)</b> 154/ 7	<b>(B)</b> 154
<b>(C)</b> 54	<b>(D)</b> 54/7

**241**. The diameter of a cylinder is 6 cm and it is filled to a height of 10 cm. If a spherical ball is put in it, then the water level increases by 0.5 cm, then find the diameter of the ball.

#### RRB NTPC 10/08/2022 Shift : 3

<b>(A)</b> 3	<b>(B)</b> 1.5
<b>(C)</b> 2.4	<b>(D)</b> 2.8

242. What would be the surface area of a solid sphere if its radius is 1.5 cm?

 $\left(\pi = \frac{22}{7}\right)$ 

	RRB NTPC 19.01.2017 Shift : 1
<b>(A)</b> 190/21	<b>(B)</b> 190/7
<b>(C)</b> 198/7	<b>(D)</b> 198/21

**243**. Find the area of a solid sphere whose radius is 2 cm.

(given that  $\pi = \frac{22}{7}$ )

- RRB NTPC 19.01.2017 Shift : 3
- (A) 352/7
  (B) 350/21
  (C) 352/21
  (D) 350/7

244. How long will it take for Ramesh to walk around a 50-meter square park if he runs at the rate of 18 km/h?

	RRB NTPC 18.04.2016 Shift : 1
(A) 40 sec	<b>(B)</b> 20 sec
( <b>C)</b> 80 sec	<b>(D)</b> 160 sec

245. If the cost to paint a wall of an  $8 \text{ m} \times 4.5 \text{ m}$  is 4,500 rupees, find the cost per square meter. RRB NTPC 10/08/2022Shift 2

(A) rs. 150	<b>(B)</b> rs. 125
(C) rs. 175	<b>(D)</b> rs. 160

246. Find the cost of covering a room of 65 dm x 30 dm at the rate of Rs. 45 per sq.m.

RRB	NTPC 10/08/2022 Shift :1
(A) rs. 877.50	<b>(B)</b> rs. 87750
(C) rs. 87.75	(D) rs. 8775

247. A closed wooden rectangular box is made of 1 cm thick wood whose external dimensions are as follows - length 22 cm, width 17 cm and height 12 cm. It is completely filled with cement. What will be the amount of cement in the box?

RRB NTPC	10/08/2022	Shift : 2	)
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(A) 1488 cm <sup>3</sup>	<b>(B)</b> 3000 cm <sup>3</sup>
( <b>C)</b> 4488 cm <sup>3</sup>	<b>(D)</b> 2880 cm <sup>3</sup>

248. Find the area of a triangle if its two dimensions and perimeter are 9cm, 11cm and 34cm respectively?

RRB Paramedical – 20/07/2018 (Shift – I) (A)  $17\sqrt{12} \ cm^2$ **(B)**  $12\sqrt{15} \ cm^2$ **(D)**  $15\sqrt{17} \ cm^2$ (C)  $12\sqrt{17} \ cm^2$ 

249. If the diagonal of a rhombus is in the ratio 5: 4, find the ratio of the area of the rhombus and the product of its diagonals.

RRB Paramedical - 21/07/2018 (Shift - II) (A) 4: 1 (B) 2: 1 (C) 1:2 (D) 1: 4

250. The width of a rectangular field is 60% of its length. If the perimeter of the ground is 800 meters, find the area of the ground.

RRB Paramedica	I – 20/07/2018 (Shift – II)
(A) 18750 m <sup>2</sup>	<b>(B)</b> 37500 m <sup>2</sup>
(C) 40000 m <sup>2</sup>	<b>(D)</b> 48000 m <sup>2</sup>

251. The length of a hollow cylinder is 84 cm and its outer diameter is 32 cm and inner diameter is 24 cm. If the weight of the material of cylinder is 10 g/cm, what will be the weight of the hollow cylinder?

RRB Paramedica	al – 21/07/2018 (Shift – III)
(A) 295680 kg.	<b>(B)</b> 329680 kg.
(C) 295.68 kg.	<b>(D)</b> 329.68 kg.

252. A sphere was divided in the ratio 2: 3. The larger part is molded as a cone whose height is equal to the radius of its base, while the smaller part is molded into a cylinder whose height is equal to the radius of its base. What will be the ratio of the radius of the base of the cone to the height of the cylinder?

<b>RRB</b> Paramed	ical – 20/07/2018 (Shift – III)
<b>(A)</b> 3: 1	<b>(B)</b> <sup>3</sup> √9: <sup>3</sup> √2
<b>(C)</b> <sup>3</sup> √9:1	<b>(D)</b> 1: <sup>2</sup> √3

253. The length of a room is 5.5 meters and the width is 3.75 meters. Find the cost of laying slabs on the floor at the rate of Rs.800 per meter.

RRB Paramedi	cal – 21/07/2018 (Shift – I)
(A) rs.15550	<b>(B)</b> rs. 15600
(C) rs. 16500	<b>(D)</b> rs. 15000

254. The perimeter of an isosceles triangle is 32 cm Its base is 6/5 times the same sides. Find the area.

	RRB JE – 22/05/2019 (Shift – III)
(A) 39 cm <sup>2</sup>	<b>(B)</b> 64 cm <sup>2</sup>
(C) 48 cm <sup>2</sup>	<b>(D)</b> 57 cm <sup>2</sup>

255. If the perimeter of a triangle is 28 cm Its inner radius is 3.5 cm Find its area.

	RRB JE - 22/05/2019 (Shift - III)
(A) 49 cm <sup>2</sup>	<b>(B)</b> 28 cm <sup>2</sup>
( <b>C)</b> 35 cm <sup>2</sup>	<b>(D)</b> 42 cm <sup>2</sup>

256. The two congruent triangles have a ratio of their corresponding sides 1: 3 and the area of the larger triangle is 72 square cm Find the area of the smaller triangle.

	RRB JE – 29/05/2019 (Shift – I)
(A) 18 cm <sup>2</sup>	<b>(B)</b> 8 cm <sup>2</sup>
(C) 14 cm <sup>2</sup>	<b>(D)</b> 9 cm <sup>2</sup>

257. The area of a farm with trapezoid shape is 1440 square meters. The vertical distance between parallel side is 24 m. The ratio of parallel sides is 5: 3. Find the length of the long parallel side. DDB IE \_ 30/05/2019 (Shift \_ III)

ľ	\\L J L = 30/03/2013 (31111 - 111)
(A) 30 meter	(B) 60 meter
(C) 45 meter	<b>(D)</b> 75 meter

258. Find the area of the circular path, which is built around a circle with a circumference of 440 meters and whose width is 7 meters.

	<b>RRB</b> ( <b>A</b> ) 3856 m <sup>2</sup> ( <b>C</b> ) 3900 m <sup>2</sup>	JE – 27/05/2019 (Shift – II) (B) 3234 m <sup>2</sup> (D) 3204 m <sup>2</sup>		(A) 30 sq meter (C) 50 sq meter
259.	The radius of a cir	cle is increased by 5%. Find	266.	The perimeter of a so
	the percentage inc RRE	crease in its area. 3 JE – 28/05/2019 (Shift – I)		width of the rectai
	<b>(A)</b> 10.25% <b>(C)</b> 10.5%	(B) 21.5 % (D) 25%		<b>(A)</b> 1360 unit <b>(C)</b> 1215 unit
260.	60. Find the area contained between a circle and a square with 'a' side formed inside it? RRB JE – 26/05/2019 (Shift – I) (A) $(a^2/2)(\pi - 2)$ sq unit		267.	What will be the c of Rs.10 per squa space around a 340 meters?
	<b>(B)</b> $2a^2(\pi - 2)$ sq	unit		RRB
	(C) $a^2(2-\pi)$ sq u (D) $a^2(2\pi - 1)$ sq	nit unit		(A) Can't be deter (C) 3400

**261.** A room is 15 feet long and 12 feet wide. A mat is to be laid on the floor of the room leaving a space of 1.5 feet from the walls. How much will the mats cost at the rate of Rs 3.50 per sq ft?

RRB	JE – 30/05/2019 (Shift – II)
<b>(A)</b> rs. 630	<b>(B)</b> rs. 378
<b>(C)</b> rs. 472.50	<b>(D)</b> rs. 496

**262**. The area of a square farm is 24200 square meters. How long will it take for someone walking at a speed of 4.4 km/h to cross it diagonally?

 RRB JE – 01/06/2019 (Shift – I)

 (A) 3 min
 (B) 4 min

 (C) 2.5 min
 (D) 2 min

**263**. Difference of area of the two squares is 32 cm. If the difference of their sides is 4 cm, find length of sides of the two squares.

 RRB JE - 01/06/2019 (Shift - III)

 (A) 6 cm, 2 cm
 (B) 12 cm, 8 cm

 (C) 4 cm, 4 cm
 (D) 4 cm, 2 cm

**264.** Find the area of a square made by touching its circumference inside a circle of radius 8 cm.

 RRB JE – 23/05/2019 (Shift – I)

 (A) 144 cm<sup>2</sup>
 (B) 128 cm<sup>2</sup>

 (C) 64 cm<sup>2</sup>
 (D) 136 cm<sup>2</sup>

**265.** Suresh took 15 seconds to cross a rectangular ground diagonally at a speed of 52 m/min, and Rajesh took the same amount of time to cross the same ground by side at a speed of 68 m/min. Find the area of the field.

RRB JE – 26/05/2019 (Shift – II)

 ) 30 sq meter
 (B) 40 sq meter

 ) 50 sq meter
 (D) 60 v meter

- 266. The perimeter of a rectangle is twice the perimeter of a square of side 18 unit. If the width of the rectangle is 45, find its area. RRB JE – 23/05/2019 (Shift – I)
  - (A) 1360 unit (B) 1050 unit (C) 1215 unit (D) 1152 unit
- **267.** What will be the cost of horticulture at the rate of Rs.10 per square meter in a 1 meter wide space around a rectangular plot measuring 340 meters?

 RRB JE – 23/05/2019 (Shift – III)

 A) Can't be determined (B) 3440

 C) 3400
 (D) 1700

**268**. The length of a rectangular plot is three times its width. If the area of a rectangular plot is 867 m<sup>2</sup>, what is the length of the rectangular plot?

	RRB JE – 25/05/2019 (Shift – II)
(A) 34 meter	(B) 17 meter
(C) 51 meter	(D) 68 meter

269. The area of a rectangular carpet is 120 meters and the perimeter is 46 meters. Find the length of its diagonal. RRB JE – 29/05/2019 (Shift – III)

(A) 15 meter (C) 20 meter (D) 17 meter

**270.** A circular wire of radius 7 cm is folded to form a rectangle whose sides are in the ratio 4: 7. Find the area of the rectangle thus constructed.

	RRB JE – 31/05/2019 (Shift – I)
(A) 56 cm <sup>2</sup>	<b>(B)</b> 60 cm <sup>2</sup>
(C) 112 cm <sup>2</sup>	<b>(D)</b> 84 cm <sup>2</sup>

**271.** Find the area of the jogging track which has a width of 2 meters and is built around a rectangle of perimeter 20 meters × 18 meters?

	RRB JE – 31/05/2019 (Shift – III)		
<b>(A)</b> 200 m <sup>2</sup>	<b>(B)</b> 140 m <sup>2</sup>		
(C) 136 m <sup>2</sup>	<b>(D)</b> 168 m <sup>2</sup>		

272. If the surface area of a cube is 3750 square cm, find its volume.

RRB	JE –	23/05/2019 (Sh	ift — III)

(A) 14255 cm	<b>(B)</b> 16625 cm
(C) 12225 cm	<b>(D)</b> 15625 cm

**273.** The sum of all the sides of a cube is 48 cm. Find its volume.

RRB JE - 23/05/2019 (Shift - III)

(A) 27 cm <sup>3</sup>	<b>(B)</b> 216 cm <sup>3</sup>
(C) 64 cm <sup>3</sup>	( <b>D</b> ) 36 cm <sup>3</sup>

**274.** The numerical values of the surface area and volume of a cube are equal. Find the volume of the cube.

RRB、	JE – 25/05/2019 (Shift – I)
(A) 512 cubic unit	<b>(B)</b> 276 cubic unit
(C) 216 cubic unit	<b>(D)</b> 162 cubic unit

275. The sides of a cuboid are in the ratio 1: 2: 3. If its surface area is 88 cm<sup>2</sup>, find its volume.
 RRB JE – 25/05/2019 (Shift – II)

	RRB JE – 25/05/2019 (Shift -
(A) 48 cm <sup>3</sup>	<b>(B)</b> 120 cm <sup>3</sup>
(C) 64 cm <sup>3</sup>	<b>(D)</b> 24 cm <sup>3</sup>

**276.** A cuboid with dimension  $| \times b \times h$  is cut into planks measuring  $| \times 0.5 b \times 0.4 h$ . Find the number of planks to be manufactured.

	RRB JE – 27/05/2019 (Shift – II)
<b>(A)</b> 4	<b>(B)</b> 5
(C) 20	<b>(D)</b> 10

**277.** Find the area of cardboard required to make a box of  $10 \text{ cm} \times 8 \text{ cm} \times 4 \text{ cm}$ .

 RRB JE – 28 / 05 / 2019(Shift – I)

 (A) 388 cm<sup>2</sup>
 (B) 412 cm<sup>2</sup>

 (C) 488 cm<sup>2</sup>
 (D) 304 cm<sup>2</sup>

**278.** A wooden box measures 20 cm × 12 cm × 10 cm. The thickness of the wood is 1 cm. Find the volume of wood used to make the box.

 RRB JE – 29/05/2019 (Shift – II)

 (A) 1120 cm<sup>3</sup>
 (B) 2400 cm<sup>3</sup>

 (C) 519 cm<sup>3</sup>
 (D) 960 cm<sup>3</sup>

**279.** A rectangular box is 12 cm in length, 8 cm in width and 10 cm in height. Find the total surface area of the box.

 RRB JE – 30/05/2019 (Shift – III)

 (A) 592 cm<sup>2</sup>
 (B) 376 cm<sup>2</sup>

 (C) 524 cm<sup>2</sup>
 (D) 482 cm<sup>2</sup>

**280.** The surface area of a cuboid is 1372 square cm. Its dimensions are in the ratio of 4: 2: 1. Find the length.

	RRB JE – 30/05/2019 (Shift – III)
(A) 24 cm	<b>(B)</b> 7 cm
(C) 28 cm	<b>(D)</b> 12 cm

**281.** Find the ratio of the volume of a sphere with radius 'r' and a cylinder of radius 'r' and height '2r'.

	RRB JE – 22/05/2019 (Shift – I)
<b>A)</b> 2: 3	<b>(B)</b> 3: 2
<b>C)</b> 5: 4	<b>(D)</b> 3: 5

**282**. What will be the total surface area of a solid cylinder whose radius is half the radius of a circle with an area of 154 square meters and the height is equal to its radius?

	RRB JE – 25/05/2019 (Shift – I)
(A) 231 m <sup>2</sup>	<b>(B)</b> 123 m <sup>2</sup>
(C) 312 m <sup>2</sup>	<b>(D)</b> 132 m <sup>2</sup>

**283**. The ratio of the radii of two cylinders is 2: 3. Their height ratio is 5: 3. If the volume of one cylinder is 160 cubic units, find the volume of the other cylinder.

RRB JE	- 26/05/2019 (Shift - II)
(A) 216 cubic unit	<b>(B)</b> 400 cubic unit
(C) 240 cubic unit	(D) 243 cubic unit

**284**. A wire is made by melting a metal sphere with a radius of 6 cm. The radius of the transverse section of wire is 8 cm. What is the length of the wire?

	RRB JE – 26/05/2019 (Shift – III)
(A) 4 cm	<b>(B)</b> 3.5 cm
( <b>C)</b> 5 cm	<b>(D)</b> 4.5 cm

**285**. Find the area of the external curve of a metal pipe of radius 21 cm and length 90 cm.

RRB JE	E – 27/05/2019 (Shift – III)
(A) 11480 cm <sup>2</sup>	<b>(B)</b> 10880 cm <sup>2</sup>
(C) 12880 cm <sup>2</sup>	<b>(D)</b> 11880 cm <sup>2</sup>

**286**. Find the total surface area of a hemisphere mounted on a cylinder, while both have the same radius and the height of the cylinder is twice its radius.

	RRB JE – 29/05/2019 (Shift – II)
<b>(A)</b> 8πr <sup>2</sup>	<b>(B)</b> 4πr <sup>2</sup>
<b>(C)</b> 7πr <sup>2</sup>	<b>(D)</b> $(2\pi rh + 2\pi r^2)$

**287.** The capacity of a cylindrical tank is 3080 cubic meters. If the radius of its base is 7 m, find the depth of the tank.

RRB 、	JE – 02/06/2019 (Shift – III)
(A) 10 meter	(B) 25 meter
(C) 15 meter	(D) 20 meter

**288.** If the height 'h' of a cylinder is equal to the circumference of its base, find the curved surface area in terms of 'h'.

	RRB JE – 02/06/2019 (Shift – I)
<b>(A)</b> h³	<b>(B)</b> 2h/ 3
<b>(C)</b> 3h²	<b>(D)</b> h <sup>2</sup>

**289.** The length of a rectangular sheet is equal to twice its width. If the volume of the cylinders is  $V_1$ ,  $V_2$  when this sheet is folded relative to its length and width, find the ratio of  $V_1$  and  $V_2$ .

RRB JE - 27/06/2019 (Shift - I)

<b>(A)</b> 1: 1	<b>(B)</b> 1: 3
<b>(C)</b> 2: 1	<b>(D)</b> 2: 3

**290.** The total surface area of a solid cylinder is 462 cm<sup>2</sup>. Its curved surface is one third of the total surface area. Find its volume.

 RRB JE – 27/06/2019 (Shift – III)

 (A) 964 cm<sup>3</sup>
 (B) 810 cm<sup>3</sup>

 (C) 539 cm<sup>3</sup>
 (D) 1024 cm<sup>3</sup>

**291.** A segment with radius 21 cm and center angle 120° is folded and turned into a cone. Find the radius of the cone thus formed.

 RRB JE – 29/05/2019 (Shift – I)

 (A) 42 cm
 (B) 21 cm

 (C) 7 cm
 (D) 7.5 cm

**292.** A solid semi-sphere of the metal is melted and molded into a cone of equal radius 'R'. If the height of the cone is H;

**RRB JE – 27/05/2019 (Shift – I)** (A) H = R (B) H = R/2(C) H = 2R (D) H = R/3

**293.** There are two cones whose volume to volume ratio is 1: 10 and their height ratio is 2: 5. Find the ratio of their base radii.

	RRB JE – 28/05/2019 (Shift – I)
<b>(A)</b> 2: 1	<b>(B)</b> 5: 2
(C) 7: 25	<b>(D)</b> 1: 2

**294.** The size of a solid is similar to a hemispherical with the same radius mounted on a cone with a radius of 2 cm and the height of the cone is equal to its radius. Find the volume of this solid.

RRB JE – 30/05/2019 (Shift – I)(A)  $2\pi \text{ cm}^3$ (B)  $6\pi \text{ cm}^3$ (C)  $8\pi \text{ cm}^3$ (D)  $4\pi \text{ cm}^3$ 

**295**. Numerical values of the volume of a cone and the curved surface area are equal. If 'h' and 'r' represent the height and radius of base of the cone, find the value of  $(1/h^2) + (1/r^2)$ .

 RRB JE – 28/05/2019 (Shift – II)

 (A) 2/9
 (B) 1/9

 (C) 1/3
 (D) 3

**296**. The ratio of the curved surface area of the two cone is 2: 1; Their slant height is in the ratio of 1: 2. Find the ratio of their radius.

 RRB JE – 01/06/2019 (Shift – I)

 (A) 1: 1
 (B) 1: 3

 (C) 1: 4
 (D) 4: 1

297. A tent is in the shape of a cylinder and a cone is installed above it, the radius and height of the cylindrical part are 10 m and 25 m respectively. The radius for the conical part is 10 m and the slant height is 15 m. Calculate the amount of canvas required for the construction of this tent, taking 20% extra canvas for folding, sewing, etc.
RRB JE – 26/06/2019 (Shift – III)

RRB JE	– 26/06/2019 (Shift – II
(A) 3783.26 meter <sup>2</sup>	(B) 4714.43 meter <sup>2</sup>
(C) 3772.14 meter <sup>2</sup>	(D) 2451.40 meter <sup>2</sup>

**298.** Two elliptical cones of height 16.4 cm and 17.2 cm respectively, whose base radius is 8.4 cm, are melted and molded into a sphere. Find the diameter of the sphere.

	RRB JE – 22/05/2019 (Shift – III)
(A) 8.6 cm	<b>(B)</b> 8.2 cm
<b>C)</b> 8.4 cm	<b>(D)</b> 16.8 cm

**299.** Find the surface area of a semicircular bowl of thickness 'd' and inner radius 'r'.

RRB JE – 25/05/2019 (Shift – II) (A)  $\pi(4r^2 + 6rd + 3d^2)$ (B)  $4\pi r^2 + 4\pi rd + 3d^2$ (C)  $\pi(4r^2 + 3rd + d^2)$ (D)  $4\pi r^2 + 6\pi rd + 3d^2$ 

**300.** The height of a cone is 32 cm and the radius of its base is 8 cm. It is melted and converted into a sphere. Find the radius of that sphere.

	RRB JE – 26/05/2019 (Shift – III)
(A) 6.5 cm	<b>(B)</b> 2.5 cm
<b>(C)</b> 4 cm	<b>(D)</b> 8 cm

**301.** From a cube with a side 6 cm, a hemisphere with maximum volume is cut and taken out. Find the remaining volume.

RRB JE - 29/05/2019 (Shift - III)

- **(A)** 36 − (3π/3)
- **(B)** [27 − (2 ⊓ /3) × 6]
- **(С)** 216 12 п
- **(D)** 216 18 п
- **302.** When the volume of a sphere is divided by its surface area, the answer is 27 cm. Find the radius of the sphere.

	RRB JE – 02/06/2019 (Shift – II)
(A) 243 cm	<b>(B)</b> 81 cm
<b>(C)</b> 27 cm	<b>(D)</b> 9 cm

**303**. Find the volume of the sphere whose surface area is 1386 meters.

RRB JE - 01/06/2019 (Shift - I)

<b>(A)</b> 3850 m <sup>3</sup>	<b>(B)</b> 4851 m³ ์
(C) 4651 m <sup>3</sup>	<b>(D)</b> 5711 m <sup>3</sup>

**304.** The base of a right-angled pyramid is a square with a 16 unit diagonal. Its slant side is 17 units. Find its vertical height.

	RRB JE – 24/05/2019 (Shift – III)
<b>(A)</b> 30	<b>(B)</b> 12
(C) 25	<b>(D)</b> 15

**305.** The base of a triangular prism is a triangle with sides 8, 15, 17 units and its height is 20 units. Find its total surface area.

	RRB JE – 02/06/2019 (Shift – I)
<b>(A)</b> 920	<b>(B)</b> 1020
(C) 960	<b>(D)</b> 940

**306.** Find the percentage of the material wasted in converting a cylinder of base diameter 10 cm and height 20 cm into a cone with equal base but double height.

	RRB JE – 23/05/2019 (Shift – I)
<b>(A)</b> 25%	<b>(B)</b> 20%
<b>(C)</b> 35%	<b>(D)</b> 33.3%

**307.** The ratio of the radii of the bases of a cylinder and cone is  $\sqrt{3}$ :  $\sqrt{2}$ , the ratio of their heights is  $\sqrt{2}$ :  $\sqrt{6}$ , then find the ratio of their volumes.

,	RRB JE – 23/05/2019 (Shift – II)
<b>(A)</b> √3:√3	<b>(B)</b> 3√3: 2
<b>(C)</b> √3:√2	<b>(D)</b> 3√3: √2

**308.** Find the area of a hexagon with side 6 cm. **RRB JE – 24/05/2019 (Shift – III)** 

<b>(A)</b> 72√3 cm <sup>2</sup>	<b>(B)</b> 64√3 cm r <sup>2</sup>
<b>(C)</b> 108√3 cm <sup>2</sup>	<b>(D)</b> 54√3 cm <sup>2</sup>

**309**. The volumes of a cone, hemisphere and cylinder with equal radius and equal height are P, Q, R respectively. Find the value of P: Q: R.

**RRB JE – 27/05/2019 (Shift – I)** (A) 1: 3: 2 (B) 3: 4: 2 (C) 2: 1: 3 (D) 1: 2: 3

**310**. A square sheet of paper is twisted from the side to form a cylinder. Find the ratio of the the side of the square and the radius of base of the cylinder.

	RRB JE – 29/05/2019 (Shift – III)
( <b>A)</b> 2п: 1	<b>(B)</b> 1: 4п
( <b>С)</b> 1: п	<b>(D)</b> 1: 2п

**311**. What is the ratio between the volume of a cube and the volume of a sphere that will fit perfectly in the cube?]

	RRB JE - 30/05/2019 (Shift - III)
<b>(А)</b> 3: п	(В) 6: п
(C) 3: 4	<b>(D)</b> п: 1

**312**. The height of a cube and a sphere is the same. Find the ratio of their volumes.

	RRB JE – 28/05/2019 (Shift – II)
<b>(A)</b> 6: π	<b>(B)</b> 4: π
<b>(C)</b> 2: π	<b>(D)</b> 3: π

**313**. The area of a rectangle is 9/20 times the area of a square. If the length and width of the rectangle are in the ratio 5: 4, find the ratio of the perimeter of the rectangle and the square.

<b>(A)</b> 25: 48	<b>(B)</b> 27: 20
(C) 27: 40	<b>(D)</b> 25: 45

**314**. How many carpets of 6 m x 4 m would be required to lay on the floor of a room measuring 40 m by 24 m?

	RRB JE – 02/06/2019 (Shift – III)
<b>(A)</b> 40	<b>(B)</b> 12
<b>(C)</b> 18	<b>(D)</b> 15

315. If only diagonal measurements are given, then which of these quadrants can be constructed?1) square

2) rectangle

3) rhombus

- RRB JE 01/06/2019 (Shift I)
- (A) 1 and 3 (B) 1 and 2 (C) only 1 (D) only 3

# **Solution**

4.

5.

6.

#### 1. Ans.(C)

The largest side of the triangle = 13 cmOther sides are 5 cm and 12 cm.

 $\because (13)^2 = (12)^2 + (5)^2$ 

169 = 169

Hence, it will be a right angle triangle.

Triangle PQR made by joining the midpoints of the three sides.

Area = 
$$\frac{Area \text{ of } \Delta ABC}{4}$$
  
A  
5 cm P  
B  
R  
12 cm

Area of  $\triangle$  PQR =  $\frac{\frac{1}{2} \times 5 \times 12}{4}$ =  $\frac{30}{4}$  = 7.5 cm<sup>2</sup>

2. Ans.(C)  
$$s = \frac{a+b+c}{2}$$
 (w

$$s = \frac{a+b+c}{2} \text{ (where, a = 72, b = 30, c = 78)}$$
  
=  $\frac{72 + 30 + 78}{2} = 90m$   
Area of triangle =  $\sqrt{s(s-a)(s-b)(s-c)}$   
=  $\sqrt{90(90-72)(90-30)(90-78)}$   
=  $\sqrt{90 \times 18 \times 60 \times 12}$   
=  $\sqrt{1166400} = 1080$   
 $\therefore \ cost \ price = 1080 \times \frac{1}{5} = Rs.216$ 

3. Ans.(B)



Area of an equilateral triangle

$$= \sqrt{s(s-a)(s-b)(s-c)}$$
  
Where,  $s = \frac{a+b+c}{2}$   
 $s = \frac{16 + 12 + 20}{2} = 24$   
 $\therefore$  Area =  $\sqrt{24(24 - 16)(24 - 12)(24 - 20)}$ 

Difference between height of triangle and base = 7x - y = 7.....(i) Area of triangle = =  $30 \text{ cm}^2$ Thus, area of right triangle =  $\frac{1}{2}$  × base × height  $30 = \frac{1}{2}xy \Rightarrow xy = 60 \dots \dots (ii)$  $x + y = \sqrt{(x - y)^2 + 4xy}$  $=\sqrt{49 + 240}$  $=\sqrt{289}$  $x + y = 17 \dots$  (iii) From equation (i) and (iii) x = 12 cm y = 5 cmNow from the Pythagoras theorem in triangle ABC  $AC^2 = AB^2 + BC^2$  $AC^2 = (12)^2 + (5)^2$  $AC^2 = 144 + 25$  $AC^2 = 169$ AC = 13 cmHence the perimeter of the triangle = 13 + 12 + 5 = 30 cm Ans.(C) Let the sides of the equilateral triangle be a cm. According to Question, Area of equilateral  $\Delta$  = perimeter of  $\Delta$  × 2,  $\frac{\sqrt{3}a^2}{4} = (3a) \times 2$  $\frac{\sqrt{3}a}{4} = 6$  $a = \frac{24\sqrt{3}}{3}$  $a = 8\sqrt{3}cm$ : Area of equilateral  $\Delta = \frac{\sqrt{3}}{4}a^2$  $=\frac{\sqrt{3}}{4}\times 8\sqrt{3}\times 8\sqrt{3}$  $= 2 \times 3 \times 8\sqrt{3}$ 

$$= 48\sqrt{3}cm^2$$

7.



Area of equilateral triangle ABC =  $\frac{\sqrt{3}}{4}a^2$  cm Areas of smaller equilateral  $\triangle AEF$ ,  $\triangle BEG$  and  $\triangle CFG$ .

$$= \frac{\sqrt{3}}{4} \left\{ \left(\frac{2a}{5}\right)^2 + \left(\frac{2a}{5}\right)^2 + \left(\frac{2a}{5}\right)^2 \right\}$$

$$= \frac{3\sqrt{3}}{4} \times \frac{4a^2}{25}$$

$$= \frac{3\sqrt{3}}{25}a^2 \text{ cm}$$

$$\frac{Area \text{ of } \Delta ABC.}{Areas \text{ of three smaller } \Delta} = \frac{\frac{\sqrt{3}}{4a^2}}{\frac{3\sqrt{3}}{25a^2}}$$

$$\frac{Area \text{ of } \Delta ABC.}{Areas \text{ of three smaller } \Delta} - 1 = \frac{25}{12} - 1$$

$$\frac{Area \text{ of } \Delta ABC. - \text{ Areas of three smaller } \Delta}{Areas \text{ of three smaller } \Delta} = \frac{25-12}{12}$$

$$= \frac{\text{The area of three smaller } \Delta}{Areas \text{ of three smaller } \Delta} = \frac{13}{12}$$

## 9. Ans.(C)

$$B = 12 \text{ cm}$$

$$AO = 12 \text{ cm}$$

$$DO = 9 \text{ cm}$$

$$216 = \frac{1}{2} \times 24 \times d_2$$

$$d_2 = 18 \text{ cm}$$

In  $\triangle$  AOD , By the Pythagoras theorem AD<sup>2</sup> = 12<sup>2</sup> + 9<sup>2</sup> {Diagonal of rhombus} AD<sup>2</sup> = 144 + 81 AD<sup>2</sup> = 225 AD = 15 cm So, The length of each side of rhombus will be 15 cm.

10. Ans.(A)

Area of parallelogram = (base x height) =  $20 \times 5.4 \text{ m}^2$ Area =  $108 \text{ m}^2$ 

11. Ans.(B)



Diagonal = d<sub>1</sub> = 2.8m Each sides = 5m In  $\triangle$  AOD  $AO = \frac{2.8}{2.8} = 1.4m$ 

$$AO = \frac{1}{2} = 1$$

$$AD = 5m$$

Diagonals of rhombus intersect each other at 900 angles. From the Pythagoras theorem,

 $OD^2 = (5)^2 - (1.4)^2$   $OD^2 = 23.04$  OD = 4.8mSo diagonal  $d_2 = 4.8 \times 2 = 9.6m$ Hence, the area of rhombus.  $= \frac{1}{2} \times d_1 \times d_2$ 

$$=\frac{1}{2} \times 9.6 \times 2.8$$
  
Area = 13.44 m<sup>2</sup>

12. Ans.(B)

Area of rhombus  $= \frac{1}{2}d_1d_2$   $= \frac{1}{2}d_1d_2 = 840$   $d_1d_2 = 1680 \dots i)$   $d_1^2 + d_2^2 = (side)^2 \times 4$   $d_1^2 + d_2^2 = 37 \times 37 \times 4$   $d_1^2 + d_2^2 = 5476 - - -(ii)$   $\therefore (d_1 + d_2)^2 = d_1^2 + d_2^2 + 2d_1d_2$ From equation (i) and (ii) -

$$\Rightarrow (d_1 + d_2)^2 = 5476 + 2 \times 1680$$
  

$$\Rightarrow (d_1 + d_2)^2 = 5476 + 3360$$
  

$$\Rightarrow (d_1 + d_2)^2 = 8836$$
  

$$\Rightarrow (d_1 + d_2)^2 = (94)^2$$
  

$$\Rightarrow d_1 + d_2 = 94cm$$

13. Ans.(C)

14.

15.



OD = 13cm Perimeter of rhombus = 56 cm 4 a = 56 Side (a) = 14 cm From the Pythagoras theorem  $(AO)^2 = (AD)^2 - (DO)^2$   $(AO)^2 = (14)^2 - (13)^2$   $(AO)^2 = 196 - 169$   $(AO)^2 = 27$   $AO = \sqrt{27}$ Diagonal (AC) = 2 ×  $\sqrt{27}$ (AC) =  $6\sqrt{3}cm$ **Ans.(D)** 

A  
B  
C  
S of 
$$\triangle$$
 BCD =  $\frac{12+25+17}{2} = \frac{54}{2} = 27$   
Area of  $\triangle$  BCD =  $\sqrt{s(s-a)(s-b)(s-c)}$   
=  $\sqrt{27(27-12)(27-25)(27-17)}$   
=  $\sqrt{27 \times 15 \times 2 \times 10}$   
=  $\sqrt{3 \times 9 \times 3 \times 5 \times 2 \times 2 \times 5}$   
=  $9 \times 5 \times 2 = 90$   
Area of parallelogram ABCD. =  $2 \times \triangle$  BCD  
=  $90 \times 2 = 180m^2$   
Ans.(C)



A rhombus is formed by joining the midpoints of all the sides of the rhombus and the area of that rhombus

Area of large rhombus

Area = 
$$\frac{96}{2}$$
 =  $48cm^2$ 

16.

17.



A C = 18 m  
B D = 24 m  
Area of Rhombus = 
$$\frac{1}{2} \times AC \times BD$$
  
 $216 = \frac{1}{2} \times AC \times BD$   
 $\frac{1}{2} \times AC \times 24 = 216$   
 $AC = 18cm$   
Length of each side of rhombus  
 $= \sqrt{(OC)^2 + (OB)^2}$   
 $= \sqrt{9^2 + 12^2}$   
 $= \sqrt{9^2 + 12^2}$   
 $= \sqrt{81 + 144}$   
 $= \sqrt{225} = 15$  Meter  
**Ans.(A)**  
Area of a parallelogram or trapezoid  
 $= \frac{1}{2}$  (sum of parallel sides) × distance  
 $= \frac{1}{2}(10 + 15) \times \text{distance}$   
 $150 = \frac{1}{2} \times 25 \times \text{distance}$   
distance  $= \frac{300}{25} = 12$  meter

## 18. Ans.(C)

Area of rhombus = 324cm<sup>2</sup> The length of a diagonal d<sub>1</sub> = 36 cm



Area of rhombus =  $\frac{1}{2} \times d_1 \times d_2$ 

$$324 = \frac{1}{2} \times 36 \times d_2$$
  

$$d_2 = 18 \text{ cm}$$
  
According to the image,  

$$(AB)^2 = (OA)^2 + (OB)^2$$
  

$$= 9^2 + 18^2$$
  

$$= 81 + 324$$
  

$$(AB)^2 = 405$$
  

$$AB = 9\sqrt{5}cm$$
  
Thus, the length of each side of rhombus is  

$$9\sqrt{5}cm.$$

#### 19. Ans.(C)

The diagonals of a rhombus bisect each other.



20. Ans.(B)

Let the side of the square = a

- $\therefore$  Diagonal of the square = a  $\sqrt{2}$
- : Height of equilateral triangle (h) =  $a\sqrt{2}$





$$AD = a\sqrt{2}$$

$$AD^{2} = AC^{2} - DC^{2}$$

$$2a^{2} = x^{2} - \frac{x^{2}}{4}$$

$$2a^{2} = \frac{3x^{2}}{4}$$

$$x^{2} = \frac{8}{3}a^{2}$$

Area of equilateral  $\Delta = \frac{\sqrt{3}}{4} \times x^2$  $= \frac{\sqrt{3}}{4} \times \frac{8}{4}a^2$ 

$$= \frac{1}{4} \times \frac{1}{3}a^{2}$$
$$= \frac{2}{\sqrt{3}}a^{2}$$

Area of the square =  $a^2$ Area of equilateral  $\Delta$  : Area of the square =  $\frac{2}{\sqrt{3}}a^2:a^2$ =  $2:\sqrt{3}$ 

### 21. Ans.(B)

Perimeter of rectangle = 2 (length + width) = 2 (12 + 8) = 40 cm Given that, Perimeter of rhombus = perimeter of rectangle .....(i) Let the side of the rhombus be a cm, From equation (i), 4a = 40a = 10In  $\Delta$  ADE

в 10 120%  $sin \ 60^\circ = \frac{h}{10}$  $\Rightarrow \frac{\sqrt{3}}{2} = \frac{h}{10}$ Height (h) =  $5\sqrt{3}$  cm Area of rhombus. = Base × height  $= 10 \times 5\sqrt{3}$  $= 50\sqrt{3}cm^2$ Ans.(B) Area of the circle=  $\pi r^2$ : Cost at Rs.10 per square meter = Rs.1540 : Area of the circle =  $\frac{1540}{10}$ = 154  $\pi r^2 = 154$  $r^2 = \frac{154 \times 7}{22}$  $r^2 = 49$  $r = 7 \, {\rm m}$ Circle perimeter =  $2\pi r$  $= 2 \times \frac{22}{7} \times 7$ = 44 m Cost of fencing at the rate of Rs. 6 per meter  $= 6 \times 44 = Rs.264$ Ans.(A)



In a cyclic quadrilateral, the bisector of the opposite angle will pass through the center. Therefore,

XY = ACAnd AC is the diameter of the circle.

And AC is the diameter of the c

**24.** Ans.(B)

22.

23.

On condition –  $2\pi r - 2r = 15$ 

$$2r(\pi - 1) = 15$$

$$2r\left(\frac{22}{7} - 1\right) = 15$$

$$2r\left(\frac{15}{7}\right) = 15$$

$$2r = 7$$

$$\boxed{r = 3.5m}$$

25. Ans.(C)

> Let the inner radius of the ring =  $r_1$ And outer radius =  $r_2$ According to Question -

28.

**29**.

30.

п

п п

Ring thickness = 
$$r_2 - r_1$$
  
=  $7 - \frac{7}{2} = \frac{7}{2}cm$  = 3.45 cm

#### **26**. Ans.(B)

Let the external radius =  $r_1$ Internal radius =  $r_2$ Given, Circumference of circle  $2\pi r_1 = 220$  $\Rightarrow r_1 = 35m$  $\Rightarrow 2\pi r_2 = 44 \Rightarrow r_2 = 7m$ The area of the garden including the road =  $2\pi r_1^2 = \frac{22}{7} \times 35 \times 35$ = 3850 m<sup>2</sup> Garden area =  $2\pi r_2^2 = \frac{22}{7} \times 7 \times 7 = 154m^2$ Area of the road =  $3850 - 154 = 3696m^2$ 

#### 27. Ans.(D)

Area of equilateral  $\Delta = \frac{\sqrt{3}}{4}a^2$ 

$$\frac{\sqrt{3}}{4} \times a^2 = 9\sqrt{3}$$

$$a^2 = 36$$

$$a = 6$$
A
A
B
r
A

Radius of circumcircle of equilateral triangle with side a =

$$\frac{a}{\sqrt{3}} = \frac{6}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$$

$$= 2\sqrt{3}$$
Area of the circle =  $\pi r^2$ 

$$= \pi \times 2\sqrt{3} \times 2\sqrt{3}$$
Hence the area of the circle =  $12\pi$ 
**Ans.(D)**  
Let the outer radius of the ground = R  
Internal radius of the field = r  
Outer perimeter of the field =  $2\pi R$   
 $2\pi R = 154$   
 $\pi R = 77$   
 $R = 49/2$   
Internal circumference of the field  $2\pi r$   
 $2\pi r = 88$   
 $\pi r = 44$   
 $r = 14$   
Field width =  $R - r = \frac{49}{2} - 14$   
 $= \frac{49 - 28}{2} = \frac{21}{2} = 10.5m$   
**Ans.(C)**  
 $\checkmark$   
 $\therefore$  Diameter of semicircle =  $14m$   
 $2r = 14$   
 $r = 7m$   
Perimeter of semicircle =  $\pi r + 2r$   
 $= \frac{22}{7} \times 7 + 14$   
 $= 22 + 14 = 36m$   
**Ans.(B)**  
Wheel diameter = 56 cm  
 $d = 56cm$   
 $\therefore r = \frac{d}{2}$   
 $r = \frac{56}{2} = 28cm$   
Let the wheel rotate n times to c  
distance of 88 km  
 $\pi \times 2\pi r = \frac{98}{2}m$ 

over a

$$n \times 2\pi r = 88km$$
 [1km = 100000cm]  

$$n = \frac{\frac{88 \times 100000}{2 \times \frac{22}{7} \times 28}}{n}$$
  

$$n = \frac{\frac{88 \times 100000}{2 \times 88}}{n}$$
  

$$n = 50000$$

31. Ans.(A)

Number of days =  $\frac{\text{Volume of cuboid}}{\text{Population × Requirement}}$ =  $\frac{15 \times 8 \times 6 \times 1000}{4000 \times 9}$  ( $\because 1 \text{ meter}^3 = 1000 \text{ liter}$ ) = 20 days

## 32. Ans.(A)

If the length of each core of the cube = a unit  $\therefore$  Sum of lengths of cube cores = 12a unit If each side of the square = b, then the perimeter of the square = 4b unit First condition,

$$12a = \frac{3}{5} \times 4b$$
  
or  $a = \frac{b}{5}$ 

Now according to the second condition,  $a^3 = b^2$ 

or, 
$$\left(\frac{b}{5}\right)^3 = b^2$$

or,  $\frac{b}{125} = b^2$ or b = 125 Now the perimeter of the square  $= 4b = 4 \times 125 = 500$  unit

33. Ans.(D)

Let the side of the square tank = x m



:. Area of square tank (covered with carpet) =  $x^2$ Area of oil cloth =  $10 \times 10 - x^2$ =  $100 - x^2$ :.  $15x^2 + 6.50(100 - x^2) = 1338.50$   $15x^2 + 650 - 6.5x^2 = 1338.50$   $8.5x^2 = 688.50$   $x^2 = \frac{688.5}{8.5}$  $x^2 = 81$ 

x = 9 ∴ Width of oil cloth border =  $\frac{10-x}{2}$ =  $\frac{10-9}{2} = \frac{1}{2}$  meter. 34. Ans.(A)



Area of square =  $28^2 = 784$  cm<sup>2</sup> Hence the area of the four sectors

$$= 4 \times \frac{\theta}{360} \pi r^{2}$$

$$4 \times \frac{90}{360} \times \frac{22}{7} \times 14 \times 14$$

$$= 616$$
Area of the center of the squ

Area of the center of the square = area of the square. – Area of territories =  $784 - 616 = 168 \text{ cm}^2$ 

35. Ans.(D)

Let the side of the square = a m Area of square (a<sup>2</sup>) = 31684 m<sup>2</sup> a = 178 m Perimeter of Square = 4a = 4 × 178 = 712m According to Question – 1 wire length = 712 ×  $\frac{105}{100}$  = 747.60 Total length of all four wires = 747.60 × 4 = 2990.40m

36. Ans.(D)



Perimeter of octagon = LE + EF + FG + GH + HI + IJ + JK + KL

$$= 2 + \frac{1}{\sqrt{2}} + 2 + \frac{1}{\sqrt{2}} + 2 + \frac{1}{\sqrt{2}} + 2 + \frac{1}{\sqrt{2}}$$
$$= 8 + \frac{4}{\sqrt{2}}$$
$$= (8 + 2\sqrt{2})cm$$

Area of the octagon. = Area of the square. -4× area of cut triangular part.

= 
$$(3)^2 - 4 \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$$
  
=  $8.5cm^2$   
Ans.(A)



According to question,

Area of the square = half of the diagonal of the square

$$a^2 = a\sqrt{2} \times a = \frac{1}{\sqrt{2}}$$

Diagonal of square =  $a\sqrt{2}$ 

1

2

$$=\frac{1}{\sqrt{2}}\times\sqrt{2}=1$$

38.

37.



Area of the square field =  $110 \times 110$ = 12100 m Remaining area after taking out the road = 105 × 105 = 11025 m<sup>2</sup> Hence the area of the road = 12100 - 11025  $= 1075 \text{ m}^2$ 

39. Ans.(D)



Area of one tile = 
$$3 \times 5cm^2 = 15cm^2$$

$$15cm^{2} = \frac{13}{100 \times 100}m^{2}$$
  
Floor area =  $\frac{15}{100 \times 100} \times 2800m^{2}$   
=  $4.2m^{2}$ 

The cost of polishing the floor at the rate of 25 per sqm =  $4.2 \times 25$  = Rs. 105

#### 42 Ans.(B)

**40**.

41.

Taking the sides of the rectangular plot to the nearest integer Length = 35.5 m, width = 25.5 mMaximum perimeter of plot = 2(length + width)= 2(35.5 + 25.5)

= 2 × 61 = 122 m.

## 43. Ans.(A)

Given, Area of rectangle = 12.46 m<sup>2</sup> Length (I) = 3.5 m Width =  $\frac{12.46}{3.5m}$  = 3.56m b = 3.56m

### 44. Ans.(D)

Perimeter of rectangular land

= 2 (Length + Width)

The length and breadth of the rectangular plot are 28 m and 22 m respectively. Then perimeter = 2(28 + 22)

 $= 2 \times 50 = 100 m$ 

That is, the nearest perimeter of a rectangular plot will be 98 m. Which is the predecessor of 100 m.

## 45. Ans.(B)

Given –

The length and breadth of the rectangular field are 4xm and 3xm respectively. According to Question –

$$4x \times 3x = 1452$$

1

$$\Rightarrow 12x^2 = 1452$$

$$\Rightarrow x^2 = 12$$

 $\Rightarrow x = 11m$ 

 $= 4 \times 11 = 44$  m.

Breadth = 
$$3x = 3 \times 11 = 33$$
 m

4x

Perimeter of rectangular field = 
$$2 (L + B)$$

$$= 2(44 + 33)$$

$$= 2 \times (77)$$

= 154m. Hence the cost of making the boundary of the rectangular field =  $154 \times 12$ 

#### = *Rs*. 1848 46. Ans.(D)

47.

Ans.(D) 1 hectare = 10000 sq.m. Income = Area of field. × 30 Quintal × 620 Per quintal  $= \frac{250 \times 380.5 \times 30 \times 620}{10,000}$  = Rs. 176932.5Ans.(C)

A 20 cm wide border is extended from all sides. Then, 20 + 20 = 40 cm

Total increase part = (180 + 40) cm

= 220 cm Area of square =  $(side)^2$  $= (220)^2$  $= 48400 cm^2$  $= 4.84m^2$ Ans.(A) **← y → ← y → ←** -v- $-x \rightarrow$ <u>- x</u> -4 It is clear from the image, 2x = 3yAccording to Question 5xy = 6000 $5x \times \frac{2x}{3} = 6000$  $x^2 = 1800$  $= 30\sqrt{2}$ Ans.(C) 5 m 4.40 m. 60 m 1.2 m

48.

49.

**50**.

Carpet area =  $5 \text{ m} \times 1.2\text{m} = 6\text{m}^2$ Area of remaining carpet except border =  $4.40\text{m} \times 0.60 \text{ m}$ Border area = 6 - 2.64 = 3.36Border printing cost =  $3.36 \times 225 = 756$ **Ans.(A)** Let short side = y m

Area of large rectangle = area of all five congruent rectangles.



But,  

$$5xy = 7500$$
  
 $5x \times \frac{2}{3}x = 7500$   
 $x^2 = 2250$   
 $x = 15\sqrt{10}$  m.

51. Ans.(B)

Area of the rectangle. = Length × Width  $2x^2 + 3x + 1 = (2x + 1) \times Width$   $= (2x^2 + 3x + 1)$   $= (2x^2 + 2x + x + 1)$  = 2x(x + 1) + 1(x + 1)  $(2x + 1) \times Width = (x + 1)(2x + 1)$ Width = (x + 1)

## 52. Ans.(C)

According to Question, Hall length = 20m Hall width = 18 m Area of hall area = 20 × 18 [150cm = 1.5m] = 360 m<sup>2</sup> Carpet width = 1.5 m Cost = Rs. 12 per m Carpet expense =  $\frac{360}{1.50} \times 12$ = Rs. 2880

## 53. Ans.(D)

Let the length of core of cube = a unit Length of side of square = b unit According to first condition,  $12a = \frac{4b}{8} \Rightarrow b = 24a$  .....(i) Second condition –  $a^3 = b^2 \Rightarrow a^3 = 24 \times 24 \times a^2$  a = 576 unit Thus, length of core of cube = 576 units

### 54. Ans.(C)

Let the side of the cube = a unit Volume of a cube =  $a^3$  cubic unit On doubling, side = 2aNew volume =  $(2a)^3 = 8a^3$  cubic unit Hence, its volume will increase by 8 times its actual volume.

### 55. Ans.(C)

Given,  $r = \frac{80}{2} = 40$  cm, a = 80 cm Unpainted surface area  $= 6a^2 - \{6 \times (\pi r^2)\}$ 

$$= 6 \times (80)^{2} - \left\{ 6 \times \frac{22}{7} \times (40)^{2} \right\}$$
  
= 38400 - \{6 \times 5028.57\}  
= 38400 - 30171.42  
= 8228.58cm^{2} \approx 8228.57cm^{2}

## 56. Ans.(C)

Let n be the number of new cubes.

$$n = \frac{\text{Orthogonal parallel hexahedron metal volume}}{\text{Volume of Cube}}$$
$$= \frac{3.6 \times 2.5 \times 1.8}{0.3 \times 0.3 \times 0.3}$$
$$= 12 \times 50$$

$$= 12 \times 50$$
  
= 600

## 57. Ans.(B)

Volume of cube with side  $a = a \times a \times a = a^3$ Volume of a cube with side a/2

$$=\left(\frac{a}{2}\right)^3 = a^3 \times \frac{1}{8}$$

Therefore, by halving the sides of the cube, its volume will be reduced by 1/8 times.

## 58. Ans.(B)

Let the edge of the cube = a cm According to Question,  $(a + 1)^3 - a^3 = 169$   $a^3 + 1 + 3a(a + 1) - a^3 = 169$   $3a^2 + 3a - 168 = 0$   $a^2 + a - 56 = 0$   $a^2 + 8a - 7a - 56 = 0$  a(a + 8) - 7(a + 8) = 0 (a + 8)(a - 7) = 0 $\therefore a = 7 \text{ cm } a = -8 \text{ (Invalid)}$ 

### 59. Ans.(B)

Let length of room = 3xWidth = 3xHeight = 4xRoom area =  $2(1 + w) \times h$ =  $2(3x + 3x) \times 4x$ =  $48x^2$ When the length is doubled, width is two thirds and height is halved, then the new area obtained.

 $= 2 \left( 3x \times 2 + 3x \times \frac{2}{3} \right) \times \frac{4x}{2}$ = 2(6x + 2x) × 2x = 16x × 2x = 32x<sup>2</sup> decrease = 48x<sup>2</sup> - 32x<sup>2</sup> = 16x<sup>2</sup> % decrease =  $\frac{16x^{2}}{48x^{2}} \times 100 = \frac{100}{3} = 33\frac{1}{3}\%$ 

60. Ans.(D)



Side of truncated square =  $\sqrt{.25}cm^2$ = 0.5 cm Therefore, Cubic height = 0.5 Cubic length = 6 cm Cubic breadth = 6 cm Volume of cuboid = lbh = 0.5 × 6× 6 = 18 cm<sup>3</sup>

### 61. Ans.(D)

Let the sides be 2x cm 3x cm and 5x cm. Total surface area of cuboid = 2(lb + bh + hl) 2(lb + bh + hl) = 6200  $2(6x^2 + 15x^2 + 10x^2) = 6200$   $31x^2 = 3100$   $x^2 = 100 \Rightarrow x = 10 cm$ Hence sides or dimensions of the cuboid –  $2x = 2 \times 10 = 20 cm$   $3x = 3 \times 10 = 30 cm$  $5x = 5 \times 10 = 50 cm$ 

### 62. Ans.(D)

Area of the cube =  $343 \text{ cm}^3$ So the side of the cube = 7 cm



Cuboid area = 2(1b + b h + hl)According to Question –

- 1 = 7 + 7 = 14, b = 7, h = 7 ∴ Cuboid area =  $2(14 \times 7 + 7 \times 7 + 7 \times 14)$ = 490 sq. m.
- 63. Ans.(B)

Volume of water tank =  $l \times b \times h$ =  $5 \times 3 \times 1 = 15m^3$ =  $15 \times 1000L$  (1 cubic m = 1000 L)

## 64. Ans.(D)

Area of the first face of the cuboid (lb) = length × breadth. =  $25 \text{ m}^2$ 

= breadth.  $\times$  height = 32 m<sup>2</sup> Area of third face of cuboid (hl) = height x length. =  $32 \text{ m}^2$ Now, Volume of cuboid =  $\sqrt{lb \times bh \times lh}$  $=\sqrt{25 \times 32 \times 32}$  $=\sqrt{5\times5\times16\times2\times16\times2}$  $= 5 \times 4 \times 4 \times 2 = 160$ Hence volume of cuboid =  $160 \text{ m}^3$ Ans.(D) A<sup>.5</sup> cm ← -8 cm-.5 cm .5 cm f 8 cm 0.5 cm R The side of cut square = =  $\sqrt{.25}$  = .5cm : Open-top cuboid volume  $= 8 \times 8 \times 0.5 = 32 cm^3$ Ans.(A) Let the side of the cube be a cm. Volume of the cube =  $(side)^3$  $216 = a^3$  $a = \sqrt[3]{216}$ a = 6cmBy connecting the two cubes l = 12, b = 6, h = 6Surface area of cuboid = 2(I b + b h + h I) $= 2(12 \times 6 + 6 \times 6 + 6 \times 12)$ = 2(72 + 36 + 72) $= 2(180) = 360 cm^2$ Ans.(C) Radius of the compartment (r) = 5 cmThe water level in the compartment increases from 10 cm to 17 cm. So height = 17 - 10 = 7 cm Thus the box will be in the form of cylinder. Hence, Volume of cylinder =  $\pi r^2 h$ 

Area of second face of cuboid (bh)

$$=\frac{22}{7} \times (5)^2 \times 7 = 22 \times 25 = 550 \text{ cm}$$

## 68. Ans.(A)

65.

66.

67.

Diameter of sphere = 42 cm Radius =  $\frac{42}{2}$  = 21cm = 21 × 10<sup>-2</sup>m Diameter of wire (cylinder) = 7m Radius (r) =  $\frac{7}{2}mm = \frac{7}{2} \times 10^{-3}$  Volume of sphere = Volume of cylinder  $\frac{4}{3}\pi R^{3} = \pi r^{2}h$   $\frac{4}{3} \times (21 \times 10^{-2})^{3} = \left(\frac{7}{2} \times 10^{-3}\right)^{2} \times h$   $\frac{4}{3} \times 21 \times 21 \times 21 \times 10^{-6} = \frac{7}{2} \times \frac{7}{2} \times 10^{-6} \times h$   $h = \frac{4}{3} \times \frac{21 \times 21 \times 21 \times 21 \times 4}{7 \times 7}$   $h = 16 \times 3 \times 21$  h = 1008 mThus, length of wire (h) = 1008 m **Ans.(A)** Surface area of solid shape = surface area of cylinder. + Area of the circle. (On both ends)

$$= 2\pi r(h + r) + 2\pi r^{2}$$
  
=  $2\pi r[(h + r) + r]$   
=  $2 \times \frac{22}{7} \times \frac{7}{2} [(10 + \frac{7}{2}) + \frac{7}{2}]$   
=  $22 [\frac{27}{2} + \frac{7}{2}]$   
=  $11 \times 34$   
=  $374$  cm  
Ans.(C)

#### **70**.

69.

Given -

∴ External and internal diameter of hollow sphere are 12 cm and 8 cm respectively. ∴ External radius (R) of hollow sphere = 6 cm And internal radius (r<sub>1</sub>) = 4 cm Diameter of cylinder (2r) = 16 cm  $r_2 = \frac{16}{2} = 8$  cm According to Question

Volume of hollow sphere = Volume of cylinder  $\frac{4}{3}\pi(R^3 - r_1^3) = \pi r_2^2 h$ 

$$\frac{4}{3}\pi [(6)^3 - (4)^3] = \pi (8)^2 \times h$$
$$\frac{4}{3}\pi [216 - 64] = 64\pi h$$

$$\frac{1}{3}$$
[152] = 16h

 $\Rightarrow$  50.667 = 16 $h \Rightarrow h$  = 3.17 cm

71. Ans.(A)

Capacity of cylindrical tank = 20790m<sup>3</sup>  $\pi r^2 h = 20790$   $\frac{22}{7} \times (10.5)^2 \times h = 20790$   $\frac{22}{7} \times 10.5 \times 10.5 \times h = 20790$   $\frac{22}{7} \times \frac{105}{10} \times \frac{105}{10} \times h = 20790$   $\frac{22 \times 21 \times 21}{7 \times 2 \times 2} \times h = 20790$   $\frac{11 \times 63}{2} \times h = 20790$   $h = \frac{20790 \times 2}{11 \times 63}$ h = 60m Thus, depth = 60 m

#### 72. Ans.(C)

Let radius of cylinder = r Then the radius of the sphere  $(r_2) = 3r$ Height of cylinder (h) = 9rAccording to Question, Volume of sphere = surface area of cylinder

$$\frac{4}{3}\pi(r_2)^3 = 2\pi r(h + r)$$
  

$$\Rightarrow \frac{4}{3}\pi(3r)^3 = 2\pi r(9r + r)$$
  

$$\Rightarrow \frac{4}{3}\pi 27r^3 = 20\pi r^2$$
  

$$r = \frac{5}{9} \text{ unit}$$
  

$$h = 9r = 9 \times \frac{5}{9}$$
  

$$h = 5$$
  
Thus, height of cylinder = 5 unit

### 73. Ans.(A)

When the rectangular aluminum sheet is folded into a cylindrical form, the width will change as the height of the cylinder and the length will become the circumference of the base.

 $\therefore$  Height of cylinder (h) = 10 m

And circumference of cylinder base

$$= 2\pi r = 22$$
  

$$\Rightarrow 2 \times \frac{22}{7} \times r = 22$$
  

$$r = \frac{7}{2}m$$
  

$$\therefore \text{ Volume of Cylinder (V)} = \pi r^{2}h$$
  

$$\therefore V = \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 10$$
  

$$V = 11 \times 7 \times 5 = 385m^{3}$$

## 74. Ans.(D)

According to Question, The height and slant height of Elliptical cone are 24 cm and 25 cm respectively, Formula  $-l^2 = h^2 + r^2$  $\begin{cases} h = 24cm \\ l = 25cm \\ (25)^2 = (24)^2 + r^2 \\ 625 = 576 + r^2 \\ 49 = r^2 \\ \hline{r} = 7cm \\ \hline{r} = 7cm \\ \hline{r} = 7cm \\ \hline{r} = 22 \\ \hline{r} \times 7 \times 25 \\ = 22 \times 25 \\ = 550 \ cm^2 \end{cases}$ 

75. Ans.(D)

 $= \frac{7}{7} \times 6 \times 5.6 = 0.6 \times 6 \times 22 = 140.6111$ 

Hence the quantity of fabric required for tent construction

 $= \frac{Curve \ surface \ area \ of \ cone}{Width}$  $= \frac{140.8}{4} = 35.2 \ m$ 

### 76. Ans.(C)

Curve surface area of cone =  $\pi rl$ Curve surface area of cone X = Curve surface area of cone Y × 5  $\pi r_1 l_1 = \pi r_2 l_2 \times 5$   $r_1 l_1 = r_2 l_2 \times 5 \dots \dots (1)$ 5 × slant height of the cone X = Slant height of the cone Y  $5l_1 = l_2$ Putting the value of  $l_2$  in equation (1)  $r_1 l_1 = r_2 \times 5 l_1 \times 5$  $r_1 = 25$ 

$$\frac{r_1}{r_1} = \frac{2}{r_1}$$

 $\overline{r_2} = \overline{1}$ Ratio of area of base of cone X and cone Y

$$=\frac{\pi r_1^2}{\pi r_2^2} = \frac{(25)^2}{(1)^2} = 625:1$$

77. Ans.(A)

According to Question, Slant height I = 15 cm Diameter of cone = 28cm

$$2r = 28cm$$
  

$$r = 14cm$$
  

$$h = \sqrt{\ell^2 - r^2}$$
  

$$h = \sqrt{(15)^2 - (14)^2}$$
  

$$h = \sqrt{29}$$
  
So the volume of the cone =  $\frac{1}{3}\pi r^2 h$   

$$= \frac{1}{3} \times \frac{22}{7} \times 14 \times 14 \times \sqrt{29}$$
  

$$= \frac{22 \times 2 \times 7 \times 14 \times \sqrt{29}}{3 \times 7}$$
  

$$= \frac{44 \times 14}{3} \sqrt{29}$$
  

$$= \frac{616}{3} \sqrt{29} cm^3$$

### 78. Ans.(D)

Diameter of solid sphere = 36 cmRadius (R) of solid sphere = 18 cmDiameter of the cone = 12 cmRadius of the cone (r) = 6 cmHeight of cone (h) = 12 cmLet the number of cones made by melting solid sphere is n Volume of solid sphere

$$n = \frac{\frac{4}{3}\pi R^{3}}{\frac{1}{3}\pi r^{2}h}$$

$$n = \frac{\frac{4 \times 18 \times 18 \times 18}{6 \times 6 \times 12}}{6 \times 6 \times 12}$$

$$n = 54 \text{ Cone}$$

Thus, number of cones made by melting solid sphere = 54

79. Ans.(C)



Curve surface area =  $2\pi rh + \pi rl$ 

$$= \pi r (2h + l)$$
  
=  $\frac{22}{7} × 63(2 × 24 + 80)$   
= 198(48 + 80)  
= 198(128)  
= 25344m<sup>2</sup>  
Area of canvas = (l × w) = 25344  
| × 8 = 25344  
∴ l =  $\frac{25344}{8}$   
Required Canvas = 3168 m

#### 80. Ans.(B)

Volume of cone =  $\frac{1}{3}\pi r^2 h$ Radius = 5 cm Height = 12 cm Volume of the shape = 2 × Volume of an elliptical cone Volume of shape =  $\frac{1}{3} \times 3.14 \times 5 \times 5 \times 12 \times 2$ 1884

$$=\frac{1004}{3}=628cm^3$$

### 81. Ans.(A)

Volume of cylinder =  $\pi r^2 h$ 

$$= \pi \left(\frac{1.5}{2}\right)^2 \times 1$$
$$= \frac{2.25\pi}{4}$$
 cubic meter

Volume of cylinder = Volume of molten sphere  $225\pi$  4 = 3

$$\frac{1}{4} = \frac{1}{3}\pi R^{3}$$

$$R^{3} = \frac{2.25 \times 3}{16}$$

$$= \frac{3 \times 3 \times 3 \times 0.5 \times 0.5}{2 \times 2 \times 2 \times 2}$$

$$= \frac{3^{3}}{2^{3} \times 2^{3}}$$

$$R = \frac{3}{4} \text{ m}$$
Thus, diameter of the sphere = 2R

$$= 2 \times \frac{1}{4}$$
$$= \frac{3}{2} m$$
$$= 1.5 m$$

Ans :(b)

82.

Volume of steel sphere with radius 6 cm

$$= \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times (6)^3$$
$$= \frac{4}{3} \times \pi \times 216$$

Volume of steel sphere of radius 1cm

$$=\frac{4}{3}\times\pi r^{3}$$

$$= \frac{4}{3}\pi \times (1)^{3}$$

$$= \frac{4}{3}\pi \times 1$$
Number of balls =  $\frac{\text{Volume of big sphere}}{\text{Volume of small sphere}}$ 

$$= \frac{\frac{4}{3}\pi \times 216}{\frac{4}{3}\pi \times 1} = 216$$

$$= 216 \text{ (Balls can be made)}$$
Ans.(A)



Diagonal of rectangle =  $\sqrt{(16)^2 + (12)^2}$  $\Rightarrow \sqrt{400} = 20cm$ 

We place the perpendicular from the top E to the bottom at point F and we will consider DF to be the base of the right angle  $\Delta a$  and the height of the pyramid is h and the hypotenuse is 26 cm.

Height  $(h) = \sqrt{(26)^2 - (10)^2} = 24cm$ Volume of a pyramid  $= \frac{1}{3} \times$  area of a rectangle × height

< height

$$=\frac{1}{3} \times 16 \times 12 \times 24$$

$$= 1536 cm^3$$

## 84. Ans.(B)

83.

Let the bases of prisms be 8x, 15x and 17x respectively. Sum of the areas of the side of the surface

= 840

Side = Perimeter of base  $\times$  height.

$$840 = (8x + 15x + 17x) \times 21$$

$$\begin{array}{r} 840 = 40x \times 21 \\ 840 \end{array}$$

$$x = \frac{010}{40 \times 21} = 1$$

So right triangular sides are 8 cm, 15 cm, 17 cm.

The triangle (the base of the prism) is a right angle.

 $\therefore (17)^2 = (8)^2 + (15)^2$ 289 = 289

Volume of a prism=area of the base x height

$$= \frac{1}{2} \times 8 \times 15 \times 21 = 60 \times 21 = 1260 cm^3$$

85. Ans.(A)

> Suppose the water in the jar will rise to the height of h level.

The radius of the circular cylinder = 14 c.m. Radius of spherical ball = 5.6 c.m.

Volume of spherical cylinder = volume of spherical ball

$$\pi r_1^2 h = \frac{4}{3} \pi r_2^3$$
$$r_1^2 h = \frac{4}{3} r_2^3$$

$$14 \times 14 \times h = \frac{4}{3} \times 5.6 \times 5.6 \times 5.6$$
$$n = \frac{4}{3} \times \frac{5.6 \times 5.6 \times 5.6}{14 \times 14}$$

$$h = 1.194 \approx 1.2 cm$$

86. Ans.(D)

1

Number of bricks = 
$$\frac{\text{Area of the floor of the hall}}{\text{Area of the brick}}$$
  
=  $\frac{16 \times 100 \times 10 \times 100}{20 \times 10}$   
= 8000

Circumference of a circle = perimeter of a square  $2\pi r = 4a$ 

$$a = \frac{\pi r}{2}$$

Ratio of area =  $\frac{\pi r^2}{a^2} = \frac{\pi r^2}{\frac{\pi^2 r^2}{4}} = \frac{4 \times 7}{22} = \frac{14}{11}$ 

#### 88. Ans.(D)

Number of bricks

$$= \frac{16.8 \times 100 \times 2.5 \times 100 \times 12}{20 \times 12 \times 8}$$
$$= \frac{1680 \times 250 \times 12}{20 \times 12 \times 8} = \frac{210 \times 250}{20}$$

$$=\frac{52500}{20}=2625$$

Ans.(B) Number of iron cubes  $= \frac{1.8 \times 100 \times 1.5 \times 100 \times 1.2 \times 100}{1.2 \times 100}$ 6×6×6  $\frac{180 \times 150 \times 120}{6 \times 6 \times 6} = 15000$ =

Let the radius of the cone be R and height H.

r.

$$R = \frac{H}{3}$$
 .....(i)  
Let the radius of hemisphere be r.  
According to Question –  
Volume of cones = Volume of hemisphere  
 $\frac{1}{3}\pi R^2 H = \frac{2}{3}r^3\pi$   
From equation (i)

$$R = \frac{H}{3}$$

$$\frac{1}{3} \times 3R^{3} = \frac{2}{3}r^{3}$$

$$\frac{R^{3}}{r^{3}} = \frac{2}{3}$$

$$\left(\frac{R}{r}\right)^{3} = \frac{2}{3}$$

$$\frac{R}{r} = \sqrt[3]{\frac{2}{3}}$$
Ans.(D)

91.



Volume of rocket = volume of cone + volume of cylinder - Volume of semicircle

$$= \frac{1}{3}\pi r^{2}h + \pi r^{2}H - \frac{2}{3}\pi r^{3}$$

$$= \frac{1}{3}\pi r^{2}(h + 3H - 2r)$$

$$= \frac{1}{3}\pi \times 3 \times 3(3 + 3 \times 10 - 2 \times 3)$$

$$= 3\pi (33 - 6)$$

$$= 3\pi \times 27 = 81\pi \text{ cube metre}$$

#### **92**. Ans.(D)

Having same circumference = same perimeter Let the side of the hexagon be x and the side of the square be y.

Then, their perimeter 6x = 4y.

$$\frac{x}{y} = \frac{4}{6}$$

$$\frac{x}{y} = \frac{2}{3}$$
Ratio of square area  $= \frac{\frac{3\sqrt{3}}{2} \times (x)^2}{(y)^2}$ 

$$= \frac{\frac{3\sqrt{3}}{2} \times (2)^2}{(3)^2} = \frac{6\sqrt{3}}{9} = \frac{2\sqrt{3}}{3}$$

$$= \frac{2\sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{2}{\sqrt{3}}$$

Required ratio =  $2:\sqrt{3}$  या  $\sqrt{3}:2$ 

93. Ans.(B) Let the radius of the sphere be r Circle area =  $4\pi r^2$ ....(i) The area of the box made for the sphere = Curve surface area of box  $2\pi rh = 2\pi r \times 2r$  ......(ii) From equation (i) and (ii),  $\frac{\text{Area of sphere}}{\text{Area of box}} = \frac{4\pi r^2}{4\pi r^2} = 1$ 

**94**.



Total area of the tent = Surface area of cylinder. + Surface area of cone.

$$= 2\pi rh + \pi r\ell = \frac{22}{7} \times 56(2 \times 12 + 60) = 22 \times 8 \times 84 = 14784 \text{ m}$$

Let the length of the canvas = I metre.

Hence, the area of the canvas = Area of tent  $4 \times \ell = 14784$ 

$$\ell$$
 = 3696 m.

95. Ans.(D)

Side of the cube = 10 cm (diameter of the sphere)

Radius of the sphere = 5 cm

According to Question, Empty space in the box = Volume of the cube

- Volume of the sphere.

= 
$$10 \times 10 \times 10 - \frac{4}{3}\pi \times 5^{3}$$
  
=  $1000 - 523.80$   
=  $476.19cm^{3}$   
Percentage of empty space  
 $_{476.19\times 100}$ 

1000

## = 47.619 ≅ 47.62%

#### Ans.(A)

96.

Volume of water drawn by a pipe = area of cross section = velocity of water

in the box =

= 
$$10.4cm^2 \times 54km/h \times 5min \times \frac{60}{100}$$
  
=  $10.4 \times 10^{-4}m^2 \times 54 \times \frac{5}{18}m/sec$   
 $\times 5 \times 60sec \times \frac{60}{100}$   
=  $10.4 \times 10^{-4}m^2 \times 15 \times 5 \times 36$   
=  $28080 \times 10^{-4}m^3$   
=  $28080 \times 10^{-4} \times 1000$   
=  $28080 \times 10^{-4} \times 10^3$  litre  
=  $28080$  litre  
**Ans.(B)**



Height of equilateral triangle = Diagonal of the square  $\times \frac{1}{2}$ 

$$\frac{\sqrt{3}}{2}a = \sqrt{2}b \times \frac{1}{3} \Rightarrow \frac{a}{b} = \frac{2\sqrt{2}}{3\sqrt{3}}$$

$$\Rightarrow \frac{\text{Area of equilateral triangle}}{\text{Area of square}}$$

$$= \frac{\sqrt{3}}{\frac{4}{b^2}}a^2 = \frac{\sqrt{3}}{\frac{4}{3\sqrt{3}} \times 2\sqrt{2} \times 2\sqrt{2}}{3\sqrt{3} \times 3\sqrt{3}}$$

$$= 2:9\sqrt{3}$$

98. Ans.(A)

97.

Ratio of areas of both square = 1: 3 Ratio of sides = 1:  $\sqrt{3}$ Perimeter of the square = 4a Ratio of perimeter of both squares =  $4 \times 1: 4 \times \sqrt{3} = 1: \sqrt{3}$ 



Total area of the transverse section = 288m<sup>2</sup>  $\frac{1}{2} \times a \times a + \frac{1}{2} \times a \times a + \frac{1}{2} \times b \times b + \frac{1}{2} \times b \times b$  $\frac{1}{2} \times b \times b = a^2 + b^2 = 288$ So, in rectangle in PQRS Diagonal (PR)  $= \sqrt{PQ^2 + RQ^2} = \sqrt{2 \times a^2 + 2 \times b^2}$  $=\sqrt{2(a^2+b^2)}=\sqrt{2\times 288}$  $=\sqrt{576} = 24m$ 100. Ans.(B) Wall length = 4.84m = 484cm Wall height = 3.1m = 310cm Number of tiles =  $\frac{484 \times 310}{22 \times 10}$  = 682 Price of one tile = Rs. 1.50 Total price of tiles =  $682 \times 1.50$ = Rs. 1023101. Ans.(A) Area of rectangular sheet. =  $I \times w$  $= 2.2 \times 100 \times 2.1 \times 100$  $= 220 \times 210$ = 46200 sq. m. According to Question The diameter of the container is equal to its height Thus, height = 14 cm and Radius = 7 cm Area of container = Surface area of the container + Area of the base  $2\pi rh + \pi r^2 = 2 \times \frac{22}{7} \times 7 \times 14 + \frac{22}{7} \times 7 \times 7$ = 616 + 154 = 770 sq cm So the number of containers made from the given seat =  $\frac{46200}{770} = 60$ Therefore, the cost of manufacturing 60 containers at the rate of Rs. 50 per container. = 60 × 50 = Rs. 3000 **102**. Ans.(B) Perimeter of a hexagon = 72cm 6a = 72cma = 12cmArea of rhombus =  $6 \times \frac{\sqrt{3}}{4}a^2$  $= 6 \times \frac{\sqrt{3}}{4} \times (12)^2$  $= 6 \times \frac{\sqrt{3}}{4} \times 144$  $= 6 \times 36\sqrt{3}$  $= 216\sqrt{3}cm^{2}$ 

103. Ans.(C)



104. Ans.(C)



From the Pythagoras theorem, Hypotenuse<sup>2</sup> = perpendicular<sup>2</sup> + base<sup>2</sup>  $(x + 8)^2 = (x + 4)^2 + x^2$   $x^2 + 64 + 16x = x^2 + 16 + 8x + x^2$   $x^2 - 8x - 48 = 0$   $x^2 - 12x + 4x - 48 = 0$  x(x - 12) + 4(x - 12) = 0 (x - 12)(x + 4) = 0Thus, x = 12, x = -4 (not possible)  $\therefore$  Hypotenuse = 12 + 8 = 20 cm **Ans.(B)** 

### 105. Ans.(B)

Let ABC be an equilateral triangle.



: Height of equilateral triangle (h) =  $\frac{\sqrt{3}}{2}a$ 

[Where 
$$AD = h = 15 \text{ cm}$$
]

$$15 = \frac{\sqrt{3}}{2}a$$
$$a = \frac{30}{\sqrt{3}}$$

: Area of triangle

$$= \frac{\sqrt{3}}{4} a^{2} \begin{bmatrix} \text{where } a = \frac{30}{\sqrt{3}} \\ a^{2} = 300 \end{bmatrix}$$
$$= \frac{\sqrt{3}}{4} \times 300 = 75\sqrt{3}cm^{2}$$

106. Ans.(A)

Let the heights of congruent  $\Delta$  be  $h_1$  and  $h_2$  respectively.

Formuls 
$$-\frac{(\text{side})_1}{(\text{side})_2} = \frac{h_1}{h_2}$$
  
 $\frac{2}{3} = \frac{h_1}{h_2}$   
 $h_1: h_2 = 2:3$ 

### 107. Ans.(A)

Let the smallest side of the right angle  $\Delta = x m$ . From the Pythagoras theorem

$$AC^2 = AB^2 + BC$$



Therefore, the length of the hypotenuse  $= 2x - 2 = 2 \times 6 - 2 = 10$ m.

## 108. Ans.(A)

Perimeter of rectangle = 2 (L + W) = 2 (5 + 4) = 18 cm And perimeter of equilateral triangle = 3 × side = 3a cm According to Question, Perimeter of rectangle = Perimeter of equilateral triangle  $18 = 3 \times \text{side} = 3a$  $\therefore a = 6$ Thus, the area of equilateral triangle =  $\frac{\sqrt{3}}{4} \times 6 \times 6 = 9\sqrt{3} \text{ cm}^2$ 

## 109. Ans.(A)

Let the length of the rectangle = 4cm and width = 2cm Perimeter of rectangle = 2(4+2) = 12 cm  $\therefore$  Perimeter of equilateral triangle= 3 x side  $\therefore$  Perimeter of equilateral triangle = Perimeter of rectangle  $\therefore$  Perimeter of equilateral triangle = 12cm  $\therefore$  Side of equilateral triangle = 4cm Area of equilateral triangle =  $\frac{\sqrt{3}}{4}$  (side )<sup>2</sup>  $\sqrt{3}$ 

$$= \frac{\sqrt{3}}{4} \times (4)^2 = \frac{\sqrt{3}}{4} \times 16 = 4\sqrt{3}cm^2$$

110. Ans.(A)



Area of parallelogram =  $b \times h$   $392 = 2h \times h$   $196 = h^2$ h = 14 meter.

111. Ans.(D)



$$AC = \sqrt{16^{2} + 12^{2}}$$
  
=  $\sqrt{256 + 144}$   
=  $\sqrt{400} = 20cm$   
ADC  $\vec{H}$   
$$ED = \sqrt{\left(\frac{25}{2}\right)^{2} - 10^{2}}$$
  
=  $\sqrt{\frac{625 - 400}{4}}$   
=  $\sqrt{\frac{225}{4}} = \frac{15}{2}$ 

Area of ABCD = Area of triangle ABC + Area of triangle ACD

$$=\frac{1}{2}\left(16\times12\,+\,\frac{15}{2}\times20\right)$$

$$= 16 \times 6 + 15 \times 5 = 96 + 75 = 171 cm^2$$
  
Ans.(D)

112.

113.



Side of rhombus ABCD = 16 cm And one diagonal  $BD = 16cm = d_1$  $\ln \triangle AOB -$ 

$$A0 = \sqrt{(AB)^2 - (BO)^2}$$
  
=  $\sqrt{(16)^2 - (8)^2}$   
=  $\sqrt{256 - 64}$   
 $A0 = \sqrt{192}$   
 $A0 = 8\sqrt{3}cm$   
Second diagonal  $(d_2) = 8\sqrt{3} + 8\sqrt{3}$   
=  $16\sqrt{3}cm$   
Area of rhombus =  $\frac{1}{2}(d_1 \times d_2)$   
=  $\frac{1}{2}(16 \times 16\sqrt{3})$   
=  $128\sqrt{3}cm^2$   
**Ans.(C)**  
 $\therefore$  Area of the circle = 616 sq.m.

$$\pi r^{2} = 616$$

$$r^{2} = \frac{616 \times 7}{22}, r^{2} = 196$$

$$r = 14 \text{ m}$$
Diameter = 2×14

Diameter = 28 m.

#### 114. Ans.(C)

Diameter = 28 cm. radius =  $\frac{\text{Diameter}}{2} = \frac{28}{2} = 14$  cm. Circumference of the semicircle  $= \pi r + 2r = r(2 + \pi)$  $= 14\left(2 + \frac{22}{7}\right) = 14 \times \frac{36}{7} = 72 \text{ cm}$ 

115. Ans.(D)

> The sides of the given triangle form a right angle  $\Delta$ . Then



Area of triangle ( $\Delta$ ) =  $\frac{1}{2} \times 24 \times 7$ 

$$= 84cm^{2}$$
(s)  $= \frac{1}{2}[24 + 25 + 7]$ 

$$= 28$$
Hence the radius of the inner circ

Hence the radius of the inner circle(r)

$$=\frac{\Delta}{s}=\frac{84}{28}=3cm$$

#### 116. Ans.(D)

Let the length of the edge of the cube = y unit Let the length of the side of the square = xunit



Then first condition, Sum of the length of the edge of the cube = 4(perimeter of the square) 12 y = 4(4x) $\therefore$  Edge of Cube = 12y Perimeter of square = 4x12y = 16x3y = 4x $\frac{4}{-}x$ .....(1) Second condition - $\frac{\text{Numerical value of volume of cube}}{\text{Numerical value of volume of cube}} = Area of square$ 4

$$\frac{y^3}{4} = x^2$$

$$y^3 = 4x^2$$
......(2)
Putting value of y from equation (1) into
equation (2),
$$\left(\frac{4}{3}x\right)^3 = 4x^2$$

$$\frac{64}{27}x^3 = 4x^2$$

$$\frac{16}{27}x = 1$$

$$\boxed{x = \frac{27}{16}}$$

Hence the side of the square = 27/16 unit

C

10

0

117. Ans.(D)

118.



$$(AC)^2 = 106, AC = \sqrt{106}cm$$
  
**119. Ans.(B)**

Let the length of the rectangle = x m

 $(AC)^2 = 81 + 25$ 

Width = 
$$(x - 6)$$
 m  
 $\therefore$  Perimeter = 64 m  
 $2(x + x - 6) = 64$   
 $2x - 6 = 32$   
 $2x = 38$   
 $x = 19$   
 $\therefore$  Area of rectangle =  $x \times (x - 6)$   
 $= 19 \times (19 - 6)$   
 $= 19 \times 13 = 247$  sq. m.

#### 120. Ans.(A)

Diagonal of rectangular closet floor = 7.5 feet Short side (width) of rectangular closet = 4.5 feet



$$=\sqrt{(7.5)^2-(4.5)^2}$$

$$=\sqrt{36} = 6$$
 feet

$$\therefore$$
 Closet area = I × w = 6 × 4.5 = 27 feet<sup>2</sup>

121. Ans.(A)

Diagonal of rectangle = 
$$\sqrt{l^2 + b^2}$$
  
=  $\sqrt{5^2 + 6^2}$  =  $\sqrt{25 + 36}$  =  $\sqrt{61}$ 

122.



= Area of EFHG + Area of IJKL - Area of MNOP

 $= 72 \times 2 + 2 \times 48 - 2 \times 2$ = 2(72 + 48) - 4 $= 2 \times 120 - 4$ = 236Hence the cost involved in making the route =  $236 \times 150 = Rs. 35, 400$ 123. Ans.(D) Let the side of the first cube = aVolume of first cube =  $a^3$ Side of second cube = 3a Volume of second cube =  $(3a)^3 = 27 a^3$ The volume of first cube will be 27 times the volume of the second cube 124. Ans.(D) Length = 24 cm, width = 18 cm, height = 16 $\therefore$  Volume of cuboid = *length* × height × width  $= 24 \times 16 \times 18$  $= 6912 cm^3$ 125. Ans.(B) Required quantity of cloth = Total surface area of box  $= 2(80 \times 60 + 60 \times 40 + 40 \times 80)$  $= 2(4800 + 2400 + 3200) = 2 \times 10400$ = 20800 sq cm 126. Ans.(C) Area of the circle =  $\pi R^2$  $\frac{1}{2}\pi R^2 = 1386$   $\frac{22}{7}R^2 = 1386$  $R^2 = \frac{1386 \times 7}{22} = 63 \times 7$  $R = \sqrt{63 \times 7} = 3 \times 7$ R = 21cmAccording to Question, Radius of cylinder =  $21 \times \frac{1}{3} = 7cm$ Height of cylinder =  $7 \times 2 = 14cm$ Volume of cylinder =  $\pi r^2 h$  $=\frac{22}{7} \times 7 \times 7 \times 14 = 2156 cm^3$ 127. Ans.(A) Diameter of cylindrical metal = 14cm 2r = 14cmr = 7 cmIf the cylinder is melted and turned into a wire, the length of the wire = 60 mSo, the length of the wire will be its height. h = 60 m = 6000 cm

Volume of solid cylinder = Volume of wire

 $\pi r_1^2 h_1 = \pi r_2^2 h_2$  $7 \times 7 \times 15 = r^2 \times 6000$  $r = \sqrt{\frac{7 \times 7}{400}} = \frac{7}{20}cm$  $r = \frac{7}{20} \times 10 mm$ Hence Diameter =  $2r = \frac{7}{20} \times 2 = 0.7$ cm Ans.(A)

128.

Volume of cylinder (V) =  $3850 \text{ cm}^3$ h = 25 cmr = ? $V = \pi r^2 h$  $3850 = \frac{22}{7} \times r^2 \times 25$  $r^2 = \frac{3850 \times 7}{22 \times 25} = 49$ r = 7 cm

#### 129. Ans.(B)

Total surface area of the cone =  $\pi r(l + r)$ According to Question,

Total surface area =  $\pi \times \frac{r}{2} \left( 2l + \frac{r}{2} \right)$  $=\frac{\pi r}{2}2\left[l+\left(\frac{r}{4}\right)\right]$  $= \pi r \left[ l + \left( \frac{r}{4} \right) \right]$ 

#### Ans.(A) 130.

Given for box: Length =  $4 \times 12 = 48$  cm Width =  $4 \times 9 = 36$  cm Number of cones =  $12 \times 9 = 108$ Volume of honey = volume of box - number of cones x volume of cones  $= 48 \times 36 \times 2 - 108 \times \frac{1}{2} \times \frac{22}{7} \times 2^2 \times 2$ = 3456 - 905.14 = 2550.87 Percent to honey =  $\frac{2550.857}{3456} \times 100$ 

= 73.809% = 73.81%

#### 131. Ans.(A)

According to Question,

Volume of solid cylinder = Volume of melted sphare



$$\pi r^{2}h = \frac{4}{3}\pi R^{3}$$
(6)<sup>2</sup> × 9 =  $\frac{4}{3}R^{3}$ 

$$\frac{36 \times 9 \times 3}{4} = R^{3}$$

$$R = \sqrt[3]{9 \times 9 \times 3}$$

$$R = \sqrt[3]{3 \times 3 \times 3 \times 3 \times 3}$$
Radius of sphere  $(R) = 3\sqrt[3]{9}$ 
**132. Ans.(A)**
Volume of cylinder =  $\pi r^{2}h$ 

$$= \pi \times 6 \times 6 \times 6$$

$$= 216\pi$$
Volume of cone =  $\frac{1}{3}\pi r^{2}h$ 

$$= \frac{1}{3}\pi \times 8 \times 8 \times 24$$

$$= 512\pi$$
Wasted material =  $\frac{(512\pi - 216\pi) \times 100}{512\pi}$ 

$$= \frac{296\pi}{512\pi} \times 100 = [57.81\%]$$
**133. Ans.(C)**
Let capacity of drum is x liters.  
Then, according to the question,  $0.6x - 38 = 0.125x$ 

$$\Rightarrow 0.6x - 0.125x = 38$$

$$\Rightarrow 0.475x = 38$$

$$x = \frac{38}{3475} = \frac{38 \times 1000}{475}$$

$$x = 80$$
 litre
**134. Ans.(C)**
Let, length = 5x
Width = 3x
Height = 2x
Room area = 2 (1 + w) × h
$$= 2(5x + 3x) \times 2x$$

$$= 32x^{2}$$
The new area obtained by doubling the length, one third the width and half the height = 2(10x + x) \times x = 22x^{2}
Percent decrease in painting expenditure =
$$\frac{(32x^{2}-22x^{2})}{32x^{2}} = \frac{500}{16} = 31.25\%$$
**135. Ans.(D)**
Let height of cone = h, radius = r\_{1}
$$\therefore radius (r_{1}) = \frac{5}{9}h$$

$$\therefore h = \frac{9}{5}r_{1}$$
Let radius of the sphere = r\_{2}

$$\therefore \text{ Volume of cones} = \text{Volume of sphere}$$

$$\frac{1}{3}\pi r_1^2 h = \frac{4}{3}\pi r_2^3$$

$$r_1^2 \times \frac{9}{5}r_1 = 4r_2^3$$

$$\left(\frac{r_1}{r_2}\right)^3 = \frac{20}{9}$$

$$\frac{r_1}{r_2} = \sqrt[3]{\frac{20\times3}{9\times3}} = \frac{\sqrt[3]{60}}{3}$$

:: 
$$r_1: r_2 = \sqrt[3]{60}: 3$$
  
136. Ans.(A)

137.

138.

Let, side of the equilateral triangle = 8x unit



Area of equilateral triangle =  $\frac{\sqrt{3}}{4} \times (8x)^2$ 

$$= \frac{\sqrt{3}}{4} \times 64x^2 = 16\sqrt{3}x^2$$

Area of three smaller equilateral triangles

$$= 3 \times \frac{\sqrt{3}}{4} \times (2x)^2 = 3\sqrt{3}x^2$$

: Area of the remaining equilateral triangle =  $16\sqrt{3}x^2 - 3\sqrt{3}x^2 = 13\sqrt{3}x^2$ 

: Required ratio =  $3\sqrt{3}x^2$ :  $13\sqrt{3}x^2 = 3: 13$ Ans.(D)



Let the third angle be  $\angle A = x$ Then,  $\angle B = \angle C = 2x$   $\therefore$  Sum of all three angles of a triangle =  $180^{\circ}$   $\angle A + \angle B + \angle C = 180^{\circ}$   $x + 2X + 2x = 180^{\circ}$   $5x = 180^{\circ}$   $x = 36^{\circ}$   $\therefore$  Third angle  $x = 36^{\circ}$ **Ans.(B)**  The side of the big triangle ABC is x cm (considered).

Areas of  $\triangle APO$ ,  $\triangle BLM$  and  $\triangle CRT$  will be equal.



Side of each small triangle = 1/3 the side of the larger triangle

$$=\frac{x}{3}cm$$

According to question

Ratio = 
$$3 \times \frac{\sqrt{3}}{4} \left(\frac{x}{3}\right)^2 : \frac{\sqrt{3}}{4} (x)^2$$
  
=  $\frac{x^2}{3} : x^2$   
= 1:3  
Ans.(B)

139.



OE

$$\tan 30^{\circ} = \frac{OE}{EB}$$

$$\frac{1}{\sqrt{3}} = \frac{1}{EB}$$

$$EB = \sqrt{3} \text{ cm}$$

Thus, the side of an equilateral triangle made from the center of the circle. = AB - (FB + DA)

= 
$$AB - (EB + DA)$$
  
=  $AB - 2EB$   
=  $(6 - 2\sqrt{3})$  cm

140. Ans.(A)

In rhombus ABCD Diagonal AC = x m (Let) BD = 8 m (given)



Area = 
$$\frac{1}{2} \times$$
 Product of diagonals  
 $24 = \frac{1}{2} \times 8 \times x$   
 $X = 6$  meter  
 $AO = \frac{1}{2}AC$   
 $BO = \frac{1}{2}BD$   
 $AO = \frac{1}{2} \times 6 = 3$  meter  
 $BO = \frac{1}{2} \times 8 = 4$  meter  
Then in right angle  $\triangle AOB$   
 $(AB)^2 = (OA)^2 + (OB)^2$   
 $(AB)^2 = 3^2 + 4^2$ 

$$AB = \sqrt{25}$$
  
AB = 5 meter

Side of rhombus 
$$AB = 5m$$

141.

Ans.(D) Let the length of the diagonal AC = x cm

 $\therefore$  Length of diagonal BD = (14 - x)



Area of rhombus  $= \frac{1}{2} \times AC \times BD$   $24 = \frac{1}{2} \times x \times (14 - x)$   $48 = 14x - x^2$   $\Rightarrow x^2 - 14x + 48 = 0$   $x^2 - 8x - 6x + 48 = 0$   $(x - 8)(x - 6) = 0 \Rightarrow x = 8, 6$ In right angle  $\triangle BOC$ ,  $BC^2 = BO^2 + CO^2$   $BC^2 = \left(\frac{BD}{2}\right)^2 + \left(\frac{AC}{2}\right)^2$   $BC^2 = \left(\frac{8}{2}\right)^2 + \left(\frac{6}{2}\right)^2 = 16 + 9 = 25$  BC = 5cmThus, side of rhombus = 5 cm

142. Ans.(B)

Length of one side of rhombus

$$= \frac{1}{2} \sqrt{d_1^2 + d_2^2}$$
Where  $d_1, d_2$  is diagonal  
 $\therefore 25 = \frac{1}{2} \sqrt{14^2 + d_2^2}$   
 $\therefore 50 \times 50 = 14^2 + d_2^2$   
 $d_2^2 = 2500 - 196$   
 $d_2^2 = 2304$   
 $\therefore d_2 = 48 \text{ m}$   
Hence, the area of rhombus  
 $= \frac{1}{2} d_1 \times d_2 = \frac{1}{2} \times 14 \times 48$   
 $= 336 \text{ sq. m.}$   
Area of rhombus  $= \frac{\text{product of diagonals}}{2}$   
Or, the product of the diagonals  $(d_1 \times d_2)$   
 $= 2 \times 720 = 1440 \text{ cm}^2$   
Side  $(a) = \sqrt{\left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$   
or  $(41)^2 = \left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2$   
or  $41 \times 41 \times 4 = d_1^2 + d_2^2$   
 $d_1^2 + d_2^2 = 6724$   
 $(d_1 + d_2)^2 = 6724 + 2 \times 1440 \Rightarrow 9604 \text{ cm}^2$   
Or,  $\overline{d_1 + d_2} = 98 \text{ cm}$   
Ans.(A)

144.

145.

143.

The side of rhombus (a) = 13 cm First diagonal  $(d_1) = 10$  cm Second diagonal (d<sub>2</sub>) = ? Side of Rhombus (a) =  $\sqrt{\left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$ Or, 13 =  $\sqrt{\left(\frac{10}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$ Or, 169 = 25 +  $\frac{d_2^2}{4}$ Or, 13 =  $\sqrt{\left(\frac{10}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$ Or,  $d_2 = 24cm$ Ans.(A) In rhombus ABCD AB = BC = CD = DA = 17 cm

BD = 16 cm Diagonal (AC) =? Therefore,  $OB = \frac{1}{2}BD = \frac{1}{2} \times 16 = 8$  cm In, right angle ∆AOB

 $(AB)^2 = (AO)^2 + (OB)^2$  $(17)^2 = (A0)^2 + 8^2$  $(A0)^2 = 289 - 64$  $AO = \sqrt{225} = 15 \text{ cm}$ Then diagonal  $AC = 2 \times AO$  $AC = 2 \times 15 = 30 \text{ cm}$ 

#### 146. Ans.(C)

If the side of rhombus is 'a' and diagonals d1 and d<sub>2</sub>. So, a = 61cm and  $Area = 1320cm^2$ Then,  $1320 = \frac{d_1 \times d_2}{2}$ Or  $d_1 \times d_2 = 2640$ And  $61^2 = \left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2$  $3721 = \frac{d_1^2 + d_2^2}{4}$ Or,  $d_1^2 + d_2^2 = 14884$  $(d_1 + d_2)^2 = 14884 + 2 \times 2640$  $(d_1 + d_2)^2 = 20164$  $(d_1 + d_2)^2 = (142)^2$  $d_1 + d_2 = 142cm$ 

#### 147. Ans.(D)

In the above question Perimeter of the rectangle =  $2 \times (\text{length} +$ width) =  $2 \times (10 + 6) = 32$  cm Here, perimeter of rectangle = perimeter of rhombus = 32 cm Perimeter of rhombus =  $4 \times \text{side} = 32 \text{ cm}$ Or, length of each side of rhombus = 8 cm 8 cm A в 8 cm 8 cm

60D 8 cm : Here the angle in the image is  $D = 60^{\circ}$ , then

triangle 'ADC' will be equilateral triangle.

Area of  $\triangle ADC = \left(\frac{\sqrt{3}}{4}a^2\right)$  $= \frac{\sqrt{3}}{4} \times 8^2 \Rightarrow \frac{64\sqrt{3}}{4} \Rightarrow 16\sqrt{3}cm^2$ Now area of rhombus  $\Rightarrow 2 \times 16\sqrt{3} = 32\sqrt{3}cm^2$ 148. Ans.(B) According to Question  $\frac{\pi r^2 x}{360^{\circ}} = \pi r^2 \times \frac{5}{18}$  $\frac{1}{20^{\circ}} = 5$  $x = 100^{\circ}$ Ans.(B) 149. 2  $\frac{6}{360^{\circ}} = \frac{2}{9}$  $\theta = 80^{\circ}$ 150. Ans.(A) Area of square =  $a^2$ According to Question,  $a^2 = 121 \text{ cm}^2$ ∵ a = 11 cm  $\therefore$  Perimeter of square = 4a = length of wire : Length of wire =  $11 \times 4 = 44$  cm Circumference of circle =  $2\pi r$ Circumference of circle = perimeter of square  $\therefore 2\pi r = 44$ ∵ r = 7 cm : Area of the circle =  $\pi r^2 = \frac{22}{7} \times (7)^2$  $= 154 \text{ cm}^2$ 151. Ans.(B) Let the side of the cube = yAnd the side of the square = xAccording to Question - $12y = \frac{4x}{2}$ .....(i)  $y = \frac{1}{6}x$ Second condition  $y^3 = \frac{1}{2}x^2$  $\left(\frac{1}{6}x\right)^3 = \frac{1}{6}x^2$  From equation (I)  $\frac{1}{216}x^3 = \frac{1}{6}x^2$  $x = \frac{216}{6}$ x = 36Side of Square (x) = 36 units 152. Ans.(C)

If length of each side of the cube is =  $a_1$ , and length of each side of the square is =  $a_2$ . Sum of lengths of cube cores

$$= \frac{\text{perimeter of square}}{2}$$

$$12a_1 = \frac{4a_2}{2}$$
or  $12a_1 = 2a_2$ 

$$\boxed{a_1 = \frac{a_2}{6}}$$
Now, volume of cube =  $(a_1)$ 

Now, volume of cube =  $(a_1)^3 = \left(\frac{a_2}{6}\right)^3 = \frac{a_2^3}{216}$ So, according to the question,  $\frac{a_2^3}{216} = a_2^2$ Or,  $a_2 = 216$  unit

Thus, length of the required side = 216 units

## 153. Ans.(C)

154.

Area of square field =  $(Side)^2$   $196 = (side)^2$   $side = \sqrt{196}$   $= \sqrt{14 \times 14}$  side = 14 m.**Ans.(C)** 

Let the side of the cube = y unit and the side of the square = x unit. According to Question –  $12y = 4x, y = \frac{x}{3}$ ......(i) And  $y^3 = x^2$  $\left(\frac{x}{3}\right)^3 = x^2$  From equation (I) x = 27Side of square (x) = 27 units

## 155. Ans.(A)

Let the length of the edges of the cube = aHence volume =  $a^3$ According to the question, the length is increased by 3 cm. Thus, the length of the edges of the new cube = a + 3Thus, new volume =  $(a + 3)^3$ Therefore  $(a + 3)^3 - a^3 = 657$  $a^3 + 27 + 9a(a + 3) - a^3 = 657$  $27 + 9a^2 + 27a = 657$  $9a^2 + 27a = 657 - 27 = 630$  $9a^2 + 27a = 630$  $a^2 + 3a = \frac{630}{9} = 70$  $a^2 + 3a - 70 = 0$  $a^2 + 10a - 7a - 70 = 0$ a(a + 10) - 7(a + 10) = 0

 $\Rightarrow (a + 10)(a - 7) = 0$ 

Therefore, the required length of the edge of the cube is a = 7 cm.

## 156. Ans.(C)

Let I, b and h be the length, width, and height of the cuboid.  $\ell b \times bh \times \ell h = 40 \times 20 \times 32$  $(bh)^2 = 25600$ 

(bh) = 25000lbh = 160 meter<sup>3</sup>

Thus the value of volume of cuboid will be 160 cubic meters.

157. Ans.(B)



Quantity of water required = Volume of cylinder + Volume of sphere

$$= \pi r_1^2 h + \frac{4}{3} \pi r_2^3$$
  
=  $\pi \left[ r_1^2 h + \frac{4}{3} r_2^3 \right]$   
=  $\frac{22}{7} \left[ 2^2 \times 7 + \frac{4}{3} \times \left(\frac{21}{2}\right)^3 + 4939 \text{ Cube cm} \right]$ 

158. Ans.(A)

Given –

Area of base of cone =  $64\pi$  sq cm  $\Rightarrow \pi r^2 = 64\pi$   $\Rightarrow r = 8$  cm  $\therefore$  Slant height of cone (l) = 17 cm  $\therefore$  Cone height  $(h) = \sqrt{\ell^2 - r^2}$   $= \sqrt{(17)^2 - (8)^2}$  $= \sqrt{289 - 64} = \sqrt{225}$ 

= 15 cm.

According to the question,

Volume of the cone = Volume of the sphere

$$\Rightarrow \frac{1}{3}\pi r^2 h = \frac{4}{3}\pi R^3$$

 $\Rightarrow 64 \times 15 = 4R^{3}$   $\Rightarrow 240 = R^{3}$   $\Rightarrow R = \sqrt[3]{240}$   $= \sqrt[3]{8 \times 30}$  $= 2\sqrt[3]{30} \text{ cm}$ 

## 159. Ans.(D)

Let the base of the parallelogram be a and height  $h_1$ . Again, the height of the corresponding triangle is  $h_2$ .

According to Question,

Area of a triangle = area of a parallelogram

$$\frac{1}{2} \times \frac{a}{3} \times h_2 = a \times h_1$$
$$\Rightarrow \frac{h_1}{h_2} = \frac{1}{6}$$

Thus, height of triangle : height of parallelogram = 6 : 1

160. Ans.(A)



Let the base of the parallelogram = 5 Then the base of  $\Delta = \frac{5}{6}x$ 

According to Question,

$$\frac{1}{2} \times \frac{5}{6} \times xh_1 = x \times h_2$$
$$\frac{5}{12}h_1 = h_2$$

 $h_1: h_2 = 12:5$ 

161. Ans.(B)

 $h = 14, r = \frac{3}{2}, R = 4 + \frac{3}{2} = \frac{11}{2}$ According to Question,

Height of embankment (H) =  $\frac{\pi r^2 h}{\pi (R)^2 - \pi r_1^2}$ 

$$= \frac{\pi r^2 h}{\pi \left(R^2 - r_1^2\right)} = \frac{(3/2)^2 \times 14}{(11/2)^2 - (3/2)^2}$$
$$H = \frac{\frac{9}{4} \times 14}{\frac{121}{4} - \frac{9}{4}} = \frac{9 \times 14}{112},$$
$$H = \frac{9}{8}m$$

### 162. Ans.(B)

Volume of Cube = (side)<sup>3</sup> Volume of Cone =  $\frac{1}{3}\pi r^2 h$ 

3

Volume of remaining solid = Volume of cube – Volume of cone



$$\begin{array}{l} 0A = h = 7cm \\ 0B = 0C = r = 3 \\ = (7)^3 - \frac{1}{3}\pi(3)^2 \times 7 \\ = 343 - \frac{1}{3} \times \frac{22}{7} \times 3 \times 3 \times 7 \\ = 343 - 66 = 277cm^3 \\ \text{Volume of remaining solid} = 277 \text{ cm}^3 \end{array}$$

#### 163. Ans.(C)

Let the height of the vertical cone = h According to the question,

Radius of the base  $(r) = \frac{1}{2} \times h$ 

Volume of cone = Volume of hemispheres

$$\frac{1}{3}\pi r^2 h = \frac{2}{3}\pi r_1^3$$
$$\left(\frac{h}{2}\right)^2 \times h = 2r_1^3$$
$$\left(\frac{2r}{2}\right)^2 \times 2r = 2r_1^3$$
$$r^3 = r_1^3 \Rightarrow \frac{r^3}{r_1^3} = 1$$
$$[r:r_1 = 1:1]$$

164. Ans.(B)

Let the radius and height of the vertical cone  $= r_1$ 

And the radius of the sphere =  $r_2$ 

 $\therefore$  Volume of cones = Volume of spheres

$$\frac{1}{3}\pi r_1^2 \times r_1 = \frac{4}{3}\pi r_2^3$$
$$\therefore \frac{r_1^3}{r_2^3} = \frac{4}{1}$$
$$\therefore \frac{r_1}{r_2} = \frac{\sqrt[3]{4}}{1} = \sqrt[3]{4}: 1$$

#### 165. Ans.(D)

If the height of the vertical cone is h and the radius of the base of the cone be  $r_1$  and the radius of the sphere be  $r_2$ , then,

Volume of vertical cone =  $\frac{1}{3}\pi r_1^2 h$ Volume of sphere =  $\frac{4}{3}\pi r_2^3$  $\therefore r_1 = \frac{h}{3}, h = 3r_1$ .....(i) According to Question -Volume of cone = Volume of sphere  $\frac{1}{3}\pi r_1^2 h = \frac{4}{3}\pi r_2^3$ Putting  $h = 3r_1$  from equation (i)  $\Rightarrow \frac{1}{3}\pi r_1^2 \times 3r_1 = \frac{4}{3}\pi r_2^3$  $\Rightarrow \frac{r_1^3}{r_2^3} = \frac{4}{3}$  $\Rightarrow \left(\frac{r_1}{r_2}\right)^3 = \frac{4}{3}$  $\Rightarrow r_1: r_2 = \sqrt[3]{4}: \sqrt[3]{3}$ Ans.(D) The largest side of big triangle  $=\sqrt{\frac{169}{121}}$  $\Rightarrow \frac{26}{\text{Largest side of small triangle}} = \frac{13}{11}$ Largest side of small triangle =  $\frac{11 \times 26}{13}$ = 22*cm* 

167. Ans.(A)

166.



Area of the circle = 64  $\pi$  $\pi$ r<sup>2</sup> = 64 $\pi$ r<sup>2</sup> = 64  $\Rightarrow$  r = 8 cm

Length of the side of equilateral $\Delta$  = diameter of the circle = 2 × 8 = 16 cm

#### 168. Ans.(C)

- $\therefore$  Two sides of a triangle are equal.
- ∴ The triangle will be isosceles.



Perimeter of triangle = 100 x + x + x + 10 = 100 3x + 10 = 100 3x = 90[x = 30]Thus, length of third side = x + 10 = 30 + 10 = 40 cm Ans (A)

## 169. Ans.(A)

Let base = x m Height = (x + 7) m. Area of right triangle = 30 sq. m.  $1/2 \times$  base  $\times$  height = 30  $\frac{1}{2} \times x \times (x + 7) = 30$   $x^2 + 7x = 60$   $x^2 + 7x - 60 = 0$   $x^2 + 12x - 5x - 60 = 0$  x(x + 12) - 5(x + 12) = 0 (x + 12)(x - 5) = 0  $\therefore x = 5$ Thus, base = 5 m.

## 170. Ans.(C)

Let the first side = x Second side = x Third side = x + 20Then, x + x + x + 20 = 2003x + 20 = 2003x = 180x = 60Third side = 60 + 20 = 80 cm.

## 171. Ans.(B)

Area of equilateral triangle =  $\frac{\sqrt{3}}{4} \times (\text{ side })^2$ 

$$=\frac{\sqrt{3}}{4} \times 16 = 4\sqrt{3}$$
 sq. unit.

172. Ans.(C)



Sides = 5, 12, 13  $5^{2} + 12^{2} = 13^{2}$  25 + 144 = 169 169 = 169Hence B will be right angled. Area of  $\triangle$  ABC =  $\frac{1}{2}$  Base× height  $= \frac{1}{2} \times 5 \times 12 = 30$  sq. cm.

## 173. Ans.(D)

Area of triangle. = 456 cm Height = 24 cm Base = ? Area of triangle =  $\frac{1}{2}$  × base × height 456 =  $\frac{1}{2}$  × 24 × base Base =  $\frac{456}{12}$  base = 38 cm Ans.(C)

$$\frac{M_1}{M_2} = \sqrt{\frac{A_1}{A_2} \frac{12 \cdot 1}{M_2}} = \sqrt{\frac{(121)}{(64)}}$$
$$\frac{12.1}{M_2} = \frac{11}{8}, \overline{M_2 = 8.8 \text{ m}}$$

### 175. Ans.(B)

174.

Let the base of right triangle = x cm Then, perpendicular = (x + 4) cm Hypotenuse = x + 8 cm



From the Pythagoras theorem, Hypotenuse<sup>2</sup> = perpendicular<sup>2</sup> + base<sup>2</sup>

$$(x + 8)^{2} = (x + 4)^{2} + x^{2}$$
  

$$\Rightarrow x^{2} + 64 + 16x = x^{2} + 16 + 8x + x^{2}$$
  

$$\Rightarrow x^{2} + 16x - x^{2} - x^{2} - 8x = 16 - 64$$
  

$$\Rightarrow -x^{2} + 8x = -48$$
  

$$\Rightarrow x^{2} - 8x = 48$$
  

$$\Rightarrow x^{2} - 8x - 48 = 0$$
  

$$\Rightarrow x^{2} - 12x + 4x - 48 = 0$$
  

$$\Rightarrow x(x - 12) + 4(x - 12) = 0$$
  

$$\Rightarrow x + 4 = 0, x - 12 = 0$$
  

$$\Rightarrow x + 4 = 0, x - 12 = 0$$
  

$$\Rightarrow x = -4 (Invalid)$$
  
and  $x - 12 = 0$  (Valid)  $x = 12$   
Perpendicular =  $(x + 4)$  cm  

$$= 12 + 4 = 16 \text{ cm}$$
  
**Ans.(C)**  

$$a = 11 \text{ cm}, b = 7 \text{ cm}, c = 14 \text{ cm}$$
  
(s)  $= \frac{a + b + c}{2} = \frac{11 + 7 + 14}{2} = \frac{32}{2}$   

$$s = 16$$
  
*Area of*  $\Delta = \sqrt{s(s - a)(s - b)(s - c)}$   

$$= \sqrt{16(16 - 11)(16 - 7)(16 - 14)}$$
  

$$= \sqrt{16(5)(9)(2)} = 12\sqrt{10} \text{ cm}^{2}$$

177. Ans.(A)

176.

178.

Let the length of the base be is x cm. According to Question, Length of perpendicular = (x + 2)cm Length of hypotenuse = (x + 4)cm



In the right angle  $\triangle ABC$ , from the Pythagoras theorem

hypotenuse<sup>2</sup> = perpendicular<sup>2</sup> + base<sup>2</sup>  $(x + 4)^2 = (x + 2)^2 + x^2$   $x^2 + 16 + 8x = x^2 + 4 + 4x + x^2$   $\Rightarrow x^2 - 4x - 12 = 0$   $\Rightarrow x^2 - 6x + 2x - 12 = 0$   $\Rightarrow x(x - 6) + 2(x - 6) = 0$   $\Rightarrow (x - 6) = 0$ , x = 6  $x \neq -2$  (not possible) Ans.(D) Let the base of right triangle = x cm  $\therefore$  Perpendicular = (x + 2) cm Hypotenuse = (x + 4) cm



hypotenuse<sup>2</sup> = perpendicular<sup>2</sup> + base<sup>2</sup>  $(x + 4)^2 = (x + 2)^2 + x^2$   $\Rightarrow x^2 + 16 + 8x = x^2 + 4 + 4x + x^2$   $\Rightarrow x^2 - 4x - 12 = 0$   $\Rightarrow x^2 - 6x + 2x - 12 = 0$   $\Rightarrow x(x - 6) + 2(x - 6) = 0$   $\Rightarrow (x - 6)(x + 2) = 0$ Therefore, x = 6  $\therefore$  Length of perpendicular (x + 2) = 6 + 2 = 8 cm.

## 179. Ans.(A)

Area of equilateral  $\Delta = \frac{\sqrt{3}}{4}a^2$   $\therefore \frac{\sqrt{3}}{4}a^2 = 16\sqrt{3}$   $a^2 = 16\sqrt{3} \times \frac{4}{\sqrt{3}}$   $a^2 = 64 a = 8$ Radius of intercircle of equilateral  $\Delta = \frac{a}{2\sqrt{3}}$   $= \frac{8}{2\sqrt{3}}$ Radius of circumcircle of equilateral  $\Delta = \frac{a}{\sqrt{3}}$ 

 $=\frac{8}{\sqrt{3}}$ 

Required ratio =  $\frac{\frac{8}{2\sqrt{3}}}{\frac{8}{\sqrt{3}}} = \frac{1}{2}$ 

180. Ans.(B)

Area of parallelogram = base × height  $161 = base \times 7$  $\therefore base = 23 \text{ cm}$ 

## 181. Ans.(D)

Let the length of the side parallel to the base = x cm Height = 3 cm Length of base = 5 cm Area = 18 cm
Area of trapezium. =  $1/2 \times \text{height} \times \text{sum of}$ parallel sides  $18 = \frac{1}{2} \times 3 \times (5 + x)$ 36 = 15 + 3x3x = 36 - 153x = 21x = 7182. Ans.(C) Area of the road = Area of land along the route - Area of the land  $= \pi (7 + 3.5)^2 - \pi (7)^2$  $=\frac{22}{7}[(10.5-7)(10.5+7)]$  $=\frac{22}{7} \times 17.5 \times 3.5 = 192.5$  m. 183. Ans.(C) Given. Circumference of circle =  $18 \pi$  $2\pi r = 18\pi$ 18  $r = \frac{10}{2}$ r = 9 cm.: Area of the circle =  $\pi r^2$  $= \pi \times (9)^2 = 81\pi$  sq. cm. 184. Ans.(B) Radius of circle(r) =  $\frac{Diameter}{2} = \frac{7}{2}cm$ Area of the circle =  $\pi r^2$  $=\frac{22}{7} \times \left(\frac{7}{2}\right)^2 = \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = \frac{77}{2} = 38.5 \text{ cm}^2$ 185. Ans.(B) Circumference of circle = 22 cm  $2\pi r = 22$  $r = \frac{22}{2\pi} = \frac{22 \times 7}{2 \times 22}$   $r = \frac{7}{2}$  cm Area of the semicircle =  $\frac{\pi r^2}{2} = \frac{22 \times 7 \times 7}{2 \times 7 \times 2 \times 2}$  $=\frac{11\times7}{4}=\frac{77}{4}=$  19.25 sq. cm. 186. Ans.(B) Area of square = 484 sq cm  $(side)^2 = 484 = (22)^2$ Side = 22 cm Perimeter of square =  $4 \times side = 4 \times 22 = 88$ cm Circumference of circle = perimeter of a square = 88 cm  $\therefore 2\pi r = 88 \Rightarrow 2 \times \frac{22}{7} \times r = 88$  $\Rightarrow r = \frac{4 \times 7}{2} = 14 \text{ cm}$ Area of the circle =  $\pi r^2$ 

$$= \frac{22}{7} \times (14)^2 = \frac{22}{7} \times 14 \times 14$$
$$= 22 \times 2 \times 14 = 616 \text{ cm}^2$$

# 187. Ans.(B)

Diameter of the circle = Length of the largest chord of the circle = 10 cm  $\therefore$  Radius of circle = 10/2 = 5 cm

## 188. Ans.(D)

Circumference of the circle =  $2\pi r$ By question –  $2\pi r = 22$   $r = \frac{22}{2 \times \pi}$   $r = \frac{22 \times 7}{2 \times 22} \Rightarrow \boxed{r = \frac{7}{2}}$   $\therefore$  Area of the circle =  $\pi r^2$   $= \frac{22}{7} \times \left(\frac{7}{2}\right)^2$   $= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$   $= \frac{77}{2} = 38.5$  sq. cm. Ans.(A)

Circumference of 14 cm circle =  $2 \pi r$ =  $2 \times \frac{22}{7} \times 14 = 88$  cm When the radius is increased by 7 cm. Then radius = 14 + 7 = 21Circumference =  $2 \times \frac{22}{7} \times 21 = 132$  cm. The required increase = 132 - 88 = 44 cm

# 190. Ans.(D)

189.

By question, Side of square = 44 cm Perimeter = 4 x side = 4 x 44 = 176 cm Perimeter of the square = circumference of the circle = 176 cm 2 = 176 cm 2 = 176 cm

$$\therefore 2\pi r = 1/6 \text{ cm} \left( \because \pi = \frac{1}{7} \right)$$

Radius (r) =  $\frac{176 \times 7}{22 \times 2}$  = 28 cm

# 191. Ans.(A)



$$\therefore \text{ Area} = \pi \left(\frac{d}{2}\right)^2 = \pi \frac{d^2}{4}$$
**192. Ans.(A)**  
Distance traveled = 44 km  
= 44000 m = 440000 cm  
Round = 5000  
Distance traveled by wheel in a round = 2  $\pi r$   
Therefore,  $2\pi r \times 5000 = 4400000$   
 $2 \times \frac{22}{7} \times r \times 5000 = 4400000$   
 $r = \frac{4400000 \times 7}{2 \times 22 \times 5000}$ ,  
 $r = 140cm$   
**193. Ans.(D)**  
Radius of circular ground  $(r) = \frac{28}{2} = 14m$   
Area =  $\pi r^2 = \frac{22}{7} \times 14 \times 14 = 616m^2$   
Cost on 1 m<sup>2</sup> = Rs. 125  
Cost on 616 m<sup>2</sup> = 125 × 616 = Rs. 77, 000  
**194. Ans.(B)**  
Diameter = 84cm  
 $r = 42$  cm  
Circumference of circle =  $2\pi r = 2 \times \frac{22}{7} \times 42 = 264cm$   
Distance traveled in 1 round = 264cm  
Number of trips to cover a distance of 792 m  
 $\Rightarrow \frac{79200}{264} = 300$   
**195. Ans.(D)**  
Radius of the circle = r  
Increase in circumference  $= 2\pi (r + x - r)$   
 $= 2\pi x$   
**196. Ans.(C)**  
Side of square =  $120 \pi$  cm  
Square perimeter =  $4 \times 120\pi = 480\pi$  cm  
 $\therefore A$  circle is made by bending the wire.  
Hence, the perimeter of the square and the circlumference of the circle }  
 $\Rightarrow r = \frac{480}{2}$   
 $r = 240$  cm  
**197. Ans.(C)**  
 $\Rightarrow 7 = 240$  cm  
**197. Ans.(C)**  
 $\Rightarrow 7 = 240$  cm  
**197. Ans.(C)**  
 $\Rightarrow 7 = \frac{480}{2}$   
 $r = 240$  cm  
**197. Ans.(C)**  
 $\therefore$  Volume of Cube = a  $^3$   
Volume of three cubes =  $(6)^3 + (8)^3 + (10)^3$   
 $= 216 + 512 + 1000 = 1728$  cm<sup>3</sup>

Side of new cube =  $(1728)^{1/3}$  = 12 cm

### **198**. **Ans.(B)** Perimeter of square = Perimeter of rectangle

Side × 4 = 2 (length + width) Side =  $\frac{2}{4}(42.7 + 21.8) = \frac{1}{2}(64.5)$ 

Side of square = 32.25 m

# 199. Ans.(B)

Length of Diagonal =  $13\sqrt{2}$  units.  $a\sqrt{2} = 13\sqrt{2}a = 13$  $\therefore$  Area of square =  $a^2 = (13)^2 = 169$  sq. unit.

# 200. Ans.(A)

Diagonal of square =  $a\sqrt{2}$  = 26 cm  $a = \frac{26}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$ Side of square (a) =13 $\sqrt{2}$ cm.

# 201. Ans.(A)

Diagonal of square = side $\sqrt{2}$  = 24 Side =  $\frac{24}{\sqrt{2}}$ Side =  $12\sqrt{2}$ 

# 202. Ans.(C)

The four sides of the square are equal and each angle is 90<sup>0</sup>. Therefore, the order of its rotational symmetry will be 4.

# 203. Ans.(A)

Diagonal of square =  $a\sqrt{2}$ According to Question –

$$\frac{12}{2} = a\sqrt{2}$$
$$a = \frac{6}{\sqrt{2}}$$
$$a = \frac{6\sqrt{2}}{2}$$
$$a = 3\sqrt{2}$$

Area of square =  $a^2 = (3\sqrt{2})^2 = 18$  sq. cm.

# 204. Ans.(B)

Diagonal of the square =  $2 \times radius$ 

$$= 2 \times 13 = 26 \text{ cm}$$

$$\therefore \text{ Side of square } = \frac{\text{Diagonal of Square}}{\sqrt{2}}$$



$$= \frac{26}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = 13\sqrt{2} \text{ cm}$$
Area of square =  $(13\sqrt{2})^2 = 338 \text{ cm}$ 
**205. Ans.(B)**  
Given –  
Area of square ground = 313600 sq. m.  
(Side)<sup>2</sup> = 313600  
Side =  $\sqrt{313600} = 560 \text{ m}$   
 $\therefore$  Diagonal = side  $\times \sqrt{2}$   
 $= 560\sqrt{2} \text{ m}$  (distance)  
Speed =  $4\sqrt{2} \text{ m/sec}$ .  
Thus, time taken to cross the ground  
diagonally = distance / speed  
 $= \frac{560\sqrt{2}}{4\sqrt{2}} = 140 \text{ sec} = 2 \text{ min } 20 \text{ second}$   
**206. Ans.(B)**  
Area of rectangle =  $5 \times 2 = 10m^2$   
Shaded square area =  $2 \times 2 = 4m^2$   
Area of unshaded rectangle =  $10 - 4 = 6m^2$   
Required ratio = Area of the square: The area  
of the unshaded rectangle  
Required ratio = 4: 6 = 2: 3  
**207. Ans.(D)**  
 $\int \text{Diagonal of rectangle = (l + b) = 13 \text{ cm}}$   
.......(i)  
Diagonal of rectangle =  $(\sqrt{l^2 + b^2}) = 11 \text{ cm}$   
 $\Rightarrow l^2 + b^2 = 121 \text{ cm}$   
I = Length, b = wedth  
 $\Rightarrow (l + b)^2 - 2lb = 121(\text{From equation (l)})$   
 $\Rightarrow (13)^2 - 2lb = 121$   
 $\Rightarrow 2lb = 169 - 121 = 48$   
 $\Rightarrow l.b = 48/2$   
 $\Rightarrow l.b = 24$   
**208. Ans.(C)**  
Let length of second side = x cm  
 $\therefore$  Perimeter of rectangle = 28  
 $x + 4 = 14$   
 $x = 10 \text{ cm}$   
**209. Ans.(C)**  
**Area of the rectangle.**

 $\Rightarrow$  I  $\times$  w = 42  $7 \times w = 42$ w = 6 cmPerimeter of the rectangle (perimeter) = 2 (l+w) $= 2(7 + 6) = 2 \times 13 = 26 \text{ cm}$ 210. Ans.(B) Let the width of the rectangle = x cmThen length of rectangle = 6x cm $\therefore$  Perimeter of rectangle = 2 (I + w) 56 = 2(x + 6x)28 = 7xx = 4 cmHence the area of the rectangle =  $I \times w$  $= 6x \times x = 6x^2 = 6(4)^2 = 96$  sq. cm. Ans.(D) 211. If the length of the rectangle I cm and breadth b cm Diagonal of rectangle = 13 cm  $\sqrt{\ell^2 + b^2} = 13$ 

 $\sqrt{l^2 + b^2} = 13$  $l^2 + b^2 = 169 .....(1)$ ∴ Perimeter of rectangle = 34 cm2(l + b) = 34l + b = 17 .....(2)l + b = 17 .....(2) $∴ (l + b)^2 = l^2 + b^2 + 2lb$  $(17)^2 = 169 + 2lb$ 289 - 169 = 2lb2lb = 120∴ Area of the rectangle = 60 sq cm

212. Ans.(B)



Field area without footpath =  $125 \times 75 - 125 \times 3$ 

 $= 125 \times (75 - 3)$ 

 $= 123 \times (73 - 3)$ = 9000 sq. m.

# 213. Ans.(D)

∴ Area of the rectangle = 168 sq cm  $length \times width = 168$   $length = \frac{168}{7} = 24$  cm ∴ Diagonal length =  $\sqrt{l^2 + w^2}$ 

 $=\sqrt{(24)^2+(7)^2}$  $=\sqrt{576 + 49} = \sqrt{625} = 25 \text{ cm}$ 214. Ans.(B) Given -Length of rectangle =  $\frac{5}{2}$  × width Perimeter of rectangle = 28  $2(l + w) = 28\left(\frac{5}{2}w + w\right) = \frac{28}{2} = 14$  $\frac{7}{2}$  w = 14 w = 4 cm  $\therefore I = \frac{5}{2} \times 4 = 10 \text{ cm}$ Therefore, the length and width of the rectangle are 10 cm and 4 cm respectively. 215. Ans.(B) Perimeter of rectangle = 24 cm Let, length = 2x, width = xPerimeter of rectangle = 2(I + b)2(2x + x) = 24 $x = \frac{24}{6} = 4$  $2 \times 3x = 24$  $1 = 2x = 2 \times 4 = 8$  cm  $w_{.} = x = 4 \text{ cm}$ Area of the rectangle =  $L \times W$  $= 8 \times 4 = 32 \text{ cm}^2$ 216. Ans.(A) Diagonal of rectangale =  $\sqrt{(40)^2 + (30)^2}$  $=\sqrt{1600 + 900} = \sqrt{2500} = 50 \text{ m}$ : Total distance covered by Ankita  $= 2 \times 50 = 100 \text{ m}$ 217. Ans.(D) Let, width = b Length = 4bArea = 256  $\therefore 4b \times b = 256$  $b^2 = 64$ , b = 8 $\therefore$  Length = 4b = 4 × 8 = 32 m 218. Ans.(C) The order of rotational symmetry of a rectangle is 2. 219. Ans.(A)  $5 \,\mathrm{cm}$ D  $3 \,\mathrm{cm}$ 

B

Length of diagonal AC =  $\sqrt{(5)^2 + (3)^2}$  $=\sqrt{25+9} = \sqrt{34}$  cm

# 220.

Ans.(A) Let the width of the rectangle = x cm $\therefore$  length = (24 + x) cm Now the perimeter of the rectangle = 2 (length + width) 112 = 2(x + 24 + x)112 = 2(2x + 24)112 = 4x + 484x = 112 - 484x = 64, x = 16Hence the length of the rectangle = (24 + x) = 24 + 16 = 40 cm 221. Ans.(A) By question, D С 4 cm А 2 cm Length of diagonal BD =  $\sqrt{AD^2 + AB^2}$  $=\sqrt{(4)^2 + (2)^2} = 2\sqrt{5}$ Thus, the length of the diagonal of rectangle  $= 2\sqrt{5}$  cm 222. Ans.(A) D 2 6 Length = 6 cmWidth = 2 cm $(Diagonal)^2 = (Length)^2 + (Width)^2$  $(Diagonal)^2 = (6)^2 + (2)^2$  $(Diagonal)^2 = 36 + 4$ Diagonal =  $\sqrt{40}$  =  $2\sqrt{10}$ 223. Ans.(C) 15 2.5 10 13



224.

Ans.(A) In triangle ABC  $AC^2 = AB^2 + BC^2$  $(13)^2 = (12)^2 + BC^2$  $BC^2 = 169 - 144$  $BC = \sqrt{25}$ BC = 5 cmArea of the rectangle =  $AB \times BC = 12 \times 5$ = 60 sq cm D 1300 12 cm в Α

225.

Ans.(A) Length of rectangle = 8 cm Width = 6 cm $Diagonal = \sqrt{(length)^2 + (bredth)^2}$  $=\sqrt{(9)^2+(6)^2}=\sqrt{81+36}$  $=\sqrt{117} = 3\sqrt{13}$ 

Ans.(C) Diagonal of Rectangle AC = 15 m and Width BC = 9 m



$$AB = \sqrt{AC^2 - BC^2} \Rightarrow \sqrt{15^2 - 9^2}$$
  
=  $\sqrt{225 - 81}$   
=  $\sqrt{144}$   
AB = 12 m  
Length of rectangle = 12 m  
Area of the rectangle = length x wir

Area of the rectangle = length × width = 9 × 12 = 108 m<sup>2</sup> Ans.(A)

**Diagonal of rectangle**  $=\sqrt{(length)^2 + (width)^2}$  $(6)^2 + (6)^2 = \sqrt{36 + 36}$  $=\sqrt{6\times6\times2} = 6\sqrt{2}$ Ans.(D)

Let, width = xLength =  $\frac{x \times 112}{100} = \frac{112x}{100}$ Area of the rectangle = Length  $\times$  Width  $448 = \frac{x \times 112x}{x}$ 100  $=\frac{448\times100}{448\times100}$  $x^2$ 112  $x^2 = 400$ x = 20Hence width = 20 mAns.(D) We know that the area of a rectangle will be maximum when the length of the rectangle is equal to its width. : For maximum area

2(|+|) = 400 $(\therefore | = w)$  $I = \frac{100}{4} = 100 \text{ m}$ Area = Length × Length  $= 100 \times 100 = 10,000 \text{ m}^2$ 

#### **230**. Ans.(D)

229.

Let length = aWidth = bAccording to Question, 2(a + b) = 40a + b = 20Since, ab = maximum ∴ a = 10. b = 10 Hence the maximum area of the field. = ab  $= 10 \times 10 = 100 \text{ m}$ 

231. Ans.(D)



For the open box

I = 35 cm, b = 25 cm, h = 5 cm

$$\therefore$$
 Volume of open box =  $35 \times 25 \times 5$ 

$$= 4375 \,\mathrm{cm}^3$$

232. Ans.(D)

> Length of reservoir = 6 mWidth of eservoir = 3.5 m Let the depth or height is (h). According to Question, Volume of rectangular water reservoir = 42000 litre  $I \times w \times h = 42000 I$  $\Rightarrow 6 \times 3.5 \times h = \frac{42000}{1000}$  m (1m = 1000 litre)

**228**.

**227**.

 $\Rightarrow h = \frac{42}{21}$  $\Rightarrow$  h = 2 m 233. Ans.(B) Ratio = 3: 2: 1 Let the room length = 3xBredth = 2 xHeight = xVolume of cuboid =  $l \times b \times h$  = 3072  $3x \times 2x \times x = 3072$  $6x^3 = 3072$  $x = \sqrt[3]{512}$ Bredth =  $2x = 2 \times 8 = 16m$  $x^3 = 512$ x = 8234. Ans.(D) Volume of Elliptical cylinder =  $\pi r^2 h$  $=\frac{22}{7} \times (1)^2 \times 2 = \frac{22}{7} \times 2 = \frac{44}{7}$  cm 235. Ans.(A) Radius (r) of cylinder = 7 cm, Height(h) = 2 cmVolume of cylinder =  $\pi r^2 h$  $=\frac{22}{7} \times 7^2 \times 2 = 22 \times 7 \times 2 = 308$  cm.<sup>3</sup> 236. Ans.(D) Volume of cylinder =  $\pi r^2 h$  $=\frac{22}{7} \times (2.5)^2 \times 2 = \frac{275}{7} cm^3$ 237. Ans.(C) Volume of cylinder =  $\pi r^2 h = \frac{22}{7} \times 2 \times 2 \times 2$  $=\frac{22}{7} \times 8 = \frac{176}{7} cm^3$ 238. Ans.(A) Total surface area of cone = Area of base + curve surface area  $=\pi r^2 + \pi r\ell = \pi r(r + \ell)$ Ans.(D) 239. Surface area of sphere =  $4\pi r^2$  $= 4 \times \frac{22}{7} \times (1)^2 = \frac{88}{7} cm^2$ 

# 240. Ans.(B)

Surface area of solid sphere =  $4\pi r^2$ 

 $= 4 \times \frac{22}{7} \times 3.5 \times 3.5$  $= 4 \times 22 \times 0.5 \times 3.5 = 154 cm$ 241. Ans.(A) Volume of water increased by 0.5 cm in the cylinder = volume of the ball  $\pi \times (3)^2 \times 0.5 = \frac{4}{2} \times \pi \times r^3$  $r^3 = \frac{27 \times 0.5}{4} = \frac{27}{8}$ r = 3/2 cm $\therefore$  Diameter of ball = 2r = 2 x 3/2 = 3 cm 242. Ans.(C) Surface area of solid sphere =  $4\pi r^2$  $= 4 \times \frac{22}{7} \times (1.5)^2 = \frac{198}{7}$  sq. cm. 243. Ans.(A) Area of circle =  $4\pi r^2 = 4 \times \frac{22}{7} \times (2)^2$  $=\frac{16\times22}{7}=\boxed{\frac{352}{7}cm^2}$ 244. Ans.(A) Given -Side of square park = 50 meters Perimeter of square park =  $4 \times 50$ = 200 m Ramesh speed = 18 Km / h  $= 18 \times \frac{5}{10}$  m/sec. The time taken by Ramesh to take a round of the park =  $\frac{200}{5}$  = 40 seconds 245. Ans.(B) Area of wall =  $8 \times 4.5 = 36.0$  sq. m. Cost per square meter =  $\frac{4500}{36}$  = Rs. 125 246. Ans.(A) Room area = 65dm  $\times$  30dm  $= 6.5m \cdot \times 3.0m$  $= 19.5m^2$  $(\therefore 1m = 10dm)$  $\therefore$  Cost to cover room =  $19.5 \times 45$ = Rs. 877.50

# 247. Ans.(B)

Wood length = 22 cm Width = 17 cm Height = 12 cm Rectangular wood is 1 cm thick Hence length of cement = 22 - 2 = 20 cm Width = 17 - 2 = 15 cm Height = 12 - 2 = 10 cm Quantity of cement =  $20 \times 15 \times 10$ = 3000 cc 248. Ans.(C) Let the sides of  $\Delta$  be a, b, c. Then, a = 9 cm, b = 11 cm,a + b + c = 34 cm9 + 11 + c = 34, c = 14 cm,  $s = \frac{a+b+c}{2} = \frac{34}{2} = 17$  $ar\Delta = \sqrt{s(s-a)(s-b)(s-c)}$  $ar\Delta = \sqrt{17(17-9)(17-11)(17-14)}$  $ar\Delta = \sqrt{17 \times 8 \times 6 \times 3} = \sqrt{17 \times 144}$  $= 12\sqrt{17} cm^2$ Hence the area of the triangle =  $12\sqrt{17}cm^2$ 249. Ans.(C) Let diagonal of rhombus = 5x, 4xArea of rhombus = 1/2 product of diagonals  $\frac{1}{2} \times 5 \times 4 \times = 10x^2$  $\therefore \frac{\text{Area of rhombus}}{\text{Product of diagonal of rhombus}} = \frac{10x^2}{20x^2} = 1:2$ 250. Ans.(B) Let the length of the rectangular ground = xWidth of rectangular ground =  $x \times \frac{60}{100} = \frac{3x}{5}$ Perimeter of ground = 800  $2\left(x + \frac{3x}{5}\right) = 800$  $2\left(\frac{5x + 3x}{5}\right) = 800$  $8x = 400 \times 5$  $x = 250 \,\mathrm{m}$ Length of ground x = 250Width of ground  $=\frac{3x}{5}=\frac{3\times 250}{5}=150 \text{ m}$ Area of ground =  $250 \times 150 = 37500m^2$ 251. Ans.(C) Length / height of a hollow cylinder = 84 cm External diameter = 32 cm External radius (R) = 16 cm Internal diameter = 24 cm Internal radius (r) = 12 cm Weight of cylinder material = 10g /cm<sup>3</sup> Cylinder weight  $=\frac{10}{1000}=\frac{1}{100}$  kg/ cm<sup>3</sup> Volume of hollow cylinder =  $\pi h(R^2 - r^2)$  $= \frac{22}{7} \times 84 \{ (16)^2 - (12)^2 \}$  $= 22 \times 12 \times 28 \times 4$  $= 88 \times 12 \times 28$ = 29568 cubic cm

Hence the weight of hollow cylinder =  $\frac{29568}{400}$ = 295.68 kg. Ans.(B) The larger part of sphere = 3/5The smaller part of sphere = 2/5In cone,  $r_c = h$ Volume of cone =  $\frac{1}{3}\pi r_c^2 h = \frac{3}{5} \times \frac{4}{3}\pi r^3$  $r_c^3 = \frac{12}{5}r^3$ .....(i) The smaller part of sphere = Volume of cvlinder  $\pi r_c^2 h = \frac{2}{5} \times \frac{4}{5} \pi r^3$  $\Rightarrow h^3 = \frac{8}{15}r^3 \dots \dots$ (ii) Dividing equation (i) by equation (ii)  $\frac{r_c^3}{h^3} = \frac{12}{5} \times \frac{15}{8}$  $\frac{r_c^3}{h^3} = \frac{9}{2}$  $\frac{r_c}{h} = \sqrt[3]{\frac{9}{2}}$  $r_c: h = \sqrt[3]{9}: \sqrt[3]{2}$ Ans.(C) Given -Room length = 5.5 mRoom width = 3.75 m Room area = Floor area  $= 5.5 \times 3.75 = 20.625 \text{ m}^2$ According to Question –

253.

252.

Slab laying cost

 $= 20.625 \times 800 = Rs.16500.00$ 

#### 254. Ans.(C)

Let x is the equal side of the isosceles triangle.

$$x + x + \frac{6x}{5} = 32$$
  

$$\Rightarrow 2x + \frac{6x}{5} = 32$$
  

$$\Rightarrow 10x + 6x = 32 \times 5$$
  

$$\Rightarrow x = \frac{32 \times 5}{16}$$
  

$$x = 10$$
  
A  
A  
A  
B  
D  
C

The side of the isosceles triangle will be 10, 10, 12 respectively.

$$AD^{2} = AB^{2} - BD^{2}$$
  
= 10<sup>2</sup> - 6<sup>2</sup>  
$$AD = \sqrt{64} = 8 \text{ cm}$$
  
Hence height = 8 cm  
Area of isosceles triangle  
=  $\frac{1}{2} \times \text{base} \times \text{height}$   
=  $\frac{1}{2} \times 12 \times 8$   
= 6 × 8 = 48 cm

**255**.



 $ar \ \Delta ABC = ar \ \Delta OBC + ar \ \Delta OAC + ar \ \Delta OAB$  $= \frac{1}{2} \times r \times BC + \frac{1}{2} \times r \times AC + \frac{1}{2} \times r \times AB$  $= \frac{1}{2} \times r \times (BC + AC + AB)$ 

$$=\frac{1}{2} \times 3.5 \times 28 = 49 \text{ cm}$$

# 256. Ans.(B)

According to the rule of identical triangles -

$$\frac{(\text{Area})_1}{(\text{Area})_2} = \frac{(\text{Side})_1^2}{(\text{Side})_2^2}$$
$$\frac{(\text{Area})_1}{72} = \frac{1}{9}$$
$$(\text{Area})_1 = 8cm^2$$

Thus the area of the smaller  $\Delta$  will be 8cm<sup>2</sup>.

### 257. Ans.(D)

Let the parallel sides of the trapezium be 5x m and 3x m respectively.

Area of trapezium = 1/2 [sum of parallel sides] × distance between them

$$1440 = \frac{1}{2}(5x + 3x) \times 24$$
  
$$\frac{1440 \times 2}{24} = 8x$$
  
$$8x = 120$$
  
$$x = 15$$
  
Length of long parallel side of trapezium  
$$= 5x \text{ m} = 5 \times 15 = 75 \text{ m}$$

### 258. Ans.(B)

Circumference of circle = 2  $\pi$ r  $2\pi r = 440$   $2 \times \frac{22}{7} \times r = 440$   $r = \frac{440 \times 7}{2 \times 22}$ r = 70 m

Let the radius of the circle be r and the radius of the circle including the circular path is R.



$$= \pi \times 1029$$
 22

$$=\frac{22}{7} \times 1029$$

259. Ans.(A)

Let, radius of the circle = xPercentage increase in area of the circle

$$= \left(2x + \frac{x^2}{100}\right)\%$$
  
=  $\left(2 \times 5 + \frac{(5)^2}{100}\right)\%$   
=  $(10 + .25)\%$   
=  $10.25\%$ 

260. Ans.(A)

Area of the circle =  $\pi R^2$ 

$$= \pi \times \left(\frac{a\sqrt{2}}{2}\right)^{2}$$

$$= \pi \times \frac{a^{2} \times 2}{4} = \frac{2\pi a^{2}}{4}$$

$$= \frac{\pi a^{2}}{2}$$
Area of square = (side)^{2} = (a^{2}) = a^{2}
$$\therefore \text{ Contiguous area} = \frac{\pi a^{2}}{2} - a^{2} = \frac{a^{2}}{2}(\pi - 2)$$
Ans (B)

261. Ans.(B)



Leaving 1.5 feet from the walls as image – Length =  $15 - (2 \times 1.5) = 12$  feet Width =  $12 - (2 \times 1.5) = 9$  feet  $\therefore$  Room area =  $12 \times 9 = 108$  sq. feet  $\therefore$  1 sq ft. cost = Rs. 3.50  $\therefore$  Cost of 108 sq.ft. =  $3.50 \times 108$ = Rs. 378 Ans.(A)

262.

263.

x - y = 4

6 - y = 4

y = 2

According to Question, Area of square = 24200 m<sup>2</sup>  $a^2 = 24200 \text{ m}^2$  $a = 110\sqrt{2} \text{ m}$ Distance traveled diagonally  $= a\sqrt{2} = 110\sqrt{2} \times \sqrt{2} = 220$  मी : Speed = 4.4 km/hr. =  $\frac{4.4 \times 1000}{60}$  m/min  $=\frac{220}{3}$  meter/min Hence time =  $\frac{\text{distance}}{\text{speed}} = \frac{220}{220/3} = 3 \text{ min}$ Ans.(A) Let the sides of the square be x, y respectively. Area of first square =  $x^2$ Area of second square =  $y^2$  $x^2 - y^2 = 32$ ....(i) x - y = 4.....(ii) from equation (i) -(x - y) (x + y) = 324(x + y) = 32x + y = 8.....(iii) from equation (ii) and (iii) x + y = 8x - y = 42x = 12x = 6Putting the value of x in equation (ii)

Therefore, the sides of the square are 6 cm and 2 cm.

B





266. Ans.(C)

Area of field  $\ell b = 60$ 

265.

Given – # Square side = 18 unit width of rectangle = 45 Perimeter of Rectangle = 2 × Perimeter of Square 2 (length + width) = 2 × 18 × 4 2 (l. + 45) = 2 × 72 L. = 72 - 45 = 27 Area = length × width = 27 × 45 Area = 1215 sq. unit.

### 267. Ans.(B)

268.

269

Given -



Perimeter of rectangular plot = 340 m 2(l + b) = 340(l + b) = 170mNew Perimeter = 2(l + 1 + b + 1)= 2(l + b + 2)= 2(170 + 2)= 2(172)= 344mGardening costs =  $344 \times 10 = Rs.3440$ Ans.(C) Let the breadth of the rectangular plot (b) = xm Length of rectangular plot (I) = 3x mArea of rectangular plot = I.b. $867 = 3x \times x$  $867 = 3x^2$  $289 = x^2$ x = 17Length of rectangular plot  $(l) = 3x = 3 \times 17 = 51$  meter Ans.(D)

Area of the rectangle =  $l \times w = 120$  ......(i) Perimeter of rectangle = 2 (l + w) (l + w) = 23 ......(ii) Diagonal of rectangle =  $\sqrt{l^2 + w^2}$ From equation (i) and (ii) –  $(l + w)^{2} = l^{2} + w^{2} + 2 l + w$   $(23)^{2} = l^{2} + w^{2} + 2 \times 120$   $529 - 240 = l^{2} + w^{2}$   $l^{2} + w^{2} = 289$ Diagonal = 17 m **270. Ans.(C)**  $2\pi r = 2(l + b)$   $2 \times \frac{22}{7} \times 7 = 2(7x + 4x)$  22 = 11x x = 2Area of the rectangle =  $7x \times 4x$ Area of the rectangle =  $28x^{2}$ 

$$= 28 \times 4 = 112$$

271. Ans.(D)



Area of the rectangle =  $20 \times 18 = 360$  sq. m. Area of rectangle with jogging track =  $24 \times 22 = 528$  m<sup>2</sup> Area of jogging track = 528 - 360 = 168 m<sup>2</sup>

# 272. Ans.(D)

Surface area of the cube. =  $6a^2$ According to Question,  $6a^2 = 3750$  $\Rightarrow a^2 = 625$ a = 25Volume of the cube =  $(side)^3$  $= 25 \times 25 \times 25$  $= 15625cm^3$ **273.** Ans.(C) Let each side of the cube = a cm

According to Question, 12 a = 48a = 4

Volume of the cube =  $(a)^3$ =  $(4)^2 = 64$ cm<sup>3</sup>

274. Ans.(C) Surface area of the cube = 6aVolume of the cube =  $a^{3}$ According to Question,  $6a^{2} = a^{3}$ a = 6Hence volume of the cube =  $a^{3} = 6^{3}$  = 216 Cube unit

#### 275. Ans.(A)

276.

277.

278.

279.

Let the length (I), breadth (b) and height (h) of the cuboid be x, 2x and 3x respectively. Surface area of cuboid = 88 cm<sup>2</sup>  $2(l.b + b.h + h.l) = 88cm^2$  $2(x.2x + 2x.3x + 3x.x) = 88cm^2$  $2(2x^2 + 6x^2 + 3x^2) = 88$  $22x^2 = 88$  $x^2 = 4$ x = 2Length of cuboid (1) = x = 2 cm Breadth of cuboid (b) =  $2x = 2 \times 2 = 4cm$ Height of cuboid  $(h) = 3x = 3 \times 2 = 6cm$ Volume of cuboid =  $\ell$ . b.h  $= 2 \times 4 \times 6$  $= 48 cm^3$ Ans.(B) Number of frames received Volume of large cuboid Volume of small cuboide  $\ell \times b \times h$  $\ell \times 0.5b \times 0.4h$  $=\frac{1}{0.5 \times 0.4}$  $=\frac{1}{0.20}=\frac{100}{20}=5$ Ans.(D) Area of cardboard = 2(lb + bh + hl) $= 2(10 \times 8 + 8 \times 4 + 4 \times 10)$ = 2(80 + 32 + 40) $= 2 \times 152 = 304 \text{ cm}^2$ Ans.(D) Wooden box measurement  $= 20cm \times 12cm \times 10cm = 2400 \text{ cm}^3$ .: The thickness of the wood is 1 cm : Internal measurement of wooden box  $= (20 - 1 \times 2) \times (12 - 1 \times 2) \times (10 - 1 \times 2)$  $= 18 \times 10 \times 8$  $= 1440 cm^{3}$ : Volume of wood used to make box = 2400 - 1440 = 960 cm<sup>3</sup> Ans.(A) Given l = 12cmb = 8cmh = 10cmTotal surface area of rectangular panel

 $= 2(12 \times 8 + 8 \times 10 + 12 \times 10)$ = 2(96 + 80 + 120) $= 2 \times 296$ 

### = 592 sq. cm 280.

Ans.(C) Let the dimensions of the cuboid be 4x, 2x, x cm. Surface area of a cuboid = 2 [lb + bh + hl) $1372 = 2[4x \times 2x + 2x \times x + 4x \times x]$  $1372 = 2[8x^2 + 2x^2 + 4x^2]$  $1372 = 2[14x^2]$  $x^2 = \frac{1372}{}$ 28  $x^2 = 49$ x = 7Length of cuboid = 4x

 $= 4 \times 7$ 

= 28 cm

#### 281. Ans.(A)

Radius of the sphere = rRadius of cylinder = r Height of cylinder = 2r

Hence, 
$$\frac{\text{Volume of spheres}}{\text{Volume of cylinder}} = \frac{\frac{4}{3}\pi r^3}{\pi r^2 \times 2r} = \frac{2}{3}$$
  
 $\therefore$  Volume of sphere: Volume of cylinder

·· Volume of sphere: Volume of cylinae = 2 : 3

#### 282. Ans.(A)

Area of the circle =  $154 \text{ m}^2$  $\pi r^2 = 154$  $r^2 = 154 \times \frac{7}{22} = 7 \times 7$ 

# r = 7

According to Question, Cylinder height = 7 m Radius of cylinder = 7/2 m Hence, curved surface area =  $2\pi r(h + r)$  $= 2 \times \frac{22}{7} \times \frac{7}{2} \left(7 + \frac{7}{2}\right)$  $= 22 \times \frac{21}{2}$  $= 231 \text{ m}^2$ 

#### 283. Ans.(A)

Let radius of first cylinder be  $(r_1) = 2 r$ And radius of second cylinder  $(r_2) = 3r$ Similarly, height of first cylinder  $(h_1) = 5h$ And the height of other cylinder  $(h_2) = 3h$ According to Question, Volume of first cylinder = 160 cubic units Volume of cylinder =  $\pi r^2 h_1$ 

= 2 (lb + bh + h)

 $\pi r_1^2 h = 160$  $\pi \times 2r \times 2r \times 5h = 160$  $\pi \times 20r^2h = 160$ .....(i)  $r^2h = \frac{160}{\pi \times 20}$  $r^2h = \frac{8}{\pi}$ Volume of second cylinder =  $\pi r_2^2 h_2$  $= \pi \times 3r \times 3r \times 3h$  $= \pi 27 r^2 h$  $= \pi \times 27 \times 8 \times \frac{1}{-}$ { From equation (i) }  $= 27 \times 8$ = 216 Thus, volume of second cylinder = 216 cubic units 284. Ans.(D) Let the length of the wire be I cm. According to Question - $\therefore$  Volume of sphere = Volume of wire (cylindrical) 4  $\frac{1}{3}\pi \times 6 \times 6 \times 6 = \pi \times 8 \times 8 \times \ell$  $\ell = \frac{4 \times 6 \times 6 \times 6}{3 \times 8 \times 8} = 4.5 \text{ cm}$ 285. Ans.(D) Radius (r) = 21 cmHeight (h) = 90 cmExternal curve of the pipe - surface area =  $2\pi rh$  $= 2 \times \frac{22}{7} \times 21 \times 90$  $= 2 \times 22 \times 3 \times 90 = 11880$  sq. cm. 286. Ans.(C) Radius of hemisphere= radius of cylinder = r Height of cylinder (h) = 2rTotal curved surface area = Curved surface area Cylinder. + Curved surface area of hemisphere. + Area of base of cylinder  $= 2\pi rh + 2\pi r^2 + \pi r^2$  $= 2\pi r \times 2r + 3\pi r^2$  $= 4\pi r^2 + 3\pi r^2$  $= 7\pi r^{2}$ 287. Ans.(D) Radius of the base (r) = 7 mCapacity or volume of cylindrical tank = 3080 cu m.  $\pi r^2 h = 3080$  $\frac{22}{7} \times 7^2 \times h = 3080$  $7h = \frac{3080}{22}$  $h = \frac{140}{7} = 20$  m.

### 288. Ans.(D)

Circumference  $(2\pi r) = h$ Curved surface area Cylinder =  $2\pi rh$ =  $h \times h = h^2$ 

# 289. Ans.(C)

When folded relative to length  $(2\pi r_1) = 2h_1$   $r_1 = \frac{1}{\pi}$ When folded relative to width  $(2\pi r_2) = 1h_2$   $r_2 = \frac{1}{2\pi}$  $\frac{V_1}{V_2} = \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2} = \frac{\pi \times \frac{1}{\pi^2} \times 1}{\pi \times \frac{1}{4\pi^2} \times 2} = 2:1$ 

# 290. Ans.(C)

Given -# Total surface area of cylinder = 462 cm<sup>2</sup>  $2\pi r(h + r) = 462$ ..... (i) Curved surface area of cylinder =  $462 \times \frac{1}{2}$  $2\pi rh = 154cm$ ....(ii) Divide by equation (ii) in equation (i) - $\frac{2\pi r(h+r)}{2\pi r(h+r)} =$ 462  $2\pi rh$ 154  $\frac{(h+r)}{r} = 3$ h + r = 3h $r = 2h \dots \dots \dots (iii)$ From equation (ii) - $2\pi rh = 154$  $2 \times \frac{22}{7} \times 2h \times h = 154$  $4 \times \frac{22}{7} \times h^2 = 154$  $h^2 = \frac{49}{4}$  $h = \frac{1}{2}$ From equation (iii) r = 2h $r = 2 \times \frac{7}{2} = 7cm$ Volume of cylinder =  $(\pi r^2 h)$  $= \frac{22}{7} \times 7 \times 7 \times \frac{7}{2} = 11 \times 49 = 539 cm^{3}$ 

291. Ans.(C)

Let radius of cone = R cm



Radius of a segment = 21 cm Angle = 120° A .....

Angle = 
$$\frac{\text{Arc}}{\text{radius}}$$
,  
 $120^{\circ} \times \frac{\pi}{180^{\circ}} = \frac{\text{Arc}}{21}$   
 $\frac{2\pi}{3} \times 21 = \text{Arc}$   
 $2\pi R = \frac{2\pi}{3} \times 21$   
 $\overline{R} = 7cm$ 

#### 292. Ans.(C)

293.

Volume of hemisphere =  $\frac{2}{3}\pi r^3$ Volume of cone =  $\frac{1}{3}\pi r^2 h$ According to Question,  $\frac{\frac{2}{3}\pi r^{3}}{\frac{2}{3}\pi r^{3}} = \frac{1}{3}\pi r^{2}h$  $\frac{2}{3}\pi R^{3} = \frac{1}{3}\pi R^{2}H$ (r = R)(h = H)H = 2RAns.(D) 10

$$V_{1}: V_{2} = 1:10$$

$$h_{1}: h_{2} = 2:5$$

$$\frac{V_{1}}{V_{2}} = \frac{\frac{1}{3}\pi r_{1}^{2}h}{\frac{1}{3}\pi r_{2}^{2}h}$$

$$\frac{1}{10} = \frac{r_{1}^{2} \times 2}{r_{2}^{2} \times 5}$$

$$\frac{1}{2} = \frac{r_{1}^{2} \times 2}{r_{2}^{2} \times 1}$$

$$r_{1}: r_{2} = 1:2$$

#### 294. Ans.(C)

Radius of the cone is equal to height of cone  $\therefore$  Volume = Volume of hemisphere + Volume of Cone

$$= \frac{2}{3}\pi r^{3} + \frac{1}{3}\pi r^{2}h$$
  
=  $\frac{2}{3}\pi r^{3} + \frac{1}{3}\pi r^{3}$   
=  $\frac{3\pi r^{3}}{3}$   
=  $\pi \times (2)^{3}$ 

 $= 8 \pi$  cm

#### **295**. Ans.(B)

Volume of the cone = Curved surface area of 0000

Cone  

$$\frac{1}{3}\pi r^{2}h = \pi rl$$

$$\frac{1}{3}rh = l$$

$$\frac{1}{3}rh = l$$
Squaring both sides,  

$$\frac{1}{n^{2}} = \frac{1}{n}$$
Squaring both sides,  

$$\frac{1}{n^{2}} = \frac{r^{2}}{9l^{2}} \qquad \dots \dots (i)$$
And 
$$\frac{1}{r^{2}} = \frac{h^{2}}{9l^{2}} \qquad \dots \dots (ii)$$
By equation (i + ii)  

$$\frac{1}{h^{2}} + \frac{1}{r^{2}} = \frac{r^{2}}{9l^{2}} + \frac{h^{2}}{9l^{2}}$$

$$\frac{1}{h^{2}} + \frac{1}{r^{2}} = \frac{l^{2}}{9l^{2}} \qquad (\because l^{2} = h^{2} + r^{2})$$

$$\frac{1}{h^{2}} + \frac{1}{r^{2}} = \frac{l^{2}}{9l^{2}} \qquad (\because l^{2} = h^{2} + r^{2})$$

$$\frac{1}{h^{2}} + \frac{1}{r^{2}} = \frac{1}{9}$$
296. Ans.(D)  

$$\frac{Curved surface area of first cone}{Curved surface area of second cone} = \frac{2}{1}$$

$$\frac{\pi r_{1}\ell_{1}}{\pi r_{2}\ell_{2}} = \frac{2}{1}$$
Given -  
Ratio of slant height  $(\ell_{1}: \ell_{2}) = 1:2$ 

$$\frac{r_{1} \times 1}{r_{2} \times 2} = \frac{2}{1}$$

$$r_{1} = 4r_{2}$$

$$\frac{r_{1}}{r_{2}} = \frac{4}{1}$$
Ratio of radius  $(r_{1}:r_{2}) = 4:1$ 
297. Ans.(D)

297



 $= \pi \times 10 \times 15 + 2\pi \times 10 \times 25$  $= 150\pi + 500\pi$ 

$$= 650\pi m^2$$

Area after increasing = 
$$650 \times \frac{120}{100} \times \frac{22}{7}$$
  
=  $\frac{780 \times 22}{7}$  =  $\frac{17160}{7}$  = 2451.40 m<sup>2</sup>  
**298. Ans.(D)**  
Let the radius of the first cone r<sub>1</sub> = 8.4 cm  
Radius of second cone r<sub>2</sub> = 8.4 cm  
Height of second cone h<sub>2</sub> = 17.2 cm  
Let the radius of sphere = R  
Volume of both cones = Volume of spheres  
 $\frac{1}{3}\pi r_1^2 h_1 + \frac{1}{3}\pi r_2^2 h_2 = \frac{4}{3}\pi R^3$   
[ $(8.4)^2 \times 16.4 + (8.4)^2 \times 17.2$ ] =  $4R^3$   
( $(8.4)^2 (16.4 + 17.2] = 4R^3$   
 $\frac{8.4 \times 8.4 \times 8.4}{4} = R^3$   
 $R^3 = 8.4 \times 8.4 \times 8.4$   
 $R = 8.4$   
Diameter of sphere (d) = 2R  
=  $2 \times 8A$   
= 16.8 cm  
**299. Ans.(A)**  
**W**  
**I**nternal radius of semi circular bowl = r  
Thickness (d) = R - r  
Outer radius of semi circular bowl = R = d + r  
Surface area of a semi circular bowl  
=  $2\pi R^2 + 2\pi r^2 + \pi (R^2 - r^2)$   
=  $2\pi ((d + r)^2) + 2\pi r^2 + \pi \{(d + r)^2 - r^2\}$   
=  $2\pi (d^2 + r^2 + 2dr) + 2\pi r^2 + \pi (d + r)^2 - r^2$   
=  $2\pi d^2 + 2\pi r^2 + 4\pi rd + 2\pi r^2 + \pi d^2 + 2\pi rd^2 + \pi (d^2 + r^2 + 2\pi rd^2 + \pi d^2 + 2\pi rd^2 + \pi d^2 + 2\pi rd^2 + \pi d^2$   
=  $3\pi d^2 + 4\pi r^2 + 6\pi rd$   
=  $\pi (4r^2 + 6rd + 3d^2)$   
**300. Ans.(D)**

 $\therefore$  Volume of sphere = Volume of Cone

 $\frac{4}{3}\pi R^3 = \frac{1}{3} \times \pi \times 8 \times 8 \times 32$  $R^3 = \frac{8 \times 8 \times 32}{4}$  $R^3 = 512$ R = 8 cm $\therefore$  Radius of the sphere = 8 cm 301. Ans.(D) Volume of a cube with sides 6 cm  $= (6)^3 = 216$ Volume of hemisphere  $=\frac{2}{3}\pi r^{3} = \frac{2}{3}\pi (3)^{3} = \frac{2}{3} \times 27 \times \pi$ Required difference =  $216 - \frac{2}{3} \times 27 \times \pi$  $= 216 - 18\pi$ 302. Ans.(B) Volume of Sphere =  $\frac{4}{3}\pi r^3$ Surface area =  $4\pi r^2$  $\frac{\frac{4}{3}\pi r^3}{4\pi r^2} = 27 \text{ cm}$  $r = (27 \times 3) \, \text{cm}$ = 81 cm 303. Ans.(B) Sphere surface of circle = 1386 m<sup>2</sup>  $4\pi r^2 = 1386$  $4 \times \frac{22}{7} \times r^2 = 1386$  $4 \times r^{2} = 63 \times 7$  $4 \times r^{2} = 7 \times 3 \times 3 \times 7$  $r = \sqrt{\frac{7 \times 7 \times 3 \times 3}{4}}$  $r = \frac{7 \times 3}{2}$  $r = \frac{21}{2}$  m Volume of Sphere =  $\frac{4}{3}\pi r^3$  $= \frac{4}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$  $= 21 \times 21 \times 11$ = 4851 m<sup>3</sup> 304. Ans.(D) 17 8 8

$$h = \sqrt{(17)^2 - (8)^2}$$
  

$$h = \sqrt{289 - 64}$$
  

$$h = \sqrt{225}$$
  

$$h = 15$$
 upit

$$n = 15$$
 unit  
Ans.(A)

305. Given -

> Sides of the triangular prism are 8, 15, 17 (units) respectively.

Height (h) = 20 unit

Total surface area. = Perimeter of the base × height + 2 × area of base

= 
$$(8 + 15 + 17) \times 20 + 2 \times \frac{1}{2} \times 8 \times 15$$
  
=  $40 \times 20 + 120 = 920$  sq. unit

$$= 40 \times 20 + 120 = 920$$
 sq. u

306.



Volume of cylinder  
= 
$$\pi r^2 h = \pi \times 25 \times 20$$
  
=  $500\pi$   
Volume of cone formed =  $\frac{1}{3}\pi R^2 H$   
 $\begin{cases} H = 2h \\ r = R \end{cases}$  given  
=  $\frac{1}{3}\pi \times 25 \times 40$   
=  $\frac{1000\pi}{3}$   
Quantity of wasted material  
=  $500\pi - \frac{1000\pi}{3} = \frac{500\pi}{3}$ 

% Of wasted material = 
$$\frac{\frac{500\pi}{3}}{500\pi} \times 100$$
  
= 33.3%

$$\frac{Cylinder \ volume}{Cone \ volume} = \frac{\pi R_1^2 h_1}{\frac{1}{3}\pi R_1^2 h_1} = 3\left(\frac{R_1}{R_2}\right)^2 \left(\frac{h_1}{h_2}\right) = \frac{V_1}{V_2}$$
$$\frac{V_1}{V_2} = 3\left(\frac{\sqrt{3}}{\sqrt{3}}\right)^2 \times \left(\frac{\sqrt{2}}{\sqrt{6}}\right) = 3 \times \frac{3}{2} \times \frac{1}{\sqrt{3}}$$
$$\frac{V_1}{V_2} = \frac{3\sqrt{3}}{2}$$
$$\therefore \ V_1: \ V_2 = 3\sqrt{3}:2$$

#### 308. Ans.(D)

309.

Formula: Area of rhombus =  $6\frac{\sqrt{3}}{4} \times (\text{side})^2$  $= 6\frac{\sqrt{3}}{4} \times 6 \times 6$  $= 54\sqrt{3}$  cm Ans.(D)

Volume of Cone =  $\frac{1}{3}\pi r^2 h$ Volume of Hemisphere =  $\frac{2}{3}\pi r^3$ Volume of cylinder =  $\pi r^2 h$  $P:Q:R = \frac{1}{3}\pi r^{3}:\frac{2}{3}\pi r^{3}:\pi r^{3} \quad (\because r = h)$ P:Q:R = 1:2:3

#### 310. Ans.(A)

Let the side of the square = xRadius of cylinder = r By question -Circumference of base of cylinder = side of square  $2\pi r = x$  $\frac{x}{r} = \frac{2\pi}{1}$ 

#### $x:r = 2\pi:1$ Δns (R) 311.

Diameter of sphere = side of cube  

$$2r = a$$

$$r = \frac{a}{2}$$

$$\frac{\text{Volume of Cube}}{\text{Volume of spheres}} = \frac{a^3}{\frac{4}{3}\pi (\frac{a}{2})^3}$$

$$= \frac{a^3}{\frac{4}{3}\pi \frac{a^3}{8}}$$

$$= \frac{1}{\frac{\pi}{6}} = 6:\pi$$

312.

o  
Ans.(A)  
Height of sphere = height of cube  

$$2r = a$$
  
 $r = \frac{a}{2}$   
Volume of Cube  
Volume of spheres  $= \frac{a^3}{\frac{4}{3}\pi (\frac{a}{2})^3}$   
 $= \frac{a^3}{\frac{4}{3}\pi \times (\frac{a}{2})^3}$   
 $= a^3 \times \frac{6}{\pi a^3} = 6:\pi$ 

# 313. Ans.(C)

Let the length of the rectangle be 5x and the width 4x.

Area of the rectangle. =  $5x \times 4x = 20x^2$ According to Question,

Area of square  $\times \frac{9}{20}$  = Area of the rectangle Area of square  $\times \frac{9}{20}$  =  $20x^2$ 

Area of square =  $\frac{400x^2}{9}$ 

Area of side =  $\frac{20x}{3}$ 

 $\frac{\text{Perimeter of Rectangle}}{\text{Perimeter of square}} = \frac{2 \times (5x + 4x)}{4 \times \frac{20x}{3}} = \frac{18x \times 3}{80x} = \frac{27}{40}$ 

Required ratio = 27: 40

### 314. Ans.(A)

 $\frac{\text{Area of room floor}}{\text{Area of carpet}} = \text{Number of carpets}$  $\frac{40 \times 24}{6 \times 4} = \text{Number of carpets}$ Number of carpets = 40

# 315. Ans.(A)

Square and rhombus are such geometric figures whose four side are equal. We know that,

Diagonal for square =  $a\sqrt{2}$ 



With this, the side of the square can be known and the square can be formed.

The diagonals of the rhombus intersect each other at  $90^{\circ}$ , so that the rhombus side will be known, and rhombus can be constructed.



# 22. (Algebra)

1. If no solution of the equations 14x + 8y + 5 = 0 and 21x - ky - 7 is possible, then the value of k will be: **RRB Group-D - 23/11/2022 (Shift-I)** 

(A) -16 (B) 12 (C) 8 (D) -12

2. If there is no solution of  $6x^2 + 2kx + k = 0$ , find the value of k: RRB Group-D - 19/11/2022 (Shift-III)

(A) 0 < k < 6 (B) k > -6(C) k > 6 (D) k < 6

3. For which value of k is there no solution of the equation 16x - 12y + 9 = 0 and 12x + ky-11 = 0? RRB Group-D - 04/12/2018 (Shift-III)

(A) −16 (B) 16 (C) −9 (D) 9

4. If there is no solution of the equation 20x + 5y + 11 = 0 and 50x - ky - 9 = 0, then the value of K is.

 RRB Group-D - 10/12/2018 (Shift-I)

 (A) 12.5
 (B) -12.5

 (C) 18
 (D) -18

5. If no solution of the equations 4x + 3y + 5 = 0 and 10x - ky - 7 = 0 is possible, then what will be the value of k?

 RRB Group-D - 08/10/2018 (Shift-I)

 (A) -8
 (B) 7.5

 (C) 8
 (D) -7.5

- 6. If  $a \frac{1}{a} = 7$ , then  $a^2 + \frac{1}{a^2} = ?$ RRB Group-D - 01/09/2022 (Shift-II) (A) 52 (B) 50 (C) 49 (D) 51
- 7. If a is a positive integer and  $a^2 + \frac{1}{a^2} = 7$  then  $a^3 + \frac{1}{a^3} = ?$ RRB Group-D - 27/11/2022 (Shift-I) (A) 18 (B)  $3\sqrt{7}$ (C)  $7\sqrt{7}$  (D) 21
- 8. If  $a + \frac{1}{a} = 5$  then find the value of  $a^3 + \frac{1}{a^3}$ . RRB Group-D - 19/11/2022 (Shift-III)

- (A) 140
  (B) 110
  (C) 120
  (D) 130
- 9. If  $\left(a \frac{1}{a}\right) = 6$ , then  $\left(a^4 + \frac{1}{a^4}\right) = ?$ RRB Group-D - 12/10/2018 (Shift-III) (A) 34 (B) 1444 (C) 38 (D) 1442
- 10. If  $x^2 + \frac{2x}{5} + \frac{1}{25} = 0$ , then  $\left(x \frac{2}{3}\right)^2 = ?$ RRB Group-D - 16/10/2018 (Shift-I) (A)  $\frac{1}{3}$  (B)  $\frac{169}{225}$ (C)  $\frac{44}{169}$  (D)  $\frac{225}{256}$
- 11. If  $a \frac{1}{a} = 7$ , then  $a^2 + \frac{1}{a^2} = ?$ RRB Group 17/11/2022 (Shift-II) (A) 51 (B) 53 (C) 52 (D) 54
- 12. If  $a + \frac{1}{a} = 8$ , then  $a^3 + \frac{1}{a^3} = ?$ RRB Group-D - 01/09/2022 (Shift-III) (A) 500 (B) 488 (C) 536 (D) 512
- 13. If  $a + \frac{1}{a} = -3$ , then find the value of  $a^6 + \frac{1}{a^6}$ . RRB Group-D - 27/11/2018 (Shift-III) (A) 36 (B) 322 (C) 729 (D) 18
- 14. If  $x + y = 9, x^2 + y^2 = 41$ , then find the value of  $x^3 + y^3$ . **RRB Group-D - 15/11/2018 (Shift-III)** (A) 189 (B) 249 (C) 289 (D) 100
- 15. If  $\frac{x+1}{x} = 2$ , then find the value of  $x^2 + \frac{1}{x^2}$ . RRB Group-D - 26/10/2018 (Shift-II) (A) 5 (B) 4 (C) 1 (D) 2
- 16. If  $\frac{x-1}{x} = 3$  then find the value of  $\frac{x^2+1}{x^2}$ . RRB Group-D - 12/10/2018 (Shift-II) (A) 3 (B) 11 (C) 5 (D) 7

- **17**. If  $a \frac{1}{a} = 10$  then find the value of  $a^2 + \frac{1}{a^2}$ . **RRB Group-D - 09**/10/**2018** (Shift-II) (A) 98 (B) 102 (C) 100 (D) 99
- 18. What is the remainder when  $4x^6 5x^3 3$  is divided by  $x^3 - 2$ ? **RRB Group-D - 11/12/2018 (Shift-II)** (A) 3 (B) 2 (C) 0 (D) 1
- **19.** If  $3x^2 + ax 12$  is completely divisible by x-8, then the value of a is:

RRB Group-D - 11/12/2018 (Shift-II)(A) -24.5(B) 22.5(C) 24.5(D) -22.5

- **20.** If  $3x^2 + ax + 7$  is completely divisible by x-1, then, the value of a is: **RRB Group-D - 12/11/2018 (Shift-II) (A)** -10.6 **(B)** -10.5 **(C)** -10 **(D)** -3
- **21.** When  $4x^3 2x^2 + 5x 8$  is divided by (x-2), what will be the remainder?

 RRB Group-D - 26/10/2018 (Shift-II)

 (A) 43
 (B) 16

 (C) 26
 (D) 25

**22.** There are 31 left over dividing  $2x^2 + ax + b$  by x-3, and 24 remaining when  $x^2 + bx + a$  is divided by x-3. Then the value of a + b will be equal to:

 RRB Group-D - 19/11/2022 (Shift-II)

 (A) -7
 (B) 23

 (C) -23
 (D) 7

23. When  $4x^6 - 5x^3 - 3$  is divided by  $x^3 - 2$ , what remains? RRB Group-D - 20/09/2022 (Shift-II)

(A) 3 (B) 0 (C) 1 (D) 2

- 24. When  $x^2 + ax + b$  is divided by x 7, 35 is left and  $x^2 + bx + a$ , when divided by x - 7, has 31 remaining. What is the value of a + b? RRB Group-D - 24/11/2022 (Shift-II) (A) 3 (B) 4 (C) -3 (D) -4
- **25.** If  $2x^2 + ax + b$  is divided by x 3, the remaining 35 is left, and  $2x^2 + bx + a$  is divided by x 3 with 29 remaining, then what will be the value of a + b?

RRB Group-D - 08/10/2018 (Shift-II)

(A) -7 (B) -23 (C) 7 (D) 23

26. For which value of k, 5kx + k<sup>2</sup> + 5 is completely divisible by x + 2 but not divisible by x + 3.
RRB Group-D - 18/11/2022 (Shift-II) (A) Neither 1 nor 9 (B) both 1 and 9 (C) 1 (D) 9
27. When 2x<sup>2</sup> + ax + 2b is divided by x - 1, 16 is left and when x<sup>2</sup> + bx + 2a is divided by x + 1, -1 is left, then a + b is equal to: RRB Group-D - 26/11/2022 (Shift-II)

- (A) −8 (B) −14 (C) 14 (D) 8
- 28. If  $3x^2 + ax + 4$  is completely divisible by x 8, then the value of a will be RRB Group–D – 28/11/2022 (Shift–I)

(A) -24.5 (B) 25.5 (C) 24.5 (D) -25.5

- 29. If  $4x^3 2x^2 + 5x 8$  is divided by (x-2), what will be the remainder? RRB Group-D - 16/10/2018 (Shift-II) (A) 16 (B) 26 (C) 42 (D) 81
- **30.** Find the value of A, when the polynomial is  $P(x) = x^3 + 3x^2 2Ax + 3$ , where 'A' is the constant, when divided by  $x^2 + 1$ , left remainder -5x.

RRB Group-D - 22/10/2018 (Shift-II) (A) 3 (B) -2 (C) 2 (D) -3

**31.** When  $3x^2 + 2ax + 4b$  is divided by x + 3, 15 remains, and when  $2x^2 + 3bx + 5a$  is divided by x - 3, 65 is left. What is the value of a + b?

RRB Group-D - 30/10/2018 (Shift-III) (A) 9 (B) 6 (C) 7 (D) 11

**32.** Factors of  $(x^2 + 4x + 4)(x^2 + 6x + 9)$  are: **RRB Group-D - 31/10/2018 (Shift-II) (A)** (2x + 3)(x + 3) **(B)** (x + 2)(x + 3)**(C)** (x + 2)(2x + 3) **(D)** (x + 2)(x + 4)

**33.** Solve the following equation to find x:  $(x-2)^2 - 36 = 0; x \in N$  **RRB Group-D - 19/11/2022 (Shift-I) (A)** 4 **(B)** -8 **(C)** -4 **(D)** 8 34. Two square root of a quadratic solution x =1/7 and x = (-1)/8 is given. The equation can be written as-

RRB Group-D - 19/11/2022 (Shift-I) (A) (7x + 1)(8x + 1) = 0 $(\mathbf{B}) (7x - 1)(8x - 1) = 0$ (C) (7x + 1)(8x - 1) = 0 $(\mathbf{D}) (7x - 1)(8x + 1) = 0$ 

- 35. Solve:  $x: x \in N; (x - 4)^2 - 36 = 0$ RRB Group-D - 12/10/2018 (Shift-III) (A) 2 **(B)** -2 (C) 10 **(D)** -10
- One of the roots of the equation  $x^2 24x +$ 36. k = 0 is x = 2. Other origin will be: RRB Group-D - 20/09/2022 (Shift-I) (A) x = 12**(B)** x = -22(C) x = 22**(D)** x = -12
- If  $a + \frac{1}{a} = -6$ , then find the value of  $a^3 + \frac{1}{a^3}$ ? RRB Group-D 26/11/2022 (Shift-II) 37. (A) -198 **(B)** -216 (C) 216 **(D)** 198
- If  $x^2 + 1.5kx + 4.5k = 0$  contains 38. the repeating root, then the satisfactory value of k will be:

RRB Group-D - 26/11/2022 (Shift-III) (A) k = 8 only **(B)** k < 0 or k > 8 (C) k = 8 or k = 0**(D)** 0 < k < 8

- 39. If  $\alpha$  and  $\beta$  are zeros of the polynomial  $x^2$  – 5x + 6, find the value of  $\frac{\alpha^2 + \beta^2}{\alpha^{-2} + \beta^{-2}}$ . RRB Group-D - 10/10/2018 (Shift-III) (A) 63 (B) 62 (C) 36 (D) 26
- 40. If  $x^2 + 4.5kx + 13.5k = 0$  has iterative roots, then what the value of k will satisfy condition? RRB Group 'D' 07/12/2018 (Shift-I)

(B) k < 0 or k >  $\frac{8}{3}$ (D) k =  $\frac{8}{3}$  or k = 0 (A)  $0 < k < \frac{8}{3}$ (C) k =  $\frac{8}{2}$ 

41. The two roots of a quadratic equation are x =1/11 and x = (-1)/9. How can the equation be written in the following way?

RRB Group-D - 06/12/2018 (Shift-II) (A) (11x + 1)(9x - 1) = 0 $(\mathbf{B}) (11x + 1)(9x + 1) = 0$ (C) (11x - 1)(9x + 1) = 0

 $(\mathbf{D})(11x-1)(9x-1) = 0$ 

If there is no real solution to  $3x^2 + 2kx + 2$ 42. k = 0, then what will be true with respect to the value of k?

### RRB Group-D - 01/09/2022 (Shift-I)

(A) 0 < k < 3 or k > 3(**B**) k > 3(C) 0 < k < 3 (**D**) k < 0

If  $\alpha \neq \beta$  but  $\alpha^2 = 5\alpha - 3$ ,  $\beta^2 = 5\beta - 3$ , find the 43. equation whose roots are  $\alpha / \beta$ .  $\beta / \alpha$ . RRB Group-D - 01/09/2022 (Shift-I) (A)  $3x^2 - 19x - 3 = 0$  $(\mathbf{B}) 3x^2 - 19x + 3 = 0$ (C)  $3x^2 + 19x - 3 = 0$ **(D)**  $3x^2 + 19x + 3 = 0$ 

- If  $2x^2 + x 28 < 0$ , then which of the 44. following specifies all possible values of 'x'? RRB Group-D - 01/09/2022 (Shift-II) (A)  $x > \frac{7}{2}$ (**B**)  $-4 < x < \frac{7}{2}$ (C) 0 < x < 13**(D)** x < -4
- If the roots of  $2x^2 + 7x 4 = 0$  are  $\alpha$  and  $\beta$ , 45. then what will be the equation whose roots are  $\alpha^2$  and  $\beta^2$ :

RRB Group-D - 01/12/2018 (Shift-II)

- (A)  $4x^2 65x 16 = 0$  $(\mathbf{B}) 4x^2 + 65x - 16 = 0$ (C)  $4x^2 - 65x + 16 = 0$ **(D)**  $4x^2 + 65x + 16 = 0$
- If  $2x^2 9x 18 < 0$ , which of the following 46. options specifies all possible values of 'X'? RRB Group-D - 11/12/2018 (Shift-III)

(A) $x < -\frac{3}{2}x$	$(\mathbf{B}) - \frac{3}{2} < x < 6$
<b>(C)</b> x < 6	$(\mathbf{D}) \ 0 < x < 12$

47. What is the number of real roots of the following equation?  $(6-x)^4 + (8-x)^4 = 16$ RRB Group-D - 31/10/2018 (Shift-III) (A) 6 (B) 2 **(C)** 4 **(D)** 0

If the roots of the equation  $x^2 - x - 1 = 0$  are 48.  $\alpha$  and  $\beta$ , then what will be the equation whose roots are  $\alpha / \beta$  and  $\beta / \alpha$ ?

- RRB Group-D 18/11/2022 (Shift-I)
- (A)  $x^2 + 3x 1 = 0$
- **(B)**  $x^2 + x 1 = 0$ (C)  $x^2 - x + 1 = 0$
- $(\mathbf{D}) x^2 + 3x + 1 = 0$

**49.** What is the sum of the values of x satisfying  $x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2$ :

 RRB Group-D - 23/11/2022 (Shift-I)

 (A) 7
 (B) -3

 (C) 3
 (D) -7

- 50. The number of solutions of the equation  $x^{\frac{2}{3}} + x^{\frac{1}{2}} 2 = 0$  is: **RRB Group-D - 28/11/2022 (Shift-III)** (A) 1 (B) 3 (C) 4 (D) 2
- 51. If x < 5, the expression will be a value of  $-5x^2 + 2x + 7$ . RRB Group-D - 30/10/2018 (Shift-II) (A) Can't say (B) Non-debt (C) Negative (D) Positive
- 52. The number of solutions of the equation  $x^{\frac{2}{3}} + x^{\frac{1}{3}} 2 = 0$  is: **RRB Group-D - 28/11/2022 (Shift-III)** (A) 1 (B) 3 (C) 4 (D) 2
- 53.  $\frac{\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)}}{RRB \text{ Group-D 17/11/2022 (Shift-I)}}$ (A) 1 (B) 4 (C) 0 (D) 2
- 54. If a + b + c = 16 and ab + bc + ca = 78. Then find the value of  $a^3 + b^3 + c^3 - 3abc$ ? RRB Group-D - 16/10/2018 (Shift-I) (A) 218 (B) 352 (C) 320 (D) 220
- 55. If a + b + c = 9 and  $a^2 + b^2 + c^2 = 29$ , then find the value of  $a^3 + b^3 + c^3 - 3abc$ ? RRB Group-D - 31/10/2018 (Shift-I) (A) 9 (B) 27 (C) 3 (D) 81
- 56. Find the value:

$$\sqrt{2\sqrt{2\sqrt{2\sqrt{2}}}}$$
RRB Group-D - 26/10/2018 (Shift-II)  
(A)  $\sqrt{2}$  (B) 2  
(C)  $2\sqrt{2}$  (D) 4

57. If x + y = 1, then  $x^3 + y^2 + 3xy - 1 = ?$ RRB Group-D - 04/10/2018 (Shift-II) (A) 0 (B) 1 (C) 5 (D) 2

- 58. If there is no solution of the equation 4x + 3y + 5 = 0 and 6x ky 7 = 0, then the value of k will be: RRB RPF SI - 12/01/2019 (Shift-III) (A) -4.5 (B) -8 (C) 8 (D) 4.5
- 59. For which value of P will there be only one solution to the following equations?
  2x + 3y = -5 and 2x + py = 2
  RRB RPF Constable 17/01/2019 (Shift-I)
  (A) The only value of p is 3
  (B) All values of p can be
  (C) The value of p is any number other than 3
  (D) The only value of p is 2
- 60. If (x + 1 / x) = 3, find the value of  $(x^3 + 1/x^3)$   $\div (x^2 + 1/x^2)$ . RRB RPF SI – 10/01/2019 (Shift-III) (A) 18/5 (B) 26/3 (C) 18/7 (D) 54/5
- 61. If  $a + \frac{1}{a} = -30$  then find the value of  $a^3 + \frac{1}{a^3}$ . RRB RPF Constable - 18/01/2019 (Shift-III) (A) 27090 (B) 26910 (C) -26910 (D) -27090
- 62. What will be the remainder when  $27x^3 9x^2 + 3x 8$  is divided by 3x + 2?RRB RPF 11/01/2019 (Shift-III) (A) -22 (B) + 22 (C) + 16 (D) -16
- 63. If the remaining 994 is left over dividing  $2x^m + x^3 3x^2 26$  by x-2, find the value of m. RRB RPF Constable - 20/01/2019 (Shift-II) (A) 10 (B) 9 (C) 11 (D) 8
- 64. Factors of  $x^2 + 7x + 10$  are: **RRB RPF SI – 12/01/2019 (Shift-II)** (A) (x-5)(x-2) (B) (x + 5)(x + 2)(C) (x-5)(x + 2) (D) (x-4)(x + 2)
- 65. Find the factors of  $f(x) = 2x^2 5x + 2$ . RRB RPF Constable - 20/01/2019 (Shift-III) (A) x-2 (B) x-3 (C) x-4 (D) x-5

66. If and  $\beta$  are the roots of the quadratic equation  $(5 + \sqrt{2})x^2 - (4 + \sqrt{5})x + (8 + 2\sqrt{5}) = 0$  then what will be the value of  $2\alpha\beta / (\alpha + \beta)$ ? RBB RPF SI – 12/01/2019 (Shift-II)

	RRB RPF SI – 12/01/2019 (Shift-
<b>(A)</b> 4	<b>(B)</b> 2
( <b>C)</b> 8	<b>(D)</b> 7

67. The equation  $x^2 - 12x + 2k = 0$  has a root x = 4. What is the second root?

**RRB RPF SI - 06/01/2019 (Shift-I)** (A) x = 6 (B) x = 8(C) x = -4 (D) x = -8

- **68.** Select the value that will replace '?' in the following expression. If a + b + c = 0, then  $a^3 + b^3 + c^3 = ? \times abc$ **RRB RPF SI – 13/01/2019 (Shift-III)** 
  - (A) 1 (B) 4 (C) 3 (D) 2
- 69. If  $2^{x} 2^{x-1} = 8$ , then find the value of  $2x^{2} + 4x + 3$ . RRB RPF Constable - 25/01/2019 (Shift-III) (A) 41 (B) 20 (C) 21 (D) 51
- 70. If  $a^{x+y} = a^6$  and y is 2 more than x, then find the value of x. RRB RPF Constable - 22/01/2019 (Shift-III) (A) 1 (B) 2 (C) 3 (D) 4
- 71. If  $(a^2 b^2) \div (a + b) = 25$ , then find the value of a b. **RRB RPF SI - 13/01/2019 (Shift-II)** (A) 15 (B) 18 (C) 25 (D) 30
- 72. If  $3x^2 + ax + 4$ , is completely divisible by x 5, then what is the value of a? **RRB ALP & Tec. (09-08-18 Shift-II)** (A) -12 (B) -5 (C) -15.8 (D) -15.6
- **73.** If  $3x^2 + kx + k = 0$  has no solution, then the value of k will be according to which of the following?

RRB ALP & Tec. (31–08–18 Shift-II)(A) k > 12(B) k < 12(C) k > -12(D) 0 < k < 12

**74.** If there is no solution of the equation 6x - 5y + 11 = 0 and 15x + ky - 9 = 0, then what is the value of k?

RRB ALP	& Tec. (21-08-18 Shift-III)
<b>(A)</b> –18	<b>(B)</b> 12.5
<b>(C)</b> –12.5	<b>(D)</b> 18

- 75. If  $x^2 + kx + k = 0$  has no solution, then the value of k will follow which of the following? RRB ALP & Tec. (21–08–18 Shift–II) (A) k > 4 (B) 0 < k < 4(C) k < 4 (D) k > -4
- 76. Pair of linear equations 3x + y = 1 and px + 2y = 5 will have no finite solution if RRB ALP & Tec. (17-08-18 Shift-III) (A) 0 (B) <math>P = 6(C) P = 0 (D)  $p \ge 6$
- 77. The number of pairs of solutions of linear equations x + 2y-8 = 0 and 2x + 4y = 16 is: RRB ALP & Tec. (10-08-18 Shift-II) (A) 0 (B) 1 (C)  $\infty$  (D) 2
- **78.** If  $a^2 + \frac{1}{a^2} = 3$ , then  $a^3 + \frac{1}{a^3} = ?$  **RRB ALP & Tec. (21–08–18 Shift-III) (A)**  $3\sqrt{5}$  **(B)**  $2\sqrt{5}$ **(C)**  $2\sqrt{3}$  **(D)**  $3\sqrt{3}$
- **79.** If  $a \frac{1}{a} = 1$ , then  $a^2 + \frac{1}{a^2} = ?$  **RRB ALP & Tec. (09–08–18 Shift–III) (A)** 1 **(B)** 3 **(C)** 2 **(D)** 4
- 80. The expression  $x^2 + ax + b$  if divided by x 3 gives the remaining 22 and the expression  $x^2 + bx + a$  when divided by x – 3 gives remainder 24. What is the value of a + b? **RRB ALP & Tec. (20–08–18 Shift-I)** 
  - (A) 23 (B) -23 (C) -7 (D) 7

(C) -23

81. When  $x^2 + ax + b$  is divided by x - 4, 32 is left and  $x^2 + bx + a$  when divided by x - 4 leaves 35 remaining. a + b = ? RRB ALP & Tec. (20-08-18 Shift-II) (A) -7 (B) 23

(D) 7

82. The expression  $x^2 + ax + b$ , if divided by x + 3, gives a remainder of -1 and the expression  $x^2 + bx + a$  when divided by x-3 gives a remainder of 39. What is the value of a + b? RRB ALP & Tec. (10-08-18 Shift-II) (A) -14 (B) -38

(A) -14 (B) -38 (C) 14 (D) 38

If  $12x^2 - ax + 7 = ax^2 + 9x + 3$  has only 83. one (iterated) solution then what is the absolute positive solution of a?

RRB ALP & Tec. (31-08-18 Shift-III) (A) 2 **(B)** 4 (C) 3 (D) 5

84. Find the value of k, for which the roots of the quadratic equation  $4x^2 + 4\sqrt{3}x + k = 0$  are the same.

RRB ALP & Tec. (30-08-18 Shift-I) (A) -2 **(B)** 3 (C) 2 (D) -3

- One of the roots of the equation  $x^2 6x +$ 85. k = 0 is x = 2. Find the second root? RRB ALP & Tec. (21-08-18 Shift-I) (A) x = 4**(B)** x = −1 (C) x = -4 **(D)** x = 1
- If the roots of the equation  $x^2 + kx + k = 0$ 86. are recurrent, then what will be the value of k? RRB ALP & Tec. (21-08-18 Shift-I)

(A) k < 0 or k > 4**(B)** k = 4(C) k = 4 or k = 0(D) 0 < k < 4

If the equation  $x^2 + kx + k = 0$  has two 87. unequal and real roots, then values of k will follow which of the following?

RRB ALP & Tec. (20-08-18 Shift-I) **(A)** 0 < k < 4 **(B)** *k* < 0 only (C) k > 4 only (**D**) k < 0 or k > 4

- If a quadratic equation has two basic  $x = \frac{1}{2}$ 88. and  $x = \frac{-1}{3}$ , then how can a quadratic equation be written? RRB ALP & Tec. (17-08-18 Shift-III) (A) (2x-1)(3x-1) = 0
  - **(B)** (2x + 1)(3x 1) = 0(C) (2x + 1)(3x + 1) = 0(D) (2x-1)(3x+1) = 0
- The root of the quadratic equation  $x^2 4x + x^2 + 4x^2 + x^2 + 4x^2 + x^2 + x^2$ 89. k = 0 is x = 3. Find the second root. RRB ALP & Tec. (14-08-18 Shift-I) (A) x = -1(B) x = -4(C) x = 1(**D**) x = 4
- If a + b + c = 0, then  $(a^3 + b^3 + c^3)^2 = ?$ 90. RRB ALP & Tec. (09-08-18 Shift-II) **(B)**  $9a^2b^2c^2$ (A)  $3a^2b^2c^2$ (C) 9abc (D) 27 abc

91. If (a - 1/a) = 3/4 then find the value of  $(a^3 - 1/a^3)$ 

	RRB NTPC 11/08/2022 Shift:	1
<b>(A)</b> 171/64	<b>(B)</b> 171/64	
<b>(C)</b> 171/32	<b>(D)</b> 164/37	

- If  $(x^2 + 1/x^2) = 6$ , then find the value of 92.  $\left(10x-\frac{10}{r}\right)$ RRB NTPC 11/08/2022 Shift: 1 **(A)** + /-15 (B) + /-20(C) + /-30(D) + /-40
- 93. If  $(x^2 + 1/x^2)^2 = 324$  then find the value of  $\left(x-\frac{1}{x}\right)$ .

**(A)** 4

(C) 8

RRB NTPC 18.04.2016 Shift: 3 **(B)** 6 **(D)** 10

If  $\left(x + \frac{1}{x}\right) = 2$  then find the value of  $\left(x^3 + \frac{1}{x}\right)$ 94.  $\left(\frac{1}{x^3}\right) \div (x^{18} + 1/x^{18}).$ RRB NTPC 02/02/2021Shift: 3

<b>(A)</b> 2/9	<b>(B)</b> 5
<b>(C)</b> 1	<b>(D)</b> 1/9

- 95. If  $15y^3 - 30y^2 + 12y - 12$  is divided by 3y-6, the remainder will be: RRB NTPC 12/08/2022Shift : 2 **(A)** 6 (B) 36 **(C)** 30 (D) 12
- Find the factors of  $(x^2 + x 42)$ . 96. RRB NTPC 30.03.2016 Shift: 1 (A) (x + 14)(x - 3) (B) (x + 6)(x - 7)(C) (x-6)(x+7)(D) (x - 14)(x + 3)
- 97. Find the factors of  $x^2 + x - 20$ . RRB NTPC 09.04.2016 Shift: 3 (A) (x + 5)(x - 4)(B)(x + 4)(x - 5)(C) (x - 2(x + 10)) $(\mathbf{D})(x-2)(x+5)$
- If (x-2) is a factor of  $3x^4 (a + 2)x^3 x^2 (a + 2)x^3 (a + 2)$ 98. 4, find the value of a. RRB NTPC 02/02/2021 Shift - 1

<b>(A)</b> 5	<b>(B)</b> –1
(C) 3	<b>(D)</b> 4

Find the factors of  $(x^2 - 13x - 48)$ . 99. RRB NTPC 26.04.2016 Shift: 1 (A) (x-4)(x + 12) (B) (x + 4)(x - 12)(C) (x - 16)(x + 3) (D)(x + 16)(x - 3)

- 100. Find the factors of  $x^2 - 8x + 12$ . RRB NTPC 12/08/2022Shift: 1 (A) (x-6)(x-2)(B)(x-6)(x+2)(C)  $(x-4)^2$  $(\mathbf{D})(x+6)(x-2)$ Find the factors of  $x^2 - 6x + 8$ . 101. RRB NTPC 12/08/2022Shift: 2
  - (B)(x + 4)(x + 2)(A) (x-4)(x-2)(C) (x + 8)(x - 2) $(\mathbf{D})(x-4)(x+2)$
- 102. Find the factors of  $x^2 - 2x - 15$ . RRB NTPC 12/08/2022Shift: 3 (A) (x + 5)(x - 3)(B)(x-5)(x-3)(C) (x-3)(x-1)(D)(x-5)(x+3)
- Find the factors of  $x^2 + 2x 8$ 103. RRB NTPC 23/07/2022 Shift: 1 (A) (x + 4)(x - 2)(B)(x-4)(x+2)(C)  $(x-4)^3$ (D)(x-4)(x-2)
- 104. Find the factors of  $x^2 + 6x + 8$ . RRB NTPC 23/07/2022 Shift: 2 (B)(x-4)(x+2)(A) (x + 4)(x + 2)(D)(x-4)(x-2)(C)  $(x-)^2$
- 105. If 2x(x + y + z) = 250, 2y(x + y + z) = 100, 2z(x + y + z) = 100+ y + z = 100, then find the value of (3 x + 6 y + 15 z). RRB NTPC 11/08/2022 Shift : 1 (A) 110 (B) 95 (D) 69 (C) 85
- 106. If a = 5, b = 4, c = 8, find the value of  $(a^3 + b^3)$  $+ c^{3} - 3abc) / (ab + bc + ca - a^{2} - b^{2} - c^{2}).$ RRB NTPC 11/08/2022 Shift : 2 (A) 15 **(B)** 17 (D) -15 (C) -17
- 107. If  $a^3 + b^3 + c^3 - 3abc = 0$ , then what is the value of  $(a^2/bc + b^2/ac - 3)$ . RRB NTPC 11/08/2022 Shift : 2 (A)  $- c^2/ab$ (B)  $- c^2/bc$ (C) – c<sup>3</sup>/ba (D) – c/a
- For real a, b and c, if  $a^2 + b^2 + c^2 = ab + bc + c$ 108. a, then find the value of  $(a + b + c)^2$ . RRB NTPC 18.04.2016 Shift : 1 (A) 9a<sup>2</sup> **(B)** 81a<sup>2</sup> (C) 27a<sup>2</sup> (D) 243a<sup>2</sup>
- 109. Given, a = 128, b = 130 and c = 132, then find the value of  $a^3 + b^3 + c^3 - 3abc$ . RRB NTPC 09/05/2022 Shift : 2 (A) 5000 **(B)** 4680 (C) 4280 (D) 4890

If  $a^2 + b^2 + c^2 + 3 = 2(a + b + c)$ , then 110. find the value of (a + b + c).

	RRB NTPC 02/02/2021Shift : 1
<b>(A)</b> 2	<b>(B)</b> 5
(C) 4	<b>(D)</b> 3

**(C)** 4

If (a + b + c) = 6 and  $a^2 + b^2 + c^2 = 14$ , then 111. (ab + bc + ca) = ?RRB NTPC 06.04.2016 Shift : 2 (A) 22 (B) 11

- (C) 33 **(D)** 44
- If w = -2, x = 3, y = 0 and  $z = -\frac{1}{2}$ , then find 112. the value of  $2(w^2 + x^2 + y^2)$ . RRB NTPC 26.04.2016 Shift : 2 (A) 26 **(B)** -26 (C) 25 (D) 28
- 113. If, w = -2, x = 3, y = 0 and  $z = -\frac{1}{2}$ , then find the value of  $x^2(z + wy)$ . RRB NTPC 26.04.2016 Shift : 3 (A) -4.5 (B) 4.5 (C) 2 (D) -2
- 114. Solve:  $(a^{-1} + b^{-1}) / (a^{-2} - b^{-2})$ RRB NTPC 18.01.2017 Shift : 2 (A)  $\frac{ab}{b-a}$ (C)  $\frac{ab}{a-b}$  $(\boldsymbol{B}) \; \frac{a+b}{ab}$  $(\boldsymbol{D}) \frac{a}{b}$
- If  $Y^2 + Y = 12$ , then Y = ?115. RRB NTPC 12/08/2022Shift : 3 (A) 2 (B) -1 **(C)** 4 (D) 3
- 116. Simplify  $(2x)^2 - (2y)^2 - (4x)^2$ . RRB NTPC 23/07/2022 Shift-1 (A)  $-12x^2 + 4y^2$  $(B) 12x^2 - 4y^2$ (D) 12x<sup>2</sup> + 4y<sup>2</sup> (C)  $-12x^2 - 4y^2$
- If 4(3x-2) = 2(3x+8), then x = ?117. RRB NTPC 10/08/2022Shift-1 (A) 1 (B) 2 (C) 3 (D) 4
- 118. If p = 2 and q = -3, then  $(p^2q - pq^2) = ?$ RRB NTPC 10/08/2022 Shift : 2 (A) -6 **(B)** -30 **(D)** 30 (C) 6
- If  $y = \frac{2x-1}{x+3}$ , and y = 1 then find the value of x? 119. RRB NTPC 10/08/2022 Shift : 1

	(A) 4 (C) 3/2	<b>(B)</b> -4 <b>(D)</b> 4/3
120.	Find the value of x in 5 $=$ 17.	x + 7 y = 19, 7 x + 5 y
	RRB NTP	PC 10/08/2022 Shift : 3
	(A) 1 (C) 3	(B) 2 (D) 4
121.	Solve (3 x + y)(2 x-3 y).	
	<b>RRB NTF</b> (A) $6x^2 - 9x y - 3y^2$ (C) $6x^2 - 7x y - 3y^2$	PC 12/08/2022Shift : 1 (B) 6x <sup>2</sup> - 7x y + 3y <sup>2</sup> (D) 6x <sup>2</sup> - 11xy + 3y <sup>2</sup>
122.	If $x + 2y = 27$ and $x - 2$	2y = -1, find the value
	RRB NTF	PC 12/08/2022Shift : 2
	(A) 3 (C) 7	<b>(B)</b> 4 <b>(D)</b> 6
123.	Solve: (x + 2 y)(2 x-y)	
	RRB NTF	PC 11/08/2022Shift : 3
	(A) $2x^2 + 5x y + 2y^2$ (C) $x^2 + 4xy + y^2$	(B) $2x^2 + 3xy - 2y^2$ (D) $x^2 + 4xy - y^2$
124.	P + Q = 2(P-Q) if Q = of P?	10, then find the value
		PC 11/08/2022Shift : 3
	(C) 20	(D) 30
125.	If a + b = −2 and a−b = of b?	12, then find the value
	RRB NTP	PC 23/07/2022 Shift : 2
	(A) 5 (C) 7	( <b>D</b> ) -7
126.	If $(2a/m + b/n) = 2$ an find the value of 'a' and	d (a/m-b/n) = 4, then 'b' respectively.
	RRB NTP	C 18.01.2017 Shift : 1
	(A) 2m, -2n (C) 2m, 2n	( <b>B</b> ) -2n, 2m ( <b>D</b> ) -2m, 2n
127.	If $\left(x^2 + \frac{1}{16x^2}\right) = \frac{19}{2}$ , the of $\left(\frac{2x-1}{2x}\right)$ .	nen find the value
	RRB NTP(	C 11/08/2022 Shift : 3
	(A) 6 (C) 32	(D) 41
128.	If 3.5x = 0.07y, find the <b>RRB NTP</b>	value of [(y−x)/(y+x)]. C 18.04.2016 Shift : 1
	(A) 51 / 49 (C) 49 / 51	(B) 49 / 53 (D) 53 / 57

m + b/n) = 2 e value of 'a' ar <b>RRB N</b> n, -2n n, 2n	and (a/m-b/n) = 4, then nd 'b' respectively. <b>TPC 18.01.2017 Shift : 1</b> ( <b>B</b> ) -2n, 2m ( <b>D</b> ) -2m, 2n	135. 136.	()
$+\frac{1}{16x^2} = \frac{19}{2},$	then find the value		(
RRB NT	<b>PC 11/08/2022 Shift : 3</b> (B) 12 (D) 41	137.	E (
= 0.07y, find th RRB N / 49	ne value of [(y−x)/(y+x)]. TPC 18.04.2016 Shift : 1 (B) 49 / 53		() ()

129.	If 0.08 x + 0. 24.8 then find	04 y = 10  and  0.2(x-1) + 0.4 y = I the value of X. <b>RRB NTPC 09/05/2022 Shift :1</b>
	<b>(A)</b> 125 <b>(C)</b> 1.25	(B) 150 (D) 12.5
130.	Solve: x−3 = 3 x + 7	
		RRB NTPC 02/02/2021Shift : 1
	( <b>A)</b> 5 ( <b>C)</b> 1	(B) −5 (D) 10/4
131.	If $w = -2$ , $z$	$x = 3, y = 0$ and $z = -\frac{1}{2}$ then
	find the value	of $\frac{z}{w} + x$ .
		RRB NTPC 02/02/2021Shift : 2
	(A) 3 <sup>1</sup> / <sub>4</sub>	$(B) - 3\frac{1}{4}$
	( <b>C)</b> 3.2	<b>(D)</b> 3.5
132.	Given w =	$-2, x = 3, y = 0, z = -\frac{1}{2}$ then
	find the value	of $x\sqrt{(x + wz)}$ –
		RRB NTPC 02/02/2021Shift : 1
	(A) ±6 (C) 6	( <b>b</b> ) -6 ( <b>D</b> ) 5
133.	lf 22 x - 40 =	207 + 3 x, then x =?
	(A) 14	RRB NTPC 06.04.2016 Shift : 2
	( <b>C</b> ) 12	( <b>D</b> ) 13 ( <b>D</b> ) 11
134.	If $a^2 + b^2 = 80$	and a−b = 4, then ab = ? RRB NTPC 10/08/2022Shift−1
	(A) 20 (C) 28	(B) 24 (D) 32
		(0) 52
135.	$(x + y)^2 - (x + y)^2 = (x + y)^2 - (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 + (x + y)^2 + (x + y)^2 = (x + y)^2 + (x + y)^2 = (x + y)^2 + (x +$	$(x - y)^2 = ?$ <b>BBB NTPC 10/08/2022 Shiff - 2</b>
	<b>(A)</b> 2x <sup>2</sup> y <sup>2</sup>	(B) 4xy
	(C) $2x^2 + 2y^2$	<b>(D)</b> $x^2 - y^2 + 2xy$
<b>136</b> .	(a−b)² + 2ab	= ? RRB NTPC 30.03.2016 Shift : 1
	<b>(A)</b> a <sup>2</sup> -b <sup>2</sup>	<b>(B)</b> $a^2 + b^2$
	( <b>C)</b> a²– 4ab +	$(b^2)$ (D) $a^2 - 2ab + b^2$
137.	Expand (c –	<sup>3)<sup>3</sup> RRB NTPC 30.03.2016 Shift : 2</sup>
	(A) $c^3 + 9c^2 +$	27c + 27
	( <b>b</b> ) $c^{3}-9c^{2}+2$ ( <b>C</b> ) $c^{3}-9c^{2}+2$	27c-27
	<b>(D)</b> c <sup>3</sup> -9c <sup>2</sup> -2	7c-27

- **138.** Expand  $(s + 2)^3$  **RRB NTPC 11/08/2022Shift : 3 (A)**  $s^3 + 3s^2 + 12s + 8$  **(B)**  $s^3 + 3s^2 + 6s + 8$  **(C)**  $s^3 + 6s^2 + 12s + 8$ **(D)**  $s^3 + 6s^2 + 6s + 8$
- **139.** If  $(a^2 + b^2) = 60$  then find the value of  $(a + b)^2 + (a b)^2$ . **RRB NTPC 11/08/2022 Shift : 2 (A)** 90 **(B)** 120 **(C)** 140 **(D)** 150
- 140. If  $40x^2 = 334^2 134^2$ , then find the value of  $x^2$ .

	RRB NTPC 02/02/2021Shift
<b>(A)</b> 2340	<b>(B)</b> 234
(C) 1234	<b>(D)</b> 144

- 141.If a-b = 5 and  $a^2 + b^2 = 97$ , then ab = ?<br/>RRB NTPC 12/08/2022Shift : 2<br/>(A) 48<br/>(B) 32<br/>(C) 36<br/>(D) 72
- **142.**  $(4x-7)^2 = ?$  **RRB NTPC 12/08/2022Shift : 2 (A)**  $4x^2 - 56x + 49$  **(B)**  $4x^2 - 14x + 49$ **(C)**  $16x^2 - 14x + 49$  **(D)**  $16x^2 - 56x + 49$
- **143**. If a-b = 5 and  $a^2 + b^2 = 31$  then find the value of ab.

RRB NTPC 09/05/2022 Shift : 1 (B) 5

(···) ·	(=) *
( <b>C</b> ) 2	<b>(D)</b> 3

144. Evaluate

**(A)**4

Г

$$72 + \sqrt{72 + \sqrt{72 + \sqrt{72 + \sqrt{\dots}}}}$$

 RRB Paramedical - 21/07/2018 (Shift-III)

 (A) 9
 (B) 8

 (C) √72
 (D) 8.8

145. Find the value of x and y by solving the following equations: 9 x + 3 y + 12 = 0 18 x + 6 y + 24 = 0RRB JE - 25/05/2019 (Shift-II)

(A) x = 4; y = -16 (B) x = 2; y = 10(C) x = 1; y = 7 (D) No unique solution. There can be infinite solution to this.

- 146. If  $X^{2n} + \frac{1}{\chi^{2n}} = k$ , then what is the value of  $x^n \frac{1}{x^n}$ ? RRB JE - 24/05/2019 (Shift-I) (A) k + 2 (B) k - 2(C)  $\sqrt{k-2}$  (D)  $\sqrt{k+2}$
- **147.** If  $X \frac{1}{x} = 3$  then find the value of  $X^4 + \frac{1}{x^4}$ . **RRB JE - 24/05/2019 (Shift-III) (A)** 129 **(B)** 119 **(C)** 14 **(D)** 123
- **148.** If  $x^3 + y^3 = 9$  and x + y = 3, then find the value of  $x^2 + y^2$ . **RRB JE - 26/05/2019 (Shift-II)** (A) 25 (B) 6 (C) 3 (D) 5
- 149.  $x^3 + 5x^2 2x 24$  has a vacuum x = 2. Find the other vacuum.
  - **RRB JE 24/05/2019 (Shift-III)** (A) -3, 5 (B) -2, 3 (C) -3, -4 (D) 3, 4
- **150.** If (x 1) and (x + 3) are factors of  $x^2 + ax + b$ , then, what will be the values of a and b respectively?

**RRB JE - 25/05/2019 (Shift-I)** (A) 2, 3 (B) 2, -3 (C) -2, -3 (D) -2, 3

**151.** If there are two real solutions of  $x^2 - 4x + 4b = 0$ , find the value of 'b'.

**RRB JE - 22/05/2019 (Shift-I)** (A)  $b \ge 1$  (B) b < 1(C) b = +1, -1 (D) b = 0

**152**. If the two roots of the quadratic equation are  $\alpha$  and  $\beta$ , where  $\alpha + \beta = 8$  and  $\alpha - \beta = 2$ , then the equation is:

RRB JE - 23/05/2019 (Shift-II)

- (A)  $x^2 8x + 15 = 0$
- **(B)**  $x^2 + 8x 15 = 0$ **(C)**  $x^2 - 8x - 15 = 0$

**(D)** 
$$x^2 + 8x + 15 = 0$$

- **153.** Find the roots of  $2x^2 15x + 28$ . **RRB JE - 27/05/2019 (Shift-I) (A)** Both negative
  - (B) Not genuine
  - (C) One positive, the other negative
  - (D) Both positive
- **154.** For which value of 'K', the roots of the equation kx (x-2) + 6 = 0 are same?

RRB JE - 27/05/2019 (Shift-III)
<b>(B)</b> 0, 6
<b>(D)</b> –2

- **155.** If a and b are the roots of the equation  $3x^2 5x + 2 = 0$ , find the value of (a / b) + (b / a). **RRB JE - 28/05/2019 (Shift-II) (A)** 13/9 **(B)** 13/6 **(C)** 13/2 **(D)** 9/13
- **156.** For which value of 'K' there is a real solution to the equation  $x^2 + 2Kx + 4 = 0$ ? **RRB JE - 31/05/2019 (Shift-I)** (A) 0 (B) 2, 0 (C) -2, 0 (D) 2, -2
- **157.**  $2x^2 + 19x + 45 = 0$  and  $2y^2 + 11y + 12 = 0$  then which of the following is true for the roots x, y? **RRB JE - 31/05/2019 (Shift-III)**

(A)  $x \ge y$  (B) x < y(C)  $x \le y$  (D) x > y

**158.** Find the equation whose roots are  $(a + \sqrt{b})$  and  $(a - \sqrt{b})$ .

**RRB JE - 02/06/2019 (Shift-III)** (A)  $x^2 + 2ax - (a^2 - b) = 0$ (B)  $x^2 - 2ax + (a^2 - b) = 0$ (C)  $x^2 - ax + a^2 - b^2 = 0$ (D)  $x^2 + ax + a^2 - b^2 = 0$ 

**159.** If a(a + b + c) = 45; b(a + b + c) = 75and c (a + b + c) = 105, then find the value of  $a^2 + b^2 + c^2$ . **RRB JE – 25/05/2019 (Shift–III)** 

( <b>A)</b> 83	<b>(B)</b> 225	
( <b>C)</b> 625	<b>(D)</b> 90	

- 160. If  $x^{1/3} + y^{1/3} z^{1/3} = 0$ , then find the value of  $(x + y - z)^3 + 27$  xyz. **RRB JE - 28/05/2019 (Shift-II)** (A)  $x^3 + y^3 - z^3$  (B)  $-z^3$ (C) 1 (D) 0
- 161. If a + b + c = 0, then find the value of  $(b + c)^2/bc + (c + a)^2/ca + \frac{(a + b)^2}{ab}$ . RRB JE - 31/05/2019 (Shift-III) (A)  $a^2 + b^2 + c^2$  (B)  $2(a + b + c)^2$ (C) 8 abc (D) 3
- 162. If a + b + c = 2s, then find the value of  $(s a)^3 + (s b)^3 + 3(s a) (s b)$ . RRB JE - 01/06/2019 (Shift-II) (A) 2s (B)  $c^2$ (C)  $c^3$  (D) ac
- 163. If  $\frac{p}{b-c} = \frac{q}{c-a} = \frac{r}{a-b}$ , then find the value of p + q + r. (A) -1 (B) 1 (C) 2 (D) 0
- 164. If y = 5, then find the value of  $5y\sqrt{y^3 y^2}$ . RRB JE - 26/05/2019 (Shift-II) (A) 500 (B) 250 (C) 50 (D)  $50\sqrt{2}$
- 165.If 3x y = 5, then find the value of  $8^x/2^y$ .<br/>RRB JE 27/05/2019 (Shift-II)<br/>(A) 32<br/>(B) 256<br/>(C) 64<br/>(D) 16

# **Solution**

1. Ans.(D)

14x + 8y + 5 = 0 - (1) 21x - ky - 7 = 0 - (2)No solution of equation (1) and (2) will be possible If—  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$   $\frac{14}{21} = \frac{8}{-K}$   $\frac{2}{3} = \frac{8}{-K} \Rightarrow \boxed{k = -12}$ Hence no solution will be possible for the value of k = -12.  $6x^2 + 2kx + k = 0$  There is no solution Then k = ?Putting K = 1 in the equation  $6x^2 + 2x + 1 = 0$ Hence there is no solution, at K = 1 Putting K = 6 -  $6x^2 + 12x + 6 = 0$   $6x^2 + 6x + 6x + 6 = 0$  6x(x + 1) + 6(x + 1) = 0 x = -1Hence, the solution of the equation is obtained at K = 6. Therefore, it is clear that

from K = 1 to K = 5. There will be no solution.

2. Ans.(A)

i.e. 0 < K < 63. Ans.(C) When there is no solution,  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ equation 16x - 12y + 9 = 0 .....(i) 12x + ky - 11 = 0 .....(ii) Comparing equation (i) and (ii) when there is no solution,  $\frac{16}{12} = \frac{-12}{K} \neq \frac{9}{-11}$  $\frac{\frac{16}{12}}{\frac{12}{12}} = \frac{-12}{K}$ 16K = -144  $K = \frac{-144}{16}$  K = -94. Ans.(B) 20x + 5y + 11 = 0 .....(i) 50x - ky - 9 = 0 .....(ii)  $a_1 = 20 b_1 = 5 c_1 = 11$  $a_2 = 50 b_2 = -k c_2 = -9$ 2 Linear equations have no solution if  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ So,  $\frac{a_1}{a_2} = \frac{b_1}{b_2}$  $\frac{20}{50} = \frac{5}{-k}$  $k = -\frac{50 \times 5}{20}$ Ans.(D) 5. In case there is no solution of equations.  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \\ \frac{4}{10} = \frac{3}{-k}$  $\frac{-2k}{k} = 15$ k = -7.5**Ans.(D)** 6. Given $a - \frac{1}{a} = 7$ By squaring both sides,  $a^2 + \frac{1}{a^2} - 2 \times a \times \frac{1}{a} = 49$  $a^2 + \frac{1}{a^2} - 2 = 49$  $a^2 + \frac{1}{a^2} = 49 + 2$  $a^2 + \frac{1}{a^2} = 51$ 7. Ans.(A)  $a^2 + \frac{1}{a^2} = 7$  .....(i) Adding 2 to both sides of equation (i), Or  $a^2 + \frac{1}{a^2} + 2 \times a \times \frac{1}{a} = 7 + 2$  $\left(a + \frac{1}{a}\right)^2 = (3)^2$  $a + \frac{1}{a} = 3$  .....(ii) Cubing both sides of equation (ii)

 $a^{3} + \frac{1}{a^{3}} + 3a \times \frac{1}{a} \left( a + \frac{1}{a} \right) = 27$  $a^{3} + \frac{1}{a^{3}} + 3 \times 3 = 27 \left( \therefore a + \frac{1}{a} = 3 \right)$  $a^{3} + \frac{1}{a^{3}} = 27 - 9
 \boxed{a^{3} + \frac{1}{a^{3}} = 18}$ Ans.(B)  $a + \frac{1}{a} = 5$  $a^3 + \frac{1}{a^3}$ Now  $a + \frac{1}{a} = 5$ Cubing both sides of equation.  $a^{3} + \frac{1}{a^{3}} + 3a \times \frac{1}{a} \left( a + \frac{1}{a} \right) = 125$  $a^3 + \frac{1}{a^3} + 3 \times 5 = 125$  $a^3 + \frac{1}{a^3} = 125 - 15$  $a^3 + \frac{1}{a^3} = 110$ Ans.(D) Given that,  $\left(a-\frac{1}{a}\right) = 6$ Squaring both sides  $a^{2} + \frac{1}{a^{2}} - 2 = 36, a^{2} + \frac{1}{a^{2}} = 38$ Again, squaring both sides,  $a^4 + \frac{1}{a^4} + 2 = 1444$  $a^4 + \frac{1}{a^4} = 1442$ Ans.(B)  $x^{2} + \frac{2x}{5} + \frac{1}{25} = 0$  Then  $\left(x - \frac{2}{3}\right)^{2} = ?$  $x^{2} + \frac{2x}{5} + \frac{1}{25} = 0$  $25x^2 + 10x + 1 = 0$  $25x^2 + 5x + 5x + 1 = 0$ 5x(5x + 1) + 1(5x + 1) = 0(5x + 1)(5x + 1) = 05x + 1 = 0So  $x = -\frac{1}{r}$ Therefore  $\left(x - \frac{2}{3}\right)^2 = \left(-\frac{1}{5} - \frac{2}{3}\right)^2$  $=\left(-\frac{13}{15}\right)^2 = \frac{169}{225}$ Ans.(A) Given,  $a - \frac{1}{2} = 7$  $\Rightarrow \left(a - \frac{1}{a}\right)^2 = (7)^2$ Squaring both sides  $\Rightarrow a^2 + \frac{1}{a^2} - 2 \times a \times \frac{1}{a} = 49$  $\Rightarrow a^2 + \frac{1}{a^2} - 2 = 49$  $a^2 + \frac{1}{a^2} = 51$ 

12. Ans.(B)

8.

9.

10.

11.

$$a + \frac{1}{a} = 8$$
Cubing both sides
$$\left(a + \frac{1}{a}\right)^{3} = (8)^{3}$$

$$a^{3} + \frac{1}{a^{3}} + 3 \times a \times \frac{1}{a}\left(a + \frac{1}{a}\right) = 512$$

$$a^{3} + \frac{1}{a^{3}} + 3 \times 8 = 512$$

$$a^{3} + \frac{1}{a^{3}} = 512 - 24$$

$$a^{3} + \frac{1}{a^{3}} = 488$$
**13.** Ans.(B)
$$a + \frac{1}{a} = -3$$
By squaring both sides,
$$\left(a + \frac{1}{a}\right)^{2} = (-3)^{2}$$

$$a^{2} + \frac{1}{a^{2}} + 2 = 9$$

$$a^{2} + \frac{1}{a^{2}} = 7$$
Cubing both sides,
$$\left(a^{2} + \frac{1}{a^{2}}\right)^{3} = (7)^{3}$$

$$a^{6} + \frac{1}{a^{6}} + 3a^{2} \times \frac{1}{a^{2}}\left(a^{2} + \frac{1}{a^{2}}\right) = 343$$

$$a^{6} + \frac{1}{a^{6}} = 343 - 21 = 322$$
**14.** Ans.(A)
Given that-
$$x + y = 9$$

$$x^{2} + y^{2} = 41$$

$$x^{3} + y^{3} = ?$$

$$(x + y)^{2} = (9)^{2}$$

$$x^{2} + y^{2} + 2xy = 81$$

$$41 + 2xy = 81$$

$$xy = 20$$

$$(x + y)^{3} = x^{3} + y^{3} + 3xy(x + y)$$

$$(9)^{3} = x^{3} + y^{3} + 3xy(x + y)$$

$$(9)^{3} = x^{3} + y^{3} + 3xy(x + y)$$

$$(9)^{3} = x^{3} + y^{3} = 189$$
**15.** Ans.(D)
Given-
$$\frac{x+1}{x} = 2$$

$$\therefore 1 + \frac{1}{x} = 2$$

$$\frac{1}{x} = 2 - 1 = 1$$

$$\frac{1}{1 = x}$$
Therefore,  $x^{2} + \frac{1}{x^{2}} = (1)^{2} + \frac{1}{(1)^{2}} = 1 + 1$ 

$$1 = 2$$
**16.** Ans.(C)
$$\frac{x-1}{x^{2}} = 3 \Rightarrow 1 - \frac{1}{x} = 3 \Rightarrow x = -\frac{1}{2}$$
Then,  $\frac{x^{2}+1}{x^{2}} = 1 + \frac{1}{x^{2}} = 1 + \frac{1}{(-\frac{1}{2})^{2}}$ 

$$= 1 + 4 = 5$$
**17.** Ans.(B)
Given-

 $a - \frac{1}{a} = 10$ Squaring both sides,  $\left(a - \frac{1}{a}\right)^2 = (10)^2$  $\Rightarrow a^2 + \frac{1}{a^2} - 2 = 100$  $\Rightarrow a^2 + \frac{1}{a^2} = 100 + 2$  $\Rightarrow a^2 + \frac{1}{a^2} = 102$ 18. Ans.(A) According to Question, Putting  $x^3 = 2$  in  $4x^6 - 5x^3 - 3$ ,  $4 \times 2^{2} - 5 \times 2 - 3$  $= 4 \times 4 - 10 - 3 = 3$ Hence the remainder will be 3. 19. Ans.(D)  $3x^2 + ax - 12$ .....(i) Equation (i) is completely divisible by x - 8.  $\therefore x = 8$  $3 \times (8)^2 + a \times 8 - 12 = 0$  $3 \times 64 + 8a - 12 = 0$ 8a = 12 - 1928a = -180a = -22.520. Ans.(C) The equation  $3x^2 + ax + 7, x - 1$  is divisible by x - 1 = 0So, putting x = 1 $\Rightarrow 3(1)^2 + a(1) + 7 = 0$  $\Rightarrow 3 + a + 7 = 0$ a = -1021. Ans.(C) x-2 = 0x = 2Putting the value of x in the given expression Remainder =  $4(2)^3 - 2(2)^2 + 5 \times 2 - 8$  $= 4 \times 8 - 2 \times 4 + 5 \times 2 - 8$ = 32 - 8 + 10 - 8= 42 - 16 = 26Hence remainder = 2622. Ans.(D)  $2x^2 + ax + b \dots$  (i)  $x^2 + bx + a \dots \dots (ii)$ By dividing both equations by (x - 3), 31 and 24 respectively remain.  $\therefore$  Putting x = 3 in both the equations, From equation (I),  $2 \times 9 + a \times 3 + b = 31$  $3a + b = 13 \dots \dots \dots (iii)$ From equation (II), 9 + 3b + a = 24a + 3b = 153a + 9b = 45 .....(iv)

Subtracting equation (iii) from equation (iv) 3a + 9b = 45b = 4Putting the value of b in equation (iii), 3a + 4 = 133a = 9  $\therefore a = 3$ Therefore a + b = 723. Ans.(A)  $4x^6 - 5x^3 - 3$  divided by  $x^3 - 2$ ,  $x^3 - 2 = 0$  $x = (2)^{\frac{1}{3}}$ Putting the value of x in the equation,  $= 4 \times \left[ (2)^{\frac{1}{3}} \right]^6 - 5 \left[ (2)^{\frac{1}{3}} \right]^3 - 3$  $= 4 \times 2^2 - 5 \times 2 - 3$ = 16 - 10 - 3= 3 Hence there are 3 remaining. 24. Ans.(D) Dividing by x - 7 in  $x^2 + ax + b$  remainder = 35 So, putting x = 7 $(7)^2 + 7a + b = 35$ 7a + b = 35 - 49 $7a + b = -14 \dots \dots (i)$ Again on dividing  $x^2 + bx + a$  by x - 7, remainder = 31 ie x = 7 $(7)^2 + 7b + a = 31$ a + 7b = 31 - 49a + 7b = -18.....(ii)Adding equation (i) and (ii) 7a + b = -14 $\frac{a+7b}{8a+8b} = -18$ 8(a + b) = -32a + b = -425. Ans.(C)  $2x^2 + ax + b = 35....(i)$  $2x^2 + bx + a = 29$  .....(ii) Putting x = 3 in equation (i) and equation (ii)  $\Rightarrow 18 + 3a + b = 35$  $\Rightarrow 3a + b = 17$  .....(iii)  $\Rightarrow 18 + 3b + a = 29$  $\Rightarrow 3b + a = 11 \dots (iv)$ Adding equation (iii) and (iv) 4a + 4b = 28 $a + b = \frac{28}{4} = 7$ a + b = 726. Ans.(D)  $x^2 + 5kx + k^2 + 5$ , is completely divisible by x + 2  $\therefore x = -2$  keeping the remainder = 0 $(-2)^2 + 5k(-2) + k^2 + 5 = 0$ 

 $4 - 10k + k^2 + 5 = 0$  $k^2 - 10k + 9 = 0$ (k-9)(k-1) = 0 $\therefore k = 9.1$ Putting k = 9 $= x^{2} + 45x + 81 + 5$  $= x^2 + 45x + 86$ = x(x + 43) + 2(x + 43)= (x + 43)(x + 2)Putting k = 1 $= x^2 + 5x + 1 + 5$  $= x^2 + 5x + 6$ = (x + 3)(x + 2)But it is not divisible by (x + 3).  $\therefore k = 9$ 27. Ans.(D)  $2x^2 + ax + 2b$ x - 1 = 0, Putting x = 1 $\therefore 2(+1)^2 + a \times (1) + 2b = 16$ 2 + a + 2b = 16a + 2b = 14 .....(i) Again,  $x^2 + bx + 2a$ x + 1 = 0Putting x = (-1) $(-1)^2 + b(-1) + 2a = -1$ 2a - b = -2 .....(ii) Equation (i) + Equation (ii) × 2 a + 2b = 14 $\frac{4a-2b}{2} = -4$ 5a a = 2Putting the value of a in equation (i) 2 + 2b = 142b = 12b = 6a + b = 2 + 6= 8 28. Ans.(A) Putting x = 8 in the given equation,  $3x^2 + ax + 4 = 0$ x - 8 = 0, x = 8 $\Rightarrow 3 \times 64 + a \times 8 + 4 = 0$  $\Rightarrow 192 + 8a + 4 = 0$  $\Rightarrow 8a = -192 - 4$  $\Rightarrow 8a = -196$  $a = \frac{-196}{8} = -24.5$ a = -24.529. Ans.(B) If  $4x^3 - 2x^2 + 5x - 8$  is divided by (x - 2)Remainder Putting x = 2 in expression  $4x^3 - 2x^2 +$ 5x - 8

 $= 4 \times (2)^3 - 2 \times (2)^2 + 5 \times 2 - 8$  $= 4 \times 8 - 2 \times 4 + 10 - 8$ = 32 - 8 + 2= 26 30. Ans.(C) When  $P(x) = x^3 + 3x^2 - 2Ax + 3$  is divided by  $x^2 + 1$ , the remainder = -5xPutting  $x^2 = -1$  in expression  $P(x) = -x^2x + 3x^2 - 2Ax + 3$  $(-1) \times x + 3 \times (-1) - 2Ax + 3 = -5x$ -x - 3 - 2Ax + 3 = -5x-2Ax = -4xA = 231. Ans.(C) First expression =  $3x^2 + 2ax + 4b$ Second expression =  $2x^2 + 3bx + 5a$ The first expression divided by x + 3 makes the remaining 15. x + 3 = 0x = -3 (Put in the first expression),  $3 \times (-3)^2 + 2a \times (-3) + 4b = 15$ 27 - 6a + 4b = 15 $3a - 2b = 6 \dots \dots (i)$ The second expression divided by x - 3 gives the remaining 65. x - 3 = 0x = 3 (When put in another expression)  $2(3)^2 + 3b(3) + 5a = 65$ 18 + 9b + 5a = 65 $5a + 9b = 47 \dots$  (ii) Equation (i)  $\times$  9 + Equation (ii)  $\times$  2 27a - 18b = 5410a + 18b = 94Adding 37a = 148a = 4Putting value of a in equation (i). 3a-2b = r $3 \times 4 - 2b = r$ 12 - 6 = 2b6 = 2bb = 3Therefore b = 3then a + b = 4 + 3 = 732. Ans.(B)  $(x^2 + 4x + 4)(x^2 + 6x \times 9)$ Comapring with  $(a^2 + 2ba + b^2)(a^2 + 2ab + b^2)(a^2 + a^2)(a^2 + a^2)$  $b^2$ )  $(a + b)^2(a + b)^2$  $\{(x^{2} + 2.2x + (2)^{2})\}\{(x^{2} + 2.3.x + (3)^{2})\}$  $(x + 2)^2(x + 3)^2$ Square root = [(x + 2)(x + 3)]33. Ans.(D)

 $(x-2)^2 - 36 = 0x \in N$  $x^2 + 4 - 4x - 36 = 0$  $x^2 - 4x - 32 = 0$  $x^2 - 8x + 4x - 32 = 0$ x(x-8) + 4(x-8) = 0(x-8)(x + 4)Hence x = 8, -4But according to the question  $x \in N$ , so the value of x will be 8. Ans.(D)  $x = \frac{1}{7}, x = -\frac{1}{9}$  $\Rightarrow 7x = 1,8x = -1$ (7x - 1) = 0, (8x + 1) = 0As a quadratic equation (7x-1)(8x + 1) = 0Ans.(C)  $(x-4)^2 - 36 = 0$  $x^2 + 16 - 8x - 36 = 0$  $x^2 - 8x - 20 = 0$  $x^2 - 10x + 2x - 20 = 0$ x(x-10) + 2(x-10) = 0(x + 2)(x - 10) = 0x - 10 = 0x = 10,  $x = -2\{x = -2 \in N\}$ x + 2 = 0x = -2Always take positive value. Ans.(C) In equation  $x^2 - 24x + k = 0$ Putting the value x = 2 in the equation.  $(2)^2 - 24 \times 2 + K = 0$ 4 - 48 + K = 0K - 44 = 0K = 44By putting the value of K in the equation and extracting the root  $x^2 - 24x + 44 = 0$  $x^2 - 22x - 2x + 44 = 0$ x(x-22) - 2(x-22) = 0(x-2)(x-22) = 0x = 2 and x = 22(Given) Hence other root = 22Ans.(A)  $a + \frac{1}{a} = -6$ Cube on both sides  $\left(a + \frac{1}{a}\right)^3 = (-6)^3$  $a^{3} + \frac{1}{a^{3}} + 3 \times a \times \frac{1}{a} \left( a + \frac{1}{a} \right) = (-6)^{3}$  $a^{3} + \frac{1}{a^{3}} + 3\left(a + \frac{1}{a}\right) = -216$  $a^3 + \frac{1}{a^3} + 3 \times (-6) = -216$  $a^3 + \frac{1}{a^3} = -216 + 18$ 

34.

35.

36.

37.

 $a^3 + \frac{1}{a^3} = -198$ 38. Ans.(C)  $x^2 + 1.5kx + 4.5k = 0$ comparing  $ax^2 + bx + c$ a = 1, b = 1.5k, c = 4.5k $b^2 - 4ac = 0$  $(1.5k)^2 - 4 \times 1 \times 4.5k = 0$  $\frac{225k^2}{100} - 18k = 0$  $225k^2 - 1800k = 0$  $225k^2 = 1800k$ k = 8 or k = 039. Ans.(C) Let the root of the quadratic equation  $ax^2$  + bx + c = 0 are  $\alpha$  and  $\beta$ . Then  $\alpha + \beta = -\frac{b}{a}$ And  $\alpha . \beta = \frac{c}{a}$ Given, quadratic equation  $x^2 - 5x + 6 = 0$  $\therefore \alpha + \beta = 5$  $\alpha \cdot \beta = 6$  $\therefore \frac{\alpha^2 + \beta^2}{\alpha^{-2} + \beta^{-2}} = \frac{\alpha^2 + \beta^2}{\alpha^2 + \beta^2} \cdot \alpha^2 \beta^2 = \alpha^2 \beta^2$  $= (\alpha\beta)^2$  $= 6^2 = 36$ 40. Ans.(D)  $x^2 + 4.5kx + 13.5k = 0$  $x^2 + \frac{9}{2}kx + \frac{27}{2}k = 0$ If the root is equal then:  $b^{2} - 4ac = 0$  $\left(\frac{9}{2}\right)^{2} k^{2} - 4 \times \frac{27}{2} k = 0$  $\frac{81}{4}k^2 - 54k = 0$  $k\left\{\frac{81}{4}k - 54\right\} = 0$ k = 0या  $81k = 54 \times 4$  $k = \frac{8}{3}$ 41. Ans.(C) When two roots  $\alpha$  and  $\beta$  are given,  $\alpha = \frac{1}{11}, \beta = \frac{-1}{9}$ Then, quadratic equation –  $(x - \alpha)(x - \beta) = 0$  $\left(x - \frac{1}{11}\right)\left(x + \frac{1}{2}\right) = 0$  $\frac{\binom{11x-1}{11}}{\binom{9x+1}{9}} = 0$  $\Rightarrow (11x-1)(9x+1) = 0$ 42. Ans.(C) When the roots are not real. From the formula

 $-b^2 - 4ac < 0$  $3x^2 + 2kx + k = 0$ a = 3, b = 2k, c = k $4k^2 - 12k < 0$ 4k(k-3) < 00 < k < 343. Ans.(B) Given- $\alpha \neq \beta$  $\alpha^2 = 5\alpha - 3,$  $\alpha^{2} - 5\alpha + 3 = 0$  $\alpha = \frac{(-5) \pm \sqrt{(-5)^{2} - 4 \times 1 \times 3}}{(-5) \pm \sqrt{(-5)^{2} - 4 \times 1 \times 3}}$  $\alpha = \frac{-5 + \sqrt{13}}{2}$  $\beta^2 = 5\beta - 3$  $\beta^{2} - 5\beta - 3 = 0$   $\beta^{2} - 5\beta + 3 = 0$   $\beta = \frac{(-5 \pm \sqrt{(-5)^{2} - 4 \times 1 \times 3})}{2}$   $\beta = \frac{-5 - \sqrt{13}}{2}$  $\alpha = \frac{-5 + \sqrt{25 - 12}}{2}, \beta = \frac{-5 - \sqrt{25 - 12}}{2}$ Formula of quadratic equation  $x^2 - (\text{Sum of roots})x + \text{Product of roots} = 0$  $x^2 - \left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)x + \frac{\alpha}{\beta} \times \frac{\beta}{\alpha} = 0$  $x^{2} - \frac{\left(\frac{-5 + \sqrt{13}}{2}\right)^{2} + \left(\frac{-5 - \sqrt{13}}{2}\right)^{2}}{\left(\frac{-5 + \sqrt{13}}{2}\right)\left(\frac{-5 - \sqrt{13}}{2}\right)}x + 1 = 0$  $x^{2} - \frac{\frac{76}{25-13}x}{x^{2} - \frac{76}{12}x} + 1 = 0$  $\frac{12x^2 - 76x + 12 = 0}{\Rightarrow 3x^2 - 19x + 3 = 0}$ 44. Ans.(B)  $2x^2 + x - 28 < 0$  $2x^2 + 8x - 7x - 28 < 0$ 2x(x + 4) - 7(x + 4) < 0(x + 4)(2x - 7) < 0If x + 4 < 0x > -4If  $x < \frac{7}{2}$ Thus  $-4 < x < \frac{7}{2}$ , specifies all possible values of x. 45. Ans.(C) The root of the equation  $2x^2 + 7x - 4 = 0$ is  $\alpha, \beta$ . i.e.  $\alpha + \beta = \frac{-b}{a} = \frac{-7}{2}$  $\alpha \cdot \beta = \frac{c}{a} = \frac{-4}{2} = -2$ If the roots of the equation are  $\alpha^2$  and  $\beta^2$  $\alpha^{2} + \beta^{2} = (\alpha + \beta)^{2} - 2\alpha\beta = \frac{49}{4} -$  $2 \times (-2) = \frac{65}{4}$ 

 $\alpha^2\beta^2 = (\alpha\beta)^2 = 4$ Intended quadratic equation  $x^2$  – (Sum of the roots) + (Product of roots) = 0 $= x^2 - \frac{65}{4}x + 4 = 0$  $4x^2 - 65x + 16 = 0$ 46. Ans.(B)  $2x^2 - 9x - 18 < 0$  $\Rightarrow 2x^2 - (12 - 3)x - 18 < 0$  $\Rightarrow 2x^2 - 12x + 3x - 18 < 0$  $\Rightarrow 2x(x-6) + 3(x-6) < 0$  $\Rightarrow (x-6)(2x+3) < 0$ x - 6 < 0Then, x < 6 .....(i)  $x > \frac{-3}{2}$  .....(ii)  $\overline{2x + 3} < 0$ From equation (i) and (ii),  $-\frac{3}{2} < x < 6$ 47. Ans.(A) Putting x = 6- $(6-6)^4 + (8-6)^4 = 16$  $2^4 = 16$ 16 = 16 $\overline{Putting} x = 8$  $(6-8)^4 + (8-8)^4 = 16$  $(-2)^4 = 16$ Therefore, it is clear that the two real roots of the equation will be 6 and 8. 48. Ans.(A) If roots of  $x^2 - x - 1 = 0$  are  $\alpha$  and  $\beta$ :  $\alpha + \beta = \frac{-b}{a} = -(-1) = 1 \dots \dots$  (i)  $\alpha \cdot \beta = \frac{c}{a} = \frac{-1}{1} = -1, \dots$  (ii) On squaring equation (i)  $\alpha^2 + \beta^2 + 2\alpha\beta = 1$  $\alpha^2 + \beta^2 - 2 = 1$  $\alpha^2 + \beta^2 = 3$  [from equation (I)] The equation whose roots are  $\frac{\alpha}{\beta}$  and  $\frac{\beta}{\alpha}$  –  $x^2$  – (Sum of the roots)x + (Product of roots)  $x^2 - \left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)x + \frac{\alpha}{\beta} \times \frac{\beta}{\alpha} = 0$  $x^2 - \left(\frac{\alpha^2 + \beta^2}{\alpha \cdot \beta}\right) x - 1 = 0$  $x^2 + 3x - 1 = 0$ 49. Ans.(D)  $x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2$ On cube of both sides -

 $\left(x^{\frac{2}{3}} + x^{\frac{1}{3}}\right)^3 = (2)^3$  $x^{2} + x + 3 \times 2 = 8 \Rightarrow x^{2} + 7x - 8 = 0$  $\Rightarrow (x + 8)(x - 1) = 0$ x = -8, 1Thus, the sum of the values of x = -8 + 1= -7 50. Ans.(D)  $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$  $x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2 - - - -(i)$ On cube of both sides –  $x^{2} + x + 3\left(x^{\frac{2}{3}} + x^{\frac{1}{3}}\right) \cdot x = 8$  $x^2 + x + 3x \times 2 = 8$  $x^2 + 7x - 8 = 0$ This is a quadratic equation. Hence the number of solutions (number of values) will be 2. 51. Ans.(A)

Since the value of x is less than 5 but it is not indicated that the value of x will be positive or negative. Hence the value of the given expression cannot be determined.

### 52. Ans.(D)

$$x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$$
  

$$x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2 - - - -(i)$$
  
On cube of both sides -  

$$x^{2} + x + 3\left(x^{\frac{2}{3}} + x^{\frac{1}{3}}\right) \cdot x = 8$$
  

$$x^{2} + x + 3x \times 2 = 8 \text{ [from equation (I)]}$$
  

$$x^{2} + 7x - 8 = 0$$
  

$$x^{2} + 8x - x - 8 = 0$$
  

$$(x + 8)(x - 1) = 0$$
  

$$x = -8, 1$$
  
So the number of solutions (number of roots)  
will be 2.

# 53. Ans.(A)

 $\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)} = \frac{3(a-b)(b-c)(c-a)}{3(a-b)(b-c)(c-a)}$ [Because (a-b) + (b-c) + (c-a) = 0]  $\frac{(a-b)^3 + (b-c)^3 + (c-a)^3}{3(a-b)(b-c)(c-a)} = \frac{3(a-b)(b-c)(c-a)}{3(a-b)(b-c)(c-a)} = 1$ 

### 54. Ans.(B)

a + b + c = 16 ab + bc + ca = 78  $a^{3} + b^{3} + c^{3} - 3abc \text{ to find the value}$   $(a + b + c)^{2} = a^{2} + b^{2} + c^{2} + 2ab + 2bc + 2ca$   $(16)^{2} = a^{2} + b^{2} + c^{2} + 2ab + 2bc + 2ca$   $(16)^{2} - 2(ab + bc + ca) = a^{2} + b^{2} + c^{2}$   $256 - 2 \times 78 = a^{2} + b^{2} + c^{2}$   $256 - 156 = a^{2} + b^{2} + c^{2}$   $100 = a^{2} + b^{2} + c^{2}$   $a^{3} + b^{3} + c^{3} - 3abc$  $= (a + b + c)\{(a^{2} + b^{2} + c^{2}) - (ab + bc + ca)\}$ 

Keeping on value,  $(a+b+c)\{(a^2+b^2+c^2)-(ab+bc+ca)\}$  $16 \times (100 - 78)$  $\Rightarrow 16 \times 22$ ⇒ 352 55. Ans.(B) If a + b + c = 9 $a^2 + b^2 + c^2 = 29$ Then,  $a^3 + b^3 + c^3 - 3abc$  $[(a + b + c)^{2} = a^{2} + b^{2} + c^{2} + 2(ab + bc + ca)]$  $(9)^2 = 29 + 2(ab + bc + ca)$ 81 - 29 = 2(ab + bc + ca)26 = (ab + bc + ca) $a^3 + b^3 + c^3 - 3abc = (a + b + c)$  $[(a^2 + b^2 + c^2) - (ab + bc + ca)]$ = 9(29 - 26) $= 9 \times 3$  $a^3 + b^3 + c^3 - 3abc = 27$ 56. Ans.(B)  $\sqrt{2\sqrt{2\sqrt{2\sqrt{2}....\infty}}}$ Let  $x = \sqrt{2\sqrt{2\sqrt{2\sqrt{2}\dots \dots \infty}}}$ .....(1) On squaring equation (1) –  $x^{2} = 2 \sqrt{2\sqrt{2\sqrt{2\sqrt{2}\dots \dots \infty}}}$  $x^2 = 2x$  $x^2 - 2x = 0$ x(x-2) = 0 $x = 0, 2x \neq 0$ Hence x = 257. Ans.(A) x + y = 1Cube on both sides  $(x + y)^3 = (1)^3$  $x^3 + y^3 + 3xy(x + y) = 1$  $x^3 + y^3 + 3xy - 1 = 0$ 58. Ans.(A) Given equations are 4x + 3y + 5 = 0 and 6x - ky - 7 = 0.The linear equation  $a_1x + b_1y + C_1 = 0$  and  $a_2x + b_2y + C_2 = 0$  will have no solution. lf –  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow \frac{4}{6} = \frac{3}{-k} \neq \frac{5}{-7}$  $\Rightarrow \frac{4}{6} = \frac{3}{-k} \Rightarrow -4k = 6 \times 3$  $\Rightarrow k = \frac{18}{-4}$  $\Rightarrow \boxed{k = -4.5}$ 59. Ans.(C)

2x + 3y = -5....(i) 2x + py = 2 .....(ii) Subtracting equation (ii) from (i) 2x + 3y = -52x + py = 2(3y - py) = -7Putting value 3 of P in (3y - py) in equation (iii), the value of the equation will be 0. Therefore, the value of P in this equation can be any number other than 3. 60. Ans.(C)  $x + \frac{1}{x} = 3$ Squaring both sides  $\left(x + \frac{1}{x}\right)^2 = (3)^2$  $x^{2} + \frac{1}{x^{2}} + 2 \times x \times \frac{1}{x} = 9$  $x^2 + \frac{1}{x^2} = 7$  $x + \frac{1}{x} = 3$ Cube on both sides  $\left(x + \frac{1}{x}\right)^3 = (3)^3$  $x^{3} + \frac{1}{x^{3}} + 3 \times x \times \frac{1}{x} \left( x + \frac{1}{x} \right) = 27$  $x^{3} + \frac{1}{x^{3}} + 3 \times 3 = 27$  $x^{3} + \frac{1}{x^{3}} = 27 - 9$  $x^3 + \frac{x^3}{x^3} = 18$  $(x^3 + \frac{1}{x^3})/(x^2 + \frac{1}{x^2}) = \frac{18}{7}$ **Ans.(C)**  $a + \frac{1}{a} = -30 - - - -(1)$ 61.  $a^3 + \frac{1}{a^3} = ?$ On cube of equation (i)  $\left(a + \frac{1}{a}\right)^3 = (-30)^3$  $a^3 + \frac{1}{a^3} + 3\left(a + \frac{1}{a}\right) = -27000$  $a^3 + \frac{1}{a^3} + 3(-30) = -27000$ 

$$a^{3} + \frac{1}{a^{3}} = -27000 + 90$$

$$a^{3} + \frac{1}{a^{3}} = -26910$$
Ans.(A)

$$27x^{3} - 9x^{2} + 3x - 8$$
  

$$3x + 2 = 0$$
  

$$3x = -2$$
  
Putting  $x = \frac{-2}{3}$   

$$27(\frac{-2}{3})^{3} - 9(\frac{-2}{3})^{2} + 3(\frac{-2}{3}) - 8$$
  

$$\Rightarrow 27(\frac{-8}{27}) - 9(\frac{4}{9}) + 3(\frac{-2}{3}) - 8$$
  

$$\Rightarrow -8 - 4 - 2 - 8$$
  

$$\Rightarrow -22$$

63. Ans.(B)

62.

Dividing  $2x^m + x^3 - 3x^2 - 26$  by (x - 2)leaves the remaining 994. Therefore, putting x = 2 in equation.  $2 \times 2^m + 8 - 12 - 26 = 994$  $2 \times 2^m = 1024$  $2^m = 512$  $2^m = 2^9$ m = 964. Ans.(B) Factor of  $x^2 + 7x + 10$  $= x^2 + 5x + 2x + 10$ = x(x + 5) + 2(x + 5)= (x + 5)(x + 2)65. Ans.(A)  $f(x) = 2x^2 - 5x + 2$  $= 2x^2 - 4x - x + 2$ = 2x(x-2) - 1(x-2)= (2x-1)(x-2)66. Ans.(A)  $\alpha + \beta = \frac{-b}{a} = \frac{+(4+\sqrt{5})}{(5+\sqrt{2})}$  $\alpha\beta = \frac{c}{a} = \frac{8+2\sqrt{5}}{5+\sqrt{2}}$  $\frac{2\alpha\beta}{\alpha+\beta} = \frac{2\times(\frac{8+2\sqrt{5}}{5+\sqrt{2}})}{(\frac{4+\sqrt{5}}{-7})}, = 4\times\frac{(4+\sqrt{5})}{(5+\sqrt{2})}\times\frac{(5+\sqrt{2})}{(4+\sqrt{5})}$ = 467. Ans.(B)  $x^{2} - 12x + 2k = 0$ Putting x = 4,  $(4)^2 - 12 \times 4 + 2k = 0$ 16 - 48 + 2k = 02k = 32k = 16In new equation (x-4) is one root of  $x^2$  – 12x + 32 = 0,  $x^2 - 12x + 32 = 0$ x(x-4) - 8(x-4) = 0(x-4)(x-8) = 0Hence, second root = (x - 8) or x = 868. Ans.(C) We know that  $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^3)$  $b^{2} + c^{2} - ab - bc - ca) - -(i)$ Givena + b + c = 0 $a^3 + b^3 + c^3 = ? \times abc$  $\frac{a^3 + b^3 + c^3}{2} = ? \dots \dots \dots (ii)$ abc Putting a + b + c = 0 in equation (i)  $a^3 + b^3 + c^3 - 3abc = 0$ From equation (ii) and equation (iii)  $\frac{3abc}{abc} = 3$ 69. Ans.(D)

 $2^{x} - 2^{x-1} = 8$  $\Rightarrow 2^{x}(1-2^{-1}) = 2^{3}$  $\Rightarrow 2^{x} \left(1 - \frac{1}{2}\right) = 2^{3}$  $\Rightarrow 2^{x}\left(\frac{1}{2}\right) = 2^{3}$ Multiplying 2 on both sides- $2^x = 2^4$  $\Rightarrow x = 4$ Hence By question equation  $2x^{2} + 4x + 3 = 2 \times (4)^{2} + 4 \times 4 + 3$  $= 2 \times 16 + 16 + 3$ = 32 + 19 = 5170. Ans.(D) By question  $x = y + 2 \Rightarrow$ y = x - 2From the equation (I)x + (x - 2) = 6 $2x = 8 \Rightarrow x = 4$ 71. Ans.(C) Given- $(a^2 - b^2) \div (a + b) = 25$  $\frac{(a-b)(a+b)}{(a+b)} = 25$ a - b = 2572. Ans.(C) According to Question,  $3x^2 + ax + 4 = 0_{(i)}$ Equation (i) is completely divisible by (x - 5). Therefore  $\Rightarrow x - 5 = 0$  $\Rightarrow x = 5$ Putting the value of x in equation (i)  $3(5)^2 + a \times 5 + 4 = 0$ 75 + 5a + 4 = 05a = -79a = -15.873. Ans.(D) If there is no solution of  $3x^2 + kx + k = 0$ , then the roots of equation will be imaginary. i.e.  $b^2 - 4ac < 0$  $\Rightarrow k^2 - 4 \times 3k < 0$  $\Rightarrow k(k-12) < 0$  $\Rightarrow k - 12 < 0, k < 0$ *k* < 12 If k < 0 then  $k^2 - 12k > 0$ Hence the desired relation will be = 0 < k < 12.74. Ans.(C) When there is no solution to the equation condition  $= \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ According to Question, Equation 6x - 5y + 11 = 015x + ky - 9 = 0 $\frac{2}{5} = \frac{-5}{k}, k = \frac{-25}{2}$ 

k = -12.575. Ans.(B)  $\therefore x^2 + kx + k = 0$  has no solution. : Discriminant (D) < 0 $b^2 - 4ac < 0$  $k^2 - 4k < 0$ k(k-4) < 0So, 0 < *k* < 4 76. Ans.(B) The linear equation 3x + y = 1 and px + 2y= 5 will have no finite solution when- $\frac{3}{p} = \frac{1}{2} \neq \frac{1}{5} \{ \because \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{C_1}{C_2} \}$  $\Rightarrow p = 6$ Hence there will be no finite solution at p = 6. 77. Ans.(C) (I)  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$  The equation has no solution. (II)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$  The equation will have a unique solution. (III)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$  The equation must have infinite solution. equation x + 2 y-8 = 0, 2 x + 4 y-16 = 0 then  $\frac{1}{2} = \frac{2}{4} = \frac{-8}{-16}$  $\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$  Hence, there will be infinite solutions to the equation. 78. Ans.(B)  $\left(a + \frac{1}{a}\right)^2 = a^2 + \frac{1}{a^2} + 2$  $\left(a + \frac{1}{a}\right)^2 = 3 + 2$  (Given,  $a^2 + \frac{1}{a^2} = 3$ )  $a + \frac{1}{a} = \sqrt{3 + 2} = \sqrt{5}$  $a^{3} + \frac{1}{a^{3}} = \left(a + \frac{1}{a}\right)^{3} - 3\left(a + \frac{1}{a}\right)^{3}$  $= (\sqrt{5})^3 - 3 \times \sqrt{5}$  $= 5\sqrt{5} - 3\sqrt{5} = 2\sqrt{5}$ Hence  $a^3 + \frac{1}{a^3} = 2\sqrt{5}$ Ans.(B)  $\therefore a^2 + \frac{1}{a^2} = (a - \frac{1}{a})^2 + 2$ 79.  $a^2 + \frac{1}{a^2} = 1^2 + 2 = 3$ 80. Ans.(D)  $\therefore x^2 + ax + b = 22 (Putting x = 3)$ 9 + 3a + b = 223a + b = 13 .....(i)  $x^2 + bx + a = 24$  (Putting x = 3) 9 + 3b + a = 243b + a = 15 .....(ii) From equation (i) + (ii) 4(a + b) = 46 - 18 $a + b = \frac{28}{4}$ a + b = 7

### 81. Ans.(D)

 $\therefore x^2 + ax + b \div (x - 4)$  gives 32 remaining.  $\therefore x^2 + ax + b - 32 = 0$ is completely divisible by (x - 4)So, putting x = 4 in equation  $(4)^2 + 4a + b - 32 = 0$  $\Rightarrow 16 + 4a + b - 32 = 0$  $\Rightarrow 4a + b = 16$  .....(i)  $\therefore$   $(x^2 + bx + a) \div (x - a)$ 4) gives 35 remainder  $\therefore x^2 + bx + a - 35 = 0$ , is completely divisible by (x-4) $\Rightarrow$  putting x = 4 in equation.  $(4)^2 + b \times 4 + a - 35 = 0$ 16 + 4b + a - 35 = 04b + a - 19 = 04b + a = 19 .....(ii) By adding equation (i) + (ii) 5a + 5b = 16 + 195(a + b) = 35a + b = 7Ans.(C) 82.  $x^2 + ax + b = 1$ x = -39 - 3a + b = -1 $b - 3a = -10 \dots \dots (i)$  $x^2 + bx + a = 39$ 9 + 3b + a = 39 $3b + a = 30 \dots \dots \dots (ii)$ On solving equations (1) and (2) a = 6, b = 8a + b = 6 + 8 = 1483. Ans.(C)  $12x^2 - ax + 7 = ax^2 + 9x + 3$  $x^{2}(12-a) - x(9 + a) + 4 = 0$  .....(ii) Comparing Equation (i) to quadratic equation  $ax^2 + bx + c = 0$ Roots will be the equivalent of equation (i) if  $b^2 = 4ac$ Therefore, taking a = 3 from option (c), the origin will be equal (iterated). 84. Ans.(B) The roots of a quadratic equation will be the same if Discriminant  $D = b^2 - 4ac = 0$ here,  $4x^2 + 4\sqrt{3}x + k = 0$  $a = 4, b = 4\sqrt{3}$  and c = k $(4\sqrt{3})^2 - 4 \times 4 \times k = 0$ 48 - 16k = 0Or, 16 k = 48 k = 385. Ans.(A) Equation  $x^2 - 6x + K = 0$ x = 2 satisfies the equation.  $2^2 - 6 \times 2 + K = 0$ K = 8

Now equation  $x^2 - 6x + 8 = 0$ (x-2)(x-4) = 0 x = 2, x = 4Therefore, the second root of the equation will be x = 4. 86. Ans.(C) For any quadratic equation if its origin is recurring, then discriminant, D = 0 $D = b^2 - 4ac = 0 \dots \dots (1)$ So,  $x^2 + kx + k = 0$ Comparing equation with  $ax^2 + bx + c = 0$ a = 1, b = k, c = kPutting the value in equation (1)  $k^2 - 4 \times 1 \times k = 0$  $k^2 - 4k = 0$ k(k-4) = 0 $\frac{k = 0}{K - 4 = 0}$ Then, k = 4Hence given option (c) is correct. 87. Ans.(D) The roots are real and unequal. Then  $b^2 - 4ac > 0$ According to Question,  $k^2 - 4k > 0$ k(k-4) > 0k > 4, k < 0Ans.(D) 88. Given roots  $x = \frac{1}{2}$ ,  $x = -\frac{1}{2}$ Equation,  $\left(x-\frac{1}{2}\right)\left(x-\left(\frac{-1}{3}\right)\right) = 0$  $\left(x - \frac{1}{2}\right)\left(x + \frac{1}{2}\right) = 0$  $\Rightarrow (2x-1)(3x+1) = 0$ 89. Ans.(C) Given  $x^2 - 4x + k = 0$  .....(i) x = 3 .....(ii) From equation (i) and (ii)  $9-4\times 3 + k = 0$ k = 3Now,  $x^2 - 4x + 3 = 0$  $x^2 - 3x - x + 3 = 0$ x(x-3) - 1(x-3) = 0(x-3)(x-1) = 0x = 3, 1Hence, the second root of the equation is 1. 90. Ans.(B) According to the formula  $a^3 + b^3 + c^3 - 3abc = (a + b + c)$  $(a^2 + b^2 + c^2 - ab - bc - ca)$  $\therefore$  Given that- (a + b + c) = 0  $\therefore a^3 + b^3 + c^3 - 3abc$  $= 0(a^2 + b^2 + c^2 - ab - bc - ca)$ 

 $a^3 + b^3 + c^3 - 3abc = 0$  $a^3 + b^3 + c^3 = 3abc$ On squaring both sides –  $\frac{(a^3 + b^3 + c^3)^2}{(a^3 + b^3 + c^3)^2} = (3abc)^2$ 91. Ans.(B) Cube on both sides  $\left(a - \frac{1}{a}\right)^3 = \frac{27}{64}$  $a^{3} - \frac{1}{a^{3}} - 3\left(a - \frac{1}{a}\right) = \frac{27}{64}$  $a^{3} - \frac{1}{a^{3}} - 3 \times \frac{3}{4} = \frac{27}{64}$  $a^{3} - \frac{1}{a^{3}} = \frac{27}{64} + \frac{9}{4} = \frac{171}{64}$ 92. Ans.(B)  $x^{2} + \frac{1}{x^{2}} = 6$  $x^{2} + \frac{1}{x^{2}} - 2 = 6 - 2$  $\left(x - \frac{1}{x}\right)^2 = 4$  $x - \frac{1}{x} = \pm 2$  $10x - \frac{10}{x} = \pm 20$ 93. Ans.(A) Given- $\left(x^2 + \frac{1}{x^2}\right)^2 = 324$  $\Rightarrow x^2 + \frac{1}{x^2} = \sqrt{324}$  $\Rightarrow x^2 + \frac{1}{x^2} = 18$  $\Rightarrow \left(x - \frac{1}{x}\right)^2 + 2 = 18$  $\Rightarrow \left(x - \frac{1}{x}\right)^2 = 18 - 2$  $\Rightarrow \left(x - \frac{1}{x}\right)^2 = 16$  $\Rightarrow x - \frac{1}{x} = \sqrt{16}$  $\Rightarrow x - \frac{1}{2} = 4$ Ans.(C) 94. By question,  $x + \frac{1}{x} = 2$  $x^2 + 1 = 2x$  $x^2 - 2x + 1 = 0$  $(x-1)^2 = 0$ x - 1 = 0x = 1 $\frac{x^3 + \frac{1}{x^3}}{x^{18} + \frac{1}{x^{18}}}$  $= \frac{1+1}{1+1} = \frac{2}{2} = 1$  **Ans.(D)** 95.
: 3y - 6 = 0 $\therefore 3y = 6$ y = 2Putting the value of y in the expression  $= 15(2)^3 - 30(2)^2 + 12(2) - 12$  $= 15 \times 8 - 30 \times 4 + 24 - 12$ = 120 - 120 + 12 = 12Hence the remainder will be 12. 96. Ans.(C)  $x^2 + x - 42$  $= x^{2} + 7x - 6x - 42$ = x(x + 7) - 6(x + 7)= (x-6)(x + 7)97. Ans.(A)  $x^2 + x - 20$  $= x^{2} + 5x - 4x - 20$ = x(x + 5) - 4(x + 5)= (x + 5)(x - 4)98. Ans.(C) Given-Factor of  $3x^4 - (a + 2)x^3 - x^2 - 4 = (x - 4)x^3 - x^2 - x^2 - x^2 - x^2 - x$ 2)  $\therefore x - 2$ , is a factor  $\therefore x - 2 = 0$  $\Rightarrow x = 2$  will satisfy the equation  $\Rightarrow 3 \times (2)^4 - (a + 2) \times (2)^3 - (2)^2 - 4 = 0$  $\Rightarrow 3 \times 16 - (a + 2) \times 8 - 4 - 4 = 0$  $\Rightarrow 48 - 8a - 16 - 8 = 0$  $\Rightarrow 24 - 8a = 0$  $\Rightarrow 8a = 24$  $\Rightarrow a = \frac{24}{8}$  $\Rightarrow a = 3$ 99. Ans.(C)  $x^2 - 13x - 48$  $= x^2 - 16x + 3x - 48$ = x(x-16) + 3(x-16)= (x - 16)(x + 3)100. Ans.(A)  $x^2 - 8x + 12$  $= x^2 - 6x - 2x + 12$ = x(x-6) - 2(x-6)= (x-6)(x-2)101. Ans.(A) Given expression  $x^2 - 6x + 8$  $= x^2 - 4x - 2x + 8$ = x(x-4) - 2(x-4)= (x-4)(x-2)102. Ans.(D) By question,  $x^2 - 2x - 15$  $= x^2 - 5x + 3x - 15$ = x(x-5) + 3(x-5)= (x-5)(x + 3)103. Ans.(A)

 $x^{2} + 2x - 8$  $= x^{2} + 4x - 2x - 8$ = x(x+4) - 2(x+4)= (x+4)(x-2)104. Ans.(A) 1)  $x^2 + 6x + 8$  $= x^{2} + 4x + 2x + 8$ = x(x + 4) + 2(x + 4)= (x + 4)(x + 2)105. Ans.(B)  $2 x(x + y + z) = 250 \dots(1)$ 2 y(x + y + z) = 100.....(2) 2 z(x + y + z) = 100.....(3) Adding equation (1), (2) and (3) (x + y + z)(2x + 2y + 2z) = 450 $2(x + y + z)^2 = 450$  $(x + y + z)^2 = 225$ x + y + z = 15 $\therefore \text{ From equation (1), } x = \frac{250}{30} = \frac{25}{3}$ From equation (2),  $y = \frac{100}{30} = \frac{10}{3}$ From equation (3),  $z = \frac{100}{30} = \frac{10}{3}$  $\therefore 3x + 6y + 15z$  $= 3 \times \frac{25}{3} + 6 \times \frac{10}{3} + 15 \times \frac{10}{3} = 25 + 20 +$ 50 = 95106. Ans.(C) Givena = 5, b = 4, c = 8 $a^3 + b^3 + c^3 - 3abc$  $(ab + bc + ca - a^2 - b^2 - c^2)$  $=\frac{(a + b + c)(a^{2} + b^{2} + c^{2} - ab - bc - ca)}{-(a^{2} + b^{2} + c^{2} - ab - bc - ca)}$ = -(a + b + c)= -(5 + 4 + 8)= -17107. Ans.(A) Given $a^3 + b^3 + c^3 - 3abc = 0 \dots \dots (i)$  $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab} - 3 = 0 \text{ (Dividing by abc)}$   $\frac{a^2}{bc} + \frac{b^2}{ca} - 3 = -\frac{c^2}{ab}$ 108. Ans.(A) From,  $a^2 + b^2 + c^2 = ab + bc + ca$ In this way  $a^2 = ab$  $b^2 = bc$  $c^2 = ca$ Therefore a = b = cSo, By question,  $(a + b + c)^2 = (a + a + a)^2$  $= 9a^{2}$ 109. Ans.(B) Givena = 128, b = 130, c = 132

 $a^{3} + b^{3} + c^{3} - 3abc$ 

$$= \frac{1}{2}(a + c)\{(a - b)^{2} + (b - c)^{2} + (c - a)^{2}\}$$

$$= \frac{1}{2}(128 + 130 + 132)$$

$$\begin{cases} (128 - 130)^{2} + (130 - 132)^{2} \\ + (130 - 132)^{2} + (132 - 128)^{2} \\ \\ = \frac{1}{2} \times 390\{(-2)^{2} + (-2)^{2} + (4)^{2}\}$$

$$= 195 \times 24$$

$$= 4680$$
Ans (D)

110. Ans.(D) By question,  $a^{2} + b^{2} + c^{2} + 3 = 2(a + b + c)$  $\Rightarrow a^{2} + b^{2} + c^{2} + 3 - 2(a + b + c) = 0$  $\Rightarrow (a^2 - 2a + 1) + (b^2 - 2b + 1) + (c^2 - 2c + 1) = 0$  $\Rightarrow (a-1)^{2} + (b-1)^{2} + (c-1)^{2} = 0$  $\Rightarrow :: a - 1 = 0 | b - 1 = 0 | c - 1 = 0$ a = 1 | b = 1 | c = 1: a + b + c = 1 + 1 + 1= 3111. Ans.(B)  $(a + b + c) = 6, a^2 + b^2 + c^2 = 14, (ab + bc + c^2)$ ca) = ? $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$ 

$$(6)^{2} = 14 + 2(ab + bc + ca)$$
  

$$36 - 14 = 2(ab + bc + ca)$$
  

$$22 = 2(ab + bc + ca)$$
  

$$ab + bc + ca = 11$$
  
**112. Ans.(A)**

$$w = -2, x = 3, y = 0, z = -\frac{1}{2}$$
  
By question,  $2(w^2 + x^2 + y^2) = ?$   
 $\Rightarrow 2\{(-2)^2 + 3^2 + 0^2\}$   
 $\Rightarrow 2(4 + 9 + 0)$   
 $\Rightarrow 2 \times 13 = 26$ 

113. Ans.(A)  $w = -2, x = 3, y = 0, z = -\frac{1}{2}$  $x^{2}(z + wy) = (3)^{2} \left( -\frac{1}{2} + (-2 \times 0) \right)$ 

$$= 9\left(\frac{-1}{2} + 0\right) \\ = 9 \times \frac{-1}{2} = \frac{-9}{2} = -4.5 \\ \text{Ans.(A)}$$

114.

115.

$$(a^{-1} + b^{-1}) \div (a^{-2} - b^{-2})$$

$$= \frac{\frac{1}{a} + \frac{1}{b}}{\frac{1}{a^2} - \frac{1}{b^2}} = \frac{\frac{a+b}{ab}}{\frac{b^2 - a^2}{a^2b^2}}$$

$$= \frac{a+b}{ab} \times \frac{a^2b^2}{(a+b)(b-a)}$$

$$= \boxed{\frac{ab}{b-a}}$$
Ans.(D)

**Ans.(D)**  
$$Y^2 + Y = 12$$

 $\Rightarrow Y^2 + Y - 12 = 0$  $\Rightarrow Y^2 + 4Y - 3Y - 12 = 0$  $\Rightarrow Y(Y + 4) - 3(Y + 4) = 0$  $\Rightarrow (Y-3)(Y+4) = 0$ Y = 3, -4So, y = 3116. Ans.(C)  $(2x)^{2} - (2y)^{2} - (4x)^{2}$ = 4x<sup>2</sup> - 4y<sup>2</sup> - 16x<sup>2</sup>  $= -12x^2 - 4y^2$ and  $-(12x^2 + 4y^2)$ 117. Ans.(D) 4(3 x-2) = 2(3 x + 8)12x - 8 = 6x + 1612x - 6x = 16 + 86x = 24 $\Rightarrow x = \frac{24}{6} \Rightarrow x = 4$ 118. Ans.(B)  $p^2q - pq^2 = pq(p-q)$ = 2 × (-3)[2 - (-3)] = -6(2 + 3)= -30119. Ans.(A)  $y = \frac{2x-1}{x+3}$ Putting y = 1 $1 = \frac{2x - 1}{x + 3} \Rightarrow x + 3 = 2x - 1$  $\Rightarrow 2x - x = 3 + 1 \Rightarrow x = 4$ 120. Ans.(A) 5x + 7y = 19 .....(i) 7x + 5y = 17 .....(ii) After subtracting equation (ii)  $\times$  7 from equation (i)  $\times$  5, 25x + 35y = 9549x + 35y = 119 $x = \frac{24}{24} = 1$ 121. Ans.(C) (3 x + y)(2 x - 3 y) $= 6x^2 - 9xy + 2xy - 3y^2$  $= 6x^2 - 7xy - 3y^2$ 122. Ans.(C) If x + 2y = 27 .....(1) Then,  $x - 2y = -1 \dots (2)$  $\therefore$  Equation (1) – Equation (2)

#### y = 7 123. Ans.(B) (x + 2y)(2x-y) $= 2x^2 - xy + 4xy - 2y^2$ $= 2x^2 + 3xy - 2y^2$ 124. Ans.(D)

P + Q = 2(P - Q)

4y = 28

Putting Q = 10P + 10 = 2(P - 10)P + 10 = 2P - 20P = 30 125. Ans.(D)  $a + b = -2 \dots \dots \dots (i)$  $a - b = 12 \dots \dots$  (ii) Adding both equations, 2a = 10a = 5 Putting the value of a in equation (i) 5 + b = -2b = -2 - 5b = -7126. Ans.(A)  $\frac{2a}{m} + \frac{b}{n} = 2 \dots \dots \dots (i)$  and  $\frac{a}{m} - \frac{b}{n} = 4 \dots \dots \dots (ii)$ Adding equation (i) and (ii)  $\frac{2a}{m} + \frac{a}{m} = 6$  $\frac{m}{m} = 6$ a = 2mAgain subtracting equation (i) from equation (ii) × 2.  $\frac{\frac{2a}{m}}{m} - \frac{2b}{n} = 8$  $\frac{\frac{2a}{m} - \frac{-1}{n}}{\frac{a}{m}} = 8$  $\frac{\frac{2a}{m} + \frac{b}{-n}}{\frac{-n}{n}} = 2$  $\frac{-\frac{3b}{n}}{\frac{-3b}{n}} = 6$  $\boxed{b = -2n}$ Ans.(A)  $x^{2} + \frac{1}{16x^{2}} = \frac{19}{2}$   $\Rightarrow 4x^{2} + \frac{1}{4x^{2}} = \frac{19}{2} \times 4$ 127. (Multiplying both sides by 4)  $\Rightarrow (2x)^2 + \frac{1}{(2x)^2} = 38 \dots \dots (ii)$  $\therefore \left(2x - \frac{1}{2x}\right)^2 = (2x)^2 + \frac{1}{(2x)^2} - 2$ = 38 - 2 = 36 $\Rightarrow 2x - \frac{1}{2x} = \sqrt{36} = 6$ 128. Ans.(C) Given-3.5x = 0.07y $\frac{x}{y} = \frac{0.07}{3.5} = \frac{7}{350}$  $\frac{x}{v} = \frac{1}{50}$  $\therefore \frac{y-x}{y+x} = \frac{50-1}{50+1} = \frac{49}{51}$ 129. Ans.(A)

By question, 0.08 x + 0.04 y = 10 8  $\Rightarrow \frac{\sigma}{100}x + \frac{\tau}{100}y = 10$  $\Rightarrow 8x + 4y = 1000$  $\Rightarrow 2x + y = 250 \dots \dots (i)$ Again.  $0.\overline{2}(x-1) + 0.4y = 24.8$  $\Rightarrow 2(x-1) + 4y = 248$  $\Rightarrow 2x - 2 + 4y = 248$  $\Rightarrow 2x + 4y = 250$  $\Rightarrow x + 2y = 125 \dots$  (ii) Multiplying equation (i) by 2 and subtracting equation (ii) 4x - x = 500 - 125 $\Rightarrow 3x = 375$ x = 125130. Ans.(B) By question, x - 3 = 3x + 7 $\Rightarrow 3x - x = -3 - 7$  $\Rightarrow 2x = -10$ x = -5131. Ans.(A) w = -2, x = 3, y = 0 and  $z = -\frac{1}{2}$  $\frac{z}{w} + x = \frac{-\frac{1}{2}}{-2} + 3$  $= \frac{1}{4} + 3 = \frac{13}{4} = 3\frac{1}{4}$ 132. Ans.(A)  $w = -2, x = 3, y = 0\&z = -\frac{1}{2}$  $x\sqrt{(x + wz)} = 3\sqrt{\left(3 + \left(-2 \times \frac{-1}{2}\right)\right)}$  $= 3\sqrt{(3 + 1)} = 3\sqrt{4} = 3 \times (\pm 2) = \pm 6$ **Ans.(B)** 22 x- 40 = 207 + 3x 133. 22x - 3x = 207 + 4019x = 247247  $x = \frac{-1}{19}$  $\therefore x = 13$ 134. Ans.(D) Given $a^2 + b^2 = 80, a - b = 4$  $\therefore (a-b)^2 = a^2 + b^2 - 2ab$  $\Rightarrow (4)^2 = 80 - 2ab$  $\Rightarrow 2ab = 80 - 16$  $\Rightarrow 2ab = 64$  $\Rightarrow ab = \frac{64}{2} \Rightarrow ab = 32$ 135. Ans.(B)  $(x + y)^{2} - (x - y)^{2} = (x^{2} + y^{2} + 2xy) (x^2 + y^2 - 2xy)$ 

 $= x^{2} + y^{2} + 2xy - x^{2} - y^{2} + 2xy$ = 4xy136. Ans.(B) (a-b)2 + 2ab  $= a^2 + b^2 - 2ab + 2ab$  $= a^2 + b^2$ 137. Ans.(C)  $(c-3)^3 = c^3 - 27 - 9c^2 + 27c$  $= c^3 - 9c^2 + 27c - 27$  $[:: (a-b)^3 = a^3 - b^3 - 3a^2b + 3ab^2]$ 138. Ans.(C)  $(s + 2)^3 = s^3 + (2)^3 + 3 \times s \times 2(s + 2)$  $= s^3 + 8 + 6s^2 + 12s$  $= s^3 + 6s^2 + 12s + 8$ 139. Ans.(B) Given $a^2 + b^2 = 60 \dots \dots (i)$  $\therefore (a + b)^{2} + (a - b)^{2} = (a^{2} + b^{2} + 2ab) +$  $(a^2 + b^2 - 2ab)$  $=a^{2} + b^{2} + 2ab + a^{2} + b^{2} - 2ab$  $= 2 (a^2 + b^2)$  $= 2 \times 60$ = 120 140. Ans.(A) By question,  $40x^2 = 334^2 - 134^2$  $\Rightarrow 40x^2 = (334 - 134)(334 + 134)$  $\Rightarrow 40x^2 = 200 \times 468$  $\Rightarrow x^2 = 2340$ 141. Ans.(C)  $a - b = 5, a^2 + b^2 = 97$  $(a-b)^2 = (5)^2$  $a^2 + b^2 - 2ab = 25$ 97 - 2ab = 25-2ab = -72ab = 36142. Ans.(D)  $\therefore (a-b)^2 = a^2 - 2ab + b^2$  $\therefore (4x-7)^2 = 16x^2 - 56x + 49$ 143. Ans.(D) Given,  $a - b = 5, a^2 + b^2 = 31$  $(a-b)^2 = a^2 + b^2 - 2ab$  $5^2 = 31 - 2ab$ 25 = 31 - 2ab2ab = 31 - 25 = 6ab = 3144. Ans.(A)  $\int 72 + \sqrt{72 + \sqrt{72 + \sqrt{72 + \dots}}} = x \dots \dots (i)$ By squaring both sides,

 $72 + \sqrt{72 + \sqrt{72 + \sqrt{72 + \dots}}} = x^2$ From equation (i)  $72 + x = x^2$  $x^2 - x - 72 = 0$  $x^2 - 9x + 8x - 72 = 0$ x(x-9) + 8(x-9) = 0(x + 8)(x - 9) = 0x - 9 = 0, x + 8 = 0Hence x = 9, x = -8 (invalid) 145. Ans.(D) 9x + 3y + 12 = 0Comparing equation with  $a_1x + b_1y + c_1 = 0$  $a_1 = 9, b_1 = 3, c_1 = 12$ 18x + 6y + 24 = 0Comparing equation with  $a_2x + b_2y + c_2 = 0$  $a_2 = 18, b_2 = 6, c_2 = 24$  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$  $\frac{9}{18} = \frac{3}{6} = \frac{12}{24}$  $\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$ Therefore, No unique solution. There can be infinite solution to this. 146. Ans.(C)  $\therefore x^{2n} + \frac{1}{x^{2n}} = k$  $\left(x^{n} - \frac{1}{x^{n}}\right)^{2} = x^{2n} + \frac{1}{x^{2n}} - 2 \times x^{n} \times \frac{1}{x^{n}}$  $\left(x^n - \frac{1}{x^n}\right)^2 = k - 2$  $\therefore \left( x^n - \frac{1}{x^n} \right) = \sqrt{k - 2}$ 147. Ans.(B)  $X - \frac{1}{x} = 3$ Squaring both side,  $X^2 + \frac{1}{X^2} - 2 = 9$  $X^2 + \frac{1}{\chi^2} = 11$ Squaring again,  $X^4 + \frac{1}{X^4} + 2 = 121$  $X^4 + \frac{1}{x^4} = 119$ 148. Ans.(D) Given  $-x^3 + y^3 = 9, x + y = 3$ According to Question,  $(x + y)^3 = x^3 + y^3 + 3xy(x + y)$  $(3)^3 = 9 + 3xy \times 3$ 27 - 9 = 9xy9xy = 18xy = 2 $(x + y)^2 = x^2 + y^2 + 2xy$  $(3)^2 = x^2 + y^2 + 2 \times 2$  $9-4 = x^2 + y^2$  $x^2 + y^2 = 5$ 

149. Ans.(C)

(x-2) is a factor of  $x^3 + 5x^2 - 2x - 24$ .  $x^2(x-2) + 7x^2 - 2x - 24 = 0$  $x^{2}(x-2) + 7x(x-2) + 12x - 24 = 0$  $x^{2}(x-2) + 7x(x-2) + 12(x-2) = 0$  $(x^2 + 7x + 12)(x - 2) = 0$ (x + 4)(x + 3)(x - 2) = 0x = -4, -3, 2150. Ans.(B) (x-1) and (x + 3) are factors of equation  $x^2$  + ax + b. Hence- $(x-1)(x + 3) = x^2 + ax + b$  $x^2 + 3x - x - 3 = x^2 + ax + b$  $x^2 + 2x - 3 = x^2 + ax + b$ Comparing both sides a = 2, b = -3151. Ans.(B)  $x^2 - 4x + 4b = 0$ For two real solutions of a quadratic equation. the value of the discriminant must be positive. i.e.  $b^2 - 4ac > 0$  $(-4)^2 - 4 \times 1 \times 4b > 0$ 16 - 16b > 016 > 16b1 > bHence b < 1 152. Ans.(A)  $\therefore \alpha$  and  $\beta$  are the two roots of quadratic equation.  $\alpha + \beta = 8 \dots (i)$  $\alpha - \beta = 2$  $\frac{1}{2\alpha = 10} \dots \dots \dots$  (ii)  $\alpha = 5$ From equation (i)  $5 + \beta = 8$  $\beta = 3$ Quadratic equation  $x^2 - (\alpha + \beta)x + \alpha\beta = 0$  $x^2 - 8x + 15 = 0$ Ans.(D) 153.  $2x^2 - 15x + 28 = 0$  $2x^2 - (8 + 7)x + 28 = 0$  $(2x^2 - 8x) - (7x - 28) = 0$ 2x(x-4) - 7(x-4) = 0(2x-7)(x-4) = 02x - 7 = 0x = 7/2x - 4 = 0x = 4It is clear that both roots are positive. 154. Ans.(A) kx(x-2) + 6 = 0 $kx^2 - 2kx + 6 = 0$ The roots of a quadratic equation will be the same if the value of its discriminant is zero.

 $b^2 - 4ac = 0$  $(-2k)^2 - 4 \times k \times 6 = 0$  $4k^2 - 24k = 0$ 4k(k-6) = 0k = 6155. Ans.(B)  $3x^2 - 5x + 2 = 0$ Comparing with  $Ax^2 + Bx + C = 0$ A = 3, B = -5, C = 2Sum of roots  $(a + b) = \frac{-B}{4} = \frac{-(-5)}{3} = \frac{5}{3}$ Product of roots (ab)  $= \frac{c}{A}^{A} = \frac{2}{3}$  $+ \frac{b}{a} = \frac{a^2 + b^2}{ab}$ a b ab  $= \frac{(a+b)^2 - 2ab}{ab}$  $\frac{ab}{\left(\frac{5}{3}\right)^2 - 2 \times \frac{2}{2}}$ 93 3 25-12  $=\frac{13}{9} \times \frac{3}{2} = \frac{13}{6}$ Ans.(D) 156. For the value of k,  $x^2 + 2Kx + 4 = 0$  has real solution.  $B^2 + 4AC = 0$  $4k^2 - 16 = 0$  $k^2 = 4$  $k = \pm 2$ 157. Ans.(B)  $2x^2 + 19x + 45 = 0$  $2x^2 + 10x + 9x + 45 = 0$ 2x(x + 5) + 9(x + 5) = 0(x + 5)(2x + 9) = 0x = -5, -9/2 $\therefore 2y^2 + 11y + 12 = 0$  $2y^2 + 8y + 3y + 12 = 0$ 2y(y + 4) + 3(y + 4) = 0(y + 4)(2y + 3) = 0y = -4, -3/2Is clear that y > x158. Ans.(B)  $(a + \sqrt{b})$ ,  $(a - \sqrt{b})$  is the root of the equation  $x^2$  – (Sum of roots) x + Product of roots = 0  $x^{2} - (a + \sqrt{b} + a - \sqrt{b})x + (a + \sqrt{b})(a - \sqrt{b})$ = 0 $x^2 - 2ax + (a^2 - b) = 0$ 159. Ans.(A) a(a + b + c) = 45 .....(i) b(a + b + c) = 75 .....(ii) c(a + b + c) = 105 .....(iii) From equation (i) and equation (ii),

 $\frac{a}{b} = \frac{3}{5} \dots \dots (iv)$ From equation (ii) and equation (iii),  $\frac{b}{c} = \frac{5}{7}$ ....(V) From equation (iv) and equation (v), a: b: c = 3: 5: 7 Therefore, putting a = 3k, b = 5k and c = 7k in equation (i), 3k(3 + 5 + 7)k = 45 $45k^2 = 45$  $k^2 = 1$  $\begin{array}{l} k = 1 \\ \therefore a^2 + b^2 + c^2 = 3^2 + 5^2 + 7^2 \end{array}$ = 9 + 25 + 49= 83 160. Ans.(D)  $x^{\frac{1}{3}} + y^{\frac{1}{3}} - z^{\frac{1}{3}} = 0$  $x^{\frac{1}{3}} + y^{\frac{1}{3}} = z^{\frac{1}{3}} \dots$  (i) Cube on both sides  $\left(x^{\frac{1}{3}} + y^{\frac{1}{3}}\right)^3 = \left(z^{\frac{1}{3}}\right)^3$  $\left(x^{\frac{1}{3}}\right)^{3} + \left(y^{\frac{1}{3}}\right)^{3} + 3x^{\frac{1}{3}}y^{\frac{1}{3}}\left(x^{\frac{1}{3}} + y^{\frac{1}{3}}\right) = z$ From equation (i),  $x + y + 3x^{\frac{1}{3}}y^{\frac{1}{3}}z^{\frac{1}{3}} = z\left(::x^{\frac{1}{3}} + y^{\frac{1}{3}} = z^{\frac{1}{3}}\right)$  $x + y - z = -3(xyz)^{\frac{1}{3}}$ Again cube on both sides,  $(x + y - z)^3 = \left[-3(xyz)^{\frac{1}{3}}\right]$  $(x + y - z)^3 = -27xyz$  $(x + y - z)^3 + 27xyz = 0$ 161. Ans.(D) a + b + c = 0a + b = -c $(a + b)^2 = c^2$ Similarly,  $\frac{\frac{(a+b)^2}{ab}}{\frac{(b+c)^2}{bc}} = \frac{c^2}{ab}$ .....(i)  $\frac{\frac{(b+c)^2}{bc}}{\frac{a^2}{bc}} = \frac{a^2}{bc}$ ....(ii)

 $\frac{(a+b)^{2}}{ab} + \frac{(b+c)^{2}}{bc} + \frac{(c+a)^{2}}{ca} = \frac{c^{2}}{ab} + \frac{a^{2}}{bc} + \frac{b^{2}}{ca}$  $= \frac{c^{3} + a^{3} + b^{3}}{ca}$ Equation (i) + equation (ii) + equation (iii) - $=\frac{abc}{3abc}$  $= \frac{bac}{abc} + \frac{(b+c)^2}{bc} + \frac{(c+a)^2}{ca} = 3$ Ans.(C) 162. a + b + c = 2s .....(i)  $(s - b)^{3}$  $= (2s - a - b)^3$  $= (a + b + c - a - b)^3$  $= c^{3}$ Ans.(D)  $\frac{p}{b-c} = \frac{q}{c-a} = \frac{r}{a-b} = k$ (Let) p = (b-c)k = bk - ck163. q = (c-a)k = ck - akr = (a-b)k = ak - bkp + q + r = bk + ck + ak - ck - ak - bk = 0164. Ans.(B) Given $v = 55v\sqrt{v^3 - v^2} = ?$  $= 5y\sqrt{y^3 - y^2}$  $= 5 \times 5\sqrt{(5)^3 - (5)^2}$  $= 25\sqrt{125 - 25}$  $= 25\sqrt{100}$  $= 25 \times 10$ = 250 165. Ans.(A)  $3x - y = 5 \dots \dots (i)$  $\therefore \frac{8^{x}}{2^{y}} = \frac{2^{3x}}{2^{y}}$  $= 2^{3x-y}$ [From equation (i) 3x - y = 5]  $= 2^5$ = 32

# 23. (Venn diagram)

1. The following Venn diagram shows the three games M, N and L played by students in a class. Total students who played only one game is:



2. The following Venn diagram shows students who play 3 games M, N and L in a class.



(C) 40 (D)	23

**3.** The given diagram represents the number of students who play football (F) hockey (H) and basketball (B) in the classroom.



 The diagram below shows the number of students playing football (F), hockey (H) and basketball (B) in the class.



What is the total number of students playing game F?

	RRB Group-D - 26/10/2018 (Shift-III)
<b>(A)</b> 9	<b>(B)</b> 49
(C) 53	<b>(D)</b> 62

The Venn diagram given below, represents the sports preferences of a group of 77 college students. The three sports are A -Badminton, B - Basketball and C - Tennis.



How many students like to play basketball, but not tennis?

	RRB Group-D - 27/11/2018 (Shift-I)
<b>(A)</b> 17	<b>(B)</b> 24
<b>(C)</b> 35	<b>(D)</b> 15

6.

5.

The given Venn diagram shows a total of 50 students, who appeared in three different exams A, B and C. All appeared in at least one examination.



How many of these are actually sitting in one of the exams?

# RRB Group 01/09/2022(Shift-III) (A) 32 (B) 13 (C) 20 (D) 18

7. The given Venn diagram shows a total of 50 patients who have selected at least one of the three treatments: A, B and C.



How many people have actually chosen a treatment?

	RRB Group-D - 16/11/2018 (Shift-I)
<b>(A)</b> 16	<b>(B)</b> 32
<b>(C)</b> 28	<b>(D)</b> 30

8. The given Venn diagram shows a total of 30 shops that purchase three different brands of biscuits (A, B, and C) from a vendor. Each shop purchases at least one brand from the seller.



Who bought the brand A biscuits from the seller?

 RRB Group-D - 31/10/2018 (Shift-III)

 (A) 16
 (B) 20

 (C) 18
 (D) 30

**9.** The diagram shows the number of students playing football (F), hockey (H) and basketball (B) in a class.



The total number of students playing game H is:

	RRB Group-D - 26/10/2018 (Shift-II)
<b>(A)</b> 62	<b>(B)</b> 53
( <b>C)</b> 12	<b>(D)</b> 49

**10.** The Venn diagram, given, represents the sports preferences of a group of college students. There are three sports: A-Badminton, B-Basketball and C-Tennis.



How many students play tennis but do not play basketball?

	RRB Group-D - 26/10/2018 (Shift-II)
<b>A)</b> 20	<b>(B)</b> 12
<b>C)</b> 17	<b>(D)</b> 40

**11.** The below figure shows the students in the class who study the three languages.



What is the number of students studying only one language?

RRB Group-D - 25/10/2018 (Shift-II)

<b>(A)</b> 100	<b>(B)</b> 45
<b>(C)</b> 4	<b>(D)</b> 64

**12.** The following Venn diagram shows students who play 3 games M, N and L in a class.



The total number of students playing the game M is:

	RRB Group-D - 04/10/2018 (Shift-I)
<b>(A)</b> 11	<b>(B)</b> 7
<b>(C)</b> 32	<b>(D)</b> 21

**13.** The above picture shows the students who play 3 games M, N and L in class.



The total number of students who play a minimum of two sports is:

	RRB Group-D - 19/11/2022 (Shift-III)
<b>(A)</b> 28	<b>(B)</b> 31
<b>(C)</b> 35	<b>(D)</b> 30

**14.** The Venn diagram below shows students in a class who play the three games M, N and L.



Total number of students who play the game N and L are but not M is.

	RRB Group-D - 08/10/2018 (Shift-II)
<b>(A)</b> 15	<b>(B)</b> 68
<b>(C)</b> 9	<b>(D)</b> 12

**15.** The number of students studying 3 languages is shown in this drawing.



The number of students studying two languages is:

	RRB Group-D -16/10/2018 (Shift-I)
<b>(A)</b> 45	<b>(B)</b> 100
<b>(C)</b> 64	<b>(D)</b> 32

16. This diagram shows the number of students playing football (F), hockey (H) and basketball (B) in a class, actually the total number of students playing two sports:



**17.** The following Venn diagram shows a total of 50 students undergoing vocational training A, B and C. Each of these takes part in at least one training session. How many students are present in only two training sessions?



**18.** The following figure shows the color preferences of a group of girls. The circle represents pink, the triangle represents blue, and the rectangle represents white. Which group of girls likes blue and pink but not white?



**19.** The given Venn diagram gives a representation of the sports preferences of a group of 77 college students. The three games are A, B and C. How many students like to play C and A games, but not B?

RRB Group-D - 26/10/2018 (Shift-III)



**20.** The given diagram shows the number of students playing football (F) hockey (H) and basketball (B) in a class.

The total number of students who like maximum two sports is:



21. In the following Venn diagram, the rectangle represents the number of RPS supporters, the triangle represents the number of MI supporters and the circle represents the number of KKR supporters. How many of them support KKR and only one other team?



22. In the given Venn diagram the triangle represents healthy people, the rectangle represents older individuals and the circle represents men. What is the number of healthy but old people?





23. The Venn diagram represents the sports preferences of a group of college students. There are three sports – A - Badminton, B-Basketball and C-Tennis. How many students actually like to play two of these three games?



24. The diagram below shows the number of students playing football (F), hockey (H) and basketball (B) in the class.

What is the total number of students playing at least two games?



**25.** The diagram below shows the number of students playing football (F), hockey (H) and basketball (B) in the class.



Find the total number of students who play (F) and (H) but do not play (B)?

	Group-D - 12/11/2018 (Shift-III)
<b>(A)</b> 33	<b>(B)</b> 21
<b>(C)</b> 12	<b>(D)</b> 27

26. The following Venn diagram shows the 50 students who participate in vocational training sessions A, B and C. Each student participates in at least one training session. How many students actually participate in in only two sessions?



27. The diagram below shows the number of students playing football (F), hockey (H) and basketball (B) in the class. What is the total number of students who play F and B but not H?



28. The given Venn diagram represents the sports preferences of a group of college students. There are three sports: A-Badminton, B-Basketball and C-Tennis. How many students play badminton or basketball but don't play tennis?



**29.** Answer the following question by studying the Venn diagram below.



The Venn diagram shows students studying three subjects in a class. What is the number of students studying French and Spanish but not Japanese?

	RRB Group-D - 24/10/2018 (Shift-III)
<b>(A)</b> 29	<b>(B)</b> 4

(7) 20	(5) 7
<b>(C)</b> 20	<b>(D)</b> 24

**30.** This diagram shows the number of students studying 3 languages in a class. How many students study Spanish and Japanese, but not French?



**31.** The above Venn diagram shows the three games M, N and L played in a class. State the total number of students who played M and L but did not play the game N.



**32.** The figure above shows the number of students in the class who study 3 languages. What is the total number of students studying the three languages French, Spanish and Japanese?



**33.** Study the following diagram carefully and answer the question given below:



What is the total number of students who have taken English or Mathematics or Social Science?

	RRB Group-D - 07/12/2018 (Shift-III)
<b>A)</b> 185	<b>(B)</b> 180
<b>C)</b> 183	<b>(D)</b> 175

**34.** In the following figure, the triangle represents the 'girls' and the square represents 'players' and the circle represents 'coaches'. Which part of the diagram represents girls who are sportsmen and coaches?



**35.** The Venn diagram given below shows students who like football, basketball and hockey in a class of 40 students. The total number of students who like at least one sport is:



#### RRB Group-D - 16/11/2018 (Shift-I)

<b>(A)</b> 40	<b>(B)</b> 30
<b>(C)</b> 10	<b>(D)</b> 20

**36.** The Venn diagram given below represents the sports preferences of a group of college students. The three sports are A-Badminton, B-Basketball and C-Tennis. How many students play at least one game?



 RRB Group-D - 05/11/2018 (Shift-III)

 (A) 77
 (B) 35

 (C) 17
 (D) 5

**37.** The diagram shows the number of students studying 3 languages in a class. What is the total number of students studying in the class?



**38.** The above Venn diagram shows students playing three games M, N and L in a class. The total number of students in the class is:



RRB Group-D - 08/10/2018 (Shift-I)

<b>(A)</b> 100	<b>(B)</b> 102
<b>(C)</b> 101	<b>(D)</b> 98

**39.** In a town with a population of 5000, 3200 people drink tea, 2500 people drink coffee and 1500 people drink both tea and coffee. How many of them neither drinks tea nor coffee?

RRB Group-D - 15/10/2018 (Shift			
<b>(A)</b> 800	<b>(B)</b> 770		
<b>(C)</b> 900	<b>(D)</b> 1800		

**40.** In a survey of 170 families, 115 drink coffee, 110 tea and 130 milk. In addition, 85 coffee and milk, 75 coffee and tea, 95 tea and milk, 70 drink all three. Find out how many use coffee and milk but not tea.

RRB RPF Constable - 19/01/2019 (Shift-I)(A) 15(B) 18(C) 20(D) 25

**41.** The following Venn diagram shows 50 students who undergo vocational training A, B and C. Each student participates in at least one training session. How many students actually participate in at least one of the training sessions?





RRB RPF Constable - 25/01/2019 (Shift-I)



<b>(A)</b> 64	<b>(B)</b> 41
<b>(C)</b> 9	(D) 23

**43.** The given diagram shows the number of students studying 3 languages in a class.



What is the number of students studying only two languages?

RRB RP	F Constable - 17/01/2019 (Shift-III)
<b>(A)</b> 32	<b>(B)</b> 100
<b>(C)</b> 45	<b>(D)</b> 64

**44.** Students of a school play three different games. The diagram below shows the number of students playing each game.



Which part represents the players who play football and kabadi but do not play cricket? RRB RPF SI - 11/01/2019 (Shift-II)

<b>(A)</b> $P + Q + R$	<b>(B)</b> V + T
(C) $S + T + V$	<b>(D)</b> Q

**45.** In a survey conducted in one area, it was found that 50% of people read a newspaper named A, 40% of people read a newspaper A nor newspaper B. If the number of people reading both A and B newspapers is 500, then how many people were surveyed?

RRB RPF SI - 13/01/2019 (Shift-III)

<b>(A)</b> 7000	<b>(B)</b> 4500
<b>(C)</b> 5000	<b>(D)</b> 3000

46. The number of students in a college is 5000. Of these, 3500 students like coffee, 2500 students like tea and 2000 students like tea and coffee both. How many students who do not like either of these two drinks? RRB RPF Constable - 22/01/2019 (Shift-III)

<b>(A)</b> 1500	<b>(B)</b> 1000
<b>(C)</b> 500	<b>(D)</b> 2000

- **47.** Based on the given Venn diagram, answer the following question.
  - A- People who are skilled.

B- People who are honest.

C- People who are hardworking.



RRB Paramedical - 20/07/2018 (Shift-III)

(A) c - (v + t) (B) c (C) c - (v + s + t) (D) c - (v + s)

**48.** The above Venn diagram represents the students participating from a class in 3 types of games, M, N and L. The total number of students participating in all three sports is:



# Solution

- 1. Ans.(C) Number of students playing a game = 11 + 41 + 18 = 70
- 2. Ans.(C)

It is clear from the given Venn diagram that the number of students playing game L

= 18 + 7 + 6 + 9 = 40



Number of students playing basketball = 20 + 14 + 13 + 15= 62

#### 4. Ans.(B)

According to Question, Number of students playing F game according to the graph = 9 + 12 + 15 + 13 = 49

Total number of students playing F game = 49

#### 5. Ans.(B)

Number of students who like to play basketball but not tennis = 12 + 12 = 24

#### Ans.(B) 6. Number of students who appeared in only one exam = 50 - (10 + 5 + 12 + 10)

7.

9.

Ans.(B) Number of patients choosing a treatment = 50 - (4 + 5 + 5 + 4)= 50 - 18= 32

8. Ans.(A)  
Brand A type biscuits purchased by seller  
$$-2 + 4 + 5 + 5 - 16$$

= 
$$2 + 4 + 5 + 5 = 16$$
  
**Ans.(B)**  
Total number of boys playing Hockey (H)  
=  $12 + 15 + 12 + 14$   
=  $38 + 15 = 53$ 

= 10 + 10 = 20



$$A = Badminton B = Basketball$$

$$C = Tennis$$

11. Ans.(D)

From the given data, Number of students studying only one subject = 23 + 32 + 9 = 64

#### 12. Ans.(C)

Total number of students playing game M. = 32

$$= 11 + 8 + 7 + 6$$

#### 13. Ans.(D)

According to Venn diagram number of students playing 3 games M, N and L in class = 6

Number of students playing minimum two games

= 7 + 8 + 9 = 24

Hence total students playing minimum two games = 24 + 6 = 30

#### 14. Ans.(C)

From the given Venn diagram -Total number of students playing N and L games but not playing M games = 9

15. Ans.(D)



Total number of students studying two languages

$$= 20 + 5 + 7$$
  
= 32

Total number of students playing two sports

= 12 + 13 + 14 = 39

## 17. Ans.(A)

According to Question – Number of students present in only two training sessions

= 5 + 4 + 4 = 13

18. Ans.(B)



It is clear from the image that p and q are the only ones that represent blue and pink. While v represents both blue and pink.

: Section which represents blue and pink while white does not = p + v + q

## 19. Ans.(D)

 $\because$  According to the graph, the number of students who like C and A game but do not like B = 10 + 13 = 23

#### 20. Ans.(D)

Total number of students who like two sports = who likes one sports + who likes two sports. = 9 + 12 + 20 + 12 + 13 + 14 = 80

#### 21. Ans.(A)

Number of teams supporting KKR and only one other team

= 5 + 1 + 2 = 8

## 22. Ans.(A)

It is clear from the given Venn diagram that the number of healthy but old people is 4.

#### 23. Ans.(D)

Number of students who like both the games = 12 + 15 + 10 = 37

## 24. Ans.(C)

Number of students playing at least two games = 12 + 13 + 15 + 14 = 54

#### 25. Åns.(C)

Number of students playing F and H but not B = 12

## 26. Ans.(C)

Number of students participating in only two sessions = Total number of students – (Number of students participating in one or more sessions)

$$= 50 - (12 + 10 + 10 + 5)$$

$$= 50 - 37 = 13$$

27. Ans.(D)

It is clear from the given figure that the total number of students playing F and B but not playing H is = 13.

# 28. Ans.(A)

From the given Venn diagram, Number of players playing Badminton or Basketball but not playing Tennis = 13 + 12 + 12 = 37



It is clear from the above Venn diagram that the number of students studying French and Spanish but not Japanese = 20

## 30. Ans.(A)

Students studying Spanish and Japanese who do not study French = 7

#### 31. Ans.(D)

It is clear from the Venn diagram that, Total number of students playing M and L games and not playing N games = 7

#### 32. Ans.(B)

It is clear from the above image that the number of students studying all three languages is 4.

## 33. Ans.(C)

From the given diagram, Total number of students of English, Mathematics and Social Sciences 16 + 14 + 9 + 18 + 15 + 19 + 13 + 12 + 20 + 18 + 13 + 16 = 183

Therefore, the number of students in all the classes except science is 183.

## 34. Ans.(A)

It is clear from the given figures that the part R in the diagram represents girls who are both sportsmen and coaches.

## 35. Ans.(A)

Since the sum of the digits given in the Venn diagram is 40.

Hence all players like at least one game.

## 36. Ans.(A)

Number of students playing only one game = 13 + 12 + 10 = 35

Students playing at least two games

= 12 + 10 + 15 = 37

Number of students playing all three games = 5

Thus, number of students playing at least one game = 35 + 37 + 5 = 77





Total number of students studying in class = 23 + 20 + 32 + 5 + 4 + 7 + 9= 100

38. Ans.(A)

Total number of students in class M, N and L = 11 + 8 + 41 + 6 + 7 + 9 + 18 = 100Ans.(A)

39.



Number of people drinking tea only = 3200 - 1500 = 1700Number of people drinking coffee only = 2500 - 1500 = 1000Number of people drinking neither tea nor coffee = 5000 - (1700 + 1000 + 1500)= 5000 - 4200 = 800Hence 800 people neither drink tea nor coffee.

40.



Number of people using coffee and milk but not using tea = 15 Ans.(C)

41.

4 42. Ans.(A)

Total number of students playing game N = 41 + 8 + 6 + 9 = 64

## 43. Ans.(A)

It is clear from the given Venn diagram that the number of students studying only two languages = 20 + 5 + 7 = 32

44. Ans.(D)

'Q' plays both football and kabaddi games but does not play cricket.

45. Ans.(C)



From the Venn diagram,

50 - x + x + 40 - x + 20 = 100 110 - x = 100 x = 10% 10% = 500 100% = 5000Therefore, the total number of people in the

# survey is 5000.

## 46. Ans.(B)

Let the number of students which does not like anything be x.



5000 = 2000 + 1500 + 500 + xx = 5000 - 4000

$$x = 5000 - 40$$

47. Âns



From the Venn diagram, Persons which is only hardworking but not honest or efficient = c - (v + s + t)

## 48. Ans.(B)

It is clear from the above Venn diagram that the total number of students participating in the three sports is 6.

# 24. (Trigonometry)

9.

1.	If $sec^{*} \theta - s$	$\sec^2 \theta = 3,$	then	$tan^{*} \theta +$
	$tan^2 \theta = ?$			
	RRB C	Group-D - 08	/10/201	8 (Shift-III)
	<b>(A)</b> 2	(B)	0	
	(C) 3	(D)	1	

**2**. If  $\cot^4 \theta + \cot^2 \theta = 2.2$ , then  $\csc^4 \theta - \csc^2 \theta = ?$ 

	RRB Group-D -26/11/2022 (Shift-I)
<b>(A)</b> 0	<b>(B)</b> 1.1
(C) 2.2	<b>(D)</b> 3.3

3. If  $(tan \ \theta + cot \ \theta) = 5$ , then find the value of  $(tan^2 \ \theta + cot^2 \ \theta)$ ? RRB Group-D - 08/10/2018 (Shift-II)

	•	
<b>(A)</b> 23	<b>(B)</b> 27	
( <b>C)</b> 25	<b>(D)</b> 21	

**4.** If  $sec \ \theta + tan \ \theta = 3.2$ , then find the value of  $sec \ \theta$ ?

	RRB Group30/10/2018 (Shift-I)
<b>(A)</b> 2.28	<b>(B)</b> 1.6
(C) 1.75625	<b>(D)</b> 1.92625

- 5. If  $\sin \theta \cos \theta = 0$ , then find the value of  $\sin^4 \theta + \cos^4 \theta + \tan^4 \theta$ . **RRB Group-D - 17/11/2022 (Shift-III)** (A)  $\frac{5}{4}$  (B)  $\frac{3}{2}$ (C)  $\frac{7}{4}$  (D) 2
- 6. If  $\cot^4 \theta + \cot^2 \theta = 3.6$  then  $\csc^4 \theta \csc^2 \theta = ?$  **RRB Group-D - 17/11/2022 (Shift-III)** (A) 0.6 (B) 3.6 (C) 2.4 (D) 1.8
- 7. If  $\cos x + \sin x = \sqrt{2}\cos x$ , then find the value of  $\cot x$ ?

RRB Group-D - 25/11/2022 (Shift-I) (A)  $\sqrt{2}$  (B) 1 (C)  $\sqrt{2} + 1$  (D)  $\sqrt{2} - 1$ 

8. If  $sec \ \theta + tan \ \theta = 1.25$ , then  $sec \ \theta - tan \ \theta = ?$ RRB Group-D - 26/11/2022 (Shift-III) (A) 1 (B) 0.80 (C) 0.75 (D) 0.25

- If  $tan^4 \theta + tan^2 \theta = 11$ , then  $sec^4 \theta sec^2 \theta =$ ? RRB Group-D - 27/11/2022 (Shift-III) (A) 12 (B) 11
  - (C) 13 (D) 10
- 10. If  $cot^4 \ \theta + cot^2 \ \theta = 4$  then, what is the value of  $cosec^4 \ \theta - cosec^2 \ \theta$ ? RRB Group-D - 04/10/2018 (Shift-II) (A) 4 (B) 0 (C) 2 (D) 3
- 11. If  $sec \ \theta + tan \ \theta = 8$ , then  $sec \ \theta tan \ \theta = ?$ RRB Group-D - 01/09/2022 (Shift-II) (A) 0.5 (B) 0.625 (C) 0.125 (D) 0.8
- **12.** If  $sec \ \theta + tan \ \theta = 6$ , then  $sec \ \theta = ?$  **RRB Group-D - 28/11/2018 (Shift-I) (A)**  $3\frac{1}{12}$  **(B)**  $3\frac{1}{6}$ **(C)** 3 **(D)**  $3\frac{1}{2}$
- **13.** If  $sec \ \theta + tan \ \theta = 2.5$ , then what is the value of  $sec \ \theta tan \ \theta = ?$  **RRB Group-D - 02/11/2018 (Shift-I) (A)** 1 **(B)** 0.4 **(C)** 0.8 **(D)** 0.6
- 14.  $\frac{\sin A + \sin B}{\cos A \cos B} + \frac{\cos A + \cos B}{\sin A \sin B} = ?$  **RRB Group-D - 17/11/2022 (Shift-I)** (A)  $\sin A \cos B$  (B) 0 (C)  $\tan A \tan B$  (D)  $\cos A \cos B$
- **15.** Complete the following-  $\Delta ABC, \cos (B + C/2) =$ ? **RRB Group-D - 29/10/2018 (Shift-III) (A)**  $\cos A$  **(B)**  $\sin A/2$ **(C)**  $\sin A + B/2$  **(D)**  $\cot B$
- 16. If  $2x = \sec A$  and  $\left(\frac{2}{x}\right) = \tan A$ , then find the value of  $2\left(x^2 \frac{1}{x^2}\right)$ ? **RRB Group-D - 10/10/2018 (Shift-III)** (A) 1 (B) 1/2 (C) 1/4 (D) 1/3

- 17. In triangle ABC, find the value of  $tan^2 \frac{A}{2} + tan^2 \frac{C}{2}$ .

   RRB Group-D 22/10/2018 (Shift-II)

   (A) > 1
   (B)  $\geq$  1

   (C) < 1</td>
   (D)  $\leq$  1
- **18.** If  $x = r\cos\theta\cos\phi$ ,  $y = r\cos\theta\sin\phi$  and  $z = r\sin\theta$ , then find the value of  $x^2 + y^2 + z^2$ ? **RRB Group-D - 26/10/2018 (Shift-II) (A)**  $y^2$  **(B)**  $x^2$ 
  - (C)  $r^2$  (D)  $z^2$
- **19.**  $tan (60^{\circ} + 30^{\circ}) tan (60^{\circ} 30^{\circ}) =?$  **RRB Group-D - 30/10/2018 (Shift-I) (A)**  $\frac{1}{2}$  **(B)**  $\frac{3}{2}$ **(C)** Infinite **(D)** 1
- 20.  $\frac{2 \sin 30^{\circ}}{1 + \cos 30^{\circ}} + \frac{1 + \cos 30^{\circ}}{\sin 30^{\circ}} = ?$ RRB Group-D - 26/11/2022 (Shift-III) (A) 4 (B) 8 (C)  $4 - 2\sqrt{3}$  (D)  $6 - \sqrt{3}$
- 21.  $\frac{\tan 45^{\circ}}{1+\cos 45^{\circ}} + \frac{1+\sin 45^{\circ}}{\cot 45^{\circ}} = ?$ RRB Group-D - 30/10/2018 (Shift-III) (A)  $3 - \frac{\sqrt{2}}{2}$  (B)  $\sqrt{2}$ (C)  $3 - 2\sqrt{2}$  (D)  $-\frac{\sqrt{2}}{2}$
- **22.**  $sin (90^{\circ} \theta) = ?$  **RRB Group-D - 06/12/2018 (Shift-II) (A)**  $cosec \ \theta$  **(B)**  $cot \ \theta$ **(C)**  $sin \ \theta$  **(D)**  $cos \ \theta$
- 23. If,  $tan (A + B) = \frac{tan A + tan B}{1 tan A tan B}$ , then find the value of tan75°? **RRB Group-D -27/11/2018 (Shift -I)** (A)  $2 + 2\sqrt{3}$  (B)  $2 - \sqrt{3}$ 
  - **(C)**  $2 + \sqrt{3}$  **(D)**  $2 2\sqrt{3}$
- 24. If  $sin \ 15^{\circ} = \frac{\sqrt{6} \sqrt{2}}{4}$ , then find the value of  $tan \ 15^{\circ}$ ? **RRB Group-D - 05/11/2018 (Shift-III)** (A)  $2 - 2\sqrt{3}$  (B)  $2 + 2\sqrt{3}$ (C)  $2 - \sqrt{3}$  (D)  $2 + 2\sqrt{3}$
- 25. If  $cosec(A B) = \frac{sec Asec B}{tan A tan B}$ , then find the value of  $cosec \ 15^{\circ}$ ?

RRB Group-D - 05/11/2018 (Shift-III)

<b>(A)</b> √6 − √3	<b>(B)</b> $\sqrt{6} - \sqrt{2}$
(C) $\sqrt{6} + \sqrt{3}$	<b>(D)</b> $\sqrt{6} + \sqrt{2}$

26.	Identify the	e incompa	tible:		
	Sin 90 <sup>0</sup>	cos 0 <sup>0</sup>	tan 900	tan 45°	
	А	В	С	D	
	R	RB Group	D-D-23/10	)/2018 (Sh	ift-III)
	(A) B		(B) C		
	(C) A		<b>(U)</b> D		
27	$5cos^2 60^0 + 4s$	ec <sup>2</sup> 30 <sup>0</sup> -tan	$\frac{245^{\circ}}{-7}$		
27.	<i>sin</i> <sup>2</sup> 30	0°+ <i>cos</i> <sup>2</sup> 30° <b>RRR</b>	 NTPC - 0	9/2022 (SI	nift-II)
	<b>(A)</b> 1		(B) 2	0/2022 (0.	
	(C) $\frac{49}{12}$		(D) $\frac{67}{12}$		
	12		12		
28.	$(cos \ 60^{\circ}+sin$	$\frac{60^{0}}{2} = ?$			
	(cos 60°-sin	<sup>60°)</sup> RB Grour	D-D-08/10	/2018 (Sh	ift-III)
	(A) $-(\sqrt{3} -$	+ 2)	<b>(B)</b> (√	(3 - 2)	,
	(C) -1	,	(D) -	<u>√3</u>	
	(•)		(-)	2	
29.	tan 34º ta	n 42º tan	48º tan 56	5º + tan 6	0º cot
	30° – cose	c 30° sec	60°=?		
	(A) 0	RB Group	D-D-26/11 (B) 1 /	/2022 (Sh	lift-III)
	(C) 1		(D) 1. (D) 2	5	
	(-)		( )		
30.	Find the va	alue of		000	
	tan 8° tan 1	22° <i>cot</i> 60° <b>PB Gro</b> u	' tan 68° ta n- <b>D - 16/1</b>	n 82° - <b>n/2018 (S</b> I	hift_II)
	(A) 1		(B) $\frac{2}{-10}$	0/2010 (01	int-nj
	$(n)^{1}$		$(-)_{\sqrt{3}}$	-	
	(C) $\frac{1}{\sqrt{3}}$		<b>(D)</b> √3	)	
31	Find the	value	of sin	$12^{0} \times cos$	18 <sup>0</sup> ×
•	sec $78^{\circ} \times c$	cosec 72 <sup>0</sup> .	0 500	12 / 005	10 /
	R	RB Grou	p-D - 16/1	0/2018 (Sł	nift-II)
	(A) $\frac{1}{2}$		<b>(B)</b> √3	3	
	(C) $\frac{\sqrt{3}}{3}$		<b>(D)</b> 1		
	<b>v</b> <sup>3</sup>		~ /		
32.	When the	angle $\alpha$ =	= 45°, wha	t is the s	um of
	the values	of all six t	rigonomet	ric ratios?	L : £4 I\
			ו <b>יי</b> ר ב- הווי גרא יישי (היי	0/2018 (S 3√2	nift-i)
	(A) $2 + 3\sqrt{2}$	2	(B) —	2	
	( <b>C)</b> 6		(D) 2 -	+ 4√2	
33.	$sin^2 60^\circ +$	cos <sup>2</sup> 30° ·	$+ cot^2 45^\circ$	$+ sec^{2} 60$	)° =?
		RRB Grou	ıp-D - 18/1	1/2022 (S	hift-l)
	(A) $\frac{7}{2}$		(B) <sup>5</sup> / <sub>2</sub>		

(D)  $\frac{15}{2}$ 

(C)  $\frac{13}{2}$ 

If  $tan \ \theta = \frac{4}{3}$ , then what is the value of  $sin \ \theta +$ 34.  $\cos\theta$ ?

> RRB Group-D - 23/11/2022 (Shift-I) (A)  $\frac{6}{5}$ (B)  $\frac{7}{5}$ (D)  $\frac{4}{5}$

- (C) 1
- 35. If  $4\cot \theta = 5$ , then find the value of  $(5sin \ \theta + 3cos \ \theta)$  $(5sin \ \theta - 3cos \ \theta)$

RRB Group-D - 19/11/2022 (Shift-III) (A) 3 **(B)** 9 (C) 7 (D) 4

- If  $tan \theta = \frac{5}{6}$ , then what is of  $\frac{12sin \theta 5cos \theta}{12sin \theta + 5cos \theta}$ ? 36. the value RRB Group-D - 19/11/2022 (Shift-III) (A)  $\frac{2}{3}$ (C)  $\frac{3}{4}$ (B)  $\frac{1}{3}$ (D)  $\frac{1}{4}$
- 37. If  $\alpha$  and  $\beta$  are complementary angles and  $\csc \alpha = 5/3$ , find the value of  $\sin \alpha \cos \beta - \cos \beta$  $\alpha \sin \beta$ .

RRB Group-D - 30/10/2018 (Shift-III) (B)  $\frac{-7}{25}$ (D)  $\frac{25}{7}$ (A)  $\frac{-25}{7}$ (C)  $\frac{7}{25}$ 

- If  $\tan \theta = \frac{4}{3}$ , then find the value of  $\sin \theta +$ 38.  $\cos \theta$ . (sin  $\theta$  and cos  $\theta$  both are positive) RRB Group-D - 30/10/2018 (Shift-III) (A) 1 **(B)** 7 (D)  $1\frac{2}{r}$ (C)  $2\frac{1}{2}$
- If  $\tan A = \frac{3}{4}$ , then  $\{1/2\} + \{(1 + \cos A)(1 \frac{1}{4})\} = 1 2$ 39.  $\cos A$ /(1 +  $\sin A$ )(1 -  $\sin A$ )} - 1 =? RRB Group-D - 08/10/2018 (Shift-I) (B)  $\frac{12}{25}$ (D)  $\frac{-1}{25}$ (A)  $\frac{1}{\frac{16}{16}}$ (C)  $\frac{-9}{25}$
- 40. From an 18 meters high tower, the angle of elevation to the top of a large building is 45 ° and the angle of depression to the bottom of the same building is 60 °. What is the height (in meters) of the building?

RRB Group-D -20/09/2022 (Shift-II)

(A) $6\left(3 + \frac{\sqrt{3}}{2}\right)$	<b>(B)</b> 6(3 + √3)
(C) $18 + \sqrt{2}$	<b>(D)</b> 12 + 6√3

41. A 13 m long ladder is placed along the wall and the lower part of the ladder is 6.5 m from

the wall. What is the angle of elevation of the stair tilted along the wall?

	RRB Group-D - 22/11/2022 (Shift-I)
<b>(A)</b> 45	<b>(B)</b> 60
<b>(C)</b> 105	<b>(D)</b> 30

42. From the top of a platform, the elevation angle of the top of the tower at a distance of  $50\sqrt{3}$  m is 30 °. If the height of the tower is 60 m, what will be the height of the platform?

RRB Group-D - 28/11/2022 (Shift-III)		
<b>(A)</b> 20√3m	<b>(B)</b> 10m	
<b>(C)</b> 40m	<b>(D)</b> 45√3 <i>m</i>	

43. From the top of a tower, the angle of elevation of a point A on the ground is 30°. The elevation angle changes to 60° when reaching the point X at 20 m towards the foot of the tower. What is the distance of the tower from point A?

	RRB Group-D ·	· 28/11/2022 (Shift-III)
<b>(A)</b> 5√1	$\overline{1}m$	<b>(B)</b> 30m
(C) 5m		<b>(D)</b> 16m

44. A 5 m long ladder with a stable base on the road can reach two windows 4m and 3m high on both side of the road. What is the width of the road?

RRB Group-D - 11/10/2018 (Shift-II) (A) 6.2m (B) 6m (D) 5.5m (C) 7m

45. From the top of a platform of 7m height, the elevation angle of a tower with a height of 47m was 30°. How far is the tower located from the platform?

RRB Group-D - 18/11/2022 (Shift-II)

<b>(A)</b> 45√3m	<b>(B)</b> 40m
<b>(C)</b> 40√3 <i>m</i>	<b>(D)</b> 15√3m

46. From the initial position of the woman standing on the ground floor, the elevation angle of the top of a 43.5 m tall tower was 60°. She moves in a straight line from the position of the tower in such a way that the angle of elevation of the tower from its final position becomes 30°. So what will be the changed distance?

RRB Group-D	- 20/09/2022	(Shift-I
(A) $\frac{29}{3}\sqrt{3}$ meter	<b>(B)</b> 29√3 met	er
(C) $\frac{29}{2}\sqrt{3}$ meter	(D) 29 meter	

47. From the initial position of a person standing on the ground, the elevation angle of the top of a tower 78 feet high is 30°. As he moves towards the tower, the elevation angle of the top of the tower is 60°. How far did he walk from his initial position?

RRB Grou	up-D - 15/11/2018 (Shift-III)
(A) 52 feet	<b>(B)</b> $26\sqrt{3}$ feet
(C) 52√3 feet	<b>(D)</b> $26\frac{\sqrt{3}}{3}$ feet

**48.** From the top of a platform 18 m high, the elevation angle of the top of the tower is  $30^\circ$ . If the platform is located  $75\sqrt{3}$  meters away from the tower, then what is the height of the tower?

RRB Group-D - 01/11/2018 (Shift-II)(A) 93m(B)  $50\sqrt{3}m$ (C) 75m(D)  $37.5\sqrt{3}m$ 

- 49. If  $3sec^2 x 2tan^2 x = 6$  and  $0^0 \le x \le 90^\circ$ then x = ? RRB Group-D - 20/09/2022 (Shift-III) (A)  $60^\circ$  (B)  $45^\circ$ (C)  $30^\circ$  (D)  $90^\circ$
- **50.** If  $8sec^2 x 7tan^2 x = 11$  and  $0^0 \le x \le 90^\circ$ , then what is the value of x? **RRB Group-D - 20/09/2022** (Shift-III) (A)  $90^\circ$  (B)  $45^\circ$ (C)  $30^\circ$  (D)  $60^\circ$
- 51. If tan A + cot A = 2, then, find the value of  $tan^2 A + cot^2 A$ ? RRB RPF Constable - 22/01/2019 (Shift-II) (A) 4 (B) 2 (C) 1 (D) 1/2
- 52. If  $cosec \ \theta sin \ \theta = P$  and  $sec \ \theta cos \ \theta = q$ , then which of the following is correct? **RRB RPF SI - 16/01/2019 (Shift-III)** (A)  $(p^2 q)^{\frac{2}{3}} - (pq^2)^{\frac{2}{3}} = 1$ (B)  $sin \ \theta sec \ \theta = \frac{1}{p}$ (C)  $sin \ \theta tan \ \theta = \frac{1}{q}$ (D)  $(p^2 q)^{\frac{2}{3}} + (pq^2)^{\frac{2}{3}} = 1$
- **53**. If  $sec \ \theta + tan \ \theta = 12.5$ , then  $sec \ \theta tan \ \theta = ?$  **RRB RPF Constable - 19/01/2019 (Shift-II) (A)** 1 **(B)** 0.08 **(C)** 0.8 **(D)** 0.4
- 54. Simplify:  $\cos \theta / (1 + \sin \theta)$ RRB RPF Constable - 18/01/2019 (Shift-III) (A)  $\csc \theta + \cot \theta$  (B)  $\sec \theta - \tan \theta$ (C)  $\csc \theta - \cot \theta$  (D)  $\sec \theta + \tan \theta$

- **55.** If  $x = asec \ \theta + btan \ \theta$  and  $y = atan \ \theta + bsec \ \theta$ , then find the value of  $x^2 y^2$ ? **RRB RPF SI - 12/01/2019 (Shift-II)** 
  - (A)  $a^2 + b^2$  (B)  $\sqrt{a^2 + b^2}$ (C) a + b (D)  $a^2 - b^2$

56. If sin(A - B) = sin A cos B - cos A sin B, then what is the value of  $sin 15^{\circ}$ ? RRB RPF Constable - 17/01/2019 (Shift-I)

RRB RPF Cor	nstable - 17/01/20
(A) $\frac{\sqrt{3}-1}{4}$	(B) $\frac{\sqrt{6}-\sqrt{2}}{2}$
(C) $\frac{\sqrt{3}-\sqrt{2}}{2}$	(D) $\frac{\sqrt{6}-\sqrt{2}}{4}$

- 57.  $cos (-780^{\circ}) = ?$ RRB RPF SI - 13/01/2019 (Shift-II) (A)  $\sqrt{3}/2$  (B)  $-\sqrt{3}/2$ (C) 1/2 (D) -1/2
- 58. If  $\cot x = \frac{5}{12}$ , then,  $\sin x \sec x =$ ? RRB RPF SI - 05/01/2019 (Shift-II) (A)  $-\frac{229}{65}$  (B)  $\frac{229}{65}$ (C)  $\frac{109}{65}$  (D)  $-\frac{109}{65}$
- **59.** If  $cos \ A = 12/13$ , then  $sin \ A(1 tan \ A) =$ ? **RRB RPF SI - 11/01/2019 (Shift-III) (A)** 32/135 **(B)** 32/137 **(C)** 35/152 **(D)** 35/156
- 60. If  $sin \theta = \frac{3}{4}$ , then what is the value of  $16cos^2 \theta + tan^2 \theta$ ? RRB RPF SI - 10/01/2019 (Shift-I)

(A) 
$$\frac{58}{7}$$
 (B)  $\frac{60}{7}$   
(C)  $\frac{55}{7}$  (D)  $\frac{62}{7}$ 

- **61.** The angle of depression of two points in the same direction on the road from an airplane over a flat road are 45° and 30° respectively. The distance between the two points is 1 mile (1.61 km). Find the approximate distance of the airplane from the ground in kilometers?
  - RRB RPF SI 11/01/2019 (Shift-II)

     (A) 1.8
     (B) 2.2

     (C) 2.4
     (D) 2.0

**62.** The elevation angle of a ladder supported by a wall is 45 ° and its lower end is 10 meters from the wall. Find the height of the ladder.

RRB RPF Constable - 19/01/2019 (Shift-II)

(A)  $10\sqrt{2}$  meter (B) 13 meter (C) 15 meter (D) 16 meter 63. The angle of depression of the foot of a building from the top of a tower 32√3 meters high is 60°. How far is the building from the tower?

RK	B RPF SI - 06/01/2019 (Shift-
(A) 32 meter	<b>(B)</b> $16\sqrt{3}$ meter

.,	
(C) $32\sqrt{3}$ meter (D) 2	16 meter

**64.** From the top of a 150 m high building A, at the top of building B, an elevation angle of 45° is formed, at the bottom of building B, a depression angle of 30° is formed. What is the height of building B?

RRB RPF Constable - 20/01/2019 (Shift-III)

<b>(A)</b> $150(1 + \sqrt{3})m$	<b>(B)</b> 250m
<b>(C)</b> 150√3m	(D) $\frac{450}{\sqrt{3}m}$

65. If  $0^{\circ} < \theta \le 90^{\circ}$  and  $\cos^{2} \theta - 3 \cos \theta + 2 = 2 \sin^{2} \theta$ , then find the value of  $\theta$ . **RRB RPF SI - 10/01/2019 (Shift-I)** (A) 30^{\circ} (B) 60^{\circ}

(C) 90°	<b>(D)</b> 45°

66. If  $\sin x + \cos x = \sqrt{2}\sin x$ , then what is the value of  $\tan x$ ? **RRB ALP & Tec. (21-08-18 Shift-II)** 

> (A)  $\sqrt{2} + 1$  (B) 1 (C)  $\sqrt{2} - 1$  (d  $\sqrt{2}$

- 67. If  $\sec \theta + \tan \theta = 4$ , then  $\sec \theta \tan \theta = ?$ RRB ALP & Tec. (13-08-18 Shift-II) (A) 1 (B) 0.75 (C) 0.25 (D) 0.5
- 68. If  $cosec \ \theta + cot \ \theta = 2$ , then  $cot \ \theta = ?$ RRB ALP & Tec. (10-08-18 Shift-I) (A) 0 (B) 1 (C) 0.75 (D) 0.5
- 69.  $\frac{1}{1+\sin \theta} + \frac{1}{1-\sin \theta} = ?$ RRB ALP & Tec. (17-08-18 Shift-III) (A) 0 (B)  $2\cos^2 \theta$ (C)  $2Sec^2 \theta$  (D) 1
- **70.** If  $\tan \theta = \frac{7}{24}$  and  $\frac{\tan \theta \sec \theta}{\sin \theta} = \frac{-p}{28}$ , then what is the value of *p*? **RRB ALP & Tec. (09-08-18 Shift-III) (A)** 25 **(B)** 75 **(C)** 50 **(D)** 100
- **71.** From the top of a 5 meter high platform, the elevation angle was 30 ° with a tower. If the

tower was 45 meters high, how far was the platform from the tower?

	& Tec. (21-08-18 Shift-
(A) 40 meter	<b>(B)</b> $40\sqrt{3}$ meter
(C) $45\sqrt{3}$ meter	(D) 15√3 meter

**72.** From the initial position of a woman standing on the ground, the elevation angle above the 36 m tall tower was 60°. She moved away in such a way that the base of the tower, its initial position and final location were in a straight line. The angle of elevation from the top of the tower to its final position was 30°. How far did she go from her initial position?

RRB ALP & Tec. (21-08-18 Shift-II)

- (A) 24 meter (B)  $36\sqrt{3}$  meter (C)  $24\sqrt{3}$  meter (D)  $12\sqrt{3}$  meter
- **73.** The angle of elevation of the top of a hill from the foot of a tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30°. If the height of the tower is 50 meters, then what is the height of the hill?

# RRB ALP & Tec. (14-08-18 Shift-I)

(A) 100 meter	(B) 120 meter
(C) 180 meter	(D) 150 meter

**74.** From the top of a platform, the angle of elevation of a tower was 30°. The tower was 45 meters high and the horizontal distance between the platform and the tower was  $40\sqrt{3}$  meters. What was the height of the platform?

#### RRB ALP & Tec. (14-08-18 Shift-II) (A) 40 meter (B) 5 meter

- (C)  $45\sqrt{3}$  meter (D)  $20\sqrt{3}$  meter
- **75.** If  $\cos \theta + \sin \theta = m$ ,  $\sec \theta + \csc \theta = n$ , then what is the value of m/n?

	RRB NIPC 10/08/2022 Shift: 1
<b>(A)</b> 1	<b>(Β)</b> sin θcos θ

- (C) sec  $\theta$  cosec  $\theta$  (D) cot  $\theta$ tan  $\theta$
- **76.** If  $sec \ \theta tan \ \theta = \frac{1}{3}$ , then what is the value of  $sec \ \theta + tan \ \theta$ ?
  - RRB NTPC 23/07/2022 Shift: 2

     (A) 1
     (B) 9

     (C) 3
     (D) 1/9
- **77.** If  $4\sin \theta 3\cos \theta = 0$ , then  $\sec \theta \csc \theta = ?$  **RRB NTPC 12/08/2022Shift: 2 (A)** 5/12 **(B)** 25/12 **(C)** 13/12 **(D)** 12/5

78. Find the value of  $(\sec \theta - \tan \theta)^2$ ? **(A)** 0 **(B)** ∞ **(D)** 1 RRB NTPC 10/08/2022 Shift: 2 (C) not defined **(A)** cot θ Evaluate:  $\frac{\sin 23^{\circ}}{\cos 67^{\circ}}$ **(B)**  $(1 - \sin \theta)/(1 + \sin \theta)$ 89. (C)  $\cos \theta \times \cos ec\theta$ RRB NTPC 12/08/2022Shift: 1 (D) 1 (A) 1/2 (B) 2  $(D)^{\frac{2}{2}}$ (C) 1 79. Which of the following is equal to  $sin^{6} A + cos^{6} A - 1?$ RRB NTPC 18.04.2016 Shift: 1 90. What is the value of *cosec*  $60^\circ$ ? RRB NTPC 23/07/2022 Shift: 1 (A)  $-3sin^2 Acos^2 A$ (B) 1 – 3sin Acos A (C)  $1 + 3sin^2 Acos^2 A$  (D) 0 (A)  $\sqrt{3}/2$ **(B)** √2 (C)  $2/\sqrt{3}$ (D)  $1/\sqrt{2}$ 80. Simplify :  $(\sin \theta / \cos \theta) \times (\cot \theta / \csc \theta)$ RRB NTPC 06.04.2016 Shift: 2  $(Cot \ 1^{0}Cot \ 2^{0}Cot \ 3^{0}Cot \ 4^{0}Cot \ 5^{0} \dots Cot \ 90^{\circ}) =?$ 91. **(A)** cos θ **(B)** *sin* θ RRB NTPC 09/05/2022 Shift: 3 **(C)** *tan* θ **(D)** sec θ (A) 0 (B) 1 (C) 2 (D) 1/2 81.  $\sin\theta \tan\theta - \sec\theta = ?$ RRB NTPC 09/05/2022 Shift: 1 92. What is the value of  $cos 100^{\circ} cos 10^{\circ} +$ (A)  $-\cos \theta$ (B) 1 sin 100°sin 10°? **(C)** –sec θ (D) cosec θ RRB NTPC 10.04.2016 Shift: 3 (A) 0 (B) cos 110° Find the value of  $[sin (45^\circ) + cos (45^\circ)]^2$ . 82. (C) sin 110° (D) 1 RRB NTPC 10/08/2022Shift: 2 93. (A) 1/2 **(B)**  $1/\sqrt{2}$ Find the value (C) 3/2 (D) 2 of tan 24. tan 48 tan 42. tan 66: RRB NTPC 02/02/2021Shift: 1 83. If  $cot 52^\circ = b$ , then  $tan 38^\circ = ?$ (A) 0 (B) 1 RRB NTPC 10/08/2022Shift: 3 (D) 2 (C) 1/2 (A)  $\sqrt{b}$ **(B)**  $\sqrt{b}/2$ 94. What is the value of the following expression? (C) - b (D) b  $(tan 0^{\circ}tan 1^{\circ}tan 2^{\circ}tan 3^{\circ}tan 4^{\circ}\dots tan 89^{\circ})$ RRB NTPC 09/05/2022 Shift: 2 84. What is the value of tan (315°)? (B) 1 RRB NTPC 04 .04 .2016 Shift: 3 (A) 0 (D) 1/2 (C) 2 (A) 1 (B) -1 **(D)**  $-1/\sqrt{2}$ (C)  $1/\sqrt{2}$ If  $tan A = \frac{15}{8}$  and  $tan B = \frac{7}{24}$ , then  $tan (A - \frac{15}{24})$ 95. 85. tan (1125°) =? B) = ?RRB NTPC 12/08/2022Shift : 1 RRB NTPC 02/02/2021Shift: 2 (B)  $\frac{304}{425}$ (D)  $\frac{87}{416}$ (A) 1 (B) -1 (A)  $\frac{304}{297}$ (C)  $\frac{416}{87}$ (C) 0 **(D)** ∞ 86.  $tan(-405^{\circ}) = ?$ RRB NTPC 11/08/2022Shift: 3 If  $\sin x = \frac{4}{5}$  then  $cosec \ x + cot \ x = ?$ 96. (B) -1 (A) 1 RRB NTPC 23/07/2022 Shift-1 (C) ∞ **(D)** 0 (B) 35/12 (A) 31/12 (C) 2 (D) 1/2 87.  $cosec (90^{\circ} - \theta) = ?$ RRB NTPC 12/08/2022Shift: 3 If  $\tan \theta = \frac{1}{\sqrt{5}}$ , then  $\csc^2 \theta = ?$ 97. **(A)** *tan* θ **(B)** cot θ RRB NTPC 23/07/2022 Shift-2 **(C)** sec θ **(D)** cos θ **(B)** √5 (A) 5 88. find the value of cos 0°. **(C)** √3 (D) 6 RRB NTPC 12/08/2022Shift: 3

98.  $\sin \theta = 5/13$ , Then find the value of  $\cos \theta$ . RRB NTPC 10/08/2022 Shift: 1 (A) 8/13 **(B)** 12/13 (C) 23/13 (D) 1 99. If  $5tan \theta = 4$ , then find the value of  $(3\sin\theta - 2\cos\theta) \div (2\sin\theta + 3\cos\theta).$ RRB NTPC 12/08/2022Shift: 3 (A) 6/23 **(B)** 2/23 (C) 4/23 (D) 5/23 100. If  $\sqrt{3} \tan \theta = 1$  then, find the value of  $\cos 2\theta$ . RRB NTPC 02/02/2021Shift: 1 (A) 1/2 **(B)** 1/√3 (C) 1/3 (D) 1 If  $sin \ x = \frac{4}{5}$ , then  $\frac{sec x}{sin x} =$ ? **RRB NTPC 02/02/2021Shift: 2** (A)  $\frac{23}{12}$  (B)  $\frac{25}{4}$ (D)  $\frac{25}{12}$ 101. If  $sin \ x = \frac{4}{5}$ , then  $tan \ x + cos \ x =$ ? **RRB NTPC 11/08/2022Shift: 2** (A)  $\frac{31}{15}$  (B)  $\frac{29}{12}$ (C)  $\frac{15}{29}$  (D)  $\frac{29}{15}$ 102. If  $tan A = \frac{15}{8}$  and  $tan B = \frac{7}{24}$ , then cosec (A -103. RRB NTPC 11/08/2022Shift: 2 (A)  $\frac{425}{304}$ (C)  $\frac{425}{97}$ (B)  $\frac{425}{416}$ (D)  $\frac{425}{297}$ If  $2\cos\theta = \sqrt{3}$ , then  $\cos\theta \times \tan\theta = ?$ 104. RRB NTPC 06.04.2016 Shift: 2 (A) 1 **(B)** √3/3 (C)  $\sqrt{3/2}$ (D) 1/2 If  $sin x = \frac{4}{5}$  then sec x + tan x = ?105. RRB NTPC 19.01.2017 Shift: 3 (A) 37/20 **(B)** 31/12 (C) 3 (D) 1/3 If  $A + B = 90^{\circ}$  and  $\cos B = \frac{1}{3}$ , then find the 106. value of sin A: RRB NTPC 12/08/2022Shift: 1 (A) 1/2 (B) 1/4 (C) 1/3 (D) 2/3

**107.** If  $sin \ A = \frac{4}{5}$  and  $sin \ B = \frac{5}{13}$  then  $cot \ (A - B) =$ ? **RRB NTPC 23/07/2022 Shift: 3** 

(A) <sup>56</sup>	(B) <sup>65</sup>
<b>(~)</b> 33	(U) <u>-</u> 33
$(n)^{\frac{33}{33}}$	רח) <u>16</u>
$(5) \frac{1}{56}$	עד) <u>-</u> 33

**108.** Two pillars of 5 m and 10 m stand straight on the ground. If the distance between their legs is 12 m, find the distance between their top.

#### RRB NTPC 10/08/2022 Shift: 3

(A) 11 meter	(B) 12 meter
(C) 13 meter	(D) 14 meter

**109.** The shadow of a tower of  $25\sqrt{3}$  m height increases by 50 m when the angle of depression by the Sun is reduced from 60° to x°. Find the measure of x°.

 RRB NTPC 11/08/2022 Shift: 1

 (A) 45°
 (B) 30°

 (C) 75°
 (D) 90°

**110.** The length of the shadow of a pillar is reduced by 24 m, when the angle of elevation of the Sun increases from 30 ° to 60 °, the length of the column is:

	RRB NTPC 18.04.2016 Shift: 2
<b>(A)</b> 10√3	<b>(B)</b> 8√3
<b>(C)</b> 16√3	<b>(D)</b> 12√3

**111.** The angle of depression of two stones in the same direction from an airplane vertically above a straight road is 30° and 45° respectively. If the plane is flying at an altitude of 1.365 km, then what is the distance between the two stones?

	RRB NTPC 09/05/2022 Shift: 2
<b>(A)</b> 1 km	<b>(B)</b> 2 km
(C) 3 km	<b>(D)</b> 4 km

**112.** If  $tan \ \alpha = 3 - 2\sqrt{2}$ , then find the value of  $tan \ \alpha - cot \ \alpha$ .

RRB Paramedical - 20/07/2018 (Shift-II)

<b>(A)</b> -4	<b>(B)</b> 3 + 2√2
<b>(C)</b> −4√2	<b>(D)</b> −8√2

**113.** There is a 15m high house situated on the banks of a river opposite to a chimney located on the other bank of the river. From the roof of the house, the angle of depression of the chimney floor is 30 ° and from the floor of the house, the elevation angle of the top of the chimney becomes 60 °. Find the approximate width of the river and the height of the chimney.

RRB Paramedical - 21/07/2018 (Shift-II)

(A) 24m and 47m	<b>(B)</b> 20m and 25m
(C) 26m and 45m	<b>(D)</b> 25m and 41m

**114.** If  $cos^2 x + sin x = 5/4$ , then, find the value of sin x?

	RRB JE - 24/05/2019 (Shift-I)
<b>(A)</b> 3/4	<b>(B)</b> 1/2
<b>(C)</b> -1/2	<b>(D)</b> 3/2

- **115.** Find the value of  $\sqrt{\cot^2 \theta \cos^2 \theta}$ . **RRB JE - 23/05/2019 (Shift-I) (A)** 1 **(B)**  $\cot \theta \cos ec\theta$ **(C)**  $\cot \theta \cos \theta$  **(D)**  $\cos \theta \cos ec\theta$
- **116.** Find the value of  $cos^4 A sin^4 A$ ? **RRB- JE - 23/05/2019 (Shift-I) (A)** cos 2A **(B)**  $sin^2 A + cos^2 A$ **(C)** 0 **(D)** 2
- **117.** Find the value of  $(1 cos^2 \theta)(cot^2 \theta + 1)$ ? **RRB-JE - 23/05/2019 (Shift-I) (A)** 0 **(B)**  $sec^2 \theta$ **(C)** 2 **(D)** -2
- **118.** Find the value of  $\theta$ .  $\frac{\cos \theta}{1-\sin \theta} - \frac{\cos \theta}{1+\sin \theta} = 2$ RRB JE - 24/05/2019 (Shift-II) (A) 45° (B) 90° (C) 30° (D) 80°
- **119.** If  $x = rsin \ Acos \ B, y = rsin \ Asin \ B$  and  $= r \ cos \ A$ , then find the value of  $x^2 + y^2 + z^2$ ? **RRB JE - 24/05/2019 (Shift-II) (A)**  $r^2(cos^2 \ B + cos^2 \ A)$  **(B)**  $2r^2$ **(C)**  $3/2r^2$  **(D)**  $r^2$
- **120.** Simplify: sin (A + B)sin (A B) **RRB JE - 24/05/2019 (Shift-III) (A)**  $sin^2 A - sin^2 B$  **(B)**  $sin^2 A + sin^2 B$  **(C)** cos 2A**(D)**  $cos^2 A - cos^2 B$
- **121.** Simplify:  $\cos \theta(1 - \tan \theta) + \sin \theta(1 - \cot \theta)$  **RRB-JE - 27/05/2019 (Shift-I) (A)**  $\sin \theta + \cos \theta$  **(B)**  $\sin \theta - \cos \theta$ **(C)** 0 **(D)**  $\tan \theta + \cot \theta$
- **122.** Simplify:  $\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta}$  **RRB JE - 31/05/2019 (Shift-I) (A)**  $\tan \theta$  **(B)**  $\sin \theta - \cos \theta$ **(C)**  $2\sin \theta \cos \theta$  **(D)**  $\sin \theta + \cos \theta$

123.	Simplify:	
	$\frac{1}{(1+tan^2 A)^2} + \frac{1}{(1+cot^2 A)^2}$	24/05/2040 (Chitty III)
	(A) 2sin Acos A	<b>(B)</b> $sin A - cos A$
	(C) sin Acos A	(D) $(\sin A + \cos A)^2$
124.	Simplify:	
	$\sin \theta / (1 - \cos \theta)$	E 02/06/2010 (Shift I)
	(A) $\tan \theta - \sec \theta$	<b>(B)</b> cosec $\theta$ + cot $\theta$
	(C) cosec $\theta - \cot \theta$	<b>(D)</b> $tan \theta + sec \theta$
125.	Simplify:	
	$\frac{1}{(\sec \theta - \tan \theta)}$	
	RRB JE	- 01/06/2019 (Shift-III)
	(A) $\sec^2 \theta - \tan^2 \theta$	<b>(B)</b> $\cos \theta + \sin \theta$
	(C) cosec $\theta - \cot \theta$	<b>(D)</b> sec $\theta$ + tan $\theta$
126.	Simplify:	
	$(\sin^2 \theta / \cos \theta) + (\cos^2 \theta)$	$\theta/\cos\theta$
	(A) tan 0	- 28/06/2019 (Shift-III)
	( <b>C</b> ) cosec θ	( <b>D</b> ) sec θ
127	If $tan 24 - cot(4 - 18)$	°) and 24 is an acute
127.	angle, find the value of	'A'.
	RRB JE	- 22/05/2019 (Shift-III)
	(A) 36° (C) 28°	(B) 24° (D) 18°
	(0) 20	
128.	Find the value of sin 75	°. - 23/05/2019 (Shift-III)
	$(\Delta) \frac{\sqrt{6} + \sqrt{2}}{2}$	(B) $\frac{\sqrt{6}-\sqrt{2}}{2}$
	$\sqrt{3}^{4}$	( <b>b</b> ) $\frac{4}{\sqrt{3+1}}$
	(C) $\frac{1}{2\sqrt{2}}$	(D) $\frac{1}{2}$
129.	Find the value of sin 12	20°sin 240°sin 270°.
		E - 22/05/2019 (Shift-I)
	(A) = 1/8	(D) $\frac{1}{2}$
	(C) <sup>9</sup> /4	$(D) - \frac{1}{8}$
130.	Find the value of $sin \frac{7\pi}{4}$	$\sin \frac{\pi}{4} \sin \frac{3\pi}{4} \sin \frac{5\pi}{4}$ .
	RRB J	E - 22/05/2019 (Shift-I)
	(A) $\frac{1}{4}$	(B) $\frac{1}{8}$
	(C) $\frac{1}{16}$	(D) $\frac{3}{16}$
131.	$cos 18^{\circ} + cos 162^{\circ} + si$	$n \ 126^\circ + \sin \ 234^\circ = ?$
	RRB JI	E - 22/05/2019 (Shift-I)
	(A) 2	<b>(B)</b> 1
	(C) -2	<b>(D)</b> 0

**132.** If  $tan^2 45^\circ - cos^2 60^\circ = xsin 45^\circ cos 45^\circ cot 30^0$ , then, find the value of 'x'.

RRB JE - 24/05/2019 (Shift-I)

(B)  $\frac{1}{\sqrt{2}}$ (D)  $\frac{3}{2}$ 

(A) 
$$\frac{\sqrt{3}}{2}$$
  
(C)  $\frac{2}{\sqrt{2}}$ 

- **133.** Simplify:  $sin 780^{\circ}sin 480^{\circ} + cos 120^{\circ}sin 30^{\circ}$  **RRB JE - 24/05/2019 (Shift-I) (A)** 2/3 **(B)** 1/3 **(C)** 0 **(D)** 1/2
- **134.** Simplify:  $cos 5^{0} + cos 24^{0} + cos 175^{\circ} + cos 204^{0} + cos 300^{\circ}$  **RRB JE - 25/05/2019 (Shift-I) (A)** 1/2 **(B)** 1 **(C)** -1/2 **(D)** 0
- 135. Find the value of tan 10°tan 15°tan 80°tan 75°. RRB JE 25/05/2019 (Shift-II) (A) 1/3 (B) 1 (C) 1/2 (D) 2/3
- **136.** Find the value of  $tan^2 60^\circ 2tan^2 45^\circ cot^2 30^\circ + 2sin^2 30^\circ + 3/4 \ cosec^2 45^\circ$ . **RRB JE - 31/05/2019 (Shift-I) (A)**  $-\frac{\sqrt{3}}{2}$  **(B)** 0 **(C)** 2 **(D)** -1
- **137**. If  $tan \alpha = \frac{1}{2}$ ,  $tan \beta = \frac{1}{3}$ , then find the value of  $\alpha + \beta$ .

	RRB JE - 24/05/2019 (Shift-III)
( <b>A</b> ) 0 <sup>0</sup>	<b>(B)</b> 135 <sup>0</sup>
( <b>C)</b> 90 <sup>0</sup>	<b>(D)</b> 45 <sup>0</sup>

**138.** If  $\cot \theta = \frac{a}{b}$ , then find the value of  $\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta}$ . **RRB JE - 25/05/2019 (Shift-I)** 

<b>(A)</b> b/a	<b>(B)</b> (a-b) /(a+b)
<b>(C)</b> a/b	<b>(D)</b> $a^2/b^2$

- 139. If  $\csc \alpha = \sqrt{2}$ , then, find the value of  $\frac{2\sin^2 \alpha + 3\cos^2 \alpha}{\csc^2 \alpha + \cot^2 \alpha}$ RRB JE - 01/06/2019 (Shift-III) (A)  $\frac{5}{12}$  (B)  $\frac{5}{3}$ (C)  $\frac{5}{2}$  (D)  $\frac{5}{6}$
- **140.** When viewed from a distance of 300 meters from the flight point, the elevation angle of a hot air balloon going upward in the vertical direction changes from 30<sup>o</sup> am at 10:00 am, to 60<sup>o</sup> at 10:02 am. Find the speed of the balloon in upward direction.
  - RRB JE 22/05/2019 (Shift-III)
  - (A) 2 meter/sec
    (B) 2.18 meter/sec
    (C) 3.4 meter/sec
    (D) 2.9 meter/sec
- **141.** An airplane is flying at a constant height 'h'. At 10:00 am, it appears at an elevation angle of 30 °. After 1 min, it appears at an elevation angle of 60 °. If the speed of the airplane is 960 km/h, find the value of 'h'.

	RRB JE - 26/05/2019 (Shift-I)
<b>(A)</b> 15 km	<b>(B)</b> 13.86 km
<b>(C)</b> 20 km	<b>(D)</b> 12.46 km

**142.** The elevation angles formed when looking at the top of the tree from two points, located at a distance of x m and y m, from the foot of the tree, are  $\alpha$ ,  $\beta$  respectively. If  $\alpha + \beta = 90$ °, find the height of the tree.

	RRB JE - 31/05/2019 (Shift-II)
2	,

(A)  $\frac{(x+y)^2}{2}$  (B)  $\sqrt{xy}$ (C)  $x\cos a + y\cos B$  (D)  $(x-y)^2$ 

# **Solution**

3.

1. Ans.(C) If  $Sec^4 \ \theta - Sec^2 \ \theta = 3$   $Sec^2 \ \theta(sec^2 \ \theta - 1) = 3[\because sec^2 \ \theta - tan^2 \ \theta = 1]$   $(tan^2 \ \theta + 1)tan^2 \ \theta = 3$   $tan^4 \ \theta + tan^2 \ \theta = 3$ Hence  $tan^4 \ \theta + tan^2 \ \theta = 3$ 2. Ans.(C)  $cot^4 \ \theta + cot^2 \ \theta = 2.2$ 

 $\cot^{2} \theta(\cot^{2} \theta + 1) = 2.2$   $(\cot^{2} \theta = \csc^{2} \theta - 1)$   $(\csc^{2} \theta - 1)(\csc^{2} \theta - 1 + 1) = 2.2$   $(\csc^{2} \theta - 1)(\csc^{2} \theta) = 2.2$   $\csc^{4} \theta - \csc^{2} \theta = 2.2$ Ans.(A)  $\tan \theta + \cot \theta = 5$   $\tan^{2} \theta + \cot^{2} \theta + 2 \tan \theta \cdot \cot \theta = 25$   $\tan^{2} \theta + \cot^{2} \theta = 25 - 2 = 23$ 

4. Ans.(C)

5.

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8.

sec  $\theta$  + tan  $\theta$  = 3.2 =  $\frac{32}{10} = \frac{16}{5}$  .....(i) Multiplying both sides of equation (i) by (sec  $\theta$  – tan  $\theta$ ).  $(\sec \theta + \tan \theta)(\sec \theta - \tan \theta) =$  $\frac{16}{5}(\sec \theta - \tan \theta)$  $\begin{bmatrix} :: \sec^2 \theta - \tan^2 \theta = 1 \end{bmatrix}$  $\therefore \sec \theta - \tan \theta = \frac{5}{16} \dots \dots \dots (ii)$ Adding equation (i) and (ii)  $2sec \ \theta = \frac{16}{5} + \frac{5}{16} = \frac{281}{80}$   $\Rightarrow 2sec \ \theta = 3.5125$   $sec \ \theta = \frac{3.5125}{2} = 1.75625$ Ans (B) Ans.(B)  $\sin \theta - \cos \theta = 0$  $\sin \theta = \cos \theta$  $On \theta = 45^\circ, sin \theta = cos \theta$ Putting  $\theta = 45^{\circ}$ ,  $sin^4 \theta + cos^4 \theta + tan^4 \theta$  $= sin^4 (45^\circ) + cos^4 (45^\circ) + tan^4 (45^\circ)$  $= \left(\frac{1}{\sqrt{2}}\right)^4 + \left(\frac{1}{\sqrt{2}}\right)^4 + (1)^4$ =  $\frac{1}{4} + \frac{1}{4} + 1 = \frac{2}{4} + 1 = \frac{1}{2} + 1 = \frac{3}{2}$ Ans.(B)  $\cot^4 \theta + \cot^2 \theta = 3.6$  $\cot^2 \theta (1 + \cot^2 \theta) = 3.6$  $(cosec^2 \ \theta - cot^2 \ \theta = 1$  $\left\{ cosec^2 \ \theta = 1 + cot^2 \ \theta \right\}$  $(cosec^2 \ \theta - 1 = cot^2 \ \theta)$  $\cot^2 \theta \cdot \csc^2 \theta = 3.6$  .....(i)  $\overline{(cosec^2 \ \theta - 1) \cdot cosec^2 \ \theta} = 3.6$  $cosec^4 \theta - cosec^2 \theta = 3.6$ Ans.(C)  $\cos x + \sin x = \sqrt{2}\cos x$ Divinding by sin x,  $\cot x + 1 = \sqrt{2}\cot x$  $\sqrt{2}cot \ x - cot \ x = 1$  $cot \ x(\sqrt{2}-1) \ = \ 1$  $cot \ x = \frac{1}{\sqrt{2}-1}$  $cot \ = \frac{(\sqrt{2}+1)}{(\sqrt{2}-1)(\sqrt{2}+1)}$  $cot \ x \ = \ \frac{\sqrt{2} + 1}{2 - 1}$  $cot \ x = \sqrt{2} + 1$ Ans.(B)  $sec \theta + tan \theta = 1.25 = \frac{125}{100}$  $\frac{(sec \theta + tan \theta)(sec \theta - tan \theta)}{(sec \theta - tan \theta)} = \frac{125}{100}$  $\frac{sec^2 \theta - tan^2 \theta}{(sec \theta - tan \theta)} = \frac{125}{100} \{sec^2 \theta - tan^2 \theta = 1\}$ 

 $\frac{1}{(\sec \theta - \tan \theta)} = \frac{125}{100}$  $\sec \theta - \tan \theta = \frac{100}{125}$  $sec \ \theta - tan \ \theta = 0.80$ 9. Ans.(B)  $\because \tan^4 \theta \ + \ \tan^2 \theta \ = \ 11$  $\therefore \tan^2 \theta (1 + \tan^2 \theta) = 11$  $\tan^2 \theta \cdot \sec^2 \theta = 11$  $(\sec^2 \theta - 1) \sec^2 \theta = 11$  $\{:: 1 + tan^2 \theta = sec^2 \theta\}$  $sec^4 \theta - sec^2 \theta = 11$ 10. Ans.(A)  $\cot^4 \theta + \cot^2 \theta = 4$  $(cosec^2 \theta - 1)^2 + cosec^2 \theta - 1 = 4$  $cosec^4 \theta + 1 - 2 cosec^2 \theta + cosec^2 \theta - 1$  $cosec^4 \theta - cosec^2 \theta = 4$ 11. Ans.(C) Given  $sec \ \theta + tan \ \theta = 8 \dots$  (i) Multiplying both sides of equation (i) by  $(\sec\theta - \tan\theta).$  $(\sec \theta + \tan \theta)(\sec \theta - \tan \theta) = 8(\sec \theta - \tan \theta)$  $tan \theta$  $\therefore (sec^2 \ \theta - tan^2 \ \theta = 1)$  $(\sec \theta - \tan \theta) = \frac{1}{2}$  $(sec \ \theta - tan \ \theta) = 0.125$ 12. Ans.(A)  $sec \ \theta + tan \ \theta = 6$  then  $sec \ \theta = ?$  $\because sec^2 \ \theta - tan^2 \ \theta = 1$  $\therefore (sec \ \theta - tan \ \theta)(sec \ \theta + tan \ \theta) = 1$  $\therefore \ sec \ \theta - tan \ \theta \ = \ \frac{1}{sec \ \theta + tan \ \theta}$  $\therefore$  sec  $\theta$  - tan  $\theta = \frac{1}{6} \dots (i)$  $sec \ \theta + tan \ \theta = 6 \dots (ii)$ Adding equation (i) and (ii),  $\sec \theta - \tan \theta = \frac{1}{6} \dots \dots$ sec  $\theta$  + tan  $\theta$  = 6.....(ii)  $2sec \ \theta = \frac{1}{6} + 6$  $2sec \ \theta = \frac{\frac{6}{37}}{\frac{6}{6}}$ sec \ \theta =  $\frac{37}{12} = 3\frac{1}{12}$ 13. Ans.(B)  $\sec \theta + \tan \theta = 2.5$ Multiplying both sides by  $(\sec \theta - \tan \theta)$ ,  $(\sec \theta + \tan \theta)(\sec \theta - \tan \theta)$  $= 2.5(sec \ \theta - tan \ \theta)$  $sec^2 \theta - tan^2 \theta = 2.5(sec \theta - tan \theta)$  $\because \sec^2 \theta - \tan^2 \theta = 1$  $\therefore \frac{1}{2.5} = \sec \theta - \tan \theta$  $\sec \theta - \tan \theta = \frac{10}{25}$  $\sec \theta - \tan \theta = 0.4$ 

14. Ans.(B)  $\frac{\sin A + \sin B}{\sin A + \sin B} + \frac{\cos A + \cos B}{\sin A + \sin B}$  $\frac{1}{\cos A - \cos B} + \frac{1}{\sin A - \sin B}$  $(\sin A + \sin B)(\sin A - \sin B) + (\cos A + \cos B)(\cos A - \cos B)$ (cos A-cos B)(sin A-sin B)  $= \frac{\sin^2 A - \sin^2 B + \cos^2 A - \cos^2 B}{\sin^2 B + \cos^2 A - \cos^2 B}$ (cos A-cos B)(sin A-sin B)  $= \frac{(\sin^2 A + \cos^2 A) - (\sin^2 B + \cos^2 B)}{(\sin^2 B + \cos^2 B)}$ (cos A-cos B)(sin A-sin B)  $(:: \sin^2 \theta + \cos^2 \theta = 1)$ 1-1  $= \frac{1}{(\cos A - \cos B)(\sin A - \sin B)} = 0$ 15. Ans.(B)  $\therefore A + B + C = 180^{\circ}$  $\frac{B + C}{\cos \frac{(B + C)}{2}} = \cos \frac{180 - A}{2}$  $= cos \left(90^\circ - \frac{A}{2}\right)$  $= sin \frac{A}{2}$ 16. Ans.(B)  $2x = sec A \dots$ (i)  $\frac{2}{2} = tan A$  .....(ii) After squaring both and then subtracting equation (ii) from (i)  $4x^2 - \frac{4}{x^2} = sec^2 A - tan^2 A$  $\{ \sec^2 A - \tan^2 A = 1 \}$ or  $4\left(x^2 - \frac{1}{x^2}\right) = 1$ or  $2\left(x^2 - \frac{1}{x^2}\right) = \frac{1}{2}$ 17. Ans.(B) In ∆ABC  $A + B + C = \pi$ We know that - $\left(\tan\frac{A}{2}-\tan\frac{B}{2}\right)^2 + \left(\tan\frac{B}{2}-\tan\frac{C}{2}\right)^2 +$  $\left(\tan\frac{c}{2}-\tan\frac{A}{2}\right)^2 \geq 0$  $\Rightarrow 2\left(\tan^2\frac{A}{2} + \tan^2\frac{B}{2} + \tan^2\frac{C}{2}\right)$  $-2\left(\tan\frac{A}{2}\cdot\tan\frac{B}{2}+\tan\frac{B}{2}\cdot\tan\frac{C}{2}+\tan\frac{C}{2}\cdot\tan\frac{C}{2}\right)$  $tan \frac{A}{2} \ge 0 \dots \dots$  (i)  $\frac{\tan \frac{A}{2} + \tan \frac{B}{2}}{1 - \tan \frac{A}{2} \tan \frac{B}{2}} = \frac{1}{\tan \frac{C}{2}}$  $tan \frac{A}{2}tan \frac{C}{2} + tan \frac{B}{2}tan \frac{C}{2} = 1 - tan \frac{A}{2}tan \frac{B}{2}$ 

 $tan \frac{A}{2}tan \frac{B}{2} + tan \frac{B}{2}tan \frac{C}{2} + tan \frac{A}{2}tan \frac{C}{2} = 1$ Placing the values from equation (ii) to equation (i) - $2\left(\tan^2\frac{A}{2} + \tan^2\frac{B}{2} + \tan^2\frac{C}{2}\right) - 2 \times 1 \ge 0$  $\Rightarrow \left( \tan^2 \frac{A}{2} + \tan^2 \frac{B}{2} + \tan^2 \frac{C}{2} \right) \ge 1$ 18. Ans.(C) Given  $x = r\cos\theta\cos\phi\dots\dots(1)$  $v = r\cos\theta\sin\phi\dots\dots(2)$ Adding squares of equations (1), (2) and (3)  $x^2 + y^2 + z^2 = r^2 cos^2 \theta cos^2 \phi +$  $r^2 cos^2 \theta sin^2 \phi + r^2 sin^2 \theta$  $= r^2 cos^2 \theta [cos^2 \phi + sin^2 \phi] + r^2 sin^2 \theta$  $= r^2 cos^2 \theta + r^2 sin^2 \theta [:: sin^2 \phi + cos^2 \phi = 1]$  $= r^2(\sin^2 \theta + \cos^2 \theta)$  $x^2 + y^2 + z^2 = r^2$ 19. Ans.(C) = tan (60 + 30) - tan (60 - 30) $= tan 90^{\circ} - tan 30^{\circ}$  $= \frac{1}{0} - \frac{1}{\sqrt{3}} = \frac{\sqrt{3} - 0}{0} = \frac{\sqrt{3}}{0} = \infty$ 20. Ans.(D)  $\frac{2\sin 30^{\circ}}{1+\cos 30^{\circ}} + \frac{1+\cos 30^{\circ}}{\sin 30^{\circ}}$  $= \frac{2\sin^2 30^{\circ} + (1+\cos 30^{\circ})^2}{\sin 30^{\circ}}$ sin 30°(1 + cos 30°)  $=\frac{2\times\frac{1}{4}+\left(1+\frac{\sqrt{3}}{2}\right)^{2}}{\frac{1}{2}\left(1+\frac{\sqrt{3}}{2}\right)}$  $= \frac{\frac{1}{2} + \frac{(2+\sqrt{3})^2}{4}}{\frac{1}{2} \times \frac{(2+\sqrt{3})}{2}} = \frac{2+7+4\sqrt{3}}{2+\sqrt{3}} = \frac{9+4\sqrt{3}}{2+\sqrt{3}}$  $= \frac{\frac{9^{2} + 4\sqrt{3}}{2 + \sqrt{3}} \times \frac{2 - \sqrt{3}}{2 - \sqrt{3}}}{\frac{18 + 8\sqrt{3} - 9\sqrt{3} - 12}{4 - 3}} = 6 - \sqrt{3}$ Ans.(A) 21.  $\frac{\tan 45^{\circ}}{1+\cos 45^{\circ}} + \frac{1+\sin 45^{\circ}}{\cot 45^{\circ}}$  $\frac{1}{1+\frac{1}{\sqrt{2}}} + \frac{1+\frac{1}{\sqrt{2}}}{1}$  $= \frac{\sqrt{2}}{\sqrt{2}+1} + \frac{\sqrt{2}+1}{\sqrt{2}}$  $= \frac{2 + (\sqrt{2} + 1)^2}{\sqrt{2}(\sqrt{2} + 1)}$  $= \frac{2+2+1+2\sqrt{2}}{\sqrt{2}(\sqrt{2}+1)}$  $5 + 2\sqrt{2}$  $\sqrt{2}(\sqrt{2}+1)$  $= \frac{(5+2\sqrt{2})}{\sqrt{2}(\sqrt{2}+1)} \times \frac{\sqrt{2}(\sqrt{2}-1)}{\sqrt{2}(\sqrt{2}-1)}$  $= \frac{10 + 4\sqrt{2} - 5\sqrt{2} - 4}{2(2)}$ 2(2-1) $=\frac{6-\sqrt{2}}{2}$  $= 3 - \frac{\sqrt{2}}{2}$ 

22. Ans.(D)  $sin(90-\theta) = cos \theta$ 23. Ans.(C)  $A = 45^{\circ} \text{ and } B = 30^{\circ}$  $\Rightarrow \frac{\tan 45^{\circ} + \tan 30^{\circ}}{1 - \tan 45^{\circ} \tan 30^{\circ}} = \tan (45^{\circ} + 30^{\circ})$  $\Rightarrow \frac{\tan 45^\circ + \tan 30^\circ}{1 - \tan 45^\circ \tan 30^\circ} = \tan 75^\circ$  $\Rightarrow \frac{1 + \frac{1}{\sqrt{3}}}{1 - 1 \times \frac{1}{\sqrt{3}}} = tan \ 75^{\circ}$  $\Rightarrow \frac{1 + \frac{1}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}} = \frac{\sqrt{3} + 1}{\sqrt{3} - 1} = tan \ 75^{\circ}$ By rationalizing,  $\Rightarrow \frac{\sqrt{3}+1}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1}$  $\Rightarrow \frac{(\sqrt{3}+1)^2}{(\sqrt{3}-1)(\sqrt{3}+1)}$  $\Rightarrow \frac{(\sqrt{3}+1)^2}{(\sqrt{3}-1)(\sqrt{3}+1)} = \frac{(\sqrt{3})^2 + (1)^2 + 2\times\sqrt{3}\times 1}{(\sqrt{3})^2 - (1)^2}$ Formula - $(a + b)^2 = a^2 + b^2 + 2ab$ and  $a^2 - b^2 = (a + b)(a - b)$ ,  $\lim_{n \to \infty} \frac{a}{a} - \frac{b}{a} = \frac{(a + b)(a - b)}{(a - b)},$ =  $\frac{3 + 1 + 2\sqrt{3}}{3 - 1} = \frac{4 + 2\sqrt{3}}{2} = \tan 75^{\circ}$ =  $\frac{2(2 + \sqrt{3})}{2} = \tan 75^{\circ}$  $= 2 + \sqrt{3} = tan 75^{\circ}$ 24. Ans.(C)  $tan \ 15^{\circ} = tan \ (45^{\circ} - 30^{\circ})$  $\tan (45^{\circ} - 30^{\circ}) = \frac{\tan 45^{\circ} - \tan 30^{\circ}}{1 + \tan 45^{\circ} \tan 30^{\circ}}$  $= \frac{1 - \frac{1}{\sqrt{3}}}{1 + 1 \times \frac{1}{\sqrt{3}}} = \frac{\frac{\sqrt{3} - 1}{\sqrt{3}}}{\frac{\sqrt{3} + 1}{\sqrt{3}}}$  $= \frac{\sqrt{3}-1}{\sqrt{3}+1} \times \frac{\sqrt{3}-1}{\sqrt{3}-1}$ =  $\frac{(\sqrt{3}-1)^2}{(\sqrt{3})^2-(1)^2} = \frac{3+1-2\sqrt{3}}{3-1}$ =  $\frac{4-2\sqrt{3}}{2} = \frac{2(2-\sqrt{3})}{2} = 2 - \sqrt{3}$ Ans.(D) 25. Let,  $A = 60^{\circ}$  $B = 45^{\circ}$  $cosec (60^{\circ} - 45^{\circ}) = \frac{sec \ 60^{\circ} \times sec \ 45^{\circ}}{tan \ 60^{\circ} - tan \ 45^{\circ}}$ cos ec 15° =  $\frac{2 \times \sqrt{2}}{\sqrt{3}-1}$  $= \frac{2\sqrt{2}}{\sqrt{3}-1} \times \frac{(\sqrt{3}+1)}{(\sqrt{3}+1)}$  $= \frac{2\sqrt{2}(\sqrt{3}+1)}{(\sqrt{3})^2 - (1)^2}$  $= \frac{2\sqrt{6} + 2\sqrt{2}}{3-1}$ =  $\frac{2\sqrt{6} + 2\sqrt{2}}{2} = \frac{2(\sqrt{6} + \sqrt{2})}{2}$ cos ec 15° =  $\sqrt{6} + \sqrt{2}$ 26. Ans.(B)  $\sin 90^{\circ} = 1$  $cos 0^\circ = 1$  $tan 90^\circ = \infty$ or tan  $45^\circ = 1$ tan 90° is inconsistent because in others the value of trigonometric ratio is getting 1 while tan 90° (∞) is incompatible.

27. Ans.(D)  $5cos^2 60^0 + 4sec^2 30^\circ - tan^2 45^\circ$  $sin^2 30^\circ + cos^2 30^\circ$  $:: \sin^2 \theta + \cos^2 \theta = 1$  $\begin{aligned} \forall \sin^2 \theta + \cos^2 \theta &= 1 \\ &= \frac{5 \times (\frac{1}{2})^2 + 4 \times (\frac{2}{\sqrt{3}})^2 - (1)^2}{1} \\ &= \frac{5 \times \frac{1}{4} + 4 \times \frac{4}{3} - 1}{1} \\ &= \frac{5}{4} + \frac{16}{3} - 1 \\ &= \frac{15 + 64 - 12}{12} = \frac{67}{12} \end{aligned}$ 28. Ans.(A)  $\left(\frac{\cos 60^\circ + \sin 60^\circ}{\cos 60^\circ - \sin 60^\circ}\right)$  $= \frac{\left(\frac{1}{2} + \frac{\sqrt{3}}{2}\right)}{\left(\frac{1}{2} - \frac{\sqrt{3}}{2}\right)}$  $= \frac{\frac{1+\sqrt{3}}{2}}{\frac{1-\sqrt{3}}{2}} = \frac{1+\sqrt{3}}{1-\sqrt{3}}$  $= \frac{(1+\sqrt{3})}{(1-\sqrt{3})} \frac{(1+\sqrt{3})}{(1+\sqrt{3})}$ Multiplying numerator and denominator by  $(1 + \sqrt{3})$  $= \frac{(1+\sqrt{3})^2}{(1)^2 - (\sqrt{3})^2} \Rightarrow \frac{1+3+2\sqrt{3}}{1-3}$  $=\frac{1+3+2\sqrt{3}}{-2},=\frac{(4+2\sqrt{3})}{-2}$  $=\frac{2(2+\sqrt{3})}{-2}, = -(\sqrt{3}+2)$ 29. Ans.(A) tan 34° tan 42° tan 48° tan 56° +  $tan 60^{\circ}cot 30^{\circ} - cosec 30^{\circ}sec 60^{\circ}$  $= tan(90^{\circ} - 56^{\circ}) tan(90^{\circ} 48^{\circ}$ ) tan  $48^{\circ}$  tan  $56^{\circ}$  + tan  $60^{\circ}$  cot $(90^{\circ}$  - $60^{\circ}$ ) - cosec( $90^{\circ}$  -  $60^{\circ}$ )sec  $60^{\circ}$ = cot 56° cot 48° tan 48° tan 56° +  $tan^2 60^\circ - sec^2 60^\circ$  $\therefore \begin{cases} \tan \theta \cdot \cot \theta = 1 \\ \sec^2 \theta - \tan^2 \theta = 1 \end{cases}$ = 1 × 1 + (-1) = 1 - 1 = 0 30. Ans.(C) tan 8°tan 22°cot 60°tan 68°tan 82°  $= tan 8^{\circ}tan 22^{\circ}cot 60^{\circ}tan (90^{\circ} 22^{\circ}$ )tan (90° - 8°)  $= \tan 8^{\circ} \cdot \tan 22^{\circ} \cot 60^{\circ} \cdot \cot 22^{\circ} \cdot \cot 8^{\circ}$  $= \tan 8^{\circ} \times \frac{1}{\tan 8^{\circ}} \times \tan 22^{\circ} \times \frac{1}{\tan 22^{\circ}} \cdot \cot 60^{\circ}$  $= 1 \times 1 \times cot 60^{\circ}$  $= 1 \times 1 \times \frac{1}{\sqrt{3}}$  [: cot 60° =  $\frac{1}{\sqrt{3}}$ ]  $=\frac{1}{\sqrt{3}}$ 31. Ans.(D)  $sin \ 12^{\circ} \times cos \ 18^{\circ} \times sec \ 78^{\circ} \times cosec \ 72^{\circ}$  $sin \ 12^{\circ} \times cos \ 18^{\circ} \times \frac{1}{cos \ 78^{\circ}} \times \frac{1}{sin \ 72^{\circ}}$ 

 $= \frac{\sin 12^{\circ} \times \cos 18^{\circ}}{10^{\circ}}$ cos 78<sup>0</sup>×sin 72°  $sin (90-78)^0 \times cos (90-72)^0$ \_ cos 78<sup>0</sup>×sin 72°  $= \frac{\cos 78^{\circ} \times \sin 72^{\circ}}{\cos 78^{\circ} \times \sin 72^{\circ}} = 1$ 32. Ans.(A) Sum of all six trigonometric ratios  $= \sin \alpha + \cos \alpha + \tan \alpha + \cot \alpha +$ sec  $\alpha$  + cosec  $\alpha$  $= sin 45^{\circ} + cos 45^{\circ} + tan 45^{\circ} +$  $cot 45^{\circ} + Sec 45^{\circ} + cosec 45^{\circ}$  $= \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 1 + 1 + \sqrt{2} + \sqrt{2}$  $= \frac{2}{\sqrt{2}} + 2 + 2\sqrt{2}$  $=\sqrt{2} + 2 + 2\sqrt{2}$  $= 3\sqrt{2} + 2 = 2 + 3\sqrt{2}$ Ans.(C) 33.  $sin^2 60^\circ + cos^2 30^\circ + cot^2 45^\circ + sec^2 60^\circ$ = ? $= \left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 + (1)^2 + (2)^2$  $= \frac{3}{4} + \frac{3}{4} + 1 + 4$ =  $\frac{6}{4} + 5 = \frac{6+20}{4} = \frac{26}{4} = \frac{13}{2}$ 34. Ans.(B)  $tan \theta = \frac{4}{3} then \sin \theta + \cos \theta = ?$  $tan \theta = \frac{\text{Prependicular}}{\text{Base}}$ Prependicular = 4Base = 3Then Hypotenuse =  $\sqrt{(4)^2 + (3)^2}$  $=\sqrt{25}$ Hypotenuse = 5  $\sin \theta = \frac{\text{Prependicular}}{\text{Hypotenuse}} = \frac{4}{5}$  $\cos \theta = \frac{\text{Base}}{\text{Hypotenuse}} = \frac{3}{5}$ Then,  $\sin \theta + \cos \theta = \frac{4}{5} + \frac{3}{5} = \frac{7}{5}$ 35. Ans.(C)  $4\cot \theta = 5 \Rightarrow \cot \theta = \frac{5}{4}$  $\frac{5\sin\theta + 3\cos\theta}{5\sin\theta - 3\cos\theta} = \frac{\sin\theta \left(5 + 3\frac{\cos\theta}{\sin\theta}\right)}{\sin\theta \left(5 - 3\frac{\cos\theta}{\sin\theta}\right)}$  $= \frac{5+3\cot\theta}{5-3\cot\theta}$  $=\frac{5+3\times\frac{5}{4}}{5-3\times\frac{5}{4}}=\frac{5+\frac{15}{4}}{5-\frac{15}{4}}=\frac{35}{5}$ 36. Ans.(B)  $\tan \theta = \frac{5}{6}$ , Then  $\frac{12\sin \theta - 5\cos \theta}{12\sin \theta + 5\cos \theta} = ?$ <u>√61</u>  $\overline{\mathbf{5}}$  $\overline{\mathbf{B}}$ 6

From the Pythagoras theorem,  $AC^2 = AB^2 + BC^2$  $AC^2 = 5^2 + 6^2$  $AC^2 = 61$  $AC = \sqrt{61}$ Putting the value of  $\sin \theta = \frac{5}{\sqrt{61}}$ ,  $\cos \theta = \frac{6}{\sqrt{51}}$ 12sin  $\theta$ -5cos  $\theta$  $12sin \theta + 5cos \theta$  $12 \times \frac{5}{\sqrt{61}} - 5 \times \frac{6}{\sqrt{6}}$  $rac{\sqrt{61}}{12 \times rac{5}{\sqrt{61}} + 5 \times rac{6}{\sqrt{61}}}$  $\Rightarrow \frac{\frac{60-30}{\sqrt{61}}}{\frac{60+30}{60+30}}$  $\Rightarrow \frac{\frac{30}{\sqrt{61}}}{\frac{90}{\sqrt{61}}} = \frac{30}{\sqrt{61}} \times \frac{\sqrt{61}}{90}$  $=\frac{1}{3}$ 37. Ans.(B) cosec  $\alpha = \frac{5}{2}$  $\frac{1}{\sin\alpha} = \frac{5}{3}$  $\sin \alpha = \frac{3}{5}$ С  $\mathbf{5}$ 3 B 4 Prependicular sin  $\alpha =$ Hypotenuse 5 Base 4 5  $\cos \alpha =$ = Hypotenuse  $: sin \beta =$  $\cos \beta = \frac{3}{5}$ sin acos  $\beta$  – cos asin  $\beta$  $\frac{3}{5} \times \frac{3}{5} - \frac{4}{5} \times \frac{4}{5}$  $\frac{9}{25} - \frac{16}{25}$  $= \frac{-7}{25}$ Ans.(D) 38. А 4 Prependicular Hypotenus в 3 Base

$$tan \ \theta = \frac{4}{3}$$

$$AC^{2} = AB^{2} + BC^{2}$$

$$AC^{2} = (4)^{2} + (3)^{2}$$

$$AC^{2} = \sqrt{16 + 9}$$

$$AC^{2} = \sqrt{25}$$

$$AC = 5$$
Then  $sin \ \theta = \frac{4}{5}, cos \ \theta = \frac{3}{5}$ 

$$sin \ \theta + cos \ \theta$$

$$= \frac{4}{5} + \frac{3}{5} = 1\frac{2}{5}$$
**Ans.(A)**
If  $tan \ A = \frac{3}{4}$ 

$$\binom{1}{2} + \binom{(1+cos \ A)(1-cos \ A)}{2} = 1 - 2$$

If 
$$\tan A = \frac{3}{4}$$
  
 $\left\{\frac{1}{2}\right\} + \left\{\frac{(1+\cos A)(1-\cos A)}{(1+\sin A)(1-\sin A)}\right\} - 1 = ?$   
 $= \frac{1}{2} + \left\{\frac{(1-\cos^2 A)}{1-\sin^2 A}\right\} - 1$   
 $= \frac{1}{2} + \left\{\frac{\sin^2 A}{\cos^2 A}\right\} - 1$   
 $= \frac{1}{2} + \tan^2 A - 1$   
 $= \frac{1}{2} + \left(\frac{3}{4}\right)^2 - 1$   
 $= \frac{1}{2} + \frac{9}{16} - 1$   
 $= \frac{17-16}{16}$   
 $\left[? = \frac{1}{16}\right]$ 

40.

=

39.





And distance of point A from tower = d m : Distance of point X from tower = (d - 20) m

B  
A  
20m  
A  
20m  
A  
20m  
A  

$$\frac{30^{\circ}}{60^{\circ}}$$
  
 $\frac{1}{\sqrt{3}} = \frac{h}{a}$   
 $h = \frac{d}{\sqrt{3}}$   
And,  $tan 60^{\circ} = \frac{h}{(d-20)}$   
 $\Rightarrow \sqrt{3} = \frac{h}{(d-20)}$   
Putting value of h  
 $\sqrt{3} = \frac{d}{\sqrt{3}(d-20)}$   
 $3(d-20) = d$   
 $3d - d = 60$   
 $2d = 60$   
 $d = 30$   
Thus, distance of point A from base = 30 m.  
Ans.(C)

45.

44.



$$\therefore AB = Tower \ height = 47m$$

$$CD = BE = Platform \ height = 7m$$

$$\therefore AE = 47 - 7 = 40m$$

$$\triangle ADE ,$$

$$tan \ 30^{\circ} = \frac{AE}{ED} = \frac{40}{DE}$$

$$\therefore DE = BC = distance \ from \ platform \ to \ tower.$$

$$\therefore \frac{1}{\sqrt{3}} = \frac{40}{DE}$$

$$DE = 40\sqrt{3}m \ or \ BC = 40\sqrt{3}m$$
Ans.(B)
Let the initial distance of the woman from the

46.

47.

Let the initial distance of the woman from the tower = y m

And distance after change of location = x m. Tower height (AB) = 43.5 m



A  

$$30^{\circ}$$
 C D B  
 $tan 30^{\circ} = \frac{78}{(CD + BD)}$   
 $CD + BD = 78\sqrt{3}$  feet - - - - (i)  
 $In \Delta$  ABD  
 $tan 60^{\circ} = \frac{78}{BD}$   
 $BD = \frac{78}{\sqrt{3}} - - - - - (ii)$   
Placing value of BD in equation (i),  
 $CD = 78\sqrt{3} - \frac{78}{\sqrt{3}}$   
 $CD = \frac{156}{\sqrt{3}}$   
 $CD = \frac{156\sqrt{3}}{\sqrt{3} \times \sqrt{3}}$   
 $CD = 52\sqrt{3}$  feet

Therefore, a person travels a distance of  $52\sqrt{3}$  feet from his former position to reach his final position. Ans.(A)

#### 48.

49.

Drawing a diagram according to the statement,



 $tan^2 x$ ]

 $3 + 3tan^2 x - 2tan^2 x = 6$  $tan^2 x = 3$  $\tan x = \sqrt{3}$  $tan x = tan 60^{\circ}$ x = 6050. Ans.(D) If  $8 \sec^2 x - 7 \tan^2 x = 11$  Then x = ? $\Rightarrow 8sec^2 x - 7tan^2 x = 11$  $\Rightarrow 8(1 + tan^2 x) - 7tan^2 x = 11$  $\Rightarrow 8 + 8tan^2 x - 7tan^2 x = 11$  $\Rightarrow tan^2 x = 11 - 8$  $\Rightarrow tan^2 x = 3$  $\Rightarrow tan x = \sqrt{3}$  $\Rightarrow tan x = tan 60^{\circ}$  $x = 60^{\circ}$ 51. Ans.(B) Given, tan A + cot A = 2Squaring both sides  $(tan A + cot A)^2 = 4$  $tan^2 A + cot^2 A + 2tan Acot A = 4$  $tan^2 A + cot^2 A + 2 \times 1 = 4(\because tan Acot A = 1)$  $tan^2 A + cot^2 A = 4 - 2 = 2$ 52. Ans.(D) Given  $cosec \ \theta - sin \ \theta = p$  $\therefore \frac{1}{\sin \theta} - \sin \theta = p$  $\frac{1-\sin^2\theta}{2} = p$ sin θ  $\cos^2 \theta = p \sin \theta$  $p = \frac{\cos^2 \theta}{2}$ sin θ And,  $sec \ \theta - cos \ \theta = q$  $\frac{1}{1-\cos\theta} - \cos\theta = q$ cos θ  $1-cos^2 \theta$ = qcos θ  $sin^2 \theta = qcos \theta$  $q = \frac{\sin^2 \theta}{2}$ cos θ Now,  $p^2 q = \frac{\cos^4 \theta}{\sin^2 \theta} \times \frac{\sin^2 \theta}{\cos \theta}$  $p^2q = \cos^3 \theta$  $(p^2q)^{\overline{3}} = \cos \theta$  $(p^2 q)^{\frac{1}{3}} = cos^2 \theta \dots$  (i) Similarly,  $(q^2p)^{\overline{3}} = sin^2 \theta \dots (ii)$ Adding equation (i) and equation (ii) - $(p^2q)^{\frac{2}{3}} + (pq^2)^{\frac{2}{3}} = 1(\because sin^2 \theta + cos^2 \theta =$ 1) Ans.(B)

53.

 $sec \ \theta + tan \ \theta = 12.5$ 

After multipling (sec  $\theta - tan \theta$ ) on both sides.  $Sec^2 \theta - tan^2 \theta = 12.5(sec \theta - tan \theta)$  $(:: sec^2 - tan^2 \theta = 1)$  $1 = 12.5(sec \ \theta - tan \ \theta)$ or, sec  $\theta$  - tan  $\theta = \frac{1}{12.5}$ Sec  $\theta - tan \ \theta = 0.08$ 54. Ans.(B) cos θ 59.  $1 + sin \theta$ Multiplying numerator and denominator by (1  $-\sin\theta$ )  $=\frac{(1-\sin\theta)\times\cos\theta}{\cos^2\theta}=(\sec\theta-\tan\theta)$ 55. Ans.(D)  $x = asec \ \theta + btan \ \theta \text{ and } y = atan \ \theta + bsec \ \theta$  $x^2 - v^2 = ?$  $x^2 - y^2 = (asec \ \theta + btan \ \theta)^2 - (atan \ \theta + bsec \ \theta)^2$  $= a^{2}sec^{2} \theta + b^{2}tan^{2} \theta + 2absec \theta tan \theta - a^{2}tan^{2} \theta$  $b^2 sec^2 \theta - 2absec \theta tan \theta$  $= a^2 sec^2 \theta + b^2 tan^2 \theta - a^2 tan^2 \theta - b^2 sec^2 \theta$  $= a^{2}(sec^{2} \theta - tan^{2} \theta) - b^{2}(sec^{2} \theta - tan^{2} \theta)$ 60.  $x^2 - y^2 = (a^2 - b^2)(\sec^2 \theta - \tan^2 \theta)$  $x^{2} - v^{2} = a^{2} - b^{2} \{ sec^{2} \theta - tan^{2} \theta = 1 \}$ 56. Ans.(D) sin(A - B) = sin Acos B - cos Asin B $sin \ 15^{\circ} = sin \ (60^{\circ} - 45^{\circ}) =$ sin 60° cos 45° – cos 60° sin 45°  $sin \ 15^{\circ} = \frac{\sqrt{3}}{2} \times \frac{1}{\sqrt{2}} - \frac{1}{2} \times \frac{1}{\sqrt{2}}$  $=\frac{\sqrt{3}}{2\sqrt{2}}-\frac{1}{2\sqrt{2}}$  $\sin 15^{\circ} = \frac{\sqrt{3}-1}{2\sqrt{2}}$  $\sin 15^{\circ} = \frac{(\sqrt{3}-1)\sqrt{2}}{2\times 2} = \frac{\sqrt{6}-\sqrt{2}}{4}$ 61. 57. Ans.(C) cos (-780°)  $= \cos 780^{\circ}$  [:  $\cos (-\theta) = \cos \theta$ ]  $= cos (2 \times 360^{\circ} + 60^{\circ})$  $= \cos 60^{\circ} = \frac{1}{2}$ 58. Ans.(D) 1213

 $(xz)^2 = 144 + 25$  $xz = \sqrt{169}$ xz = 13 $\therefore$  sin x - Sec x $=\frac{12}{13}-\frac{13}{5}$  $= \frac{60-169}{100}$ 65 \_\_\_\_\_\_\_\_ 65 Ans.(D) Given - $\cos A = \frac{12}{13} = \frac{Base}{Hypotenuse}$ (Prependicular)<sup>2</sup> =  $(Hypotenuse)^2 - (Base)^2$  $= (13)^2 - (12)^2$ = 25 So, Prependicular =  $\sqrt{25}$  = 5  $\therefore \sin A(1 - \tan A) = \frac{5}{13} \left( 1 - \frac{5}{13} \right)$  $= \frac{5}{13} \times \frac{7}{12} = \frac{35}{156}$  **Ans.(A)**  $\sin \theta = \frac{3}{4}$  (Given)  $16\cos^2 \theta + \tan^2 \theta = 16\cos^2 \theta + \frac{\sin^2 \theta}{\cos^2 \theta}$  $= 16(1 - \sin^2 \theta) + \frac{\sin^2 \theta}{(1 - \sin^2 \theta)}$  $= 16 \times \left(1 - \frac{9}{16}\right) + \frac{\frac{9}{16}}{\left(1 - \frac{9}{16}\right)}$  $= 16 \times \left(\frac{7}{16}\right) + \frac{\frac{9}{16}}{(\frac{7}{16})}$  $= 7 + \frac{9}{7}$  $=\frac{58}{7}$ Ans.(B) Let the distance of the airplane from land = h km



5

 $(xz)^2 = (12)^2 + (5)^2$ 

In right angle  $\Delta$  xyz, by Pythagoras theorem,

 $(Hypotenuse)^2 = (Perpendicular)^2 + (Base)^2$  $(xz)^2 = (yz)^2 + (xy)^2$ 

 $\therefore cot x = \frac{xy}{yz} = \frac{5}{12}$ 

$$\frac{1}{\sqrt{3}} = \frac{h}{1.61 + x}$$

$$\sqrt{3}h = 1.61 + x$$

$$\sqrt{3}h = 1.61 + h$$

$$h = \frac{1.61}{0.732}$$

$$= 2.19 \approx 2.2km$$

$$h = 2.2km$$
Ans.(A)



According to the image -Stair height = AC In ⊿ ABC –  $cos \ 45^{\circ} = BC/AC$  $\frac{1}{\sqrt{2}} = \frac{10}{AC}$  $AC = 10\sqrt{2}$  meter

#### 63. Ans.(A)

62.

Height of tower AB =  $32\sqrt{3}$  m. Let the distance of the building from the tower is x m.



 $tan 45^\circ = \frac{h}{r}$  $1 = \frac{h}{x}$ h = x .....(i) In ⊿SRQ  $tan \ 30^{\circ} = \frac{150}{100}$  $\Rightarrow \frac{1}{\sqrt{3}} = \frac{150}{x}$  $x = 150\sqrt{3}$  $h = 150\sqrt{3}$  $\therefore$  Total height of building (B) = 150 + h  $= 150 + 150\sqrt{3}$  $= 150(1 + \sqrt{3})m$ Ans.(C) If,  $0^{\circ} < \theta \le 90^{\circ}$ 

then  $\cos^2 \theta - 3\cos \theta + 2 = 2\sin^2 \theta$  $\cos^2 \theta - 3\cos \theta + 2 = 2(1 - \cos^2 \theta)$  $\cos^2 \theta - 3\cos \theta + 2 = 2 - 2\cos^2 \theta$  $3\cos^2 \theta = 3\cos \theta$  $3\cos^2 \theta - 3\cos \theta = 0$  $\cos^2 \theta - \cos \theta = 0$  $\cos \theta (\cos \theta - 1) = 0$ If,  $\cos \theta = 0 = \cos 90^\circ$ then,  $\theta = 90^{\circ}$ if,  $\cos \theta = 1 = \cos 0^{\circ}$  $\theta = 0^{\circ}$ 

#### 66. Ans.(A)

65.

 $\sin x + \cos x = \sqrt{2}\sin x$ Dividing both side by cosx  $\frac{\sin x}{\cos x} + \frac{\cos x}{\cos x} = \frac{\sqrt{2}\sin x}{\cos x}$  $tan x + 1 = \sqrt{2}tan x$  $1 = \sqrt{2} \tan x - \tan x$  $1 = tan \ x(\sqrt{2}-1)$  $tan \ x = \frac{1}{\sqrt{2}-1}$  $tan \ x \ = \ \frac{\sqrt{2} + 1}{(\sqrt{2} - 1)(\sqrt{2} + 1)}$  $tan \ x \ = \ \sqrt{2} \ + \ 1$ Ans.(C)

67. Given that,

 $(\sec \theta + \tan \theta) = 4$  $\Rightarrow$  (sec  $\theta$  – tan  $\hat{\theta}$ )(sec  $\theta$  + tan  $\theta$ ) =  $4(\sec \theta - \tan \theta)$  $\Rightarrow (sec^2 \ \theta - tan^2 \ \theta) = 4(sec \ \theta - tan \ \theta)$  $\Rightarrow 1 = 4(sec \ \theta - tan \ \theta)$  $\Rightarrow$  (sec  $\theta$  – tan  $\theta$ ) = 1/4  $\Rightarrow$  (sec  $\theta$  - tan  $\theta$ ) = 0.25 Ans.(C)

## 68.

Given (cosec  $\theta$  + cot  $\theta$  = 2) And, cosec  $\theta$  + cot  $\theta$  = 2 .....(i)  $cosec^2 \theta - cot^2 \theta = 1 -$  Formula  $: (cosec \ \theta \ + \ cot \ \theta)(cosec \ \theta \ - \ cot \ \theta) \ = \ 1$  $\therefore \operatorname{cosec} \theta - \operatorname{cot} \theta = \frac{1}{2} \dots \dots \dots \dots \dots (ii)$ 

Subtracting equation (i) and (ii),  $2cot \ \theta = 2 - \frac{1}{2} = 1.50$  $\therefore \cot \theta = \frac{1.50}{2}^2 = 0.75$ Ans.(C) 69.  $\frac{\frac{1}{1+\sin\theta} + \frac{1}{1-\sin\theta}}{= \frac{1-\sin\theta+1+\sin\theta}{1-\sin\theta}}$  $_{2}^{1-sin^{2}} \theta$  $[\because 1 - \sin^2 \theta = \cos^2 \theta]$  $\frac{1-\sin^2\theta}{2}$  $=\frac{2}{\cos^2\theta}$  $= 2sec^2 \theta$  **Ans.(B)** 70. Given,  $\tan \theta = \frac{7}{24} = \frac{\text{Prependicular}}{\text{Base}}$ Hypotenuse =  $\sqrt{(Base)^2 + (Prependicular)^2}$  $=\sqrt{24^2+7^2}$  $=\sqrt{625}$ = 25  $\frac{= 25}{\text{: By question,}}$   $\frac{\tan \theta - \sec \theta}{\sin \theta} = \frac{-P}{28}$   $\frac{\frac{7}{25}}{28} = -P$  $\Rightarrow \frac{\frac{7}{24} + \frac{25}{24}}{\frac{7}{25}} = \frac{-P}{28}$ 25  $\Rightarrow \frac{\frac{-18}{24}}{24} \times \frac{25}{7} = \frac{-P}{28}$  $P = \frac{\frac{18 \times 25 \times 28}{24 \times 7}}{\frac{28}{24 \times 7}} = 75$ 71. Ans.(B) 40 ↓ (30<sup>0</sup> E<sup>45</sup> D L 5 B From  $\Delta$  DEC,  $\tan 30^\circ = \frac{CE}{DE}$  $\tan 30^\circ = \frac{40}{x} \Rightarrow \frac{1}{\sqrt{3}} = \frac{40}{x}$  $x = 40\sqrt{3}$  m. Ans.(C) 72. 60<sup>0</sup> 30<sup>0</sup> A D from ∆ABC  $\tan 30^\circ = \frac{AB}{AC}$  $\tan 30^\circ = \frac{36}{AC}$  $AC = 36 \times \sqrt{3} \quad ----(i)$ 

 $\therefore$  In  $\triangle ABD$ ,  $\tan 30^\circ = \frac{50}{AB} \Rightarrow \frac{1}{\sqrt{3}} = \frac{50}{AB}$  $\Rightarrow AB = 50\sqrt{3}$  meter Hill Tower D t h 50 60<sup>0</sup> 30<sup>0</sup> A В  $\therefore$  in  $\varDelta ABC$  ,  $\tan 60^\circ = \frac{h}{50\sqrt{3}}$  $\Rightarrow h = 50\sqrt{3} \times \sqrt{3}$  $\Rightarrow h = 150$  meter Therefore, the height of the hill is 150 meters.

74. Ans.(B)

73.

Given the height of the tower is EC = 45 m.



Angle of elevation  $\angle EAB = 30^{\circ}$ Horizontal distance  $DC = 40\sqrt{3}$  meter = AB Let the height of platform is h m.  $\therefore$  in  $\triangle ABE$ tan  $30^{\circ} = \frac{EB}{2}$ 

$$\begin{aligned} \tan^2 50 &= \frac{1}{AB} \\ \Rightarrow \frac{1}{\sqrt{3}} &= \frac{45-h}{40\sqrt{3}} \\ \Rightarrow 45-h &= 40 \\ \Rightarrow h &= 45-40 \\ \Rightarrow h &= 5 \text{ meter} \end{aligned}$$

75. Ans.(B)
$\cos \theta + \sin \theta = m \dots \dots (i)$ and  $sec \ \theta + cosec \ \theta = n$  $\frac{1}{\cos\theta} + \frac{1}{\sin\theta} = n$   $\Rightarrow \frac{\sin\theta + \cos\theta}{\cos\theta \sin\theta} = n$   $\Rightarrow \frac{m}{\cos\theta \sin\theta} = n$ {From equation i  $(\sin \theta + \cos \theta = m)$  }  $\Rightarrow \frac{m}{n} = \sin \theta \cos \theta$ 76. Ans.(C) sce  $\theta$  - tan  $\theta = \frac{1}{3}$  $\therefore sec^2 \theta - tan^2 \theta = 1$  $(\sec \theta - \tan \theta)(\sec \theta + \tan \theta) = 1$  $\frac{1}{3}(\sec \theta + \tan \theta) = 1$  $sec \ \theta + tan \ \theta = 3$ 77. Ans.(B) Given,  $4\sin \theta - 3\cos \theta = 0$  $4sin \theta = 3cos \theta$ 3 B 4  $\frac{\sin\theta}{\cos\theta} = \frac{3}{4}$  $\tan \theta = \frac{3}{4} = \frac{Prependicular}{Base}$ From Pythagoras theorem - $(Hypotenuse)^2 = (Prependicular)^2 + (Base)^2$  $(AC)^2 = 3^2 + 4^2$ = 9 + 16 = 25AC (Hypotenuse) =  $\sqrt{25} = 5$ Then sec  $\theta$ . cosec  $\theta = \frac{\text{Hypotenuse}}{\text{Base}} \times \frac{\text{Hypotenuse}}{\text{Prependicular}}$  $=\frac{5}{4}\times\frac{5}{3}$ sec  $\theta \cdot cosec \ \theta = \frac{25}{12}$ 78. Ans.(B)  $(\sec \theta - \tan \theta)^2 = (\frac{1}{\cos \theta} - \frac{\sin \theta}{\cos \theta})^2$  $= (\frac{1-\sin\theta}{\cos\theta})^2$  $=\frac{(1-\sin\theta)^2}{(1-\sin\theta)^2}$  $= \frac{\frac{(1-\sin\theta)^2}{1-\sin^2\theta}}{(1-\sin\theta)(1-\sin\theta)} (\because \sin^2\theta + \cos^2\theta = 1)$  $= \frac{(1-\sin\theta)(1-\sin\theta)}{(1-\sin\theta)(1-\sin\theta)}$  $\overline{(1-\sin \theta)(1+\sin \theta)}$  $= \frac{1-\sin\theta}{1+\sin\theta}$ 79. Ans.(A)  $sin^6 A + cos^6 A - 1$  $= (sin^{2} A)^{3} + (cos^{2} A)^{3} - 1$ 

 $= (sin^2 A + cos^2 A)^3 - 3sin^2 A \cdot$  $\cos^2 A(\sin^2 A + \cos^2 A) - 1$  $= (1)^{3} - 3sin^{2} A \cdot cos^{2} A(1) - 1$ {sin^{2} A + cos^{2} A = 1}  $= 1 - 3sin^2 A \cdot cos^2 A - 1$  $= -3sin^2 A \cdot cos^2 A$ 80. Ans.(B)  $\frac{\frac{\sin\theta}{\cos\theta} \times \frac{\cot}{\csc\theta}}{\frac{\sin\theta}{\cos\theta} \times \frac{\frac{\cos\theta}{\sin\theta}}{\frac{1}{\sin\theta}} = \sin\theta}$ 81. Ans.(A)  $\sin \theta \tan \theta - \sec \theta = \sin \theta \frac{\sin \theta}{\cos \theta} - \frac{1}{\cos \theta}$  $= \frac{\sin^{2} \theta}{\cos \theta} - \frac{1}{\cos \theta}$   $= \frac{\sin^{2} \theta}{\cos \theta} - \left(\frac{\sin^{2} \theta + \cos^{2} \theta}{\cos \theta}\right)$   $= \frac{\sin^{2} \theta - \sin^{2} \theta - \cos^{2} \theta}{\cos \theta} = \frac{-\cos^{2} \theta}{\cos \theta} = -\cos \theta$ Ans (D) **82**.  $[sin (45^{\circ}) + cos (45^{\circ})]^{2}$  $= \left(\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}\right)^2$  $= \left(\frac{2}{\sqrt{2}}\right)^2 = \frac{4}{2} = 2$ 83. Ans.(D)  $cot 52^\circ = b$  $cot (90^{\circ} - 38^{\circ}) = b$  $\tan 38^\circ = b [\because \cot (90^\circ - \theta) = \tan \theta]$ 84. Ans.(B)  $tan \ 315^{\circ} = tan \ (360^{\circ} - 45^{\circ})$  $= -tan 45^{\circ}$  [:  $tan (360^{\circ} - \theta) = -tan \theta$ ] = -185. Ans.(A) tan (1125°)  $= tan(3 \times 360^{\circ} + 45^{\circ})$  $= \tan 45^{\circ}$  [::  $\tan (n \times 360^{\circ} + \theta) = \tan \theta$ ] = 1 86. Ans.(B) tan (-405°)  $= -tan \ 405^{\circ}$  $= -tan(360^{\circ} + 45^{\circ})$  $= -tan \ 45^{\circ} = -1$  $[\because \tan (360^\circ + \theta) = \tan \theta]$ 87. Ans.(C)  $cosec (90 - \theta) = sec \theta$ Ans.(D) 88.  $\cos 0^{0} = 1$ 89. Ans.(C)  $\frac{\sin 23^{0}}{\cos 67^{0}} = \frac{\sin 23^{0}}{\cos(90^{\circ} - 23)} = \frac{\sin 23^{\circ}}{\sin 23^{\circ}} = 1$ 90. Ans.(C)  $cosec \ 60^{\circ} = \frac{1}{\sin 60^{\circ}}$  $= \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}}$ 

By formula,

 $a^{3} + b^{3} = (a + b)^{3} - 3ab(a + b)$ 

91. Ans.(A)  $cot \ 1^{\circ}cot \ 2^{\circ}cot \ 3^{\circ}cot \ 4^{\circ}cot \ 5^{\circ} \dots \dots cot \ 90^{\circ})$  $: cot 90^{\circ} = 0$ Therefore (cot  $1^{\circ}cot \ 2^{\circ}cot \ 3^{\circ}cot^{\circ}$  cot  $5^{\circ}..cot \ 89^{\circ} \times$ 0) = 092. Ans.(A)  $cos(A - B) = cos A \cdot cos B + sin A \cdot sin B$ By question,  $\cos 100^{\circ} \cdot \cos 10^{\circ} + \sin 100^{\circ} \cdot \sin 10^{\circ}$  $= \cos(100^{\circ} - 10^{\circ}) = \cos 90^{\circ} = 0$ 93. Ans.(B) tan 24°. tan 48° · tan 42° · tan 66°  $= tan 24^{\circ}tan 48^{\circ}tan (90^{\circ} - 48^{\circ})tan (9$ 24°)  $= tan 24^{\circ} \cdot tan 48^{\circ} \cdot cot 48^{\circ} \cdot cot 24^{\circ}$ {::  $tan (90^\circ - \theta) = cot \ \theta$ } = 1 94. Ans.(A)  $\therefore$  tan 0° = 0  $\therefore$  tan 0° tan 1° tan 2° tan 3° ... ... tan 89° = 0 Ans.(A) 95.  $\operatorname{Tan} A = \frac{15}{8}, \operatorname{Tan} B = \frac{7}{24}$  $\tan (A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$  $= \frac{\frac{43-7}{24}}{\frac{192+105}{297}} = \frac{38\times8}{297} = \frac{304}{297}$ Ans.(C) 96. 4 x3 If  $\sin x = \frac{4}{5}$  then  $\cos x = \frac{3}{5}$ So cosec x + cot x $\frac{1}{\sin x} + \frac{\cos x}{\sin x}$ sin x  $\frac{1}{4} + \frac{3/5}{4}$  $\frac{5}{4} + \frac{3}{4} = \frac{8}{4} = 2$  $cosec \ x + cot \ x = 2$ 97. Ans.(D)  $\tan \theta = \frac{1}{\sqrt{5}}$  $\Rightarrow cot \ \theta = \sqrt{5}$  $cosec^2 \theta = 1 + cot^2 \theta$  $= 1 + (\sqrt{5})^2$ = 1 + 5= 6

## 98. Ans.(B)

$$\sin \theta = \frac{5}{13}$$

$$\sin^2 \theta = \frac{25}{169}$$

$$\cos \theta = \sqrt{1 - \sin^2 \theta}$$

$$= \sqrt{1 - \frac{25}{169}}$$

$$= \sqrt{\frac{144}{169}} = \frac{12}{13}$$
Ans (B)

99. Ans.(B)

 $\begin{aligned} & \text{Given} - 5\tan \theta = 4 \Rightarrow \tan \theta = \frac{4}{5} \\ & \frac{3\sin \theta - 2\cos \theta}{2\sin \theta + 3\cos \theta} \\ & = \frac{3\left(\frac{\sin \theta}{\cos \theta}\right) - 2\left(\frac{\cos \theta}{\cos \theta}\right)}{2\left(\frac{\sin \theta}{\cos \theta}\right) + 3\left(\frac{\cos \theta}{\cos \theta}\right)} \end{aligned}$ 

Dividing numerator & denominator by 
$$\cos \theta$$
)

 $= \frac{3\tan\theta - 2\times 1}{2\tan\theta + 3} = \frac{3\times\frac{4}{5} - 2}{2\times\frac{4}{5} + 3} = \frac{\frac{12-10}{5}}{\frac{8+15}{5}} = \frac{2}{23}$ 

## 100. Ans.(A)

(

By question,  $\sqrt{3}tan \ \theta = 1$   $\Rightarrow tan \ \theta = \frac{1}{\sqrt{3}} = tan \ 30^{\circ}$   $\therefore \ \theta = 30^{\circ}$   $\therefore \ cos \ 2\theta = cos \ 2 \times 30^{\circ}$  $= cos \ 60^{\circ} = \frac{1}{2}$ 

# 101. Ans.(D)

 $sin x = \frac{4}{2}$  $sin x - \frac{5}{Prependicular}$   $sin x = \frac{1}{Prependicular}$ Hypotenuse  $(Base)^2 = (Hypotenuse)^2 -$ (Prependicular)<sup>2</sup> Base =  $\sqrt{(5)^2 - (4)^2}$ Base =  $\sqrt{25 - 16}$ Base =  $\sqrt{9}$ Base = 3Then, sec  $x = \frac{\text{Hypotenuse}}{\text{Base}} = \frac{5}{3}$ 5  $\frac{\sec x}{\sin x} = \frac{\frac{3}{3}}{\frac{4}{3}}$ sin x  $=\frac{5}{3}\times\frac{5}{4}=\frac{25}{12}$ 102. Ans.(D)  $sin x = \frac{4}{5} = \frac{Prependicular}{Hypotenuse}$ ∴ Base =

 $\sqrt{\text{Hypotenuse}^2 - \text{Prependicular}^2}$ 

$$= \sqrt{(5)^{2} - (4)^{2}}$$

$$= \sqrt{25 - 16}$$

$$= \sqrt{9}$$

$$= 3$$

$$\therefore By question,
tan  $x + \cos x$ 

$$= \frac{4}{3} + \frac{3}{5}$$

$$= \frac{20 + 9}{15}$$

$$= \frac{20}{15}$$
103. **Ans.(A)**

$$\frac{1}{15}$$

$$\frac{1}{103} = \frac{15}{8}$$

$$= \frac{20}{15}$$

$$\frac{1}{103} = \frac{15}{8}$$

$$\frac{1}{103} = \frac{1}{103}$$

$$\frac{1}{104} = \frac{1}{103} = \frac{1}{100}$$

$$\frac{1}{104} = \frac{1}{100} = \frac{$$$$

$$4 \frac{4}{9} \frac{5}{9} \frac{5}{9} \frac{1}{9} \frac{1}{9} \frac{5}{9} \frac{1}{9} \frac{1}{9} \frac{1}{9} \frac{5}{9} \frac{1}{9} \frac{$$



Tan 30° = 
$$\frac{h}{x+24}$$
  
 $\frac{1}{\sqrt{3}} = \frac{h}{x+24}$   
 $\sqrt{3}h = x + 24$  .....(1)  
Tan 60° =  $\frac{h}{x}$   
 $\sqrt{3} = \frac{h}{x}$   
 $h = \sqrt{3}x$  .....(11)  
Putting the value of h in equation (1),  
 $\sqrt{3} \times \sqrt{3}x = x + 24$   
 $3x = x + 24$   
 $2x = 24$   
 $x = 12$   
 $\sqrt{3} = \frac{h}{12}$   
 $h = 12\sqrt{3}m$   
111. Ans.(A)  
In  $ADBC$ ,  
 $tan 45° = \frac{1.365}{DB}$   
DB = 1.365 km.  
 $DB = 1.365$  km.  
 $T$   
 $AD = AB - DB$   
AD  $= 1.365\sqrt{3} - 1.365$   
 $= 1.365(\sqrt{3} - 1)$   
 $= 1.365 \times 0.73$   
 $= 0.99 \approx 1$  km.  
Hence the distance between the stones is 1  
km.  
112. Ans.(C)  
 $tan \alpha = 3 - 2\sqrt{2}$   
 $tan \alpha - cot \alpha = tan \alpha - \frac{1}{tan\alpha}$   
 $= (3 - 2\sqrt{2}) - \frac{(3 + 2\sqrt{2})}{(3 - 2\sqrt{2})(3 + 2\sqrt{2})}$   
 $= (3 - 2\sqrt{2}) - \frac{(3 + 2\sqrt{2})}{1}$   
 $= (3 - 2\sqrt{2}) - \frac{(3 + 2\sqrt{2})}{1}$ 

 $= -4\sqrt{2}$ 

Ans.(C)

113.

109.

 $\ln \triangle ABC -$ Let the width of the river = x mChimnev Home h 15 60<sup>0</sup> 30<sup>0</sup> x $tan \ 30^{\circ} = \frac{15}{x}$  $\frac{1}{\sqrt{3}} = \frac{15}{x}$  $x = 15\sqrt{3}$  .....(i)  $tan 60^\circ = \frac{h}{r}$  $\sqrt{3} = \frac{h}{r}$ Putting the value of equation (i) in equation (ii)  $h = \sqrt{3} \times 15\sqrt{3} = 45m$ River width (x) =  $15 \times 1.732$  $= 25.98 \simeq 26m$ Chimney height (h) = 45mAns.(B)  $\therefore \cos^2 x + \sin x = \frac{5}{4}$  $1 - \sin^2 x + \sin x = \frac{5}{4}$  $\sin^2 x - \sin x + \frac{1}{4} = 0$  $\sin^2 x - 2 \times \frac{1}{2} \times \sin x + \frac{1}{4} = 0$  $\left(\sin r - \frac{1}{r}\right)^2 - 0$ 

$$\sin x - \frac{1}{2} = 0$$
  
$$\sin x - \frac{1}{2} = 0$$
  
$$\sin x = \frac{1}{2}$$

115. Ans.(C)

114.

$$\sqrt{\cot^2 \theta - \cos^2 \theta} = \sqrt{\frac{\cos^2 \theta}{\sin^2 \theta} - \cos^2 \theta}$$
$$= \sqrt{\frac{\cos^2 \theta - \sin^2 \theta \cos^2 \theta}{\sin^2 \theta}}$$
$$= \sqrt{\frac{\cos^2 \theta (1 - \sin^2 \theta)}{\sin^2 \theta}}$$
$$= \sqrt{\cot^2 \theta \cdot (1 - \sin^2 \theta)}$$
$$= \cot \theta \cdot \cos \theta$$
Ans.(A)

116. Ans.(A)  $\cos^4 A - \sin^4 A = (\cos^2 A)^2 - (\sin^2 A)^2$ 

$$= (\cos^2 A + \sin^2 A)(\cos^2 A - \sin^2 A)$$

 $= \cos^{2} A - \sin^{2} A \{:: \cos^{2} A + \sin^{2} A = 1\}$ = cos 2A117. Ans.(A)  $(1-\cos^2\theta)(\cot^2\theta+1)-1$  $\{1 - \cos^2 \theta = \sin^2 \theta\}$  $1 + \cot^2 \theta = \csc^2 \theta$  $= sin^2 \theta \times cosec^2 \theta - 1 = 1 - 1$ = 0Ans.(A) 118.  $\frac{\cos\theta}{1-\sin\theta} - \frac{\cos\theta}{1+\sin\theta} = 2$  $\Rightarrow \frac{\cos \theta (1 + \sin \theta) - \cos \theta (1 - \sin \theta)}{2} = 2$  $(1-sin^2 \theta)$  $\frac{\cos \theta + \cos \theta \cdot \sin \theta - \cos \theta + \cos \theta \cdot \sin \theta}{2} = 2$  $\cos^2 \theta$  $\Rightarrow \frac{2\cos\theta \cdot \sin\theta}{\cos^2\theta} = 2[\because \tan 45^\circ = 1]$  $\cos^2 \theta$  $\Rightarrow tan \ \theta = 1 = tan \ 45^{\circ}$  $\Rightarrow \theta = 45^{\circ}$ 119. Ans.(D)  $x = r \sin A \cos B$  $y = r \sin A \sin B$  $z = r \cos A$  $x^{2} + y^{2} + z^{2} = (rsin Acos B)^{2} +$  $(rsin Asin B)^2 + (rcos A)^2$  $= r^2 sin^2 Acos^2 B + r^2 sin^2 Asin^2 B +$  $r^2 cos^2 A$  $= r^2 sin^2 A(cos^2 B + sin^2 B) + r^2 cos^2 A$  $= r^2 sin^2 A + r^2 cos^2 A [sin^2 B + cos^2 B]$ = 1 $= r^2(\sin^2 A + \cos^2 A)$  $= r^{2}$ 120. Ans.(A) sin(A + B)sin(A - B)Formula:  $(a + b)(a - b) = a^2 - b^2$  $(sin A \cdot cos B + cos A \cdot sin B)(sin A \cdot cos B$  $-\cos A \cdot \sin B$ )  $(\sin A \cdot \cos B)^2 - (\cos A \cdot \sin B)^2$  $sin^2 A \cdot cos^2 B - sin^2 B \cdot cos^2 A$  $sin^2 A(1-sin^2 B) - sin^2 B(1-sin^2 A)$  $sin^2 A - sin^2 B - sin^2 A \cdot sin^2 B + sin^2 A \cdot sin^2 B$  $sin^2 A - sin^2 B$ 121. Ans.(C)  $\cos \theta (1 - \tan \theta) + \sin \theta (1 - \cot \theta)$  $= \cos \theta \left(1 - \frac{\sin \theta}{\cos \theta}\right) + \sin \theta \left(1 - \frac{\cos \theta}{\sin \theta}\right)$  $= \cos \theta - \cos \theta \frac{\sin \theta}{\cos \theta} + \sin \theta - \sin \theta \frac{\cos \theta}{\sin \theta}$  $= \cos \theta - \sin \theta + \sin \theta - \cos \theta = 0$ 122. Ans.(A)  $sin \theta - 2sin^3 \theta$  $2cos^3 \theta - cos \theta$  $=\frac{\sin\theta(1-2\sin^2\theta)}{\theta}$  $cos \ \theta(2cos^2 \ \theta-1)$  $=\frac{\sin\theta \cdot \cos 2\theta}{2}=\tan\theta$  $\cos \theta \cdot \cos 2\theta$ 123. Ans.(C)

 $\frac{\tan A}{(1 + \tan^2 A)^2} + \frac{\cot A}{(1 + \cot^2 A)^2}$  $\frac{\frac{\sin A}{\cos A}}{\frac{1}{\cos A}} \pm \frac{\frac{\cos A}{\sin A}}{\frac{1}{\cos A}}$  $\frac{\cos A}{(\sec^2 A)^2} + \frac{\sin A}{(\cos \ e \ c^2 A)^2}$  $= \frac{\sin A}{\cos A} \cos^4 A + \frac{\cos A}{\sin A} \sin^4 A$  $= sin A \cdot cos^3 A + cos A \cdot sin^3 A$  $= sin A \cdot cos A(cos^2 A + sin^2 A)$  $= sin A \cdot cos A (:: sin^2 A + cos^2 A = 1)$ 124. Ans.(B) sin θ  $1-\cos \theta$  $\frac{\sin \theta(1 + \cos \theta)}{(1 - \cos \theta)(1 + \cos \theta)}$  (On rationalization)  $=\frac{\sin \theta(1+\cos \theta)}{2}$  $1-cos^2 \theta$  $= \frac{\sin \theta (1 + \cos \theta)}{2}$ sin² θ  $=\frac{1+\cos\theta}{1+\cos\theta}$ sin θ  $= \frac{1}{\sin\theta} + \frac{\cos\theta}{\sin\theta}$  $= cosec \ \theta + cot \ \theta$ 125. Ans.(D)  $(sec \ \theta - tan \ \theta)$ Multiplying numerator and denominator by (sec  $\theta$  + tan  $\theta$ ).  $\Rightarrow \frac{1(\sec \theta + \tan \theta)}{(\sec \theta - \tan \theta)(\sec \theta + \tan \theta)}$  $\Rightarrow \frac{(\sec \theta + \tan \theta)}{(\sec^2 \theta - \tan^2 \theta)} \{\sec^2 \theta - \tan^2 \theta = 1\}$  $\Rightarrow$  (sec  $\theta$  + tan  $\theta$ ) 126. Ans.(D)  $\frac{\sin^2\theta}{\cos\theta} + \frac{\cos^2\theta}{\cos\theta} = \left(\frac{\sin^2\theta + \cos^2\theta}{\cos\theta}\right)$  $\frac{1}{\cos\theta} = \sec\theta$ 127. Ans.(A)  $tan 2A = cot (A - 18^{\circ})$  $cot (90^{\circ} - 2A) = cot (A - 18^{\circ})$  $90^{\circ} - 2A = A - 18^{\circ} [\because cot (90^{\circ} - \theta)]$  $= tan \theta$  $108^\circ = 3A$  $A = 36^{\circ}$ 128. Ans.(A) sin (75°)  $= sin (45^{\circ} + 30^{\circ})$  $= \sin 45^{\circ} \cdot \cos 30^{\circ} + \cos 45^{\circ} \cdot \sin 30^{\circ}$  $=\frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} + \frac{1}{\sqrt{2}} \times \frac{1}{2}$  $= \frac{\sqrt{3}}{2\sqrt{2}} + \frac{1}{2\sqrt{2}} = \frac{\sqrt{3}+1}{2\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$  $=\frac{\sqrt{6}+\sqrt{2}}{4}$ 129. Ans.(C)  $\Rightarrow$  sin 120° sin 240° sin 270°  $\Rightarrow$  sin (90° + 30°)sin (180° + 60°) sin(180° + 90°)  $\Rightarrow cos \ 30^{\circ}(-sin \ 60^{\circ})(-sin \ 90^{\circ})$  $\Rightarrow \frac{\sqrt{3}}{2} \times \left(-\frac{\sqrt{3}}{2}\right) \times (-1) = \frac{3}{4}$ 

130. Ans.(A)  $\sin \frac{7\pi}{4} \sin \frac{\pi}{4} \sin \frac{3\pi}{4} \sin \frac{5\pi}{4}$  $= sin \left(\pi + \frac{3\pi}{4}\right) sin \frac{\pi}{4} sin \frac{3\pi}{4} sin \left(\pi + \frac{\pi}{4}\right)$  $= \left(-\sin\frac{3\pi}{4}\right)\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\left(-\sin\frac{\pi}{4}\right)$  $= sin \frac{3\pi}{4} sin \frac{\pi}{4} sin \frac{3\pi}{4} sin \frac{\pi}{4}$  $= \sin\left(\pi - \frac{\pi}{4}\right)\sin\frac{\pi}{4}\sin\left(\pi - \frac{\pi}{4}\right)\sin\frac{\pi}{4}$  $= sin \frac{\pi}{4} sin \frac{\pi}{4} sin \frac{\pi}{4} sin \frac{\pi}{4} sin \frac{\pi}{4}$  $= \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{1}{4}$ 131. Ans.(D)  $cos \ 18^{\circ} + cos \ 162^{\circ} + sin \ 126^{\circ} + sin \ 234^{\circ}$  $= cos 18^{\circ} + cos (180^{\circ} - 18^{\circ}) + sin 126^{\circ} +$ sin (360° -126°)  $= cos 18^{\circ} + (-cos 18^{\circ}) + (sin 126^{\circ}) +$  $(-sin \ 126^{\circ})$  $= \cos 18^{\circ} - \cos 18^{\circ} + \sin 126^{\circ} - \sin 126^{\circ}$ = 0132. Ans.(A)  $tan^{2} 45^{\circ} - cos^{2} 60^{\circ} =$ xsin 45°cos 45°cot 30°  $1 - \left(\frac{1}{2}\right)^2 = x \times \frac{1}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}} \cdot \sqrt{3}$  $\frac{3}{4} = \frac{x}{2} \times \sqrt{3}$  $x = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2}$ 133. Ans.(D)  $sin 780^{\circ} sin 480^{\circ} + cos 120^{\circ} sin 30^{\circ}$  $= sin (2 \times 360^{\circ} + 60^{\circ}) sin (360^{\circ} + 120^{\circ}) +$ cos 120° sin 30°  $= sin \ 60^{\circ}sin \ (120^{\circ}) + cos \ 120^{\circ}sin \ 30^{\circ}$  $= sin \ 60^{\circ}sin \ (90^{\circ} + 30^{\circ}) + cos \ (90^{\circ} + 30^{\circ})sin \ 30^{\circ}$ = sin 60° cos 30° - sin 30° sin 30°  $= \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{1}{2}$  $=\frac{3}{4}-\frac{1}{4}=\frac{2}{4}=\frac{1}{2}$ 134. Ans.(A)  $cos 5^{0} + cos 24^{\circ} + cos 175^{\circ} + cos 204^{\circ} +$ cos 300°  $= \cos 5^{\circ} + \cos 24^{\circ} + \cos (180^{\circ} - 5^{\circ})$  $+ cos (180^{\circ} + 24^{\circ}) +$  $cos (270^{\circ} + 30^{\circ})$  $= \cos 5^{\circ} + \cos 24^{\circ} - \cos 5^{\circ} - \cos 24^{\circ} + \sin 30^{\circ}$  $= sin 30^{\circ} = \frac{1}{2}$ 135. Ans.(B)  $tan 10^{\circ} \cdot tan 15^{\circ} \cdot tan 80^{\circ} \cdot tan 75^{\circ}$  $= tan \ 10^{\circ} \cdot tan \ 15^{\circ} \cdot tan \ (90^{\circ} - 10^{\circ})tan \ (90^{\circ} - 15^{\circ})$  $= tan \ 10^{\circ} \cdot tan \ 15^{\circ} \cdot cot \ 10^{\circ} \cdot cot \ 15^{\circ}$  $= \tan 10^\circ \cdot \tan 15^\circ \times \frac{1}{\tan 10^\circ} \times \frac{1}{\tan 15^\circ}$ 

= 1

Ans.(B)

136.

$$\tan^{2} 60^{\circ} - 2\tan^{2} 45^{\circ} - \cot^{2} 30^{\circ} + 2\sin^{2} 30^{\circ} + 3/4\cos e^{2} 45^{\circ}$$

$$(\sqrt{3})^{2} - 2 \times 1 - (\sqrt{3})^{2} + 2\left(\frac{1}{2}\right)^{2} + \frac{3}{4} \times (\sqrt{2})^{2}$$

$$3 - 2 - 3 + 2 \times \frac{1}{4} + \frac{3}{4} \times 2$$

$$3 - 5 + \frac{1}{2} + \frac{3}{2}$$

$$\frac{6 - 10 + 1 + 3}{2} = \frac{10 - 10}{2} = 0$$
**137. Ans.(D)**

$$\tan \alpha = \frac{1}{2} \tan \beta = \frac{1}{3} \alpha + \beta = ?$$

$$\tan (\alpha + \beta) \& = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$= \frac{\frac{1}{2} + \frac{1}{3}}{1 - \frac{1}{2} \times \frac{3}{3}} = \frac{\frac{3 + 2}{6}}{1 - \frac{1}{6}}$$

$$= \frac{\frac{5}{2}}{\frac{5}{6}} = 1$$

$$\tan (\alpha + \beta) = 1 = \tan 45^{\circ}$$
**138. Ans.(B)**

$$\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{\sin \theta (\frac{\cos \theta}{\sin \theta} - 1)}{\sin \theta (\frac{\cos \theta}{\sin \theta} + 1)}$$

$$= \frac{\cot \theta - 1}{\cot \theta + 1}$$

$$[\because \cot \theta = \frac{a}{b}]$$
**139. Ans.(D)**

$$\cos e c \alpha = \sqrt{2} = \csc 45^{\circ}$$

$$\therefore \alpha = 45^{\circ}$$

$$\frac{2\sin^{2} \alpha + 3\cos^{2} \alpha}{\cos e^{2} \alpha + \cot^{2} \alpha} = \frac{2\sin^{2} 45^{\circ} + 3\cos^{2} 45^{\circ}}{\cos e^{2} 45^{\circ} + \cot^{2} 45^{\circ}}}$$

$$= \frac{2\times (\frac{1}{\sqrt{2}})^{2} + 3\times (\frac{1}{\sqrt{2}})^{2}}{(\sqrt{2})^{2} + 1^{2}}$$

$$= \frac{2\times \frac{1}{2} + 3\frac{1}{2}}{\frac{2}{3}}$$

$$= \frac{5}{6}$$
**140. Ans.(D)**

$$\int_{0}^{0} \frac{1}{300^{0} 60^{0}}$$

Suppose the position of the balloon changes from A to C in 2 min. In ⊿ ABD,  $tan \ 30^{\circ} = \frac{x}{300}$  $\frac{1}{\sqrt{3}} = \frac{x}{300}$  $x = \frac{300}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 100\sqrt{3} \text{ m.}$ In,  $\tan 60^\circ = \frac{x+y}{300}$  $\sqrt{3} = \frac{x+y}{300}$  $x + y = 300\sqrt{3}$  $100\sqrt{3} + y = 300\sqrt{3}$  $y = 200\sqrt{3}$  $\therefore Speed \text{ of balloon} = \frac{y}{t} = \frac{200\sqrt{3}}{2\times60} = \frac{5}{3}\sqrt{3}$  $= \frac{5\times1.732}{3} = 5\times0.577 = 2.885$ = 2.9 m/sec.141. Ans.(B) 30º\60º Ć  $\boldsymbol{x}$ d D Е : It took 1 min to go from B to A ∴ Speed = Distance / Time  $960 = \frac{CD}{1 \min}$  $\frac{960\times 1}{60} = \stackrel{1 \text{ min}}{d} \Rightarrow d = 16 \text{ km}$ From  $\triangle AED$  –  $tan \ 60^{\circ} = \frac{h}{x} \Rightarrow x\sqrt{3} = h \dots (i)$ From  $\triangle BEC$ ,  $tan \ 30^{\circ} = \frac{h}{x+d} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{16+x} \dots (ii)$ From equation (i) and (ii) –  $\frac{1}{\sqrt{3}} = \frac{x\sqrt{3}}{16+x}$ 

16 + x = 3x2x = 16x = 8 km

 $\therefore h = x\sqrt{3} = 8\sqrt{3}$ 

 $h = 1.732 \times 8 = 13.86 \, km$ 



# 25. (Co-ordinate Geometry)

9.

1. The coordinates of a point, which internally divides the line segment connecting (-1, 9) and (11, 1) points, in the ratio of 3: 1, are the following:

RRB Group-D - 28/11/2022 (Shift-III)

<b>(A)</b> (5,5)	<b>(B)</b> $\left(\frac{13}{2}, 4\right)$
<b>(C)</b> (2,7)	<b>(D)</b> (8,3)

2. Find the coordinates of the point, which internally divides the line segment connected by the points (-1, 0) and (2, 6) in the ratio of 2: 1.

RRB Group-D - 23/11/2022 (Shift-I)

<b>(A)</b> (0,4)	<b>(B)</b> (1,3)
<b>(C)</b> (1,4)	<b>(D)</b> (0,5)

**3**. At which point will the line segment connected to the points (4, 5) and (7, 11) divide internally in the ratio 2: 1?

**RRB Group-D - 15/11/2018 (Shift-III)** (A) (6,8) (B) (5,10) (C) (5,9) (D) (6,9)

4. What will be the coordinates of that point, which internally divides the line segment connecting the points (-7, 6) and (5, 0) in the ratio of 1: 3.

RRB Group-D -05/11/2018 (Shift-III)(A) (-3,4)(B) (-4,4.5)(C) (3,1)(D) (1,3)

5. A point divides a line segment internally in the ratio of 2: 3, connecting the points (4,5) and (-3,3). Find the coordinates of the point.

RRB Gro	up-D - 24/10/2018 (Shift-III)
<b>(A)</b> 11/5,17/5	<b>(B)</b> 13/5,17/5
<b>(C)</b> 12/5,13/5	<b>(D)</b> 6/5,21/5

Find the area of the triangle whose coordinates are (1,2), (-4, -3) and (4,1).
 RRB Group-D - 17/11/2022 (Shift-I)

(A) 7 sq unit	<b>(B)</b> 10 sq unit
(C) 14 sq unit	<b>(D)</b> 20 sq unit

7. The area of the triangle with (a, b + c), (b, c + a) and (c, a + b) vertex is- **RRB Group-D - 12/10/2018 (Shift-III)** (A) ab+b c+c a (B) 0 (C) a-b-c (D) a+b+c

What will be the area of the triangle with (3,5), (-2,0) and (6,4) vertices?
 RRB Group-D - 11/10/2018 (Shift-II)

(A) 20 sq unit (C) 10 sq unit	( <b>B)</b> 7 sq unit ( <b>D)</b> 14 sq unit	-

If A = (1,1), B=(-2,7) and C=(3,-3), then  $\frac{1}{AB}$  +  $\frac{1}{BC}$  +  $\frac{1}{CA}$  =? **RRB Group-D - 27/11/2022 (Shift-III)** (A)  $\frac{31\sqrt{5}}{150}$  (B)  $\frac{31}{60}\sqrt{5}$ (C)  $\frac{150}{31}$  (D)  $\frac{31}{150}$ 

- **10.** The triangle formed by the vertices (4, 1), (1, 1), (3, 5) will be:
  - RRB Group-D 19/11/2022 (Shift-I)
  - (A) Isosceles but not right angles
  - (B) Right angled but not isosceles triangle
  - (C) Isosceles and right angles
  - (D) Asymmetrical triangle
- **11.** Find the equation of the line having slope = -4 and y-intersection = 2.

# RRB Group-D - 16/10/2018 (Shift-III)

(A) $2x + \frac{y}{4} = 1$	<b>(B)</b> $2x + \frac{y}{2} = 1$
(C) $2x + \frac{y}{3} = 1$	<b>(D)</b> $2x + y = 1$

12. If two straight lines x-5 y = 2 and x + 2 y = 9 intersect each other at point A and cut the positive x-axis at point B and point C respectively, find the area of triangle ABC? RRB Group-D - 25/10/2018 (Shift-II)

(A) 3.2 sq unit	(B) 3.5 sq unit
(C) 3.7 sq unit	(D) 3.1 sq unit

Find the coordinates of the point, which 13. internally divides the line segment joining the points (-4,4) and (4,0) in the ratio of 3: 1.

	RRB RPF SI - 05/01/2019 (Shift-II)
<b>(A)</b> (0,4)	<b>(B)</b> (2,1)
<b>(C)</b> (-3,4)	<b>(D)</b> (1,3)

Find the ratio in which the line 4x + y = 1314. divides the line segment connecting two points (1, 6) and (6,1).

RRB RPF Constable - 17/01/2019 (Shift-I) (A) 1: 3 (B) 2: 5 (C) 2: 3 **(D)** 1: 4

What type of lines is represented by the 15. equation 6x - 3y + 10 = 0 and 2x - y + 9 = 0? RRB RPF SI - 16/01/2019 (Shift-III)

(A) Coincident

- (B) Parallel
- (C) Antidote
- (D) Cannot be determined

#### 1. Ans.(D)

If the coordinates of the inner point of the line joining two points  $(x_1, y_1)$  and  $(x_2, y_2)$  are  $(x_1, y_2)$  are  $(x_2, y_2)$  are (xy),

Then,

$$\begin{array}{ccc} (x_1 \ y_1) & (x_2 \ y_2) \\ (-1, \ 9) & (11, \ 1) \end{array}$$

$$m_{1} (x, y) m_{1}$$

$$m_{1} = 3, m_{2} = 1$$

$$x = \frac{m_{1}x_{2} + m_{2}x_{1}}{m_{1} + m_{2}}, y = \frac{m_{1}y_{2} + m_{2}y_{1}}{m_{1} + m_{2}}$$

$$x = \frac{3 \times 11 + 1 \times (-1)}{3 + 1}, y = \frac{3 \times 1 + 1 \times 9}{3 + 1}$$

$$x = \frac{33 - 1}{4}, y = \frac{3 + 9}{4}$$

$$x = 8, y = 3,$$

Hence the coordinates are (8,3)Ans.(C)

2.

(-1,0) (x, y) (2,6)  
m<sub>1</sub> m<sub>2</sub>  
(2) (1)  
Let the internal points be (x, y) then,  

$$x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}, \quad y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2}$$
  
 $x = \frac{2 \times 2 + 1 \times (-1)}{2 + 1}, \quad y = \frac{2 \times 6 + 1 \times 0}{2 + 1}$   
 $x = \frac{4 - 1}{3}, \quad y = \frac{12}{3}$   
 $x = 1, y = 4$ 

16. What are the coordinates of the point internally dividing the line segment containing points (-5,5) and (7, -3) in the ratio of 3: 1?

RRB ALP & Tec. (29-08-18 Shift-I) (A) (-2,3) **(B)** (4,-1) (C)  $\left(\frac{5}{2}, 0\right)$ (D) (1,1)

- 17. Find the area of the triangle whose vertices (2,4), (-3, -1) and (5,3) are given: RRB ALP & Tec. (17-08-18 Shift-I) **(B)** 14 sq unit (A) 7 sq unit (D) 10 sq unit (C) 20 sq unit
- 18. What are the coordinates of the point that divides the line joining the points (-3,7) and (9, -1) internally in the ratio of 3: 1?

RRB Paramedical - 21/07/2018 (Shift-III) **(A)** (0,5) **(B)** (6,1)

(D)  $\left(\frac{9}{2}, 2\right)$ **(C)** (3,3)

Thus, the interior point (x, y) = (1, 4)

Ans.(D) The coordinates of the points P (x, y)internally dividing the line segment connecting two points  $(x_1, y_1)$  and  $(x_2, y_2)$  in the ratio of  $m_1: m_2 are -$ 

$$x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2} \qquad y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2}$$

$$x_1 = 4, \quad y_1 = 5, \quad m_1 = 2$$

$$x_2 = 7, \quad y_2 = 11, \quad m_2 = 1$$

$$x = \frac{2 \times 7 + 1 \times 4}{2 + 1}, \quad y = \frac{2 \times 11 + 1 \times 5}{2 + 1}$$

$$x = \frac{14 + 4}{3}, \quad y = \frac{22 + 5}{3}$$

$$x = \frac{18}{3}, \quad y = \frac{27}{3}$$

$$x = 6 \qquad y = 9$$
Therefore, the required point will be (6.1)

Therefore, the required point will be (6, 9).

#### Ans.(B) Given -

4.

Solution

3.

 $x_1 = -7$ ,  $m_1 = 1$  $x_2 = 5$ ,  $y_2 = 0, \quad m_2 = 3$  $y_1 = 6,$ If the point is divided internally, then the coordinates of the point  $(m_2x_1 + m_1x_2, m_2y_1 + m_1y_2)$ 

$$(x, y) = \left(\frac{m_2 x_1 + m_1 x_2}{m_1 + m_2}, \frac{m_2 x_1 + m_1 y_2}{m_1 + m_2}\right)$$
  
=  $\left(\frac{3 \times (-7) + 1 \times 5}{1 + 3}, \frac{3 \times 6 + 1 \times 0}{1 + 3}\right)$   
=  $\left(\frac{-21 + 5}{4}, \frac{18}{4}\right)$   
=  $\left(\frac{-16}{4}, \frac{18}{4}\right)$   
 $(x, y) = (-4, 4 \cdot 5)$ 

5. Ans.(D)

A   
A   
(4,5) (X,Y) (-3,3) B  

$$m_1 = 2, \quad m_2 = 3$$
  
According to the figure,  
 $x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2} = \frac{2 \times (-3) + 3 \times 4}{2 + 3}$   
 $x = \frac{6}{5}$   
 $y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} = \frac{2 \times 3 + 3 \times 5}{2 + 3}$   
So,  $(x, y) = \left(\frac{6}{5}, \frac{21}{5}\right)$ 

6. Ans.(B)

Area of triangle

$$= \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$
  
=  $\frac{1}{2} [1(-3 - 1) + (-4)(1 - 2) + 4(2 - (-3))]$   
=  $\frac{1}{2} [-4 + 4 + 20]$   
=  $\frac{20}{2}$   
= 10 square unit

7. Ans.(B)

Area of triangle  

$$= \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$

$$= \frac{1}{2} [a\{c + a - (a + b)\} + b\{a + b - (b + c)\}$$

$$+ c\{b + c - (c + a)\}]$$

$$= \frac{1}{2} [a(c + a - a - b) + b(a + b - b - c)$$

$$+ c(b + c - c - a)]$$

$$= \frac{1}{2} [ac - ab + ab - bc + bc - ac]$$

$$= \frac{1}{2} \times 0 = 0$$
Area (C)

8. Ans.(C)

The vertices of the triangle (3,5), ( -2,0) and (6,4) Area of  $\Delta =$ 

$$\frac{1}{2}[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$
A (x1, y1)  
(3, 5)  
B(x\_2, y\_2) (-2, 0)  
(6, 4) C(x\_3, y\_3)

$$= \frac{1}{2}[3(0-4) + (-2)(4-5) + 6(5-0)]$$
  
=  $\frac{1}{2}[3(-4) + (-2)(-1) + 6(5)]$   
=  $\frac{1}{2}[-12 + 2 + 30]$   
=  $\frac{1}{2}[20]$   
= 10 Square unit

9. Ans.(A) 10. Ans.(D)

If two points are  $(x_1, y_1)$  and  $(x_2, y_2)$ , then the distance between them

$$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
A (4, 1)  
(1, 1) B  
C (3, 5)  

$$AB = \sqrt{(1 - 4)^2 + (1 - 1)^2} = \sqrt{3^2} = 3$$

$$AC = \sqrt{(3 - 4)^2 + (5 - 1)^2} = \sqrt{1 + 16} = \sqrt{17}$$

$$BC = \sqrt{(3 - 1)^2 + (5 - 1)^2} = \sqrt{4 + 16} = 2\sqrt{5}$$
Since the three sides of the triangle are different, the triangle will be asymmetrical.  
Ans.(B)

# 11. Ans.(E

y intersection = 2 Hence coordinates = (0,2) = (x<sub>1</sub>, y<sub>1</sub>) Slope (m) = -4 Equation of a line passing through a point (x<sub>1</sub>, y<sub>1</sub>) with slope (m) Line equation  $\Rightarrow y - y_1 = m(x - x_1)$   $\Rightarrow y - 2 = -4(x - 0)$   $\Rightarrow y - 2 = -4x$  4x + y = 2 $2x + \frac{y}{2} = 1$ 

### 12. Ans.(B)

The points B and C lie on the x axis. Hence, putting y = 0 in the given equations x - 5 y = 2 and x + 2y = 9, the points B and C will be (2,0) and (9,0) respectively. Again the lines x - 5y = 2 and x + 2y = 9intersect each other at point A.  $x - 5y = 2 \dots \dots \dots (i)$   $x + 2y = 9 \dots \dots \dots (i)$ Solving equation (i) and (ii), x = 7, y = 1Thus, the coordinates of point A = (7,1)  $x_1 = 2, x_2 = 9, x_3 = 7$   $y_1 = 0, y_2 = 0, y_3 = 1$ Thus, area of triangle ABC

$$= \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$
  
=  $\frac{1}{2} [2(0 - 1) + 9(1 - 0) + 7(0 - 0)]$   
=  $\frac{1}{2} [-2 + 9] = \frac{7}{2} = 3.5$  square unit  
Ans (B)

13. Ans.(B)

Given -  

$$x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2},$$

$$= \frac{3 \times 4 + 1 \times (-4)}{3 + 1}$$

$$= \frac{12 - 4}{4},$$

$$x = 2$$

$$y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2} = \frac{3 \times 0 + 1 \times 4}{3 + 1} = \frac{4}{4}$$

$$y = 1$$
So coordinates = (2, 1)

14. Ans.(D)

15.

Equation of a line going from two points  $(x_1,$ y<sub>1</sub>) and (x<sub>2</sub>, y<sub>2</sub>) y - y<sub>1</sub> =  $\frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$ : Equation of line going from points (1,6) and (6,1)  $y - 6 = \frac{1 - 6}{6 - 1}(x - 1)$ y - 6 = -x + 1 or  $x + y = 7 \dots (i)$ Again, equation the given line 4 x + y = 13....(ii)From equation (i) and (ii) -The intersection point of the two lines is (x, y)= (2, 5).Let, points (1, 6) and (6, 1) are divided by point (2, 5) in the ratio m: n.  $x = \frac{mx_2 + nx_1}{m + n}$  $2 = \frac{m \times 6 + n \times 1}{m + n}$ or 2m + 2n = 6m + nor 4m - n = 0or 4m = nor  $\frac{m}{n} = \frac{1}{4} = 1:4$ Ans.(B) Given equation

$$6 x - 3 y + 10 = 0$$
Let, gradient = m<sub>1</sub>  

$$\therefore m_1 = -\left(\frac{coefficient \ of \ x}{coefficient \ of \ y}\right) = -\left(\frac{6}{-3}\right)$$

$$= 2$$
Then equation,  $2x - y + 9 = 0$ 
For second line,  
Let gradient = m<sub>2</sub>  
 $m_2 = -\left(\frac{coefficient \ of \ x}{coefficient \ of \ y}\right) = -\left(\frac{2}{-1}\right) = 2$ 

 $\therefore m_1 = m_2 = 2$ Hence the lines will be parallel.

16. Ans.(B)

17.

Ans.(B)  
Let the coordinates of point (x, y)  

$$(x, y) = \frac{mx_2 + nx_1}{m + n}, \frac{my_2 + ny_1}{m + n}$$
  
 $x_1 = -5, x_2 = 7, x = ?$   
 $y_1 = 5, y_2 = -3, y = ?$   
 $(x, y) = \left(\frac{3\times7 + 1\times(-5)}{3+1}, \frac{3\times(-3) + 1\times5}{3+1}\right)$   
 $= \left(\frac{21-5}{4}, \frac{-9+5}{4}\right)$   
 $= \left(\frac{16}{4}, \frac{-4}{4}\right)$   
 $= (4, -1)$   
Hence the coordinate of the point is  $(4, -1)$ .  
Ans.(D)  
 $\therefore$  Area of triangle  
 $= \frac{1}{2}[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$   
 $= \frac{1}{2}[2(-1 - 3) + (-3)(3 - 4) + 5(4 + 1)]$   
 $= \frac{1}{2}[-8 + 3 + 25]$   
 $= \frac{1}{2} \times 20$   
 $= 10$  Square unit

18. Ans.(B)

Formula of Interdiction,  $x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}$   $y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2}$ 

According to Question, The ratio of the line joining the interior division of points (-3,7) and (9, -1) is 3: 1. where,  $x_1 = -3, x_2 = 9, y_1 = 7, y_2 = -1,$  $m_1 = 3, m_2 = 1$ 

then, 
$$x = \frac{3 \times 9 + 1(-3)}{3 + 1}$$
$$x = \frac{27 - 3}{4}$$
$$x = \frac{24}{4}$$
$$x = 6$$
$$y = \frac{3 \times (-1) + 1 \times 7}{3 + 1}$$
$$y = \frac{4}{4} \Rightarrow y = 1$$

Hence the coordinates of the interdivision will be (6, 1).

# 26. (Geometry)

1. If a acute angle of a right triangle is 55<sup>0</sup>, what will be the value of the other acute angle? RRB Group-D - 12/10/2018 (Shift-III)

	RRB Group-D - 12/10/2018 (Shift
(A) 25 <sup>0</sup>	<b>(B)</b> 30 <sup>0</sup>
<b>(C)</b> 40 <sup>0</sup>	<b>(D)</b> 35 <sup>0</sup>

2. ABC is a right angled triangle whose angle A is right angled. Which side needs to bisect for the formation of two other right-angled triangles?

RRB (	Group-D -20/0 /2018 (Shift-I)
(A) AB	<b>(B)</b> CA
(C) To center	(D) BC

**3.** Which of the following will be the sides of the right angled triangle?

RRB Group-D - 25/11/2022 (Shift-III) (A) 84 cm, 13 cm, 85 cm (B) 84 cm, 63 cm, 115 cm (C) 15 cm, 112 cm, 111 cm (D) 76 cm, 100 cm, 57 cm

4. In the diagram, M is the midpoint of YZ,  $\angle XMZ = 32^{\circ}$  and  $\angle XYZ = 16^{\circ}$ , the measure of  $\angle XZY$  is-



 RRB Group-D - 27/11/2022 (Shift-I)

 (A) 84°
 (B) 81°

 (C) 74°
 (D) 68°

5. Two right sides of a right triangle are 1.5 cm and 2 cm long. The area of its circumference will be –

RRB Group-D - 18/11/2022 (Shift-III)

<b>(A)</b> 1.75 π cm <sup>2</sup>	( <b>B</b> ) 1.25 $\pi$ cm <sup>2</sup>
<b>(C)</b> 1.5625 π cm <sup>2</sup>	<b>(D)</b> 1.5 π cm <sup>2</sup>

6. ABC is a right angled triangle in which  $\angle A = 90^{\circ}$ , AB = 6 cm and AC = 8 cm. What will be the perimeter of a circle whose center O is inside the triangle?

RRB Group-D - 26/10/2018 (Shift-III) (A)  $4.5 \pi$  (B)  $3 \pi$ 

( <b>n</b> ) <b>h</b> .5 <i>h</i>	
<b>(C)</b> 3.5 π	<b>(D)</b> 4 π

7. Triangle ABC, is equal to triangle PQR. If AB = 5 cm and PQ = 3 cm, then find the value of  $\frac{ar (\Delta ABC)}{ar (\Delta PQR)}$ .

### RRB Group-D - 19/11/2022 (Shift-III)

	-	
<b>(A)</b> 9/25		<b>(B)</b> 3/5
(C) 5/3		<b>(D)</b> 25/9

8. The lengths of the three sides of a triangle are given 8 cm, 13 cm and 15 cm respectively. What will be the ratio of their reciprocal altitude?

RRB Group-D - 22/10/2018 (Shift-III)(A) 195: 120: 104(B) 15: 13: 8(C) 28: 23: 21(D) 104: 195: 120

**9**. In triangle ABC, point M is on side AB and point N is on side AC such that BMNC becomes a trapezium. The ratio of side MN and side BC is 7: 9. Calculate the ratio of the area of triangle AMN and the area of trapezium BMNC.

RRB G	roup-D - 11/12/2018 (Shift-II)
<b>(A)</b> 7 : 9	<b>(B)</b> 32 : 49
(C) 49 : 32	<b>(D)</b> 49 : 81

**10**. The acute angle of a right triangle is 62<sup>0</sup>. Find the value of the second acute angle.

 RRB Group-D - 15/10/2018 (Shift-III)

 (A) 38°
 (B) 28°

 (C) 45°
 (D) 36°

**11**. If 8, p and 17 are Pythagoras triples, then the value of p will be –

	RRB Group-D - 01/10/2018 (Shift-I)
<b>(A)</b> 15	<b>(B)</b> 9
<b>(C)</b> 14	<b>(D)</b> 13

**12**. In  $\triangle$ ABC, D and E on AB and AC are points in which DE is parallel to BC. If AD = 2 cm, BD = 3 cm, then what is the value of  $\frac{ar (\Delta ADE)}{ar (\Delta ABC)}$ .

RRB Group-D - 22/11/2022 (Shift-III)

<b>(A)</b> 16/81	<b>(B)</b> 4/9	
<b>(C)</b> 4/25	<b>(D)</b> 2/5	

**13.** All four angles of a quadrilateral are equal. Find their measurement.

	RRB Group-D-09 /10/2018 (Shift-I)
<b>(A)</b> 110 <sup>0</sup>	<b>(B)</b> 80 <sup>0</sup>
<b>(C)</b> 75 <sup>0</sup>	<b>(D)</b> 90 <sup>0</sup>

**14.** The diagonals of a quadrilateral are 25<sup>o</sup> inclined on one side of the quadrilateral. The acute angle formed between the diagonals is

\_

	RRB Group-D - 08/10/2022	(Shift-I)
<b>(A)</b> 40 <sup>0</sup>	<b>(B)</b> 50 <sup>0</sup>	
(C) 55 <sup>0</sup>	<b>(D)</b> 25 <sup>0</sup>	

**15.** The ratio of the four angles of a quadrilateral is 3: 4: 5: 6. What will be the value of smallest angle?

	RRB Group-D - 05/10/2018 (Shift-I)
<b>(A)</b> 49 <sup>0</sup>	<b>(B)</b> 60 <sup>0</sup>
(C) 45 <sup>0</sup>	<b>(D)</b> 36 <sup>0</sup>

**16.** The values of two adjacent angles of a quadrilateral are 1250 and 350 and the other two angles are equal. Find the value of equal angles.

 RRB Group-D - 22/10/2018 (Shift-II)

 (A) 90°
 (B) 100°

 (C) 135°
 (D) 80°

**17.** What is the radius of a circle formed inside a triangle with sides 9 cm, 40 cm and 41 cm long?

RRB G	roup-D - 03/12/2018 (Shift-II)
(A) 3.5 cm	<b>(B)</b> 3 cm
(C) 2.5 cm	<b>(D)</b> 4 cm

**18.** In the given figure,  $\angle BAD = 30^\circ$ ,  $\angle DBC = 60^\circ$ . If the length of AB is 18 cm, what is the length of BC?



 RRB Group-D - 12/12/2018 (Shift-I)

 (A) 7.5 cm
 (B) 4.5 cm

 (C) 9 cm
 (D) 6 cm

**19.** Each of the three acute angles of a quadrilateral has a value of 82<sup>0</sup>. Find the value of the fourth angle.

	RRB Group-D - 25/10/2018 (Shift-II)
(A) 125 <sup>0</sup>	<b>(B)</b> 114 <sup>0</sup>
(C) 120°	<b>(D)</b> 100 <sup>0</sup>

**20.** Three angles of a quadrilateral are equal, and the value of the fourth angle is 150°. What is the value of each of the same angles?

	RRB Group-D - 08/10/2018 (Shift-I)
<b>(A)</b> 75 <sup>0</sup>	<b>(B)</b> 90 <sup>0</sup>
( <b>C</b> ) 80 <sup>0</sup>	<b>(D)</b> 70 <sup>0</sup>

**21.** The value of each of the two angles of a quadrilateral is 65°. The other two angles are also equal. Find the value of these angles.

F	RB Group-D - 19/11/2022 (Shift-II)
<b>(A)</b> 100 <sup>0</sup>	<b>(B)</b> 115 <sup>0</sup>
<b>(C)</b> 125 <sup>0</sup>	<b>(D)</b> 105 <sup>0</sup>

**22.** Each side of a square park is 25 m. And there are 2.2 m wide two paths passing through its center. How much does it cost to lay gravel on the paths at a cost of Rs 1/dm<sup>2</sup>?

RRB Gro	oup-D - 01/10/2018 (Shift-II)
<b>(A)</b> rs. 11,000	<b>(B)</b> rs. 110
<b>(C)</b> rs. 105.16	<b>(D)</b> rs. 10,516

**23**. The ratio of the length and width of a rectangle is 3 : 1. If its perimeter is 96 m, what will be the length of the rectangle?

### RRB Group –D 17/11/2022 (Shift-II)

(A) 48 meter	(B) 24 meter
(C) 36 meter	(D) 12 meter

24. The dimensions of the rectangular plot of land, given in the nearest integer, are 37 m and 23 m. What is the upper limit of the perimeter of the rectangle?

RRB G	roup-D - 12/10/2018 (Shift-I)
(A) 122 meter	(B) 61 meter
(C) 60 meter	(D) 120 meter

**25.** The length of one side of rhombus is 17/3 cm and its diagonal is 16/3 cm. Find the length of the second diagonal.

RRB	Group-D - 08/10/2022 (Shift-II)
<b>(A)</b> 20/3 cm	<b>(B)</b> 32/3cm
(C) 10 cm	<b>(D)</b> 16/3 cm

**26.** The length of the side of rhombus is  $\sqrt{5}$  cm and its area is 4 cm. What will be the sum of the lengths of its diagonals?

	RRB Group-D - 11/10/2018 (Shift-II)
(A) 5 cm	<b>(B)</b> 6 cm
(C) 8 cm	<b>(D)</b> 7 cm

**27.** The length of one side of a rhombus is 26 cm and the length of one diagonal is 48 cm. Then what will be the length of the second diagonal?

RRB Group-D - 10/10/2018 (Shift-I)

(A) 24 cm	<b>(B)</b> 20 cm
(C) 25 cm	<b>(D)</b> 22 cm

**28.** The diagonals of a rhombus are 16 cm and 12 cm. What is the perimeter of rhombus?

RRB Group-D - 06/12/2018 (Shift-II)

(A) 56 cm	<b>(B)</b> 20 cm
<b>(C)</b> 28 cm	<b>(D)</b> 40 cm

**29.** One side of a rhombus is 4 cm in length and has a diagonal of 6 cm. The length of the second diagonal will be ...... cm.

RRB Group-D - 16/11/2018 (Shift-I)

(A)  $\sqrt{14}$  (B)  $\frac{\sqrt{14}}{2}$ (C)  $\sqrt{7}$  (D)  $2\sqrt{7}$ 

**30.** The sum of the diagonals of a quadrilateral is ..... the perimeter of the quadrilateral.

RRB Group	-D - 16/11/2018 (Shift-III)
(A) Less than 3/4	(B) Greater than
(C) Equal to	(D) Less than 1/2

**31.** The length of one side of the rhombus and one of the two diagonals is 6 cm. The area of rhombus is ..... cm<sup>2</sup>.

RRE	8 Group-D - 18/11/2022 (Shift-I)
<b>(A)</b> 18	<b>(B)</b> 9 √3
(C) 27 √3	<b>(D)</b> 18 √3

**32.** A parallelogram PQRS with lengths of sides 8 cm and 12 cm has a diagonal 10 cm long. The length of the second diagonal is approximately:

RRB Group-D - 17/11/2022 (Shift-II)

<b>(A)</b> 18 cm	<b>(B)</b> 17.8 cm
<b>(C)</b> 17 cm	<b>(D)</b> 17.5 cm

**33.** If in an asymmetric ABCD, E and F are the midpoints of the two transverse sides AB and CD, then FE =?

RRB Group-D - 19/11/2022 (Shift-III)

$(\mathbf{A})\frac{2}{3}(AB-CD)$	<b>(B)</b> $\frac{1}{2}(AB + CD)$
(C) $\frac{\sqrt{3}}{2}(AB + CD)$	<b>(D)</b> $\sqrt{3}(AB + CD)$

**34**. The smaller side of the parallelogram is 4.8 cm and the larger side is 1.5 times the smaller side. Find the perimeter of a parallelogram.

RRB Group-D - 23/10/2018 (Shift-II) (A) 48 cm (B) 36 cm

(,	(_) •• •
<b>(C)</b> 24 cm	<b>(D)</b> 72 cm

**35**. Find the value (in degrees) of angle ABC in the given parallelogram ABCD:

RRB Group-D - 11/10/2018 (Shift-I)

(A) 112°	( <b>B)</b> 102°
(C) 78 <sup>0</sup>	<b>(D)</b> 68 <sup>0</sup>

**36.** Find the area of the quadrilateral shown in the following figure.



**37.** In the figure below, TU||PS and point Q and R, is on PS.  $\angle PQT = x^\circ$ ,  $\angle RQT = (x - 50)^\circ$  and  $\angle TUR = (x + 25)^\circ$ . Find the value of  $\angle URS$ .



38. Read the given question and decide which of the following information is sufficient to answer the question-What is the value of ∠ACB?

> Information (1) C D DA D B(2)  $\angle D = 60^{\circ}$ RRB Group-D - 17/11/2022 (Shift-I)

- (A) Either 1 or 2 is sufficient.
- (B) Both 1 and 2 are sufficient.
- (C) Only 2 is sufficient
- (D) Only 1 is sufficient

**39**. In a semicircle, A and C denote the diameter ends and B is a point on the semicircle. So the angle ABC will always be:

RRB Group-D - 08/10/2022 (Shift-II)

- (A) cannot be determined
- (B) acute angle
- (C) obtuse angle
- (D) right angle
- **40**. The area of the circumcircle of a right angled triangle with sides 6 cm, 8 cm and 10 cm will be.....

RRB Group-D -1 8/09/ 2018 (Shift-II)(A)  $16\pi \text{ cm}^2$ (B)  $25 \pi \text{ cm}^2$ (C)  $24.5 \pi \text{ cm}^2$ (D)  $9 \pi \text{ cm}^2$ 

**41**. In circle below, m  $\overline{AE}$  = 4 cm, m  $\overline{BE}$  = 15 cm and m  $\overline{CE}$  = 2.5 cm. Find the value of m $\overline{DE}$ .



 RRB Group-D - 24/10/2018 (Shift-I)

 (A) 16.5 cm
 (B) 20 cm

 (C) 24 cm
 (D) 30 cm

**42.** AB and CD are two parallel chords on opposite sides of the center of the circle. If AB = 10 cm, CD = 24 cm and radius of the circle is 13 cm, then what is the distance between the two chords?

# RRB Group-D - 26/10/2018 (Shift-III)

( <b>A)</b> 16 cm	<b>(B)</b> 17 cm
( <b>C)</b> 18 cm	<b>(D)</b> 15 cm

**43.** A 16 cm long arc is cut in a circle of 20 cm diameter. Find the distance of the arc from the center of the circle.

 RRB Group-D - 16/11/2018 (Shift-I)

 (A) 6 cm
 (B) 12.8 cm

 (C) 12 cm
 (D) 18.9 cm

**44.** The radii of two concentric circles are 13 cm and 8 cm. AB is the diameter of the larger circle, BD is the tangent line to the smaller circle which touches it on D. The length of AD is equal to:

 RRB Group-D - 11/12/2018 (Shift-III)

 (A) 17 cm
 (B) 18 cm

 (C) 19 cm
 (D) 16 cm

**45.** In the figure below,  $\angle BAE = 30^\circ$ ,  $\angle ABE = 80^\circ$  and  $\angle DBE = 50^\circ$ . Find the value of  $\angle BCE$ .



**46.** In circle below,  $m\overline{AE} = 5$  cm,  $m\overline{BE} = 15$  cm and  $m\overline{CE} = 25$  cm, then what is the length of  $m \overline{DE}$ ?





47.



(C) 3 cm

If  $\angle BCD = \tilde{8}2^{\circ}$ , what will be the value of  $\angle BAC$ ?

 RRB Group-D -26 / 09 / 2018 (Shift-II)

 (A) 85°
 (B) 77°

 (C) 83°
 (D) 82°

**48.** In the circle below, chord  $\overline{AB}$  is extended to meet the tangent line  $\overline{DE}$  at the D point. If  $\overline{AB} = 24$  cm and  $\overline{DE} = 9$  cm, find the length of  $\overline{BD}$ .



## RRB Group-D - 28/11/2022 (Shift-II)

(A) 3 cm	<b>(B)</b> 4√6 cm
(C) 5 cm	<b>(D)</b> 4 cm

In the circle given below, chord  $\overline{AB}$  is 49. extended to join at point D with tangent  $\overline{DE}$ . If  $\overline{AB}$  = 6 cm and  $\overline{BD}$  = 2 cm, find the length of  $\overline{DE}$ .



(D) 5 cm

50. P is a point on a circle whose center is C. A straight line whose length is equal to the radius of the circle drawn from P to another point Q. Find the value of the angle subtended at Q from the tangent of the circle drawn on P in radians -

> RRB Group-D - 10/10/2018 (Shift-I) (B)  $\frac{\pi}{4}$ (A)  $\frac{\pi}{\frac{6}{3}}$ (C)  $\frac{\pi}{2}$ (D)  $\frac{\pi}{2}$

(C) 4.5 cm

51.



In the circle above, Line  $\overline{AB}$  is extended to join  $\overline{DE}$  at point D. If  $\overline{AB}$  =7 cm and  $\overline{DE}$ =12 cm, then what is the length of  $\overline{BD}$ ?

RRB	Group-D - 24/10/2018 (Shift-I)
<b>(A)</b> 7 cm	<b>(B)</b> 9 cm
<b>(C)</b> 2√21 cm	<b>(D)</b> 8 cm

52. In a circle, the chord  $\overline{AB}$  is extended to touch the tangent  $\overline{DE}$  at D. If  $\overline{AB}$  = 24 cm and  $\overline{BD}$  = 8 cm, find the length of  $\overline{DE}$ . RRB Group 'D' 07/12/2018 (Shift-I)

(R) 18 cm

	( <b>D</b> ) to Chi
(C) 16 cm	<b>(D)</b> 24 cm

53. The number of diagonals in a 27 sided polygon is-

	RRB Group-D - 19/11/2022 (Shift-II)
(A) 320	<b>(B)</b> 324
( <b>C)</b> 322	<b>(D)</b> 325

54. The sum of all interior angles of a polygon is 1260°. Find the number of sides of the polygon.

	RRB Group-D - 28/11/2022 (Shift-II)
<b>(A)</b> 9	<b>(B)</b> 8
<b>(C)</b> 10	<b>(D)</b> 11

55. What will be sum of the interior angles of a simple octagon?

	RRB Group-D -	19/11/2022	(Shift-III)
(A)	1080	<b>(B)</b> 720	

(D) 900

56. The measure of each interior of a common pentagon is....

(C) 540

/ ٨

	RRB Group-D - 05/10/2018 (Shift-II)
(A) 180 <sup>0</sup>	<b>(B)</b> 108 <sup>0</sup>
(C) 115 <sup>0</sup>	<b>(D)</b> 120 <sup>0</sup>

57. What is the number of diagonals in a 19 sides polygon?

RRB Group-D - 08/10/2018 (Shift-II) **(A)** 304 **(B)** 114 (C) 152 (D) 76

58. What will be the ratio of the measurement of the interior angles of a regular octagon to the interior angles of a regular dodecagon?

	KKR	Group-D - 12/10/2018 (Shift-III)
\ A. E		<b>(D)</b> 0.40

(A) 4. 5	( <b>D</b> ) 0. 12
<b>(C)</b> 12: 8	<b>(D)</b> 9: 10

59. The number of diagonals in 26 sides polygon will be-

	RRB Group-D - 25/11/2022 (Shift-I)
<b>(A)</b> 325	<b>(B)</b> 300
(C) 299	<b>(D)</b> 650

The measure of each interior angle of a **60**. common octagon is-

RRB Group-D - 04/10/2018 (Shift-II) (A) 115° (B) 125<sup>0</sup> (C) 120<sup>0</sup> **(D)** 135<sup>0</sup>

61. Each interior angle of an heptagon is... RRB Group-D - 05/10/2018 (Shift-I) (B) 126 370 (1) 128 570

(A) 120.07°	( <b>b)</b> 120.37°
<b>(C)</b> 148.24 <sup>0</sup>	<b>(D)</b> 137.56 <sup>0</sup>

**62**. What is the value of each angle of an equilateral pentagon?

RRB Group-D - 22/10/2018 (Shift-III)

( <b>A)</b> 148.24 <sup>0</sup>	<b>(B)</b> 137.56°
<b>C)</b> 128.57 <sup>0</sup>	<b>(D)</b> 108 <sup>0</sup>

**63**. The number of diagonals in a polygon with 28 sides is:

	RRB Group-D - 11/12/2018 (Shift-I)
( <b>A)</b> 350	<b>(B)</b> 280
<b>C)</b> 304	<b>(D)</b> 175

**64**. What is the number of diagonals in a polygon with 17 sides?

	RRB Group-D -31/10/2018 (Shift-III)
<b>(A)</b> 118	<b>(B)</b> 120
(C) 121	<b>(D)</b> 119

65. The supplementary angle of an angle is 15<sup>o</sup> more than three times its complementary angle. What will be the value of the angle? RRB Group-D - 16/10/2018 (Shift-III)

<b>(A)</b> 57.5 <sup>0</sup>	<b>(B)</b> 72.5 <sup>0</sup>
(C) 52.5 <sup>0</sup>	<b>(D)</b> 65 <sup>0</sup>

**66.** In the given figure, AOB is a straight line,  $\angle AOC = 67^{\circ}$  and bisector of  $\angle BOC$  is OD. What is the value of  $\angle BOD$  in degrees?



**67**. In figure, AB || CD and  $\angle AFE = 30^{\circ}$ , Find the value of  $\angle FCD$ .



	RRB Group-D - 05/11/2018 (Shift-III)
<b>(A)</b> 60 <sup>0</sup>	<b>(B)</b> 120 <sup>0</sup>
<b>(C)</b> 90 <sup>0</sup>	<b>(D)</b> 45 <sup>0</sup>

**68**. There are two vertical columns of height 8m and 12m. One rope is drawn from the top of both the pillars to the bottom of the other. At what height from the ground do the ropes cut each other?

RRB Group-D - 12/10/2018 (Shift-I)		
(A) 24/5	m	<b>(B) 22</b> /7 m
(C) 29/6	m	<b>(D)</b> 31/8 m

**69.** If the angles of the triangle are in the ratio 1 : 2 : 3, what is the smallest angle?

 RRB RPF Constable - 17/01/2019 (Shift-I)

 (A) 40°
 (B) 25°

 (C) 15°
 (D) 30°

**70.** If one side of an equilateral triangle is  $6\sqrt{3}$  cm, what is its height?

	RRB RPF SI - 13/01/2019 (Shift-II)
<b>(A)</b> 9 cm	<b>(B)</b> 6 cm
(C) 3 cm	<b>(D)</b> 3√3 cm

**71.** The midpoints of the sides of an equilateral triangle PQR are X, Y and Z. If the perimeter of triangle PQR is 24 cm, what will be the perimeter of triangle XYZ?

 RRB RPF Constable - 22/01/2019 (Shift-II)

 (A) 96 cm
 (B) 36 cm

- (C) 12 cm (D) 48 cm
- **72.** In  $\triangle$ ABC, the points D and E are on the sides AB and AC respectively such that DE || BC and AD : DB = 3 : 1 if EA = 3.3 cm, find the value of AC.

 RRB RPF Constable - 25/01/2019 (Shift-I)

 (A) 5.5 cm
 (B) 4 cm

 (C) 4.4 cm
 (D) 1.1 cm

**73.** The length of a rectangular plot is 5 m more than its width. If the perimeter of the plot is 142 m, find the dimensions of the plot.

RRB RPF Constable - 19/01/2019 (Shift-II)

- (A) Length 38 m And width 33 m.
- (B) Length 39 m And width 34 m.
- (C) Length 34 m And width 39 m.
- (D) Length 33 m And width 38 m.
- **74.** The length of one side of rhombus is 12 cm and the length of one of its diagonals is also 12 cm. The length of the second diagonal will be.

### RRB RPF SI - 10/01/2019 (Shift-I)

<b>(A)</b> 12 √3 cm	<b>(B)</b> 6 √3 cm
<b>(C)</b> 24 cm	<b>(D)</b> 9 √3 cm

75. The order of rotational symmetry of a rhombus is: RRB NTPC 02/02/2021Shift : 2

	RRB NTPC 02/02/2021Shift :
<b>(A)</b> 1	<b>(B)</b> 4
<b>(C)</b> 2	<b>(D)</b> 0

**76.** In a parallelogram ABCD, angle  $A = (3x-25)^{\circ}$ and angle  $C = (2x + 15)^{\circ}$ , in which angle A and angle C are opposite angles. Find the angle A.

	RRB RPF SI - 13/01/2019 (Shift-II)
( <b>A)</b> 105 <sup>0</sup>	<b>(B)</b> 85 <sup>0</sup>
( <b>C)</b> 95º	<b>(D)</b> 115 <sup>0</sup>

**77.** The two circles touch each other externally at point X. PQ is a simple common intersection of both circles. If the radii of circles are R and r, find the value of PQ<sup>2</sup>.

RRB RPF	Constable - 25/01/2019 (Shift-III)
<b>(A)</b> 4 <i>Rr</i>	<b>(B)</b> 2π <i>Rr</i>
(C) $\frac{3}{2}Rr$	<b>(D)</b> 2 <i>Rr</i>

78. If 'O' is the circumcentre of a triangle ABC and OD is perpendicular to BC, then find the value of angle ∠BOD.

RRB	RPF SI - 16/01/2019 (Shift-III)
<b>(A)</b> (1/2)∠A	<b>(B)</b> 90°∠A
(C) ∠A	<b>(D)</b> 2∠A

79.



In the circle shown above, the chord AB is extended so that it meets the tangent line DE at D. If AB = 5 centimeters and DE = 6centimeters, find the length of BD.

 RRB RPF Constable - 18/01/2019 (Shift-III)

 (A) 6 cm
 (B) 5 cm

 (C) 4 cm
 (D)  $\sqrt{30}$  cm

**80.** Answer the question based on the figure given below-



81. The ratio of internal and external angles of an even polygon is 4: 1. What is the number of sides in the polygon?
 RRB RPF Constable - 24/01/2019 (Shift-III) (A) 12 (B) 6

**(D)** 10

(C) 8

- 82. What will be the sum of internal angles in degrees of a polygon with 7 sides?
  RRB RPF Constable 20/01/2019 (Shift-III)
  (A) 180°
  (B) 360°
  (C) 540°
  (D) 900°
- **83**. In a regular polygon each internal angle is 108<sup>0</sup>, so what is the number of sides?

RRB	RPF Constable - 25/01/2019 (Shift-I)
<b>(A)</b> 6	<b>(B)</b> 15
( <b>C)</b> 5	<b>(D)</b> 7

**84**. What will be the total sides of a regular polygon whose exterior angle is 10<sup>o</sup>?

	RRB RPF SI - 06/01/2019 (Shift-II)
<b>A)</b> 36	<b>(B)</b> 63
<b>C)</b> 46	<b>(D)</b> 38

**85**. The sum of all interior angles of a common polygon is 1440<sup>°</sup>. How many diagonals does that polygon have?

RRB RPF	Constable - 22/01/2019 (Shift-II)
<b>(A)</b> 27	<b>(B)</b> 44
( <b>C)</b> 35	<b>(D)</b> 20

 86. Each angles of an equilateral polygon is 168°. How many sides does this polygon have?
 RRB RPF SI - 12/01/2019 (Shift-II)

<b>(A)</b> 20	<b>(B)</b> 30
( <b>C</b> ) 15	<b>(D)</b> 31

**87.** If two complementary angles are in the ratio 11: 7, find the smaller angle.

RRB RPF SI - 11/01/2019 (Shift-II)

<b>(A)</b> 35 <sup>0</sup>	<b>(B)</b> 55 <sup>0</sup>
<b>(C)</b> 45 <sup>0</sup>	<b>(D)</b> 25 <sup>0</sup>

**88.** If  $\triangle ABC$  is  $\cong \triangle XYZ$  and angle BAC = 55°, then what is the angle ZXY?

 RRB ALP & Tec. (31-08-18 Shift-I)

 (A) 65°
 (B) 135°

 (C) 55°
 (D) 67.5°

**89**. In  $\triangle ABC$ , AB = 10 centimeters, BD = 6 centimeters and DC = 7.5 centimeters. The line bisecting  $\angle A$  internally cuts the BC line at the D point. What is the length of CA?

RRB ALP & Tec. (30-08-18 Shift-III)

(A) 12 cm	(B) 10 cm
(C) 10.5 cm	<b>(D)</b> 12.5 cm

**90**. In  $\triangle$ ABC, AB = 8 cm. The bisector of  $\angle$  A is internally found at D on BC and BD = 6 cm and DC = 7.5 cm. What will be the value of CA?

	RRB ALP 8	а Тес. (10-08-18	Shift-III)
(A) 10.5	cm	<b>(B)</b> 12.5 cm	
(C) 12 cr	n	<b>(D)</b> 10 cm	

**91**. The radius of two circles is 3.5 centimeters, 4.5 centimeters and the distance between their centers is 10 centimeters, then find the length of the common transverse tangent.

RRI	B ALP & Tec. (17-08-18 Shift-II)
( <b>A)</b> 6 cm	( <b>B</b> ) 8 cm
( <b>C)</b> 6.4 cm	<b>(D)</b> 3.6 cm

**92**. The two sides forming a right angle in a triangle are 3 cm and 4 cm long respectively. What will be the area of the circumcircle of this triangle?

RRB ALP & Tec. (09-08-18 Shift-II)(A)  $5 \pi cm^2$ (B)  $7 \pi cm^2$ (C)  $6.75 \pi cm^2$ (D)  $6.25 \pi cm^2$ 

**93.** If the tangent lines PA and PB on a circle with center O from a point P are inclined at an angle of 110<sup>0</sup>, what is the measure of angle POA?

 RRB ALP & Tec. (20-08-18 Shift-III)

 (A) 50°
 (B) 70°

 (C) 35°
 (D) 45°

**94**. In the above circle, the arc  $\overline{AB}$  is extended to join the tangent line  $\overline{DE}$  to the D point. If  $\overline{AB}$  = 12 cm and  $\overline{DE}$  = 8 cm, find the length of  $\overline{BD}$ .



(A)

(C)

6 cm	<b>(B)</b> ∜6 cm
5 cm	(D) 4 cm

**95.** To draw a pair of tangent lines on a circle at an angle of 75<sup>o</sup> to each other, it is necessary that the tangent lines are drawn at the end points of the two radii of the circle, the angle between which is:

	RRB ALP & Tec. (09-08-18 Shift-II)
<b>(A)</b> 65 <sup>0</sup>	<b>(B)</b> 75 <sup>0</sup>
<b>(C)</b> 95 <sup>0</sup>	<b>(D)</b> 105 <sup>0</sup>

**96**. The area of a triangle ABC is 63 square units. The two parallel lines DE, FG are drawn such that it divides AB and AC into three equal parts. What is the area of quadrilateral DEFG?

### RRB NTPC 10/08/2022 Shift : 2

<b>(A)</b> 28 sq unit	<b>(B)</b> 35 sq unit
(C) 21 sq unit	<b>(D)</b> 48 sq unit

**97**. If  $\triangle$ ABC and  $\triangle$ DEF are congruent triangles, in which BC = 4 cm, EF = 7 cm, and the area of  $\triangle$ ABC is 144 square cm, find the area of  $\triangle$ DEF.

### RRB NTPC 10/08/2022 Shift : 1

(A) 252 cm <sup>2</sup>	<b>(B)</b> 504 cm <sup>2</sup>
(C) 441 cm <sup>2</sup>	(D) 324 cm <sup>2</sup>

**98**. HI, GF and DE are parallel lines, If DG = 6, GH = 4 and FI = 8, then EF=?



**99**. If the ratio of the angles of a triangle is 1 : 2 : 3, find the value of the largest angle?

	RRB NTPC 11/08/2022	Shift :	1
۱			

<b>(A)</b> 30 <sup>0</sup>	<b>(B)</b> 60 <sup>0</sup>
(C) 90 <sup>0</sup>	<b>(D)</b> 120 <sup>0</sup>

**100.** Find the value of a in diagram below.



- 101. In which all the arms have the same length? RRB NTPC 23/07/2022 Shift : 1
  - (A) rectangle
  - (B) trapezium
  - (C) parallel quadrilateral
  - (D) class
- 102. Trapezium is a quadrilateral which has RRB NTPC 23/07/2022 Shift : 3
   (A) All sides are equal
  - (B) The opposite sides are the same
  - (C) There are two pairs of parallel opposite sides.

(D) A pair of parallel opposite sides

103. The order of rotational symmetry of a trapezium is. RRB NTPC 02/02/2021Shift : 2

(A) 2 (B) 0 (C) 1 (D) 3

104. In an equilateral triangle ABC, D, E and F are the midpoints of AB, BC and AC respectively. So quadrilateral BEFD is— RRB NTPC 11/08/2022Shift : 1

(A) A square	(B) a rectangle
(C) A parallelogram	(D) A rhombus

105. The order of rotational symmetry of a parallelogram is: RRB NTPC 26.04.2016 Shift : 2

<b>(A)</b> 1	<b>(B)</b> 4
--------------	--------------

(C) 2 (D) 0

**106.** The radius of circle A and circle B is 4 units. If the point P is on A and the point Q is on B and both circles touch each other at exactly one point, then what is the maximum length of the PQ?

	RRB NTPC 30.03.2016 Shift : 2
<b>(A)</b> 0	<b>(B)</b> 4
(C) 8	<b>(D)</b> 16

**107**. An equilateral triangle is constructed in such a way that the two ends of the triangle are placed on the diameter of the circle and the third is placed on the circle. If the area of the circle is  $48\pi$ , what will be the side of the triangle?

	RRB NTPC 10.04.2016 Shift : 3
<b>(A)</b> 8	<b>(B)</b> 4
( <b>C)</b> 8/√3	<b>(D)</b> 4 √3

**108**. If a circle is divided into 6 equal parts, what will be the measure of each angle made?

	RRB NTPC 09/05/2022 Shift : 1
<b>(A)</b> 45	<b>(B)</b> 60
(C) 30	<b>(D)</b> 90

109. The largest chord of the circle is-RRB NTPC 12/08/2022Shift : 2

(A) radius	( <b>D</b> ) ulameter
(C) line segment	(D) Segment

**110**. A polygon with 7 sides is called a ---.

## RRB NTPC 23/07/2022 Shift : 1

(A) Nonagon	(B) Hexagon
(C) Heptagon	(D) Octagon

**111**. The sum of the interior angles of a polygon is equal to-

	RRB NTPC 11/08/2022Shift : 1
(A) (n-2) 360	<b>(B)</b> (n-3) 180
(C) (n-2) 180	<b>(D)</b> (n+2) 180

**112**. In a polygon, each exterior angle is 120<sup>0</sup>, then the number of sides is:

	RRB NTPC 11/08/2022Shift : 3
<b>A)</b> 6	<b>(B)</b> 4
<b>C)</b> 3	<b>(D)</b> 5

RRB NTPC 26.04.2016 Shift : 2

<b>(A)</b> 7	<b>(B)</b> 5
( <b>C)</b> 6	<b>(D)</b> 8

**114**. A polygon has 9 sides. What will be its internal angle?

RRB NTPC 30.03.2016 Shift : 1

<b>(A)</b> 140 <sup>0</sup>	<b>(B)</b> 100 <sup>0</sup>
(C) 120 <sup>0</sup>	<b>(D)</b> 40 <sup>0</sup>

**115**. What is the number of sides of a regular polygon whose internal angle is 150?

	RRB NTPC 23/07/2022	Shift-3
<b>(A)</b> 15	<b>(B)</b> 13	
(C) 12	<b>(D)</b> 14	

**116**. If each exterior angle of an equilateral is 9<sup>0</sup>, then how many sides of the equilateral are there?

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 30	<b>(B)</b> 40	
(C) 45	<b>(D)</b> 36	

**117.** In a polygon, if each external angle is  $72^{0}$ , then the number of sides is

	RRB NTPC 23/07/2022	Shift-1
<b>(A)</b> 7	<b>(B)</b> 6	
( <b>C)</b> 5	<b>(D)</b> 8	

In a regular polygon, if each exterior angle is 36<sup>0</sup>, find the number of its sides.
 RRB NTPC 11/08/2022Shift : 2

<b>(A)</b> 11	<b>(B)</b> 9
<b>(C)</b> 10	<b>(D)</b> 8

**119**. In a polygon, if each exterior angle is 45<sup>0</sup>, the number of sides is:

	RRB NTPC 02/02/2021Shift : 2
<b>(A)</b> 7	<b>(B)</b> 6
( <b>C)</b> 8	<b>(D)</b> 9

**120**. In a polygon, if each exterior angle is 40<sup>0</sup>, the number of sides is:

 RRB NTPC 26.04.2016 Shift : 3

 (A) 8
 (B) 45

 (C) 9
 (D) 10

**121**. What is the number of sides of a regular congruent triangle?

RRB NTPC 23/07/2022 Shift : 3

( <b>A</b> ) 6	<b>(B)</b> 4
(C) 3	<b>(D)</b> 2

**122.** How many degrees does an angle that is 1/5 of its supplementary?

RRB NTPC 10/08/2022 Shift :		
<b>(A)</b> 45 <sup>0</sup>	<b>(B)</b> 30 <sup>0</sup>	
(C) 60 <sup>0</sup>	<b>(D)</b> 75 <sup>0</sup>	

**123.** If two supplementary angles are in the ratio 4: 5, find the larger angle.

	RRB NTPC 09/05/2022 Shift :1
<b>(A)</b> 80 <sup>0</sup>	<b>(B)</b> 50 <sup>0</sup>
<b>(C)</b> 60 <sup>0</sup>	<b>(D)</b> 100 <sup>0</sup>

**124.** If two supplementary angles are in the ratio 13: 5, find the difference between them.

	RRB NTPC 18.04.2016 Shift : 2
<b>(A)</b> 60 <sup>0</sup>	<b>(B)</b> 70 <sup>0</sup>
<b>(C)</b> 80 <sup>0</sup>	<b>(D)</b> 120 <sup>0</sup>

**125**. If  $(6y + 70)^0$  and  $(3y + 47)^0$  are supplementary angles, find the value of y.

	RRB NTPC 02/02/2021Shift	
<b>(A)</b> 12	<b>(B)</b> 15	

()	(-) ••
( <b>C)</b> 7	<b>(D)</b> 10

**126**. If  $(7x + 5)^0$  and  $(x + 5)^0$  are complementary angles, find the value of x.

	RRB NTPC 02/02/2021Shift : 3
(A) 100	(B) 200

<b>(A)</b> 10°	<b>(B)</b> 20°
<b>(C)</b> 30 <sup>0</sup>	<b>(D)</b> 40 <sup>0</sup>

**127**. The ratio of two complementary angles is 4: 5, find the ratio of the square of the first angle to the square of the second angle.

<b>RRB NTPC</b>	09/05/2022	Shift	: 2
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(A) 16: 25	<b>(B)</b> 64: 125
(C) 100: 125	<b>(D)</b> 25: 16

**128**. x, y and z are parallel lines and t is a transversal intersecting them all. Which of the following lists of angles is the same?



**129**. Consider the following statements and select the correct option

When two straight lines intersect each other,

- **1.** Enclosed angles are complementary.
- **2.** Opposite angles are complementary.

### RRB NTPC 09/05/2022 Shift : 1

- (A) Both 1 and 2 are wrong
- (B) Both 1 and 2 are correct
- (C) 1 is wrong and 2 is correct
- (D) 1 is right and 2 is wrong
- **130**. Perpendicular lines are ..... on the same line.

RRB NTPC 12/08/2022Shift : 1

(A) equal in length

- (B) parallel to each other
- (C) intersect each other
- (D) forms a triangle
- **131.** In triangle ABC, the points D and E lie on the sides AB and AC respectively. DE is parallel to the base BC. O is the intersection of BE and CD. If AD : DB = 4 : 3, find the ratio of DO and DC.

**RRB Paramedical - 20/07/2018 (Shift-III)** (A) 4 : 11 (B) 3 : 7

<b>\</b> /	
<b>(C)</b> 5 : 12	<b>(D)</b> 5 : 7

**132.** In the circle given below, chord AB is extended to point D to match the tangent DE. If AB = 9 cm and BD = 3cm, then find the length of <u>DE</u>?



(A) 4 cm (B)  $\sqrt{27}$  cm (C) 6 cm (D) 5 cm

**133.**  $\triangle ABC$  is similar to  $\triangle PQR$  in that their perimeters are 36 and 24, respectively. If PQ = 10 then find the value of AB.

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 15	<b>(B)</b> 16
<b>(C)</b> 20	<b>(D)</b> 18

**134.** In a rectangle Length : width = 4 : 3. Find the value of Length : diagonal.

RRB JE - 24/05/2019 (Shift-I) (B) 2: 3

<b>\ /</b>	· · ·
<b>(C)</b> 4: 5	<b>(D)</b> 1: 5

**(A)** 4: 7

**135.** The length of a rectangular plot is 20 meters more than its width. If the cost of planting the

fence at the rate of Rs.26.50 per meter on the plot is Rs.5300, find the length of the plot in meters.

### RRB JE - 29/05/2019 (Shift-I)

(A) 50 meter	(B) 40 meter
<b>C)</b> 120 meter	(D) 60 meter

**136**. The circumference of a circle is 132 cm. What will be the circumference of the part whose center angle is 135<sup>0</sup>?

	RRB JE - 26/05/2019 (Shift-II)
<b>A)</b> 93.5 cm	<b>(B)</b> 101.5 cm
<b>C)</b> 92.5 cm	<b>(D)</b> 91.5 cm

**137**. A chord of 8 cm length makes an angle of 60<sup>o</sup> at the center, what will be the value of the radius of the circle?

	RRB JE - 30/05/2019 (Shift-II)
(A) 8 cm	<b>(B)</b> 6 cm
(C) 4 cm	<b>(D)</b> 12 cm

**138**. The distance between the centers of two circles with radii  $r_1$  and  $r_2$  is d. Find the length of their straight tangent lines.

	RRB JE - 01/06/2019 (Shift-I)
(A) $\sqrt{d^2(r_1^2 r_2^2)}$	<b>(B)</b> $\sqrt{d^2 - (r_1 - r_2)^2}$
(C) $\sqrt{d^2 - (r_1^2 r_2^2)}$	(D) $\sqrt{d^2 - (r_1 + r_2)^2}$

**139**. If there is a chord of length 24 cm at a distance of 5 cm from the center, find the radius of the circle.

RRB JE - 28/06/2019 (Shift-III)
<b>(B)</b> 17 cm
<b>(D)</b> 15 cm

**140.** In the second quartile, the value of sin θ is between. **RRB IF** - 30/05/2019 (Shift-I)

	RRB JE - 30/05/2019 (Shit
(A) -1 to 1	<b>(B)</b> 1 to -1
<b>(C)</b> 1 to 0	<b>(D)</b> 0 to 1

**141**. The internal angle of an equilateral polygon is 150 degrees. This polygon is a .....

RRB	JE - 22/	05/2019	(Shift-I)

(A) Octagon	(B) Decagon
(C) Dodecagon	(D) Heptagon

142. Choose the incorrect statement.
1) All sides of an equilateral polygon are equal.
2) All its interior angles are equal.
3) The sum of its exterior is 360°.
4) The sum of its interior angles is (n - 2) × 360°.
RRB JE - 29/05/2019 (Shift-II)

(A) statement 1	(B) statement 4
(C) statement 2	(D) statement 3

Each interior angle of an equilateral polygon is 36<sup>o</sup> more than its exterior angle. Find the number of sides of this polygon.
 RRB JE - 02/06/2019 (Shift-I)

**(B)** 10

**(A)** 4



The sum of the three interior angles of a triangle is  $180^{\circ}$ .

$$180^{\circ} = \angle A + \angle B + \angle C$$
  

$$180^{\circ} = \angle A + 90^{\circ} + 55^{\circ}$$
  

$$180^{\circ} - 145^{\circ} = \angle A$$
  

$$\angle A = 35^{\circ}$$
  
**Ans (D)**





(**C)** 8

**(D)** 5

**144**. The sum of the angles of an equilateral polygon is 2160<sup>0</sup>. How many sides does this polygon have?

	RRB JE - 27/06/2019 (Shift-I)
<b>(A)</b> 12	<b>(B)</b> 16
(C) 18	<b>(D)</b> 14

# **Solution**

ABC is a right angled triangle whose angle A is right angled. To create two other right – angled triangles, the BC side has to bisect.

# 3. Ans.(A)

From the Pythagoras theorem,

The square of the hypotenuse in right angle will be equal to the sum of the squares of the remaining two sides.

$$\therefore (85)^2 = (13)^2 + (84)^2$$
  
7225 = 169 + 7056

$$7225 = 107 + 703$$
  
 $7225 = 7225$ 

The sides of right angle  $\Delta$  will be 85,84 and 13.



5. Ans.(C)



 $(Hypotenuse)^2 = (Base)^2 + (Prependicular)^2$  $(AC)^2 = (1.5)^2 + (2)^2$  $(AC)^2 = 2.25 + 4$  $(AC)^2 = 6.25$ Hypotenuse =  $\sqrt{6.25}$  = 2.5*cm* .. The radius of the circumference is half that of the hypotenuse. AĊ 2.5 5

$$R = \frac{\pi a}{2} = \frac{\pi a}{2} = \frac{\pi}{4}$$
Area of circumcircle =  $\pi R^2$ 

$$= \left(\frac{5}{4}\right)^2 \times \pi$$

$$= \frac{25}{16} \times \pi$$

$$= 1.5625\pi cm^2$$
Ans.(D)

7.



The ratio of the area of any two identical  $\Delta$  = is equal to the ratio of the square of its corresponding side.

$$\frac{\operatorname{area}(\Delta ABC)}{\operatorname{area}(\Delta PQR)} = \left(\frac{5}{3}\right)^2 = \frac{25}{9}$$
Ans.(A)
  
Ans.(A)
  
Ans.(A)
  
Ans.(A)
  
Ans.(A)
  
Ans.(A)
  
C
  
Ratio of reciprocal altitude
  

$$= \frac{1}{8}:\frac{1}{13}:\frac{1}{15}$$

$$= 15 \times 13:8 \times 15:13 \times 8$$

$$= 195:120:104$$
Ans.(C)
  
Ans.(

10. Ans.(B) :

8.

9.

The right triangle is given -

49 81 =



# 11. Ans

According to Question, 8, p and 17 are Pythagoras trials. Then p = ? From the figure,



 $(Hypotenuse)^{2} = (Prependicular)^{2} + (Base)^{2}$  $(17)^{2} = (8)^{2} + (p)^{2}$  $289 = 64 + (p)^{2}$  $289 - 64 = (p)^{2}$  $225 = p^{2}$  $\boxed{p = 15}$ Ans.(C)

12.

In 
$$\triangle ABC$$
  
DE // BC  
 $\therefore ADE \sim ABC$   
AD = 2 cm  
BD = 3 cm



 $\frac{ar (\Delta ADE)}{ar (\Delta ABC)} = \frac{AD^2}{AB^2} = \frac{(\text{Side of small } \Delta)^2}{(\text{Side of big } \Delta)^2}$  $= \frac{(2)^2}{(2+3)^2} = \frac{4}{25}$ 



 $\therefore$  Each angle =  $\frac{360^{\circ}}{4}$  = 90° Ans.(B) C D O Angle formed 50<sup>0</sup> ا between digonals 1300 250 250 А в  $\triangle AOB$ ,  $\angle A + \angle B + \angle O = 180^{\circ}$  $25^{\circ} + 25^{\circ} + \angle 0 = 180^{\circ}$ Obtuse angle  $(\angle 0) = 180^{\circ} - 50^{\circ} = 130^{\circ}$ Acute angle  $(\angle COB) = 180^\circ - 130^\circ = 50^\circ$ Therefore, the acute angle to be formed between the diagonals will be 50°. Ans.(B) Let the four interior angles of a quadrilateral be 3x, 4x, 5x, 6x respectively. The sum of all the four angles of a quadrilateral = 360°  $3x + 4x + 5x + 6x = 360^{\circ}$  $18x = 360^{\circ}$  $x = 20^{\circ}$ Hence the smallest angle  $= 3 \times 20 = 60^{\circ}$ Ans.(B)

Sum of all the angles of the quadrilateral  $= 360^{\circ}$ 

Two adjacent angles of quadrilateral are  $125^{\rm 0}$  and  $35^{\rm 0}$  and the remaining two angles are equal.

Let X be the angle.

 $\therefore 125^{\circ} + 35^{\circ} + x^{\circ} + x^{\circ} = 360^{\circ}$  $2x^{\circ} = 360^{\circ} - 160$  $x^{\circ} = 100$ 

# 17. Ans.(D)

14.

15.

16.

A right angled triangle is formed from the sides of measures 9 cm, 40 cm, and 41 cm.



Then, Area of ( $\Delta$ ) =  $\frac{1}{2} \times 9 \times 40 = 180 \text{ cm}^2$ Semi – perimeter (s) =  $\frac{1}{2}[40 + 41 + 9]$ = 45 cm Hence the radius of the inner circle  $(r) = \frac{\Delta}{s} = \frac{180}{45} = 4 \ cm$ Ans.(B) в 60<sup>0</sup> 0 300 From  $\triangle ABD$ ÀВ BD  $\frac{1}{\sin 90^\circ} = \frac{1}{2}$ sin 30°  $BD = \frac{AB}{2} = \frac{18}{2}$ BD = 9cm*∵ ∆BDC* से BC ΒD  $\frac{BD}{\sin 90^{\circ}} = \frac{BC}{\sin 30^{\circ}}$  $BC = \frac{1}{2} \times BD = \frac{1}{2} \times 9$ BC = 4.5 cmAns.(B) Let the value of fourth angle =  $x^0$ Sum of the four interior angles of the quadrilateral = 360°  $\therefore x + 82^{\circ} + 82^{\circ} + 82^{\circ} = 360^{\circ}$  $x = 360^{\circ} - 246^{\circ} = 114^{\circ}$ Ans.(D) The sum of the four angles of a quadrilateral is 360°. Given -Fourth angle =  $150^{\circ}$ Sum of all three angles  $= 360^{\circ} - 150^{\circ} = 210^{\circ}$ Thus, the value of each angle =  $\frac{210^{\circ}}{3} = 70^{\circ}$ Ans.(B)

18.

19.

20.

21.

# The sum of the four angles of any quadrilateral is 360°.



22. Ans.(D)



Area of path A =  $25 \times 2.2 = 55m^2$ Area of path B =  $25 \times 2.2 = 55m^2$ Total route area =  $25 \times 2.2 + 25 \times 2.2 - 2.2 \times 2.2$ =  $55 + 55 - 4.84 = 105.16m^2$ Total cost =  $105.16 \times 100 = Rs.10516$ 

# 23. Ans.(C)

Let the length of the rectangle be 3x m. and width x m.

Perimeter of rectangle = 2 [l + b]  $\begin{bmatrix} l &= \text{Length} \\ b &= \text{Width} \end{bmatrix}$ 96 = 2[3x + x] 96 = 6x + 2x 96 = 8x x =  $\frac{96}{8}$   $\boxed{x = 12}$ Length of rectangle = 3×12 = 36 meter

# 24. Ans.(D)

Given – Length of rectangle = 37 m Width of rectangle. = 23 m Perimeter of rectangle = 2 (length + width) = 2 (37 + 23) = 120 meter

25.



Side of rhombus =  $\frac{17}{2}$  cm A diagonal  $AC = \frac{16}{3}cm$  $\therefore AO = OC$  and BO = OD $\therefore AO = OC = \frac{AC}{2}$  $=\frac{16}{3}/2$  $AO = \frac{8}{3}cm$  $In \Delta AOB$ ,  $AB^2 = AO^2 + BO^2$  $BO = \sqrt{AB^2 - AO^2}$  $\left(\frac{17}{3}\right)^2 - \left(\frac{8}{3}\right)^2$ =  $-\frac{64}{9}$ 15 = 3 BO = 5Thus, OB = OD = 5 cmSecond diagonal BD = BO + OD= 5 + 5 = 10 cm

26.



In rhombus ABCD, First diagonal = AC Second diagonal = BD  $4AB^2 = AC^2 + BD^2$  $4 \times 5 = AC^2 + BD^2$  $20 = AC^2 + BD^2$ Let AC = xBD = y $\therefore$  Area of rhombus  $=\frac{1}{2} \times x \times y = 4$  $x \times y = 8$  $(x + y)^2 = 20 + 2 \times 8$  $(x + y)^2 = 20 + 16$  $(x + y)^2 = 36$ x + y = 6 cm27. Ans.(B) C 24 26 24 D  $(OD)^2 = (CD)^2 - (OC)^2$  (From the Pythagoras theorem)  $(OD)^2 = (26)^2 - (24)^2$  $(OD)^2 = 676 - 576$  $(OD)^2 = 100$ OD = 10cmDiagonal  $BD = OB + OD\{: OB = OD\}$ BD = 20cm28. Ans.(D) : In a rhombus,  $d_1 = 16, d_2 = 12$  perimeter = ? R Diagonals of rhombus bisect each other at right angles. AO = OC

> BO = OD $\angle AOB = \angle BOC = \angle COD = \angle DOA = 90^{\circ}$



### 29. Ans.(D)

In rhombus, all sides are equal and diagonals bisect each other at right angles. In  $\Delta BEC$ .



#### 30.

A square (quadrilateral) is given in the figure. Here –



Sum of diagonals =  $a\sqrt{2} + a\sqrt{2} = 2a\sqrt{2}$ Perimeter = a + a + a + a = 4a3/4 times the perimeter =  $4a \times \frac{3}{4} = 3a$ Here,  $\Rightarrow 2a\sqrt{2} < 3a$  Thus, the sum of diagonals of a quadrilateral is less than 3/4 times the perimeter of the quadrilateral.

31. Ans.(D):



According to the picture,  $\Delta OBC,$   $(OC)^2 = (BC)^2 - (OB)^2$   $(OC)^2 = (6)^2 - (3)^2$   $(OC) = 3\sqrt{3}$ Area of  $\Delta OBC = \frac{1}{2} \times 3 \times 3\sqrt{3}$   $= \frac{9\sqrt{3}}{2} cm^2$ 

Area of rhombus ABCD = 4 × area of  $\triangle OBC$ .

$$= 4 \times \frac{9\sqrt{3}}{2} cm^2$$
$$= 18\sqrt{3} cm^2$$

32. Ans.(B)

If the parallel sides of a parallelogram are a and b and the diagonals  $d_1$ , and  $d_2$ , then –



### 33. Ans.(B)

In any trapezium, the line joining the midpoint of the parallelogram is parallel to the parallel sides of the trapezium and half of their sum in length.



.(C) Given: TU||PS





Therefore, both information will be required. The value of the angle made by an arc (chord) on the remaining circumference of the circle is the same.

 $\angle C = \angle D$ 

Therefore, from information 2,  $\angle D = 60^{\circ}$  and from the image of information 1, it is clear that  $\angle ACB = \angle ADB = 60^{\circ}$ 

39. Ans.(D)

38.

 $\angle ABC = 90^{\circ}$ 



Theorem : Angle at a semicircle is right angled.

40. Ans.(B)



r = 13cm  $ON = \sqrt{13^2 - 12^2} = \sqrt{169 - 144}$  ON = 5cmSimilarly, MO =  $\sqrt{13^2 - 5^2} = 12cm$  Hence the distance between the two chords = MO + NO

= 12 + 5 = 17cm

# 43. Ans.(A)

Diameter of the circle = 20 cm

An arc of 16 cm is cut.

 $\therefore$  The perpendicular drawn on the chord from the center of a circle bisects the chord.



44. Ans



DB is the tangent line of the smaller circle and the tangent line of the circle makes an angle of  $90^{0}$  at the circumference from the center of the circle.

So given - $\{OB = 13 \ cm, OD = 8 \ cm\}$ From the Pythagoras Theorem} In  $\triangle ODB$ ,  $(BD)^2 = (OB)^2 - (OD)^2$  $BD = \sqrt{(13)^2 - (8)^2}$  $BD = \sqrt{169 - 64} = \sqrt{105}$ again in  $\triangle AFB$ ,  $FB = 2DB = 2\sqrt{105}cm$ AB = 20B = 26cmFrom Pythagoras theorem,  $(AF)^2 = (AB)^2 - (FB)^2$ AB = 20B = 26cmAgain in  $\triangle AFD$ ,  $(AD)^2 = (AF)^2 + (FD)^2$  $(AD)^2 = (16)^2 + (\sqrt{105})^2$  $(AD) = \sqrt{256 + 105} = \sqrt{361}$ AD = 19cm

45. Ans.(C) Given - $\angle BAE = 30^{\circ}$  $\angle ABE = 80^{\circ}$  $\angle DBE = 50^{\circ}$ ABAE से  $\angle BEA + 80 + 30 = 180^{\circ}$ [: Sum of the interior angles of  $\Delta = 180^{\circ}$ ]  $\angle DEB = 180^{\circ} - 70^{\circ} = 110^{\circ}$ In cyclic quadrilateral CBED  $\angle DCB = 70^{\circ}$ [: Sum of the opposite angles of cyclic quadrilateral =  $180^{\circ}$ ]  $\therefore \angle DBE = 50^{\circ}$ [Angle at circumference with chord is equal.]  $\therefore \angle DCE = 50^{\circ}$  $\therefore \angle DCB = 70^{\circ}$  $\therefore \angle BCE = 70^{\circ} - 50^{\circ} = 20^{\circ}$ Hence  $\angle BCE = 20^{\circ}$ Ans.(C) :

46.

Given  $m\overline{AE} = 5cm, m\overline{BE} = 15cm$  $m\overline{CE} = 25cm, m\overline{DE} = ?$ We know that, If chords AB and CD intersect each other at point E inside the circle, then  $AE \times BE = CE \times DE$ 

$$AE \times BE = CE \times DE$$
$$DE = \frac{AE \times BE}{CE}$$
$$= \frac{5 \times 15}{25} = 3cm$$
Hence  $m\overline{DE} = 3cm$ 

47. Ans.(D):

> .: The angle subtended by the chord of a circle along the tangent line is equal to the angle subtended by that chord at the alternate segment of the circle.

 $\angle BAC = \angle BCD = 82^{\circ}$ 

**48.** Ans.(A): 
$$AD \times BD = (DE)^2$$
  
(Let BD = x)

 $(24 + x) \times x = (9)^2$  $24x + x^2 = 81$  $x^2 + 24x - 81 = 0$  $x^2 + 27x - 3x - 81 = 0$ x(x + 27) - 3(x + 27) = 0x + 27 = 0, x = -27(Inadmissible) x - 3 = 0x = 3Length of BD = 3cm

#### 49. Ans.(B)

50.

A piercing line and a tangent line are being drawn from point D.

 $\therefore DE^2 = AD \times BD$  $DE^2 = (AB + BD) \times BD$  $= (6 + 2) \times 2$  $= 8 \times 2$  $DE^2 = 16$ DE = 4cmAns.(A)



From the figure CP = CQ (radis of the same circle)  $\therefore$  CP = CQ = PQ (equilateral triangle)

: Value of each angle of equilateral triangle =  $60^{\circ}$ 

Therefore, the value of acute angle at ∠PQB  $= 90^{\circ} - 60^{\circ} = 30^{\circ} = \frac{\pi}{6}$  radians





 $DE^2 = AD \times BD$ If BD = x then  $12^2 = (7 + x) \times x$  $x^2 + 7x - 144 = 0$  $x^2 + 16x - 9x - 144 = 0$ x(x + 16) - 9(x + 16) = 0Or, x + 16 = 0, x - 9 = 0Therefore x = 9, x = -16 (Invalid)

Hence, BD = x = 9cm52. Ans.(C)



$$DE^{2} = AD \times BD$$
$$DE^{2} = (24 + 8) \times 8$$
$$DE^{2} = 32 \times 8$$
$$DE = \sqrt{16 \times 16}$$
$$DE = 16cm$$

53.

Ans.(B): The number of diagonals in a polygon with n sides =  $\frac{n}{2} \times (n-3)$ : Number of sides in a polygon n = 27 : Number of diagonals =  $\frac{27}{2} \times (27 - 3)$  $=\frac{27\times24}{2}=27\times12=324$ Ans.(A) : Let the number of sides of the polygon = n

54.

According to Question - $(n-2)\pi = 1260$ (n-2)180 = 1260n = 9

55. Ans.(A)

Sum of the interior angles of an equilateral of n sides =  $(2n - 4) \times 90^{\circ}$ : Sum of internal angles of a (octagonal) equilateral with 8 sides  $= (2 \times 8 - 4) \times 90 = 1080$ 

Ans.(B) 56.

Exterior angle of a polygon, =  $\frac{360^{\circ}}{\text{Number of sides}}$ External angle  $=\frac{360^{\circ}}{5}=72^{\circ}$ Interior angle =  $180^{\circ} - 72^{\circ} = 108^{\circ}$ 

#### 57. Ans.(C)

Number of diagonals in a polygon with n sides n(n-1)

$$= \frac{n(n-1)}{2} - n$$
  
=  $\frac{19 \times (19-1)}{2} - 19$   
=  $\frac{19 \times 18}{2} - 19$   
=  $19 \times 9 - 19$   
=  $19(9 - 1)$   
=  $19 \times 8$   
=  $152$ 

#### 58. Ans.(D)

Sum of the interior angles of a polygon with n sides =  $(2n-4) \times 90^{\circ}$ 

Every inner angle of the octagon =  $\frac{(2\times 8-4)\times 90^0}{8}$  $=\frac{12\times90}{8}$  $=\frac{1080}{8}$ Every internal angle of the dodecagon  $=\frac{(2\times 12-4)\times 90^{0}}{2}$ 12  $=\frac{1800}{12}$ Ratio =  $\frac{1080}{8}:\frac{1800}{12} = 9:10$ 

#### 59. Ans.(C)

Number of vertices of a polygon

$$=\frac{n}{2}\times(n-3)$$

Number of vertices of an equilateral of 26 sides =  $\frac{26}{2}(26-3)$  $= 13 \times 23 = 299$ 

#### **60**. Ans.(D)

Measurement of inner angles of polygons = (n-2)180 n

$$= \frac{\frac{(8-2)\times 180}{8}}{135^0}$$

#### 61. Ans.(A)

: Each inner angle of an equilateral of n sides =  $\frac{(2n-4)\times90}{7}$ 

: Every internal angle of the heptagon  $=\frac{(2\times7-4)\times90}{}$  $=\frac{900}{7}=128.57^{0}$ 

#### **62**. Ans.(D)

Inner Angle of Polygon =  $\frac{(n-2)}{n}$  180 : Every internal angle of the pentagon

$$= \frac{(5-2)}{5} 180$$
$$= \frac{3 \times 180}{5} = \frac{540}{5} = 108^{\circ}$$

63. Ans.(A) : Number of sides (n) = 28

Number of diagonal =  $\frac{n(n-3)}{2}$ 28(28-3)

$$=\frac{28\times25}{2}=350$$

**64**. Ans.(D) Number of diagonals in a polygon =  $\frac{n}{2}(n-3)$ 

$$= \frac{17}{2}(17 - 3)$$
$$= \frac{17}{2} \times 14 = 119$$

65. Ans.(C)

> Let angle =  $x^0$ According to Question - $180^{\circ} - x^{\circ} = 3(90^{\circ} - x^{\circ}) + 15^{\circ}$  $2x^{\circ} = 270^{\circ} + 15^{\circ} - 180^{\circ}$  $2x^{\circ} = 105^{\circ}$  $x = 52.5^{\circ}$

#### 66. Ans.(D)

 $\angle AOC = 67^{\circ}$  $\therefore \angle BOC = 180 - 67$  $\angle BOC = 113^{\circ}$ The bisector of  $\angle BOC$  is OD. Therefore  $\angle BOD = \frac{\angle BOC}{2}$  $\angle BOD = \frac{113}{2}$  $\angle BOD = 56.5^{\circ}$ Ans.(B)

# **67**.



Given, AB ∥ CD  $\angle AFE = 30^{\circ}$  $\angle FCD = ?$  $\triangle AEF से$  $\angle AFE = 30^{\circ}$  (Given)  $\angle FAE = 90^{\circ}$ : The sum of the three angles of  $\Delta$  is 180<sup>0</sup>.  $\therefore 90^{\circ} + 30^{\circ} + \angle AEF = 180^{\circ}$  $\therefore \angle AEF = 180^{\circ} - 120^{\circ} = 60^{\circ}$  $\angle BEC = 60^{\circ}$  (Vertically Opposite Angle)  $\angle FEB + \angle BEC = 180^{\circ}$  (Alternate angle)  $\angle FEB + 60^{\circ} = 180^{\circ}$  $\angle FEB = 120^{\circ}$  $\because \angle FEB = \angle FCD$  (corresponding angle)  $\therefore \angle FCD = 120^{\circ}$ Ans.(A) Given -

# **68**.

Pillar heights = 8m, 12m



Let the ropes cut each other at a height of h meters above the ground.

$$OP = \frac{a \times b}{a+b}$$
$$h = \frac{12 \times 8}{12+8} = \frac{12 \times 8}{20} = \frac{24}{5}m$$

#### 69. Ans.(D)

Let the angle of the triangle be x, 2x, 3x, then-

Sum of all three angles of triangle =  $180^{\circ}$  $x + 2x + 3x = 180^{\circ}$  $6x = 180^{\circ}$  $x = 30^{\circ}$ 

Therefore, the smallest angle will be 30°.

#### 70. Ans.(A)

One side of an equilateral triangle =  $6\sqrt{3}$ 



$$= 108 - 27$$

 $(AC)^2 = 81$ 

Height = 9 cm

#### 71. Ans.(C)

According to Question -PQ + QR + PR = 24 cm



In a triangle, the line joining the midpoints of two sides is parallel and half of the third side.

$$ZX = \frac{1}{2}QR$$
 .....(i)  

$$XY = \frac{1}{2}PR$$
 .....(ii)  

$$ZY = \frac{1}{2}PQ$$
 .....(iii)  
Adding equation (i), (ii) and (iii) -  

$$ZX + XY + ZY = \frac{1}{2}(QR + PQ + PR)$$
  

$$\frac{1}{2} \times 24 = 12 cm$$
  
Thus perimeter of  $\Delta XYZ = 12cm$ 

72.



From the Thales theorem -

$$\frac{AD}{AB} = \frac{AE}{EC}$$
$$\frac{3}{1} = \frac{3.3}{EC}$$
$$EC = 1.1$$

AC = AE + EC = 3.3 + 1.1 = 4.4

73. Ans.(A) :

> Let the length of a rectangular plot be  $\ell$  m and width b m.

: Perimeter of rectangular plot =  $2(\ell + b)$ According to Question,  $: \ell = b + 5$ 

- $\therefore 2(\ell + b) = 142$
- $\Rightarrow 2(b + 5 + b) = 142$
- $\Rightarrow (2b + 5) = 71$
- $\Rightarrow 2b = 71 5$
- $\Rightarrow 2b = 66$
- $\Rightarrow b = 33m$
- $\ell = 33 + 5 = 38m$

Therefore, the length will be 38 meters and the width will be 33 meters.

#### 74. Ans.(A)

The second diagonal of the rhombus is d<sub>2</sub>.

side (a) =  $\frac{1}{2}\sqrt{d_1^2 + d_2^2}$ Where  $d_1$  and  $d_2$  are diagonals of rhombus.

$$12 = \frac{1}{2} \sqrt{12^2 + d_2^2}$$

$$12 \times 2 = \sqrt{12^2 + d^2}$$
Squaring both sides
$$(24)^2 = 12^2 + d_2^2$$

$$d_2^2 = (24)^2 - (12)^2$$

$$= (24 + 12)(24 - 12)$$

$$= 36 \times 12 = 432$$

$$\therefore d_2 = 12\sqrt{3} cm$$

75. Ans.(C)

76.



Hence the rotational symmetry will be 2. Ans.(C)



$$= \sqrt{R^2 + r^2 + 2Rr - R^2 - r^2 + 2Rr}$$
  

$$= \sqrt{4Rr}$$
  

$$PQ = 2\sqrt{Rr}$$
  

$$PQ^2 = (2\sqrt{Rr})^2$$
  

$$= 4Rr$$
  
Ans.(C)



∴ The angle made by an arc of a circle at the center is twice the angle made at the circumference by the same arc. ∠BOC = 2∠A

$$\therefore \angle BOD = \frac{\angle BOC}{2} = \frac{\angle \angle A}{2} = \angle A$$

79. Ans.(C)

$$\therefore DE^{2} = DA \times BD$$

$$DE^{2} = (AB + BD) \times BD$$

$$6^{2} = (5 + BD) \times BD$$

$$36 = 5BD + BD^{2}$$

$$\Rightarrow BD^{2} + 5BD - 36 = 0$$

$$\Rightarrow BD^{2} + 9BD - 4BD - 36 = 0$$

$$\Rightarrow BD(BD + 9) - 4(BD + 9) = 0$$

$$(BD - 4)(BD + 9) = 0$$

$$BD - 4 = 0, BD \neq -9$$

$$BD = 4 \text{ cm}$$

80.



So, 
$$\angle BAC = 72^{\circ}$$

If the angle between the line and the chord passing through one end of the chord of the

circle is equal to the angle subtended by the chord in the alternate segment, then this line is the tangent line of the circle. Let O be the center of the circle and AC is the chord of this circle. A straight line DE going through point C is drawn such that  $\angle BCD = \angle BAC$  where  $\angle BAC$  is located in the alternating segment. Thus  $\angle BAC = 72^{\circ}$ 

81. Ans.(D)

Let the internal angle and external angle be 4x and x respectively. Internal Angle = 180 -Angle 4x = 180 - x 5x = 180 x = 36Number of side =  $\frac{360}{\text{External angle}} = \frac{360}{36} = 10$ 

# 82. Ans.(D)

Sum of interior angles of polygons =  $(2n - 4) \times 90^{\circ}$ =  $(2 \times 7 - 4) \times 90^{\circ}$ =  $10 \times 90^{\circ} = 900^{\circ}$ 

# 83. Ans.(C)

If n is the number of sides Every angle of the equilateral =  $\frac{(n-2)\times 180}{n}$   $108 = \frac{(n-2)\times 180}{n}$  108n = 180n - 360 180n - 108n = 360 72n = 360  $n = \frac{360}{72}$ Number of sides n = 5 **Ans.(A)** 

Every exterior angle of a polygon

$$= \frac{360^{\circ}}{n(\text{ Number of sides})}$$
$$n = \frac{360}{10} = 36$$

85. Ans.(C)

84.

Sum of interior angles of a polygon with n sides

 $(\Sigma \theta) = n \times 180 - 360$ 1440 =  $n \times 180 - 360$  $n \times 180 = 1440 + 360$ 

$$n \times 180 = 1440$$
  
 $n \times 180 = 1800$ 

$$n = 10$$

If a polygon has n sides, then the number of diagonals in it

$$D = \frac{n}{2}(n-3)$$

**78**.
$$D = \frac{10}{2}(10 - 3)$$
  

$$D = 5 \times 7$$
  

$$D = 35$$

Ans.(B)

86.

Each interior angle of an equilateral

$$= \frac{(n-2)\pi}{n} \\ \frac{(n-2)180^{\circ}}{n} = 168^{\circ} \\ 180^{\circ}n - 360^{\circ} = 168^{\circ}n \\ 12^{0}n = 360^{\circ} \\ n = 30 \\ Thus, the number of sides n = 30 \\ \end{cases}$$

87. Ans.(A)

The sum of two complementary angles is 
$$90^{\circ}$$
  
Small angle =  $\frac{7}{11+7} \times 90$ 

$$= \frac{7}{18} \times 90 = 35^{\circ}$$

## 88. Ans.(C)

Given –  $\angle BAC = 55^{\circ}$   $\triangle ABC \cong \triangle XYZ$ So by the rule of congruence –



or 
$$\angle BAC = \angle Z$$
  
 $55^{\circ} = \angle ZXY$ 

89. Ans.(D)

According to Question, In  $\Delta ABC$ 





From the angle bisector theorem -

$$\frac{AB}{BD} = \frac{AC}{CD}$$
$$\frac{8}{6} = \frac{AC}{7.5}$$
$$AC = \frac{8 \times 7.5}{6}$$
$$AC = 10 \text{ cm.}$$





Length of transverse tangent



$$= \sqrt{100 - 64} = \sqrt{36}$$
$$= 6cm$$

92. Ans.(D)



The center of the circumcircle formed on any right triangle is at the midpoint of the

hypotenuse of the triangle, which is the diameter of the circle.

Radius of a circle  $=\frac{\sqrt{4^2+3^2}}{2}=\frac{\sqrt{25}}{2}=5/2cm$ Area of the circle  $\pi r^2 = \pi \times \left(\frac{5}{2}\right)^2$  $=\pi \times \frac{25}{4} = 6.25\pi cm^2$ Ans.(C)



In  $\triangle POA \angle OAP = 90^{\circ}$  (The perpendicular drawn on the tangent form right angle.)

 $\angle OPA = 55^{\circ} \left(\frac{110^{\circ}}{2} = 55^{\circ}\right)$ Therefore  $\angle OAP + \angle OPA + \angle POA = 180^{\circ}$  $90^{\circ} + 55^{\circ} + \angle POA = 180^{\circ}$  $\angle POA = 180^{\circ} - (90^{\circ} + 55^{\circ})$  $= 180^{\circ} - 145^{\circ}$  $\angle POA = 35^{\circ}$ 

94.

Ans.(D)

Let the length of BD = x cm



Formula –  

$$(DE)^2 = DB \times DA$$
  
 $(8)^2 = x \times (x + 12)$   
 $\Rightarrow 64 = x^2 + 12x$   
 $\Rightarrow x^2 + 12x - 64 = 0$   
 $\Rightarrow x^2 + (16 - 4)x - 64 = 0$   
 $\Rightarrow x(x + 16) - 4(x + 16) = 0$   
 $\Rightarrow (x + 16)(x - 4) = 0$   
 $\Rightarrow x = -16($  Invalid)  
 $\Rightarrow x = 4cm.$   
Hence,  $DB = 4cm$   
**Ans.(D)**  
From the picture,

95.

From the picture,  $\angle PAO = \angle PBO = 90^{\circ}$   $\angle APB = 75^{\circ}$  $\because PAOB$  is a quadrilateral



96.

**97**.

: The sum of the four angles of a quadrilateral is 360°. : PAOB Is a quadrilateral - $\therefore \angle APB + \angle PBO + \angle PAO + \angle AOB = 360^{\circ}$  $75^{\circ} + 90^{\circ} + 90^{\circ} + \angle AOB = 360^{\circ}$  $\angle AOB = 360^{\circ} - 255^{\circ} = 105^{\circ}$ Type – 4 Ans.(C) In identical  $\triangle ADE$  and ABC - $\frac{Area \ of \ \Delta ADE}{Area \ of \ \Delta ABC} = \left(\frac{AD}{AB}\right)^2$  $\frac{Area \ of \ \Delta ADE}{63} = \left(\frac{AD}{3AD}\right)^2$ Area of  $\triangle ADE = 7$  square units Similarly - $\Delta AFG \cong \Delta ABC$  $\therefore \frac{Area \ of \ \Delta AFG}{Area \ of \ \Delta ABC \ and} = \left(\frac{AF}{AB}\right)^2$  $\Rightarrow \frac{Area \text{ of } \Delta \text{ AFG}}{63} = \left(\frac{2AD}{3AD}\right)^2$  $\Rightarrow$  Area of  $\triangle AFG = \frac{4}{9} \times 63 = 28$  Sq. unit  $\therefore Area of \ \Delta DEFG = \Delta AFG - \Delta ADE$ = 28 - 7 = 21 sq. unit Ans.(C) B

$$\therefore \Delta ABC \sim \Delta DEF$$
  

$$\therefore \frac{Area \ of \ \Delta ABC}{Area \ of \ \Delta DEF} = \left(\frac{BC}{EF}\right)^2$$
  

$$\frac{144}{Area \ of \ \Delta DEF} = \left(\frac{4}{7}\right)^2$$
  

$$Area \ of \ \Delta DEF = \frac{144 \times 49}{16} = 441 \text{ sq. cm}$$
  
Ans.(C)

4 6 D C C C C

From the Thales Theorem,  
In 
$$\Delta CGF$$
  
Let EF = x  
 $\frac{CD}{GD} = \frac{CE}{EF}$   
or  $\frac{CD}{CE} = \frac{GD}{EF}$  ......(1)  
Again in  $\Delta CHI$   
 $\frac{CD}{DH} = \frac{CE}{EI}$   
 $\frac{CD}{CE} = \frac{DH}{EI}$  .....(2)  
 $\therefore$  From equation (1) and (2),  
 $\frac{GD}{EF} = \frac{DH}{EI}$   
 $\frac{6}{x} = \frac{6+4}{x+8}$   
 $10x = 6x + 48$ 

EF = 12 **Ans.(C)**If the angles of the triangle are x, 2x and 3x. then x + 2 x + 3 x = 180°  $6x = 180^{\circ}$   $x = 30^{\circ}$  $\therefore$  Largest angle =  $3x = 3 \times 30 = 90^{\circ}$ 

100. A

**99**.

98.



 $\angle ABC = 75^{\circ}$  (Opposite angle)  $\angle ACB = 40^{\circ}$  (Opposite angle)  $\therefore \angle BAC = 180^{\circ} - (75^{\circ} + 40^{\circ})$  $= 180^{\circ} - 115^{\circ} = 65^{\circ}$ But  $\angle BAC + a = 180^{\circ}$  (angle of linear pair)  $a = 180^{\circ} - 65^{\circ} = 115^{\circ}$ 

## 101. Ans.(D)

All four sides are the same length in both square and rhombus. But the angles of each of the four corners in the square are right angled, while the opposite angles of rhombus are same.

## 102. Ans.(D)

Trapezium is a quadrilateral that has a pair of parallel opposite sides.



103. Ans.(C) The rotational symmetry of a trapezium is 1.
104. Ans.(C)



In a triangle, the line joining the midpoints of two sides is parallel to and half of the third side.

DF||BC  
And 
$$DF = \frac{1}{2}BC$$
 .....(i)  
 $\therefore$  E is the midpoint of BC  
 $\therefore BE = \frac{1}{2}BC$  .....(ii)  
From equation (i) and equation (ii) –  
D F = B E

 $:: DF \parallel BC \Rightarrow DF \parallel BE$ 

Hence quadrilateral BEFD is a parallelogram.

105. Ans.(C)

> The order of rotational symmetry of a parallelogram is 2.

106. Ans.(D)



In the figure, circle A and circle B touch on point R. Then

AR = BR = 4 units (radius of the circle.)

PR and QR are the diameters of circle A and circle B respectively.

Then, PR = QR = 2AR

 $PR = QR = 2 \times 4 = 8$  unit

I.e. maximum length of PQ =  $2 \times PR$ 

 $= 2 \times 8 = 16$  units

#### 107. Ans.(A)

108.

From the figure,



Let radius of the circle = r

$$\therefore$$
 Area =  $\pi r^2$ 

$$= 48\pi = \pi r^2$$

$$r = \sqrt{48} = 4\sqrt{3}$$

Radius of the circle = Length of perpendicular OP in equilateral triangle PQR

$$\Rightarrow 4\sqrt{3} = \frac{\sqrt{3}}{2}a$$
$$\therefore a = 4 \times 2 =$$

Thus, length of the side of the triangle = 8Ans.(B)

8

 $\therefore$  Angle formed by all 6 parts at the center of the circle =  $360^{\circ}$ 



: Angle made by each part at center of circle  $=\frac{360^{\circ}}{6}=60^{\circ}$ 

#### 109. Ans.(B)

The largest chord of the circle is the "diameter" which passes through the center of the circle.



The shape with seven sides is called the heptagon.

360

#### 111. Ans.(C)

The sum of the interior angles of a polygon = (n - 2) 180.

112. Ans.(C)

Number of sides of polygon =  $\frac{300}{\text{Each external angle}}$ 

$$=\frac{360}{120}=3$$

113. Ans.(C)

Every exterior angle of a polygon =  $\frac{360^0}{n}$ 

$$\therefore n = \frac{360^{\circ}}{60^{\circ}} = 6$$

114. Ans.(A)

Each interior angle of an equilateral

$$= \frac{(2n-4)\times90^{0}}{n}$$
$$= \frac{(2\times9-4)\times90^{0}}{9} = 140^{0}$$

115. Ans.(C)

> Let the number of sides = n Each interior angle of the equilateral

> > 12

$$= \frac{(2n-4)90^{0}}{n}$$
  

$$150 = \frac{180n - 360}{n}$$
  

$$150n = 180n - 360$$
  

$$30n = 360^{0} \Rightarrow n = 360^{0}$$

116. Ans.(B) Each exterior angle of the polygon =  $\frac{360}{10}$ Where n is the number of sides of the polvaon. Hence  $=\frac{360^\circ}{n}=9^0$  $n = \frac{360^{\circ}}{9^{0}} = 40$  Sides Thus, the number of sides of the polygon = 40. 117. Ans.(C) Number of sides of a polygon 360<sup>0</sup> = Every external angle  $=\frac{360^\circ}{72^\circ}$ = 5 118. Ans.(C) In polygons, Every external angle =  $\frac{360^{\circ}}{\text{Number of sides}}$ 360°  $\Rightarrow 36^{\circ} = \frac{1000}{\text{Number of sides}}$ ∴ Number of sides = 10 119. Ans.(C) Number of sides of polygon 360 Each external angle  $=\frac{360}{45}=8$ 120. Ans.(C) Number of sides  $=\frac{300}{\text{Each external angle}}$ 360°  $=\frac{360^{\circ}}{40}=9$ 121. Ans.(C) The number of sides of any triangle is 3 and the sum of the three angles is 180°. 122. Ans.(B) Let one angle =  $x^0$ Supplementary angle =  $5x^{0}$ Sum of two supplementary angles =  $180^{\circ}$  $x + 5x = 180^{\circ}$  $6x = 180 \Rightarrow x = 30^{\circ}$ Required angle =  $30^{\circ}$ 123. Ans.(D) Let the angles be  $4x^0$  and  $5x^0$  respectively. We know that the sum of two supplementary angles is 180°.  $\therefore 4x^{\circ} + 5x^{\circ} = 180^{\circ}$  $9x^{\circ} = 180^{\circ}$  $x^{\circ} = 20^{\circ}$  $\therefore$  Big angle  $(5x^\circ) = 5 \times 20^\circ = 100^\circ$ 

### 124. Ans.(C)

Let the first angle =  $13x^0$ Second angle =  $5x^0$ Then  $13x^0 + 5x^0 = 180^\circ$  (sum of supplementary angles)  $18x^0 = 180^\circ$ ,  $x^0 = 10^\circ$ First angle =  $13 \times 10^\circ = 130^\circ$ Second angle =  $5 \times 10^\circ = 50^\circ$ Requited difference =  $130^\circ - 50^\circ = 80^\circ$ **Ans.(C)** 

 $(6y + 70)^{\circ} + (3y + 47)^{\circ} = 180^{\circ}$   $6y^{\circ} + 70^{\circ} + 3y^{\circ} + 47^{\circ} = 180^{\circ}$   $9y^{\circ} + 117^{\circ} = 180^{\circ}$  $9y^{\circ} = 180^{\circ} - 117^{\circ}$ 

 $9y^{\circ} = 63^{\circ}, y^{\circ} = 7^{\circ}$ 

## 126. Ans.(A)

125.

We know that the sum of complementary angles is equal to 90°.  $\therefore$  By question,  $(7x + 5)^{\circ} + (x + 5)^{\circ} = 90^{\circ}$   $\Rightarrow 7x^{\circ} + 5^{\circ} + x^{\circ} + 5^{\circ} = 90^{\circ}$   $\Rightarrow 8x^{\circ} = 90^{\circ} - 10^{\circ}$   $8x^{\circ} = 80^{\circ}$   $x^{\circ} = \frac{80^{\circ}}{8^{\circ}} = 10^{\circ}$ Ans (A)

## 127. Ans.(A)

Let both complementary angles be  $4x^0$  and  $5x^0$  respectively.  $\cdot 4x^0 + 5x^0 = 00^\circ$ 

∴ 
$$4x^{\circ} + 5x^{\circ} = 90^{\circ}$$
  
 $9x^{\circ} = 90^{\circ}$   
 $x^{\circ} = 10^{\circ}$   
∴ First complementary angle =  $40^{\circ}$   
Second complementary angle =  $50^{\circ}$   
∴ Required ratio =  $(40)^{2}$ : $(50)^{2}$   
= 1600: 2500  
= 16: 25

## 128. Ans.(C)

- $\angle 1 = \angle 4$  (Corresponding angles)
- $\angle 4 = \angle 6$  (Vertically Opposite Angle)
- $\angle 6 = \angle 9$  (Corresponding angles)

So, angle 1, 4, 9 are equal.



When 2 straight lines intersect each other, the angles enclosed are the complementary angles.

- 130. Ans.(B) Vertical lines on the same line are parallel to each other.
- 131. Ans.(A)

133.



$$\therefore \frac{\Delta ABC \ Dimension}{\Delta PQR \ Dimension} = \frac{AB}{PQ}$$
$$\frac{36}{24} = \frac{AB}{10}$$
$$AB = \frac{360}{24} = 15$$

#### 134. Ans.(C)

Let the length of the rectangle = 4xAnd the width of the rectangle = 3x: Diagonal of rectangle

 $=\sqrt{(4x)^2 + (3x)^2} = 5x$ 

: Length: Diagonal = 4x: 5x = 4:5

#### 135. Ans.(D)

Let the width of the rectangular plot = x mLength of plot = (x + 20) m Dimension = 2 (length + width)= 2(x + x + 20) meter = (4 x + 40) meter в Х D X + 20According to Question - $(4x + 40) \times 26.50 = 5300$ 4x + 40 = 2004x = 160x = 40 meter

Length of plot = (x + 20) m  $(10 \pm 20)$  motor

$$= (40 + 20)$$
 meter  
= 60 meter

136. Ans.(D)

> According to Question, Circumference of circle  $2\pi r = 132$

$$2 \times \frac{22}{7} \times r = 132$$
  
$$r = \frac{132 \times 7}{2 \times 22} = 21 \text{ cm.}$$

Circumference = 
$$2\pi \frac{r\theta}{360} + 2\pi$$
  
=  $\frac{132 \times 135}{360} + 2 \times 21$   
= 49.5 + 42 = 91.5 cm  
Ans.(A)

60°

According to the picture,  $\angle AOB = 60^{\circ}$   $\because \angle A = \angle B = 60^{\circ}$ Hence,  $\triangle OAB$  will be an equilateral triangle.  $\because OA = OB = AB = 8$  cm.  $\because OA$  and OB are radius of circle. Hence r = 8 cm.

### 138. Ans.(B)

137.



Length of tangent AB

$$AB = \sqrt{(\text{Distance between centers})^2 - (\text{Radius difference})^2}$$
$$= \sqrt{d^2 - (r_1 - r_2)^2}$$

139.



Since the perpendicular inserted from the center of the circle on the chord, divides the chord into two equal parts –

 $OA^2 = OC^2 + AC^2$ {where, AC = 12cm}  $r^2 = 5^2 + 12^2$  $r^2 = 25 + 144 = 169$ r = 13 cm

## 140. Ans.(C)

The second quartile is between 90° and 180°.  $sin 90^{\circ} = 1$   $sin 180^{\circ} = 0$ Hence,  $0 < sin \theta < 1$ 

The value of sin  $\theta$  is between 1 and 0.

## 141. Ans.(C)

Each interior angle of an polygon with n sides.

$$= \frac{(n-2) \times 180}{n}$$
  

$$150 = \frac{(n-2) \times 180}{n}$$
  

$$150n = 180n - 360$$
  

$$30n = 360$$
  

$$n = \frac{360}{30} = 12$$

Thus, this polygon will be a dodecagon.

## 142. Ans.(B)

Sum of interior angles of a polygon  $-(n-2) \times 180$ 

$$= (n-2) \times 180$$

Hence it is clear that the other statement is true whereas statement (4) is false.

## 143. Ans.(D)

Let the number of sides of the polygon = n According to Question,

$$\frac{(2n-4) \times 90}{n} - \frac{360^{\circ}}{n} = 36^{\circ}$$

$$\frac{180n - 360^{\circ} - 360^{\circ}}{144n} = 36^{\circ}$$

$$\frac{144n}{144n} = 720^{\circ}$$

$$n = \frac{720}{144}$$
Thus, number of sides = 5

144. Ans.(D)

Sum of the interior angles of the equilateral polygon =  $2160^{\circ}$ 

$$(2n-4)90^{\circ} = 2160^{\circ}$$
  
 $(2n-4) = 24$ 

(2n - 4) = 22n = 28

$$n = 14$$

Thus, there are 14 sides in a polygon.

# 27. (Elementary

1. The mean of the figures 2, x, 7, 3, y, 9, 6 is 6, where x and y are constant. If x is replaced by 3x + 1 and y is replaced by y + 3, the mean 2 increases. Find the value of x –

	RRB Group-D - 20/09/2022	(Shift-III)
<b>(A)</b> 7	<b>(B)</b> 8	
<b>(C)</b> 10	<b>(D)</b> 5	

2. The mean of the 8 smallest numbers in a group is 17 while when taken together, the mean of all the numbers in the group is 20. If the mean of the remaining numbers after leaving the smallest eight numbers is 22, then how many numbers are there in the group?

	RRB Group-D - 28/11/2022 (Shift-II)
<b>(A)</b> 20	<b>(B)</b> 22
<b>(C)</b> 18	<b>(D)</b> 19

**3.** The mean of 21 observations (all different) is 40. If the value of the median is increased to 21, then the value of the observations increases, the mean of the observations will be:

 RRB Group-D - 17/11/2022 (Shift-II)

 (A) 50
 (B) 50.5

 (C) 30
 (D) 45

4. The mean of the 8 smallest numbers in a group is 12.5, while the mean of all 14 numbers in the group is 14. What is the mean of the largest 6 numbers?

	RRB Group-D -10/10/2018 (Shift-I)
(A) 16.50	<b>(B)</b> 16.00
(C) 17.00	<b>(D)</b> 15.50

5. The arithmetic mean of a set of numbers is 12. The mean of another set of numbers is 15. If the combined mean of both sets is 12.5, what will be the ratio of frequency of the two groups?

	RRB Group-D - 24/10/2018 (Shift-II)
( <b>A)</b> 3: 1	<b>(B)</b> 5: 1
( <b>C)</b> 3: 2	<b>(D)</b> 5: 2

6. Find the median of 67, 34, 57, 32, 12, 92, 51, 62, 62, 57, 93 and 5.

 RRB Group-D - 06/12/2018 (Shift-III)

 (A) 56.5
 (B) 32

 (C) 57
 (D) 62

7. Mean of an observation set  $x_1, x_2 \dots \dots x_{10}$  is 20. Find out mean of  $x_1 + 4, x_2 + 8 \dots \dots x_{10} + 40$ .

	RRB Group-D - 15/11/2018 (Shift-I)
<b>(A)</b> 34	<b>(B)</b> 32
<b>(C)</b> 42	<b>(D)</b> 52

8. In one examination, the mean of 36 students in mathematics was 72.50. On revising the digits, it was found that if a student's marks were mistakenly written 65 instead of 56, what would be the correct mean?

RRB G	roup-D - 12/11/2018 (Shift-III)
<b>(A)</b> 71.50	<b>(B)</b> 72.25
(C) 72	<b>(D)</b> 73

**9.** One group with 17 members had a mean score of 15, while another group with n members had a mean score of 12. If their combined mean was 13.7, find the value of n.

	RRB Group-D -12/11/2018 (Shift-III)
<b>(A)</b> 12	<b>(B)</b> 13
<b>(C)</b> 14	<b>(D)</b> 11

**10.** The mean weight of six children is 17.5 kg. If the individual weights of five of these children are 14, 19, 23, 21 and 13 kg respectively, find the weight of the sixth child.

	RRB Group-D - 05/11/2018 (Shift-III)
(A) 17 kg	g <b>(B)</b> 15kg
(C) 16kg	<b>(D)</b> 18kg

**11.** The mean of the digits will be based on the data given below:

अंक	0	1	2	3	4	8	
छात्रों की संख्या	6	5	4	3	2	5	
RRB Grou	p-D	- 23	/10/2	2018	3 (S	hift-	-III)
<b>(A)</b> 3.3		(B)	2.8				
(C) 2.5		(D)	3.2				

**12.** The four numbers a, b, c and d are such that average of a and b is 19.5 and their overall average is 23. The average of c and d will be

RRB Group-D - 01/10/2018 (Shift-I)

<b>(A)</b> 26.5	<b>(B)</b> 25.5
<b>(C)</b> 24.5	<b>(D)</b> 27.5

13. Mean of numbers 27+x, 31+x, 89+x, 107+x and 156+ x is 82, then find out mean of 130+x, 126+x, 68+x, 50+x and 1+x?

RRB Group-D - 23/11/2022 (Shift-II) (A) 30 (B) 75 (C) 50 (D) 70

14. Arithmetical mean of series  $x_1, x_2, x_3, \dots, x_n$  is 1, then find the arithmetical mean of  $\frac{x_1}{k}, \frac{x_2}{k}, \frac{x_3}{k}, \dots, \frac{x_n}{k}$  (k > k0).

RRB Group-D - 19/11/2022 (Shift-I)

(A) $\frac{1}{k}$	<b>(B)</b> k
(C) $\frac{2}{k}$	<b>(D)</b> 2k

15. Find the median of the numbers 5, 17, 68, 17, 32, 45, 64, 37, 93, 45, 78, 32, 35 and 45. RRB Group-D - 12/11/2018 (Shift-I)

	KKB Gloup-D - 12/11/2010 (Simit
<b>(A)</b> 41	<b>(B)</b> 44
<b>(C)</b> 42	<b>(D)</b> 43

16. Find the median of the prime numbers from 1 to 55?

	RRB Group-D - 08/10/2018 (Shift-III)
<b>(A)</b> 22	<b>(B)</b> 20
<b>(C)</b> 21	<b>(D)</b> 19

17. Points scored by 12 persons - 6, 17, 89, 16, 10, 15, 21, 9, 11, 12 and 16. Find their median.

RRB Group-D - 01/10/2018 (Shift-II) (A) 11.5 **(B)** 11.6 (C) 10.4 **(D)** 12

18. Following are the points obtained by a Kabaddi team in a series of matches. 17, 2, 7, 27, 15, 5, 14, 8, 10, 24, 48, 10, 8, 7, 18.28 Find the median of the marks obtained by the team.

RRB Group-D - 18/11/2022 (Shift-III)

<b>(A)</b> 11	<b>(B)</b> 12
<b>(C)</b> 16	<b>(D)</b> 15

19. In a school, the statistics (in cm) of height survey of 50 girls of class X are as follows:

Length (in cm)	Number of girls
Less than 140 cm	4
Less than 145 cm	11
Less than 150 cm	29
Less than 155 cm	40
Less than 160 cm	46
Less than 165 cm	50

Find the median of their height.

RRB Group-D -30/10/2018 (Shift-II)

(A) 144.03 cm	<b>(B)</b> 148.89 cm
(C) 145.03 cm	(D) 149.03 cm

20. The following graph shows the 12 months price of cabbage. What is the median of their values?



	KKB Group-D - 17/11/2022 (Shint-iii)
<b>(A)</b> 55	<b>(B)</b> 40
<b>(C)</b> 50	<b>(D)</b> 60

21. The mean of 12, 13, 15, 18, x, 28, 18, 12, 6, 8 is 15. What is the median of the data? 25/11/2022 (Shift-III)

RRB G	roup-D - 25/11/2022 (Shif
<b>(A)</b> 14.5	<b>(B)</b> 13.5
<b>(C)</b> 14	<b>(D)</b> 13

22. Find the mean of the first 10 numbers in the Fibonacci series: A Fibonacci number is the sum of the last two numbers in that series. The first two Fibonacci numbers are 0 and 1 respectively.

	RRB Group-D - 11/10/2018 (Shift-III)
<b>(A)</b> 4	<b>(B)</b> 3
(C) 5	<b>(D)</b> 4.5

In a survey conducted by a group of students 23. on 20 households in a local area, the results of the following frequency table related to the number of household family members have been found.

household size	Number of families
1-3	7
3-5	9
5-7	2
7-9	1
9-11	1

Find the mode of these data.

RRB Group-D - 20/09/2022 (Shift-III)

<b>(A)</b> 3.571	<b>(B)</b> 3.444
<b>(C)</b> 3.628	<b>(D)</b> 3.286

- 24. The wickets taken by a bowler in 12 cricket matches are as follows:
   2, 6, 4, 3, 5, 0, 3, 2, 1, 3, 2, 3
   RRB Group-D 18/11/2022 (Shift-II)
   (A) 4
   (B) 2
   (C) 3
   (D) 1
- 26. The details of the number of persons taking loans from the bank are given below, based on the interval of their age group.

		<u> </u>			
age group	20	30	40	50	60
	-	-	-	-	-
	30	40	50	60	70
number of	37	38	70	42	13
persons					

Find the mode.

RRB Group-D - 15/11/2018 (Shift-III)(A) 45.33(B) 44.89(C) 45.67(D) 45.12

**27.** Below, the details of the 100 students present in the class are given based on their attendance (day).

Number of	6	10	14	18	22
days of	-	-	-	-	-
attendance	10	14	18	22	26
Number of students	9	28	34	18	11
=					

Find the mode.

RRB Group-D - 12/11/2018 (Shift-I)(A) 15.09(B) 15.01(C) 14.71(D) 15.04

**28.** If the mean of 3, 4, a, b, 10 is 6 and the median is 5 and a <b, then the values of a and b are \_\_\_\_\_ and \_\_\_\_\_ respectively.

 RRB Group-D - 19/11/2022 (Shift-III)

 (A) 7, 6
 (B) 5, 8

 (C) 6, 7
 (D) 8, 5

**29.** Sachin Tendulkar scored 38, 70, 48, 34, 42, 55, 63, 46, 54, and 44 against Australia in ten innings. Find the average deviation in terms of mean.

RRB Group-D - 01/09/2022 (Shift-III)

- (A)  $\frac{44}{5}$  (B)  $\frac{43}{5}$ (C)  $\frac{41}{5}$  (D)  $\frac{42}{5}$
- **30.** If the mean deviation of the numbers 1, 1 + d, 1 + 2d ..... 1 + 100d is 255, then d is equal to.

	RRB Group-D -16/11/2018 (Shift-II)
<b>(A)</b> 20.2	<b>(B)</b> 10.1
<b>(C)</b> 20.0	<b>(D)</b> 10.5

**31.** What would be the possibility of taking out a face card from a pack of cards?

 RRB Group-D - 12/10/2018 (Shift-I)

 (A)  $\frac{6}{13}$  (B)  $\frac{12}{13}$  

 (C)  $\frac{3}{13}$  (D)  $\frac{3}{26}$ 

**32.** From a pack of cards, what is the probability of extracting an ace?

	RRB Group-D - 16/10/2018 (Shift-I)
(A) $\frac{12}{12}$	( <b>B</b> ) $\frac{15}{15}$
$(n)^{\frac{13}{9}}$	() <sup>26</sup>
$(0)\frac{1}{13}$	(D) <u>13</u>

**33.** There are 100 pens in a box of which 8 are defective. A pen is taken out of the box. Find the probability that it is not defective?

RI	२B Group-D - 29/10/2018 (Shift-III)
<b>(A)</b> 23/25	<b>(B)</b> 8/100
(C) 100 8	<b>(D)</b> 25/23

**34.** If 75% of the data represents upper quartile and 25% of the data represents lower quartile, then the median will be:

	RRB Group-D - 01/09/2022 (Shift-III)
(A) 20%	<b>(B)</b> 100%
<b>(C)</b> 50%	<b>(D)</b> 80%

**35.** Out of a set of four numbers, the mean of the three smallest numbers is 19 and the mean of the three largest numbers is 23. What will be the range of this set?

	RRB Group-D - 08/10/2022	(Shift-II)
<b>(A)</b> 18	<b>(B)</b> 12	
<b>(C)</b> 14	<b>(D)</b> 15	

**36.** The mean of three numbers is 20. The range of this data set is 12 while the difference of two smaller numbers is 3, the larger number is:

RRB Group-D - 28/11/2022 (Shift-II)
<b>(B)</b> 25
<b>(D)</b> 24

**37.** The mean of the three numbers is 33 and the range of data is 29. The middle number is 27 less than the sum of the other two numbers. What is the largest number among these three numbers?

 RRB Group-D - 03/12/2018 (Shift-II)

 (A) 46
 (B) 45

 (C) 48
 (D) 47

**38.** The mean of the three numbers was 35 and the range of the figures was 24. The difference between the largest and the middle number was three times the difference between the smallest and the middle number. Which is the largest of these three numbers?

 RRB Group-D - 23/10/2018 (Shift-III)

 (A) 51
 (B) 50

 (C) 49
 (D) 52

**39.** The ratio of the number of blue and red balls in a bag is fixed. When the number of red balls was 68, the number of blue balls was 36. If the number of blue balls is 63, what should be the number of red balls in the bag?

	RRB Group-D - 23/11/2022 (Shift-I)
<b>(A)</b> 119	<b>(B)</b> 98
(C) 110	<b>(D)</b> 102

**40.** Find the least common multiple of the mode, median and mean of the data given below. 7, 2, 10, 4, 3, 12, 8, 4, 6, 4

, , -,	RRB Group-D -26/11/2022 (Shift-I)
<b>(A)</b> 30	<b>(B)</b> 20
<b>(C)</b> 12	<b>(D)</b> 60

**41.** For the following data, find (Mode × Median + Mean).

9, 1, 11, 3, 2, 12, 8, 4, 6, 4 **RRB Group-D - 30/10/2018 (Shift-I)** (A) 34 (B) 31 (C) 26 (D) 29

**42.** The mean of the three numbers was 15 and the range of figures was 9. The difference between the largest number and the middle number was twice the difference between the middle number and the smallest number. Which is the largest of the three numbers?

RRB Group-D - 22/10/2018 (Shift-II)

<b>(A)</b> 20	(B) 21
<b>(C)</b> 19	<b>(D)</b> 22

**43.** The range of the set of four integers a, b, c and d arranged in ascending order is 20. The difference between c and a is equal to the difference between d and b. The arithmetical

mean of these numbers is 25. Which of the following number is the value of a?

	RRB Group-D - 16/11/2018 (Shift-I)
<b>(A)</b> 13	<b>(B)</b> 15
<b>(C)</b> 14	<b>(D)</b> 16

**44.** The arithmetic mean of the marks obtained by the students of a class is 58. Among them, the mean of the marks obtained by 20% was 60 and the mean of the marks obtained by 30% was 40. What was the mean of the marks obtained by the remaining students?

RRB F	RPF Constable - 20/01/2019 (Shift-II)
<b>(A)</b> 65	<b>(B)</b> 66
<b>(C)</b> 68	<b>(D)</b> 70

**45.** Mean of observations x, x + 3, x + 5, x + 8, x + 9 is 9. Find the mean of last three observations.

 RRB RPF Constable -17/01/2019 (Shift-I)

 (A)  $\frac{32}{3}$  (B)  $\frac{31}{3}$  

 (C)  $\frac{35}{3}$  (D)  $\frac{34}{3}$ 

**46.** Since a student's marks were mistakenly typed 86 instead of 68, the mean of the class increased by 1/2. What is the total number of students?

 RRB RPF Constable - 19/01/2019 (Shift-II)

 (A) 34
 (B) 36

 (C) 38
 (D) 40

**47.** If the mean of five observations x, x + 3, x + 4, x + 6 and x + 7 is 11, then the mean of the last three observations will be:

	RRB RPF SI - 16/01/2019 (Shift-II)
<b>(A)</b> 12	<b>(B)</b> 12.67
<b>(C)</b> 19	<b>(D)</b> 13

**48.** The average of the marks obtained by 40 students in an examination is 72.5. Later it was discovered that a student's marks were mistakenly written 48 instead of 84. Find the correct mean.

	RRB RPF SI - 13/01/2019 (Shift-III)
(A) 71.3	<b>(B)</b> 72.4
(C) 77.5	<b>(D)</b> 73.4

49. Find the median of all positive factors of 48. RRB RPF SI - 12/01/2019 (Shift-III)

<b>(A)</b> 16	<b>(B)</b> 12
( <b>C)</b> 8	<b>(D)</b> 7

50. Find the median of  $1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}$ . RRB RPF Con 22/01/2019 (Shift-III)

(A) $\frac{1}{4}$	( <b>B</b> ) $\frac{1}{2}$
(C) $\frac{1}{6}$	(D) $\frac{3}{4}$

- 51. Find the median of 5, 2, 2, 7, 3 and 8. RRB RPF Constable - 22/01/2019 (Shift-III) (A) 3.5 (B) 4.5 (C) 4 (D) 3
- 52. Find the mode of 3, 12, 4, 6, 8, 5, 4. RRB RPF SI - 06/01/2019 (Shift-II) (A) 5 (B) 8 (C) 4 (D) 3
- **53.** The mean of a distribution is 24 and the standard deviation is 6. What is the value of variance coefficient?

	RRB RPF SI - 11/01/2019 (Shift-I)
<b>(A)</b> 50%	<b>(B)</b> 25%
<b>(C)</b> 100%	<b>(D)</b> 75%

- 54. If the standard deviation of the population is 10, what will be its variance coefficient? RRB RPF Constable 25/01/2019 (Shift-I) (A) 100 (B) 30 (C) 5 (D) 20
- **55**. Find the Standard deviation of {11, 7, 10, 13, 9}.

 RRB RPF SI - 10/01/2019 (Shift-II)

 (A) 1
 (B) 2

 (C) 4
 (D) 5

**56.** Satish kept 5 yellow and 3 blue balls in a closed box. His brother Manish picks up two balls at random.

Find the probability of picking balls of the same color.

RRB RPF Constable - 17/01/2019 (Shift-III) (A)  $\frac{15}{12}$  (B)  $\frac{15}{12}$ 

28	• 23
$(n)^{13}$	(D) <sup>11</sup>
$(0){28}$	

**57.** Find the probability that the sum of the digits coming when a dice is thrown twice is 10.

	RRB RPF SI - 05/01/2019 (Shift-II)
<b>(A)</b> 3	<b>(B)</b> 1/36
<b>(C)</b> 1/12	<b>(D)</b> 5/36

**58.** Find the range of the figures 9, 5, 9, 3, 4, 7, 8, 4, 8, 9, 5, 9.

 RRB RPF Constable - 24/01/2019 (Shift-III)

 (A) 3
 (B) 5

 (C) 6
 (D) 4

**59.** Find the range of data 11, 13, 9, 17, 13, 19, 10, 11.

	RRB RPF SI - 12/01/2019 (Shift-II)
<b>(A)</b> 6	<b>(B)</b> 10
<b>(C)</b> 11	<b>(D)</b> 13

**60**. If the arithmetic mean of 10 numbers is 35, then 2 is added to each, then what will be the mean of the new range of numbers?

	RRB NTPC 10/08/2022Shift: 3
<b>(A)</b> 28	<b>(B)</b> 34
<b>(C)</b> 40	<b>(D)</b> 37

**61.** The mean of the marks obtained by 12 students of a class is 67.4. If the mean of the marks obtained by 15 students of another class is 72.3, what will be the combined mean of the two classes?

	RRB NTPC 10/08/2022 Shift: 2
<b>(A)</b> 70.12	<b>(B)</b> 69.85
(C) 71.23	<b>(D)</b> 68.94

**62**. The mean of the four different observations is 17.5, when a new observation whose value is 20 is added to it, then what will be its new mean?

(A)

(C)

	RRB NTPC 23/07/2022 Shift : 2
18	<b>(B)</b> 17.5
19	<b>(D)</b> 18.5

**63**. The arithmetic mean of 20 observations is 15.5. It was later found that one observation accidentally read 42 instead of 24. So find the correct mean?

	RRB NTPC 23/07/2022	Shift: 3
<b>(A)</b> 14	<b>(B)</b> 14.4	
<b>(C)</b> 14.6	<b>(D)</b> 15	

**64.** The mean of 22 observations is 10. Including two more observations, the new mean becomes 11. The mean of two new observations is-

RRB NTPC 11/08/2022 Shift: 1
<b>(B)</b> 20
<b>(D)</b> 22

**65.** The mean of 8 observations is 10. Three more observations are added to these and the new mean becomes 12. The mean of three new observations is:

	RRB NTPC 09/05/2022 Shift: 2
<b>(A)</b> 16	<b>(B)</b> 18
<b>(C)</b> 17.33	<b>(D)</b> 15

- 66. The mean of the data  $1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}$  is- **RRB NTPC 02/02/2021Shift: 1** (A)  $\frac{15}{18}$  (B)  $\frac{13}{18}$ (C)  $\frac{7}{9}$  (D)  $\frac{8}{9}$
- 67. If mean of data 18, 16, 22, 13 and ? is 16, then find the value of ?.
  RRB NTPC 06.04.2016 Shift: 1
  (A) 9
  (B) 11
  (C) 10
  (D) 12
- **68.** The mean of 9 observations is 18. Four more observations are included and the new mean becomes 19. The mean of four new observations is-

	RRB NIPC 02/02/20215nift: 3
<b>(A)</b> 21.25	<b>(B)</b> 20.25
<b>(C)</b> 19	<b>(D)</b> 22

- 69. Find the mean of the first 6 prime numbers. **RRB NTPC 11/08/2022Shift: 1** (A) 14/3
   (B) 3
   (C) 41/6
   (D) 13/2
- 70. The median of the following numbers (figures) is
   7, 21, 2, 17, 3, 13, 7, 4, 9, 7, 9
   RRB NTPC 23/07/2022 Shift-3
   (A) 4
   (B) 17
   (C) 7
   (D) 9
- **71.** Find the median of 9, 0, 2, 8, 5, 3, 5, 4, 1, 5, 2, 7.

	KKD NIPC 10/00/2022 Shift: 2
<b>(A)</b> 5	<b>(B)</b> 6.5
<b>(C)</b> 4.5	<b>(D)</b> 4

- **73.** Find the median of 25, 23, 26, 29, 31, 39 and 11.

	RRB NTPC 10/08/2022 Shift: 1
<b>(A)</b> 25	<b>(B)</b> 26
<b>(C)</b> 29	<b>(D)</b> 31

**74.** Find the median of the numbers 55, 53, 59, 56, 61, 69, and 31.

RRB NTPC 10/08/2022 Shift: 2

<b>(A)</b> 55	<b>(B)</b> 56
<b>(C)</b> 59	<b>(D)</b> 61

- 75. Find the median of the following set of numbers. 2, 3, 4, 3, 0, 5, 1, 1, 3, 2 RRB NTPC 12/08/2022Shift: 3 **(A)** 0 **(B)** 3 (D) 2.4 (C) 2.5 76. If the numbers 3, 6, 7, 11, x, 15, 19, 20, 25, 28 are in ascending order and their median is 13, then find x? RRB NTPC 23/07/2022 Shift : 3 (A) 11 **(B)** 12 (C) 13 (D) 14 77. Find the median of the data -3, 4, 0, 4, -2, -5, 1.7.10.5. RRB NTPC 02/02/2021Shift : 2 (A) 2 **(B)** 2.5 **(D)** 3 (C) 2.75 78. What is the median of the numbers? 3, 3, 5, 7, 8, 8, 8, 9, 11, 12, 12 RRB NTPC 19.01.2017 Shift: 3 (A) 9 **(B)** 7 (C) 8 (D) 12 79. What is the median of the numbers? 87, 21, 53, 12, 86, 98, 23, 64, 87, 23, 23, 87, 56, 12, 53 RRB NTPC 09/05/2022 Shift: 3 (A) 53.5 **(B)** 54 (D) 56.5 (C) 53 80. The median of the following terms 32, 12, 23, 17, 28, 25, 43 was determined: Later it was found that 17 was written by mistake instead of 29, now what will be the changed median? RRB NTPC 12/08/2022Shift: 1 (A) 29 (B) 17 (C) 23 (D) 28 81. Find the mode of 12, 1, 10, 1, 9, 3, 4, 9, 7, 9. RRB NTPC 23/07/2022 Shift-1 (A) 9 (B) 12 (C) 1 (D) 7 Find the mode of 32, 34, 35, 36, 35, 34, 33, 82. 35, 33, 31 and 37. RRB NTPC 10/08/2022 Shift : 3 (A) 33 **(B)** 34
  - (C) 35 (D) 32

83.	Find the mode of 12, 14, 15, 16, 15, 14, 13,
	15, 13, 11 and 17.

RRB NTPC 10/08/2022 Shift: 3

<b>(A)</b> 13	<b>(B)</b> 14
(0) 45	(D) 40

**(C)** 15 **(D)** 12

**84.** Find the mode of 2, 4, 5, 6, 5, 4, 3, 5, 3, 1 and 7.

	RRB NTPC 10/08/2022 Shift:
<b>(A)</b> 3	<b>(B)</b> 4
( <b>C)</b> 5	<b>(D)</b> 2

85. If the mode of the following figures is 52, find the value of x. 52, 45, 49, 54, 56, x-3, 56
 RRB NTPC 11/08/2022Shift : 2
 (A) 52
 (B) 55

· · ·	•=	<b>ι</b>	,
(C)	54	(D)	<b>)</b> 56

- 86. Find the mode of  $1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{2}{4}$ . RRB NTPC 11/08/2022Shift: 3 (A)  $\frac{1}{4}$  (B)  $\frac{1}{2}$ (C)  $\frac{3}{4}$  (D) 1
- **87.** If the standard deviation of a population is 9.5, what will be its variance?

	RRB NTPC 11/08/2022 Shift : 1
<b>(A)</b> 19	<b>(B)</b> 90.25
<b>(C)</b> 81.25	<b>(D)</b> 93.25

**88.** If the standard deviation of a population is 4.5, what will be its variance?

 RRB NTPC 09/05/2022 Shift: 1

 (A) 20.25
 (B) 20

 (C) 9
 (D) 18

**89.** If the standard deviation of the population is 11, what will be the variance of the population?

	RRB NIPC 02/02/20215nift:
<b>(A)</b> 44	<b>(B)</b> 121
(C) 22	<b>(D)</b> 33

**90.** If the standard deviation of a distribution is 4, what is the value of variance?

	RRB NTPC 09/05/2022 Shift: 3
<b>(A)</b> 8	<b>(B)</b> 9
<b>(C)</b> 16	<b>(D)</b> 12

**91.** 4 out of 5 cricketers have played 13, 9, 5, 11 innings respectively. If the mean of the data set is 9, then the number of innings played by that 5th player is

RRB NTPC 10/08/2022Shift-1

<b>(A)</b> 9	<b>(B)</b> 8
<b>(C)</b> 7	<b>(D)</b> 6

92. The mean of the 8 observations is 10.5. If seven observations out of observations are 3. 15, 7, 19, 12, 17 and 8, then find the eighth observation -RRB NTPC 10/08/2022 Shift: 1 **(A)** 10 (B) 11 **(D)** 12 (C) 3 93. The mean of distributions is 14 and the standard deviation is 5. Find the variance coefficient. RRB JE - 01/06/2019 (Shift-I) (A) 60.4% **(B)** 27.9% (C) 35.7% (D) 48.3% 94. The mean deviation of the figures 3, 10, 10, 4, 7 10 5 is-

, -,	RRB NTPC 23/07/2022	Shift-1
(A) $\frac{49}{7}$	(B) <sup>19</sup> / <sub>7</sub>	
(C) $\frac{50}{7}$	(D) $\frac{18}{7}$	

**95.** The standard deviation of a set of 10, 11, 12, 9, and 8 is......

KKR I	NIPC	12/08	3/2022	2Shift:	2
	(-	1-			

<b>(A)</b> 1	<b>(B)</b> √2
<b>(C)</b> 2	<b>(D)</b> 2√2

**96.** If the standard deviation of a distribution is 6, what is the value of its variance?

	RRB NTPC 18.01.2017 Shift: 3
<b>(A)</b> 8	<b>(B)</b> 24
<b>(C)</b> 36	<b>(D)</b> 12

**97.** Find the standard deviation if the variance of a data set is 196.

	RRB NTPC 02/02/2021Shift : 1
<b>(A)</b> ±14	<b>(B)</b> 14
<b>(C)</b> 96	<b>(D)</b> 98

**98.** Variance of a data set is 121; find the standard deviation of the data.

	RRB NTPC 02/02/2021Shift: 2
<b>(A)</b> ±11	<b>(B)</b> 11
(C) 21	<b>(D)</b> 60.5

**99.** If the variance of a set of data is 81, find the standard deviation of the data.

	RRB NTPC 02/02/2021Shift : 3
<b>(A)</b> ±9	<b>(B)</b> 9
<b>(C)</b> 81	<b>(D)</b> 40.5

**100.** The multiplier of a set of data is 64 then find the standard deviation.

RRB NTPC 11/08/2022Shift: 1

<b>(A)</b> ±8	<b>(B)</b> 8
<b>(C)</b> 14	<b>(D)</b> 64

**101.** Find the standard deviation if the variance of a data set is 361.

	RRB NTPC 11/08/2022Shift : 3
<b>(A)</b> ±19	<b>(B)</b> 19
<b>(C)</b> 361	<b>(D)</b> 180.5

**102.** The variance of a data set is 169, then find the standard deviation.

	RRB NTPC 26.04.2016 Shift : 2
<b>(A)</b> ±13	<b>(B)</b> 13
<b>(C)</b> 69	<b>(D)</b> 845

**103.** What will be standard deviation of n observation of  $x_1, x_2, x_3, \dots, x_n$ , whose mean is  $\bar{x}$  and frequency is  $f_1, f_2, f_3, \dots, f_x$  respectively?

RRB NTPC 23/07/2022 Shift: 3

(A) 
$$\sqrt{\frac{\sum_{i=1}^{n} f_{i}(x_{i}-\bar{x})}{\sum_{i=1}^{n} f_{i}}}$$
 (B)  $\sqrt{\frac{\sum_{i=1}^{n} f_{i}(x_{i}-\bar{x})^{2}}{\sum_{i=1}^{n} f_{i}}}$   
(C)  $\sqrt{\frac{\sum_{i=1}^{n} f_{i}(x_{i}^{2}-\bar{x})}{\sum_{i=1}^{n} f_{i}}}$  (D)  $\sqrt{\sum_{i=1}^{n} f_{i}(x_{i}-\bar{x})}$ 

**104.** What will be standard deviation of n observation of  $x_1, x_2, x_3, \dots, x_n$ , whose mean is  $\overline{x}$ .

RRB NTPC 23/07/2022 Shift: 3

(A) $\sqrt{\frac{\sum_{1}^{n}(x_{i}-\bar{x})}{n}}$	(B) $\sqrt{\frac{\sum_{1}^{n} (x_i - \bar{x})^2}{n}}$
(C) $\sqrt{\frac{\sum_{1}^{n} \left(x_{i}^{2} - \bar{x}\right)}{n}}$	(D) $\sqrt{\frac{\sum_{1}^{n} (x_i - \bar{x})^2}{n}}$

**105.** If a box has 3 white cushions, 4 red cushions and 5 blue cushions, what is the probability of choosing a white or blue cushion?

 RRB NTPC 09/05/2022 Shift: 2

 (A) 2/3
 (B) 3/4

 (C) ¼
 (D) 1/9

106. When a coin is tossed once, what is the probability of getting head? RRB NTPC 12/08/2022Shift: 1

<b>(A)</b> 1	<b>(B)</b> 1/2
<b>(C)</b> 2	<b>(D)</b> 0

**107.** Find the range of these figures. 6, 7, 8, 9, 5, 6, 7, 4, 8, 9, 5, 9 **RRB NTPC 12/08/2022Shift: 1** 

<b>(A)</b> 2	<b>(B)</b> 3
<b>(C)</b> 4	<b>(D)</b> 5

**108.** 2, 1, 2, 3, 4, 5, 7, 3, 5, 2, 4 Find the range of data of 2, 1, 2, 3, 4, 5, 7, 3, 5, 2, 4.

RRB NTPC 12/08/2022Shift : 2 (A) 5 (B) 4 (C) 3 (D) 6

109.	Find the ra	ange of these digits.
	12, 11, 18	, 28, 19, 13, 19, 18
		RRB NTPC 30.03.2016 Shift : 2
	<b>(A)</b> 11	<b>(B)</b> 17
	<b>(C)</b> 18	<b>(D)</b> 19

**110.** If the variance of 2, 4, 5, 6, 8, 18 figures is 23.33, then the variance of 4, 8, 10, 12, 16, 36 figures will be-

	RRB NTPC 02/02/2021Shift: 1
<b>(A)</b> 11.66	<b>(B)</b> 46.66
<b>(C)</b> 93.3333	<b>(D)</b> 483

- 111.
   Find the range of 10, 21, 5, 1, 3, 17, 19, 2.

   RRB NTPC 09.04.2016 Shift: 3

   (A) 19
   (B) 10

   (C) 20
   (D) 17
- 112. If the following information  $60 \sum x^2 = 18000$  is related to a specimen of  $\sum x = 960$ , then variation is:

<b>(A)</b> 55	<b>(B)</b> 44
<b>(C)</b> 22	<b>(D)</b> 16

 113.
 Find the range of data of 3, 1, 4, 6, 5, 7, 3, 8, 1, 4.

 RRB NTPC 26.04.2016 Shift: 1

<b>(B)</b> 8
<b>(D)</b> 6

**114.** Find the mean, mode and median of 3, 4, 5, 3, 6, 3, 4, 5, 3 –

	RRB NTPC 12/08/2022Shift: 1
<b>(A)</b> 4, 4, 4	<b>(B)</b> 4, 4, 3
<b>(C)</b> 3, 4, 4	<b>(D)</b> 4, 3, 4

**115.** Find the median, mode and mean of 9, 5, 8, 9, 9, 7, 8, 9, 8.

	RRB NTPC 12/08/2022Shift: 2
<b>(A)</b> 9, 9, 9	<b>(B)</b> 9, 8, 9
<b>(C)</b> 8, 9, 8	<b>(D)</b> 8, 9, 9

**116.** Find the mode and median of 8, 6, 8, 7, 8, 6, 8, 7, 6.

RRB NTPC 30.03.2016 Shift: 1

(A) 7 and 8	<b>(B)</b> 6 and 7
(C) 8 and 7	<b>(D)</b> 6 and 8

**117.** What is the mean and mode of these figures 1, 9, 5, 4, 2, 1, 9, 9, 2, 1, 9, 1, 2,1 ?

	RRB NTPC 11/08/2022Shift:
(A) 4 and 9	<b>(B)</b> 5 and 1
(C) 4 and 1	<b>(D)</b> 5 and 9

**118.** The mean of a distribution is 13 and the standard deviation is 7. What is the value of variance coefficient?

	RRB NTPC 11/08/2022 Shift : 1
<b>(A)</b> 50%	<b>(B)</b> 76.77%
(C) 53.85%	<b>(D)</b> 38.88%

119. The mean of 20 observations is 19. Another observation is included and the new mean becomes 20. The 21st observation is-RRB NTPC 11/08/2022 Shift: 2

<b>(A)</b> 20	<b>(B)</b> 30
<b>(C)</b> 40	<b>(D)</b> 42

**120.** The mean of a distribution is 18 and the standard deviation is 4.5. What is the value of the coefficient of variation?

	RRB NTPC 11/08/2022 Shift: 2
<b>(A)</b> 50%	<b>(B)</b> 25%
<b>(C)</b> 100%	<b>(D)</b> 75%

**121.** The mean of a distribution is 11 and the standard deviation is 5. What is the value of variance coefficient?

	RRB NTPC 11/08/2022 Shift: 2
<b>(A)</b> 45.45%	<b>(B)</b> 35.35%
(C) 25.25%	<b>(D)</b> 55.55%

**122.** The mean of a distribution is 10 and the standard deviation is 5. What is the value of variance coefficient?

	RRB NTPC 18.04.2016 Shift: 2
<b>(A)</b> 50%	<b>(B)</b> 100%
(C) 150%	<b>(D)</b> 200%

**123.** If the standard deviation of a population is 8, what will be its variance?

	RRB NTPC 18.04.2016 Shift: 2
<b>(A)</b> 64	<b>(B)</b> 16
<b>(C)</b> 32	<b>(D)</b> 24

124. The mean of a distribution is 24 and the standard deviation is 8. What is the value of variance coefficient? RRB NTPC 18.04.2016 Shift: 3

	RRB NTPC 18.04.2016 Shift
<b>(A)</b> 16.66%	<b>(B)</b> 66.66%
<b>(C)</b> 33.33%	<b>(D)</b> 100%

**125.** The mean of a distribution is 20 and the standard deviation is 4, so what will be the value of its coefficient variation?

	RRB NTPC 09/05/2022 Shift: 1
<b>(A)</b> 10	<b>(B)</b> 20
<b>(C)</b> 40	<b>(D)</b> 60

**126.** The mean of a distribution is 18 and the standard deviation is 7. What is the value of variance coefficient?

	RRB NTPC 09/05/2022 Shift: 2
<b>(A)</b> 50%	<b>(B)</b> 76.77%
<b>(C)</b> 54.44%	<b>(D)</b> 38.88%

**127.** The mean of a distribution is 21 and the standard deviation is 7. What is the value of variance coefficient?

	RRB NTPC 09/05/2022 Shift: 3
<b>(A)</b> 16.66%	<b>(B)</b> 66.66%
<b>(C)</b> 33.33%	<b>(D)</b> 100%

**128.** The average of the results of 35 test is 21. The average of the first 17 results is 19 and the average of the last 17 is 22. What is the value of the result of the 18th test?

	RRB NTPC 02/02/2021Shift :
<b>(A)</b> 42	<b>(B)</b> 36
<b>(C)</b> 38	<b>(D)</b> 34

**129.** The mean of a distribution is 15 and the standard deviation is 5. What is the value of variance coefficient?

	RRB NTPC 02/02/2021Shift: 3
<b>A)</b> 16.66%	<b>(B)</b> 66.66%
<b>C)</b> 33.33%	<b>(D)</b> 100%

**130.** If the value of the mode is 14 and the arithmetic mean is 5, then the value of the median is:

	RRB NTPC 10.04.2016 Shift: 3
<b>(A)</b> 8	<b>(B)</b> 18
(C) 12	<b>(D)</b> 14

**131.** Find the mode and median of 3, 4, 5, 5, 3, 6,7, 3, 5, 5, 6.

	RRB NTPC 09.04.2016 Shift: 3
(A) 5 and 5	<b>(B)</b> 3 and 5
(C) 5 and 4	<b>(D)</b> 3 and 4

**132.** If a data set variance is 324, find the standard deviation.

	RRB NTPC 11/08/2022Shift: 2
<b>(A)</b> ±18	<b>(B)</b> 18
<b>(C)</b> 324	<b>(D)</b> 162

**133.** If the mean value of the height of 12 men is 1.70 meters and the mean height of 8 women is 1.60 meters. Then what is the sum (in meters) of the total length of 8 women?

RRB NTPC 19.01.2017 Shift: 1

<b>(A)</b> 12.9	<b>(B)</b> 12.8
(C) 12.4	<b>(D)</b> 13

**134.** The mean of a distribution is 80 and the standard deviation is 16. What is the value of the variance coefficient?

	RRB NTPC 02/02/2021Shift: 1
<b>(A)</b> 10%	<b>(B)</b> 20%
<b>(C)</b> 40%	<b>(D)</b> 6%

**135.** If the standard deviation of the population is 13, what will be the variance of the population?

	RRB NTPC 02/02/2021Shift: 3
<b>(A)</b> 78	<b>(B)</b> 39
<b>(C)</b> 26	<b>(D)</b> 169

**136.** Find the median, mode and mean of 9, 8, 3, 5, 1, 9, 8, 2, 9.

	RRB NTPC 26.04.2016 Shift: 1
<b>(A)</b> 9, 9, 6	<b>(B)</b> 9, 6, 9
<b>(C)</b> 8, 9, 6	<b>(D)</b> 8, 5, 6

**137.** If the standard deviation of a distribution is 9, what is the value of the variance?

	RRB NTPC 09/05/2022 Shift: 2
<b>(A)</b> 18	<b>(B)</b> 27
<b>(C)</b> 81	<b>(D)</b> 36

**138.** The mean of the lengths of 6 bars is 44.2 cm. is. The mean of the lengths of 5 bars is 46 cm, then what will be the length (in cm) of the sixth bar?

	RRB NTPC 23/07/2022 Shift: 3
<b>(A)</b> 35	<b>(B)</b> 35.2
<b>(C)</b> 35.1	<b>(D)</b> 35.5

**139.** The frequency distribution of diameter (D) of 101 steel balls is given in the following list –

D	43	44	45	46	47	48
(mm)						
No.	13	15	22	21	16	14

Find the mean of diameter in mm.

RRB Pa	ramedical -20/07/2019 (Shift-I)
<b>(A)</b> 45.4	<b>(B)</b> 45.5
(C) 45.7	<b>(D)</b> 45.6

140. Find the median of 1.9, 8.4, 3.6, 5.8. RRB Paramedical -21/07/2019 (Shift-III)

<b>(A)</b> 5.1	<b>(B)</b> 4.7
( <b>C)</b> 5.2	<b>(D)</b> 5.6

**141.** Find the range, mode and median of 13, 14, 13, 12, 15, 21, 16, 18, and 13.

	cai - 20/07/2010 (Shint-in)
<b>(A)</b> 9, 13, 14	<b>(B)</b> 6, 13, 14
<b>(C)</b> 8, 13, 14	<b>(D)</b> 5, 13, 14

**142.** Find the frequency 'x' absent in this figure, given that the arithmetic mean is 28.

profit %	0 -	10	20	30	40	50
	10	—	—	—	—	—
		20	30	40	50	60
Number of stores	12	18	27	X	17	6
RRB JE - 30/05/2019 (Shift-II)						
<b>(A)</b> 20			(B)	15		
<b>(C)</b> 12			(D)	24		

**143.** If the mean of K, 2K + 1, 2K + 5, 2K + 9 is 30, find the value of 'K'.

	RRB JE - 27/06/2019 (Shift-I)
<b>(A)</b> 15	<b>(B)</b> 5
<b>(C)</b> 12	<b>(D)</b> 20

144.Find the median.<br/>(a + 4), (a - 3.5), (a - 2.5), (a - 3), (a - 2), (a + 2), (a + 0.5) and (a - 0.5)<br/>RRB JE - 27/05/2019 (Shift-II)<br/>(A) <math>a - 1.25 (B) a - 2.5<br/>(C) a - 1.5 (D) a - 0.75

145. Calculate the median for these data.

(1) 20	RRB JE - 30/05/2019 (Shift-						
Number of Employees	5	10	15	20	10	5	
rs.	- 14	- 19	- 24	- 29	- 34	- 39	
Daily	10	15	20	25	30	35	

<b>(A)</b> 20	<b>(B)</b> 12.33
<b>(C)</b> 26.4	<b>(D)</b> 25.13

146.	Find the mode of this distribution.							
	Class	1	10	20	30	40	50	
	interval	-	-	-	-	-	-	
		10	20	30	40	50	60	
	Frequency	3	16	26	31	16	8	
RRB JE - 27/06/2019 (Shi							(Shift	i-I)
	<b>(B)</b> 35							
			(D) :	32.5				

**147.** The standard deviation of a group of values is 4.5. If each value increases by K, find the variance of the new set of values.

	RRB JE - 26/06/2019 (Shift-I)
<b>(A)</b> 10.5	<b>(B)</b> 20.25
<b>(C)</b> 100.25	<b>(D)</b> 4.5

**148.** The variance of 5 values is 16. If each value is doubled, find the standard deviation of the new value.

	RRB JE - 28/05/2019 (Shift-I)
<b>(A)</b> 16	<b>(B)</b> 4
<b>(C)</b> 10	<b>(D)</b> 8

149. The variance of 5 values is 36. If each value is doubled, find the standard deviation.
 RRB JE - 30/05/2019 (Shift-III)
 (A) 12
 (B) 6

	<b>``</b>
<b>(C)</b> 18	<b>(D)</b> 10

- 150. Find the standard deviation of the given sample data.
   6, 12, 9, 7, 8, 4, 3, 12, 15, 4
   RRB JE 26/06/2019 (Shift-I)
   (A) 3.80 (B) 2
  - (C) 3.48 (D) 4
- **151.** Find the standard deviation of the first 'n' natural numbers.

RRB JE - 02/06/2019 (Shift-II)

(A) 
$$\sqrt{\frac{n^2-1}{12}}$$
 (B)  $\frac{n(2n+1)}{3}$   
(C)  $\sqrt{\frac{n^2+1}{6}}$  (D)  $\frac{n(n+1)}{12}$ 

**152.** If a number is chosen at random, what is the probability that a two-digit number is not a prime number?

RRB JE - 29/05/2019 (Shift-II)

# Solution

2.

1. Ans.(D)

Mean = 
$$\frac{\text{sum of digits}}{\text{number of digits}}$$
  
6 = 
$$\frac{2 + x + 7 + 3 + y + 9 + 6}{7}$$
  
x + y + 27 = 42  
x + y = 42 - 27  
x + y = 15 .....(i)  
According to Question,  

$$\frac{27 + 3x + 1 + y + 3}{7} = 8$$
  
31 + 3x + y = 56  
3x + y = 56 - 31

<b>(A)</b> 7/30	<b>(B)</b> 23/30
(C) 21/90	<b>(D)</b> 67 /90

**153.** When a pair of dice is thrown, what is the probability that the sum of the numbers is odd?

	RRB JE - 29/05/2019 (Shift-II)
<b>(A)</b> 1	<b>(B)</b> 0.25
<b>(C)</b> 0.4	<b>(D)</b> 0.5

**154.** In a shooting competition, the probability of penetrating a target is 1/2 for A, 2/3 for B and 3/4 for C. If they shoot to hit the target together, what is the probability of one of them hitting the target?

	RRB JE - 28/05/2019 (Shift-I)
<b>(A)</b> 1 6	<b>(B)</b> 3/8
<b>(C)</b> 2/3	<b>(D)</b> 1/4

**155.** One black, one red and one green dice are thrown together. What is the probability that the sum of three numbers is ≥17?

	RRB JE - 30/05/2019 (Shift-III)
<b>(A)</b> 7/216	<b>(B)</b> 5/216
<b>(C)</b> 1/54	<b>(D)</b> 1/36

**156.** The variance of a set of values  $X_1 X_2, ..., X_n$ , is given by which of the following formulas?

RRB JE - 01/06/2019 (Shift-II)

(A) 
$$\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2$$
 (B)  $\left(\frac{\sum x}{n}\right)^2 - \frac{\sum x^2}{n}$   
(C)  $\left(\frac{\sum x}{n}\right)^2$  (D)  $\frac{\sum x^2}{n} - \frac{\sum x}{n}$ 

- 157.
   Find the range of the first 7 prime numbers.

   RRB JE 27/06/2019 (Shift-III)
   (A) 15
   (B) 8.3

   (C) 9
   (D) 17

3x + y = 25....(ii) From equation (i) and equation (ii) - x = 5

Ans.(A) Let the total number in the group = x According to Question –  $8 \times 17 + (x - 8)22 = x \times 20$ 136 + 22x - 176 = 20x-40 + 22x = 20x2x = 40x = 20Total number in group = 20 3. Ans.(A)

4.

Total of 21 observations = 21 × 40 = 840 If the value of the median is increased to 21, the value of observations increases. Increased value of observations =  $(21 - 11) \times 21 = 210$ Mean of observations =  $\frac{\text{Total mean + Increased value}}{21}$ =  $\frac{840 + 210}{21} = 50$ Ans.(B) Mean of the eight smallest numbers in the

group = 12.5 Sum of the smallest eights =  $8 \times 12.5 = 100$ Mean of all 14 numbers = 14 Sum of 14 numbers =  $14 \times 14 = 196$ Sum of 6 largest numbers = 196 - 100 = 96Mean of 6 largest numbers =  $\frac{96}{6} = 16$ [*Thus, the required mean* = 16]

## 5. Ans.(B)

Let the number of terms in the first set of numbers (frequency) = n<sub>1</sub> And the number of terms in the second set of numbers (frequency) = n<sub>2</sub> According to Question –  $\Rightarrow 12 \times n_1 + 15 \times n_2 = (n_1 + n_2) \times 12.5$  $\Rightarrow 12n_1 + 15n_2 = 12.5n_1 + 12.5n_2$  $\Rightarrow 15n_2 - 12.5n_2 = 12.5n_1 - 12n_1$  $\Rightarrow 2.5n_2 = .5n_1 \Rightarrow \frac{n_1}{n_2} = \frac{5}{1}$ Hence ratio of frequency of both groups = 5: 1

## 6. Ans.(C)

Write the given numbers in ascending order 5, 12, 32, 34, 51,  $\overline{57}$ ,  $\overline{57}$ , 62, 62, 67, 92, 93 Total numbers (n) = 12 even  $Median = \frac{\binom{n}{2}^{th} term + \binom{n}{2} + 1^{th} term}{2}$   $= \left[\frac{6^{th} term + 7^{th} term}{2}\right]^2$   $= \left[\frac{57 + 57}{2}\right] = \frac{114}{2} = 57$  **Ans.(C)**   $x_1 + x_2 + x_3 + \dots - x_{10} = 200$  ......(i) Then, mean  $= \frac{(x_1 + 4) + (x_2 + 8) + (x_3 + 12) + \dots - (x_{10} + 40)}{2}$ 

$$= \frac{x_1 + x_2 + x_3 + \dots + x_{10}^{10} + 4 + 8 + 12 + \dots + 40}{10}$$
  
=  $\frac{200 + 5(4 + 40)}{10}$  (From equation (i))  
=  $\frac{200 + 220}{10} = \frac{420}{10} = 42$ 

7.

**Ans.(B)** Correct mean  $= \frac{36 \times 72.50 + (56-65)}{36}$ 

$$=\frac{2610-9}{36}=\frac{2601}{36}=72.25$$

9.

10.

Ans.(B) Total score of 17 members = 17 x 15 = 255 Total score of n member = 12n According to Question,  $\frac{255 + 12n}{17 + n} = 13.7$  13.7n + 232.9 = 255 + 12n 13.7n - 12n = 255 - 232.9 1.7n = 22.1 n = 13Ans.(B) Let the weight of the sixth child be x kg

$$\therefore 17.5 = \frac{14 + 19 + 23 + 21 + 13 + x}{6}$$

$$105.0 = 90 +$$

x = 15Thus, weight of sixth child = 15 kg

x

11. Ans.(B)

Number (x)	0	1	2	3	4	7	
No. of students	6	5	4	3	2	5	$\sum_{= 25}^{f}$
fx	0	5	8	9	8	40	$\sum_{= 70}^{fx}$
Mean = $\frac{\Sigma}{2}$	$\sum f x$ $\sum f$						

$$=\frac{70}{25}=2.8$$

12. Ans.(A)

There are four numbers a, b, c, d whose average is 23. Sum of all numbers =  $4 \times 23 = 92$ Sum of a and b =  $2 \times 19.5 = 39.0$ Sum of c and d = Sum of 4 numbers – Sum of 2 numbers = 92 - 39Sum of c and d = 53Average of c and d =  $\frac{53}{2}$ Average of c and d = 26.5

## 13. Ans.(B)

Mean =  $\frac{\text{Sum of terms}}{\text{Number of terms}}$ 

$$\Rightarrow \frac{27 + x + 31 + x + 89 + x + 107 + x + 156 + x}{5} = 82$$
  
$$\Rightarrow 410 + 5x = 410$$

 $\Rightarrow 5x = 410 - 410$  $\Rightarrow 5x = 0$ x = 0Again mean $= <math>\frac{130 + x + 126 + x + 68 + x + 50 + x + 1 + x}{5}$  $= \frac{130 + 126 + 68 + 50 + 1}{5}$  $= \frac{375}{5} = 75$ 

Required mean = 75

14. Ans.(A)  
Mean = 
$$\frac{\text{Sum of terms}}{\text{Number of terms}}$$
  
 $1 = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n} - - - - - (l)$   
Therefore, mean =  $(\frac{x_1 + x_2 + x_3 + \dots + x_n}{n})$   
Mean =  $\frac{1}{k}(\frac{x_1 + x_2 + x_3 + \dots + x_n}{n})$   
Mean =  $\frac{1}{k}$   
15. Ans.(A)  
Write numbers in ascending order -  
5, 17, 17, 32, 32, 35, 37, 45, 45, 45, 64, 68,  
78, 93  
Number of terms = 14 (even)  
Median =  $(\frac{(\frac{n}{2})^{th} term + (\frac{n}{2} + 1)^{th} term}{2}$   
=  $\frac{1}{2}(7^{th} term + 8^{th} term)$   
=  $\frac{1}{2}[37 + 45]$   
=  $\frac{82}{2} = 41$   
16. Ans.(C)  
According to Question,  
All prime numbers from 1 to 55 = 2, 3, 5, 7,  
11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53  
n = 16 even  
 $\therefore Median = \frac{(\frac{n}{2})^{th} term + (\frac{n}{2} + 1)^{th} term}{2}$   
=  $\frac{(\frac{16}{2})^{th} term + (\frac{12}{2} + 1)^{th} term}{2}$   
=  $\frac{(\frac{19}{2})^{th} term + (\frac{12}{2} + 1)^{th} term}{2}$   
=  $\frac{42}{2}$   
=  $\frac{42}{2}$   
=  $21$   
Thus, the median of the total prime numbers  
from 1 to 55 = 21  
17. Ans.(A)  
Placing the series in ascending order,  
6, 8, 9, 9, 10, 11, 12, 15, 16, 16, 17, 21  
 $\therefore n = 12$  (even)  
 $(n)^{th} term + (n + 1)^{th} term$ 

$$Median = \frac{(\frac{1}{2})^{t} term + (\frac{1}{2} + 1)}{2}$$

$$\frac{(\frac{12}{2})^{th} term + (\frac{12}{2} + 1)^{th} term}{2}$$

$$= \frac{6^{th} term + 7^{th} term}{2} = \frac{11 + 12}{2}$$

$$= \frac{23}{2} = 11.5$$

18. Ans.(B)

1 /

Write the digits in ascending order -2, 5, 7, 7, 8, 8, 10, 10, 14, 15, 17, 18, 24, 27, 28, 48 The total number of terms is (n) = 16 even.

 $Median = \frac{\left(\frac{n}{2}\right)^{th} term + \left(\frac{n}{2} + 1\right)^{th} term}{2}$  $= \frac{8^{th} term + 9^{th} term}{2} = \frac{10 + 14}{2} = \frac{24}{2} = 12$ Ans.(B) Length (cm) Frequency Cumulative frequency 135 - 1404 4 7 140-145 11 145-150 18=f 29  $11 = f_{b}$ 40 150-155 155-160 6 46 160-165 4 50  $\Sigma f = N = 50$ Median =  $L + \left(\frac{N}{2} - f_b}{f}\right) \times i$ where  $\frac{N}{2} = \frac{50}{2} = 25$ = 145 +  $\frac{(25-11)}{18} \times 5$ = 145 +  $\frac{70}{18}$  $= 145 + 3.88 = 148.88 \approx 148.89$ Ans.(C) Write the given numbers in ascending order, 30, 40, 40, 40, 40, 50, 50, 50, 80, 80, 80, 80 Total number (n) = 12 (even)  $Median = \frac{\left(\frac{n}{2}\right)^{th} term + \left(\frac{n}{2} + 1\right)^{th} term}{2}$  $= \frac{\left(\frac{12}{2}\right)^{th} term + \left(\frac{12}{2} + 1\right)^{th} term}{2}$  $= \frac{6^{th} term + 7^{th} term}{2} = \frac{50 + 50}{2} = 50$ Ans (C)Ans.(C) Given 12, 13, 15, 18, x, 28, 18, 12, 6, 8 Mean = 15 $\frac{\frac{6+8+12+12+13+15+18+18+28+x}{10}}{=130+x=150} = 15$ x = 150 - 130 = 20Write data in ascending order ∴ 6, 8, 12, 12, <mark>13, 15</mark>, 18, 18, 20, 28 Number of terms = 10 (even) Median  $=\frac{1}{2}\left[\frac{n}{2}\vec{q}^*$  term  $+\left(\frac{n}{2}+1\right)^{th}$  term  $= \frac{1}{2} \left[ \left( \frac{10}{2} \right)^{th} \text{ term } + \left( \frac{10}{2} + 1 \right)^{th} \text{ term } \right]$  $=\frac{1}{2}[5^{th} \text{ term } + 6^{th} \text{ term }]$ Median  $= \frac{13+15}{2} = \frac{28}{2} = 14$ Ans.(A)

19.

20.

21.

22.

Fibonacci series =  $a_0$ ,  $a_1$ ,  $a_2$ ,  $a_3$ ,  $a_4$  ..... Where,  $a_0 = 0$  $a_1 = 1$  $a_n = a_{(n-2)} + a_{(n-1)}$ 

In this, the next number is the sum of the first two numbers.

Hence Fibonacci numbers = 0, 1, 1, 2, 3, 5, 8, 13, 21, 34

Number of terms (n) = 10 (even)

Median = 
$$\frac{(5^{th} \text{ term } + 6^{th} \text{ term })}{2} = \frac{3+5}{2} = 4$$

23. Ans.(B)

Family size	Number of family
1 – 3	$7 = f_0$
3 – 5	9 = f <sub>1</sub>
5 – 7	$2 = f_2$
7 – 9	1
9 – 11	1

The frequency of classes 3 - 5 is the highest so the mode is class 3 - 5.

28.

29.

30.

$$L = 3, f_0 = 7, f_1 = 9, f_2 = 2 \text{ and } h = 2$$
  
Mode =  $L + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right) \times h$   
=  $3 + \frac{9 - 7}{18 - 7 - 2} \times 2$   
=  $3 + \frac{2}{9} \times 2 = \frac{31}{9} = 3.444$ 

24. Ans.(C)

Mode means that the number has come more often or has a higher frequency. Therefore, the given mode has a high frequency of 3.  $\therefore$  mode of data = 3

### 25. Ans.(D)

Given data – 25, 45, 58, 87, 45, 54, 65, 12, 25, 59, 42, 60 It has 25 is maximum 2 times and 45 is 2 times.

Hence the required mode is 25, 45.

### 26. Ans.(A)

27.

Age group	Number	of
	persons	
20 – 30	37	
30 – 40	38	
40 – 50	70 Mode class	
50 - 60	42	
60 - 70	13	

Here -L = low limit of Mode class = 40  $F_1 = number of Mode classes = 70$   $F_0 = number of class above Mode class = 38$  i = higher limit - lower limit (class difference)= 10

Mode 
$$(z) = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times I$$
  
= 40 +  $\frac{70 - 38}{70 \times 2 - 38 - 42} \times 10$   
= 40 +  $\frac{32}{140 - 80} \times 10$   
= 40 +  $\frac{320}{60}$  = 40 + 5.33  
= 45.33  
Ans.(A)

Number Frequency 9 6-10 10-14  $28 = f_0$ 14-28 34-f<sub>1</sub> 18-22  $18 = f_2$ 22-26 11  $z(Mode) = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times I$   $L = 14 \ f_1 = 34 \ f_0 = 28$  $f_{2} = 18i = 4$  $z = 14 + \frac{34-28}{68-28-18} \times 4$  $= 14 + \frac{24}{22}$ z = 15.09Ans.(B) The mean of 3, 4, a, b, 10 is 6 and the median is 5 a < b Mean = Sum of total numbers Total number  $6 = \frac{3+4+a+b+10}{5}$ 30 = 17 + a + ba + b = 13Median is 5 -Median when the number of terms is odd  $\left(\frac{n+1}{2}\right)$ Number of terms (n) = 5Median =  $\left(\frac{5+1}{2}\right)^{th}$  term =  $3^{rd}$  term 5 = aa + b = 135 + b = 13b = 8a = 5, b = 8Ans.(B) Average = 34 + 38 + 42 + 44 + 46 + 48 + 54 + 55 + 63 + 70 10  $=\frac{494}{10}=$ Mean = 34+38+42+44+46 2905 5 Mean deviation  $=\frac{247}{5} - \frac{204}{5} = \frac{43}{5}$ Ans.(B)  $1, 1 + d, 1 + 2d \dots 1$ + 100*d* is in airthmetic progression. : Total number of terms = 101 Arithmetic mean(x) =  $\frac{1 + (1 + d) + \dots (1 + 100d)}{101}$  $=\frac{101(1+50d)}{10}$ 101 x = 1 + 50d

 $\begin{aligned} x &= 1 + 50d \\ \text{Mean deviation} &= \frac{1}{101} \sum_{i=0}^{100} |x_i - \bar{x}| \\ &= \frac{1}{101} (|-50d| + |-49d| + \dots |-d| + \\ 0 + |d| + |2d| + \dots \dots + |50d|) \end{aligned}$ 

 $255 = \frac{2d}{101} \frac{(50 \times 51)}{2}$  $255 = \frac{d}{101} \times 50 \times 51$  $d = \frac{255 \times 101}{50 \times 51} = \frac{25755}{2550} = 10.1$ 31. Ans.(C) Total number of cards = 52 Number of face cards = 12 Hence the possibility of having a face card  $=\frac{12}{52}=\frac{3}{13}$ 32. Ans.(D) The number of cards is 52. The number of ace in the cards is 4. Probability of taking out from pack of cards =  $\frac{4}{52} = \frac{1}{13}$ 33. Ans.(A) Total number of pens = 100 Number of damage pens = 8 Probability of removing a damage pen =  $\frac{8}{100}$ Probability of not having a damage pen = 1 - 1 $\frac{8}{100} = \frac{92}{100} = \frac{23}{25}$ 34. Ans.(C) Mean =  $\frac{75\% + 25\%}{2} = \frac{100\%}{2} = 50\%$ 35. Ans.(B) Sum of 3 smallest numbers in four numbers  $= 19 \times 3 = 57$ Sum of the three largest numbers  $= 23 \times 3 = 69$ Range of set = 69 - 57 = 1236. Ans.(C) Considered numbers = x, y, z where x < y <Ζ According to Question x + y + z = 60 - (i) $z - x = 12 \Rightarrow z = 12 + x \dots$  (ii)  $v - x = 3 \Rightarrow v = 3 + x$ Solving equation (i), (ii) and (iii), x = 15 y = 18z = 27Maximum number (z) = 2737. Ans.(A) Let the three numbers be x > y > z. According to Question - $\frac{x+y+z}{2} = 33$ x + y + z = 99 .....(i) x - z = 29.....(ii) and y = x + z - 27y + 27 = x + z.....(iii) From equation (I) and (III) y + y + 27 = 992y = 72y = 36

Putting the value of y in equation (III), y + 27 = x + z36 + 27 = x + zx + z = 63 .....(iv) Equation (II) + (IV) 2x = 92x = 46Putting the value of x in equation (IV) – z = 63 - 46z = 17Hence the numbers x, y and z are 46, 36, 17 respectively. Hence the largest number = 46 38. Ans.(C) Let the numbers be a, b, c where a> b> c Mean =  $\frac{a+b+c}{3}$  = 35 a + b + c = 105....(1)a - c = 24 .....(2) And a - b = 3(b - c).....(3) a-b = 3b - 3ca + 3c = 4ba + c = 4b - 2c.....(4) Putting the value of a + c from equation (4) into equation (1) b + 4b - 2c = 105 $5b - 2c = 105 \dots (5)$ Putting a = 24 + c in equation (1) 24 + c + b + c = 105 $b + 2c = 81 \dots (6)$ On solving equation (5) and (6) b = 31, c = 25From equation (I) a + 31 + 25 = 105a + 56 = 105a = 4939. Ans.(A) Blue : Red = 36: 68 = 9: 17 When the number of blue balls is 63, then the number of red balls is n. Then - $\frac{63}{n} = \frac{9}{17}$  $9n = 63 \times 17$  $n = \frac{63 \times 17}{9}$  $n = 7 \times 17$ n = 119Thus, number of red balls = 119 40. Ans.(D) 7, 2, 10, 4, 3, 12, 8, 4, 6, 4 Write in ascending order 2, 3, 4, 4, 4, 6, 7, 8, 10, 12 Median =  $\frac{1}{2} \left( \frac{n^{th}}{2} + \left( \frac{n}{2} + 1 \right)^{th} \right)$ Median =  $\frac{1}{2}(5^{th} + 6^{th})$  term

 $= \frac{1}{2} \times 10 = 5$ Mean =  $\frac{10 \text{ total output}}{\text{Total number}}$ Total sum  $=\frac{2+3+4+4+6+7+8+10+12}{10}$ Mean  $=\frac{60}{10}=6$ L.C.M of  $4, 5, 6, = 2 \times 2 \times 3 \times 5 = 60$ 41. Ans.(C) Mode = 4 (maximum) Arranging in ascending order -1, 2, 3, 4, 4, 6, 8, 9, 11, 12 Mean =  $\frac{1+2+3+4+4+6+8+9+11+12}{1+2+3+4+4+6+8+9+11+12}$ 10  $=\frac{60}{10}=6$ Total number (n) = 10 (even) Median =  $\frac{\frac{n^{th}}{2}$  value of term +  $(\frac{n}{2} + 1)^{th}$  value of term  $= \frac{5^{th} \text{ value of term } + 6^{th} \text{ value of term}}{2}$  $=\frac{4+6}{2}=\frac{10}{2}=5$ = Mode × Median + Mean  $= (4 \times 5) + 6 = 26$ 42. Ans.(A) Let there be three numbers a, b and c. Where a <b <c According to Question - $\frac{a+b+c}{3} = 15$  $\Rightarrow a + b + c = 45$  .....(I) and c - a = 9 .....(II) and c - b = 2(b - a) $\Rightarrow c - b = 2b - 2a$  $\Rightarrow 3b = 2a + c \Rightarrow b = \frac{2a+c}{3} \dots \dots \dots (III)$ Putting the value of 'b' from equation (III) in equation (I)  $a + \left(\frac{2a+c}{3}\right) + c = 45$  $\Rightarrow 5a + 4c = 135 \dots (IV)$ Now, equation (IV) + equation  $(II) \times 5$  $9c = 180 \Rightarrow c = 20$ From equation (II)  $20 - a = 9 \Rightarrow a = 11$ From equation (III)  $b = \frac{2 \times 11 + 20}{3} = 14$ Hence the largest number = 20 43. Ans.(B) According to Question,  $c-a = k \dots (i)$  $d-b = k \dots (ii)$ Subtracting, c-a-d+b=0 $b + c = a + d \dots \dots (iii)$  $\therefore$  Arithmetic mean = 25

 $\frac{a+b+c+d}{4} = 25$ a + (b + c) + d = 100a + d + a + d = 100a + d = 50 .....(iv) But, d - a = 20d = 20 + a $\therefore a + 20 + a = 50$ 2a = 30a = 15Hence the coefficient of variance = (standard deviation)  $^{2} = (10)^{2} = 100$ 44. Ans.(C) Let the number of students in the class = 100 and the mean of the marks obtained by the remaining 50% students = x According to Question - $20 \times 60 + 30 \times 40 + 50 \times x = 100 \times 58$  $1200 + 1200 + 50 \times x = 5800$ 2400 + 50x = 580050x = 5800 - 2400 = 3400 $x = \frac{3400}{50} = 68$ Hence the mean of the marks obtained by the remaining students is 68.

### 45. Ans.(D)

46.

47.

 $\therefore \text{ Mean} = \frac{\text{Sum of total terms}}{\text{numbers of terms}}$   $9 = \frac{x+x+3+x+5+x+8+x+9}{5}$  45 = 5x + 25 5x = 45 - 25 5x = 20 x = 4Value of last three terms x + 5 = 4 + 5 = 9 x + 8 = 12 x + 9 = 13Mean =  $\frac{9+12+13}{3}$   $= \frac{34}{3}$ Ans.(B)

Let the number of students be x and the mean of the entire class is y, so the total marks obtained by the students = xyAccording to Question –

$$xy + (86 - 68) = x\left(y + \frac{1}{2}\right)$$
  

$$\Rightarrow xy + 18 = xy + \frac{x}{2}$$
  

$$\Rightarrow \frac{x}{2} = 18$$
  

$$\Rightarrow x = 18 \times 2$$
  

$$\Rightarrow x = 36$$
  
Thus, number of students = 36  
**Ans.(B)**  
Mean = Sum of total terms =  $\Sigma x$ 

numbers of terms N  
11 = 
$$\frac{x + (x + 3) + (x + 4) + (x + 6) + (x + 7)}{5}$$

55 = 5x + 20  
35 = 5x  
x = 
$$\frac{35}{5} = 7$$
  
Mean of last three observations  
=  $\frac{(x+4)+(x+6)+(x+7)}{3}$  =  $\frac{38}{3}$  = 12.67  
48. Ans.(D)  
Sum of marks obtained by 40 students = 40 x  
72.5 = 2900  
According to Question,  
True mean =  $\frac{2900+(84-48)}{40}$   
=  $\frac{2936}{40}$  = 73.4  
49. Ans.(D)  
All positive factors of 48 are –  
1,2,3,4, [G] [B] 12,16,24,48  
 $n = 10(\text{even})$   
 $\therefore$  Median =  $\frac{10}{2}$  th term +  $(\frac{10}{2}+1)$  th term  
=  $\frac{6+8}{2} = \frac{14}{2} = 7$   
50. Ans.(B)  
On keeping the data in ascending order –  
 $\frac{1}{4}, \frac{1}{4}, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{3}{4}, 1, 2$   
 $n = 9 (\text{Odd})$   
Meadian =  $(\frac{n+1}{2})$  th term =  $(\frac{9+1}{2})$  th term  
= 5 th term =  $\frac{1}{2}$   
51. Ans.(C)  
5, 2, 2, 7, 3, 8  
Arranging in ascending order  
2, 2, 3, 5, 7, 8  
 $n = 6$   
Median =  $\frac{\frac{n}{2}$  th term +  $(\frac{n}{2}+1)$  th term  
 $= \frac{3+5}{2}$   
 $= \frac{8}{2} = 4$   
52. Ans.(C)  
Mode = Highest frequency number  
Mode = 4  
53. Ans.(B)  
Variance Coefficient =  $\frac{\text{Standard Deviation}}{\text{Mean}} \times 100$   
 $= \frac{6}{24} \times 100 = 25\%$   
54. Ans.(A)  
Variance is the square of standard deviation.  
Here given the standard deviation of a  
population is 10. So, the population variance

 $= 10^2 = 100$  **55. Ans.(B)** 

Standard deviation = 
$$\sqrt{\frac{\sum(x-x)^2}{n}}$$
  
where  $x \rightarrow$  personal term  
 $x \rightarrow$  Mean  
 $n \rightarrow$  number of terms  
 $\bar{x} = \frac{11+7+10+13+9}{5} = \frac{50}{5} = 10$   
 $\sum(x-m)^2 = (11-10)^2 + (7-10)^2 + (10-10)^2 + (10-10)^2 + (13-10)^2 + (9-10)^2 = 1 + 9 + 0 + 9 + 1 = 20$   
Standard deviation =  $\sqrt{\frac{20}{5}} = 2$   
**Ans.(C)**  
Total number of balls = 8  
Probability of two balls of the same color.  
 $= \frac{5C_2 + 3C_2}{8C_2} \left[ nC_{\Gamma} = \frac{n!}{r!(n-r)!} \right]$   
 $= \frac{\frac{51}{8C_2} + \frac{31}{2K_2}!}{\frac{21\times61}{2\times1\times6!}} = \frac{\frac{5\times4}{2K_1} + 3}{\frac{21\times7}{2\times1}}$   
 $= \frac{5\times4}{8\times7/2} = \frac{\frac{2}{2}}{2} = \frac{13}{28}$   
**Ans.(C)**  
When a dice is thrown 2 times -  
Total possibilities N (E) =  $6^2 = 36$   
The probability that the sum of digits is 10 N (S) = (4, 6) (6, 4) (5, 5) = 3  
Hence the required probability P (E)  $= \frac{N(S)}{N(E)}$   
 $= \frac{3}{36} = \frac{1}{12}$   
**Ans.(C)**  
Data Range = Highest Value - Lowest Value = 9 - 3 = 6  
**Ans.(B)**  
Range of data = ceiling - lowest range = 19 - 9 = 10  
**Ans.(D)**  
Since, 2 is added to each number.  
 $\therefore 2$  will be added to the arithmetic mean.  
Thus, the mean of the new range =  $35 + 2 = 37$   
**Ans.(A)**  
Total sum of marks obtained by 12 students =  $12 \times 67.4 = 808.8$   
Total sum of marks obtained by 15 students =  $15 \times 72.3 = 1084.5$   
Joint mean of both classes  $= \frac{808.8 + 1084.5}{12 + 15}$   
 $= \frac{1893.3}{12 + 15} = 70.12$   
**Ans.(A)**

56.

57.

58.

59.

**60**.

61.

**62**.

Mean of four observations = 17.5 Sum of four observations = 17.5 × 4 = 70.0 Adding a new observation = 70 + 20 = 90 New mean =  $\frac{90}{5}$  = 18

## 63. Ans.(C)

Total of 20 observations =  $20 \times 15.5 = 310$ But 42 was read instead of 24 by mistake.  $\therefore$  Correct sum = 310 + 24 - 42 = 292Hence the correct mean =  $\frac{292}{20} = 14.6$ 

### 64. Ans.(D)

Mean of two new observations =  $\frac{24 \times 11 - 22 \times 10}{2}$ =  $\frac{264 - 220}{2}$  =  $\frac{44}{2}$  = 22

### 65. Ans.(Č)

66.

68.

69.

70.

Total of 8 observations =  $8 \times 10 = 80$ Sum of observations when three other observations are included =  $11 \times 12 = 132$  $\therefore$  Sum of three new observations = 132 - 80 = 52Hence the mean of three new observations =

## $\frac{52}{2} = 17.33$

Ans.(B)  
Mean = 
$$\frac{\text{sum of numbers}}{\text{number of numbers}}$$
  
=  $\frac{1 + \frac{1}{2} + \frac{1}{2} + \frac{3}{4} + \frac{1}{4} + 2 + \frac{1}{2} + \frac{1}{4} + \frac{3}{4}}{\frac{9}{9}}$   
=  $\frac{\frac{4 + 2 + 2 + 3 + 1 + 8 + 2 + 1 + 3}{4}}{\frac{9}{9}}$   
=  $\frac{26}{36}$   
=  $\frac{13}{36}$ 

Ans.(B) Mean =  $\frac{18 + 16 + 22 + 13 + ?}{5}$ 16 =  $\frac{69 + ?}{5}$ 

$$\Rightarrow 69 + ? = 16 \times 5$$
  
? = 80 - 69 = 11

Ans.(A) Sum of 9 observations =  $18 \times 9 = 162$ Sum of 13 observations =  $19 \times 13 = 247$ Hence the mean of four new observations =  $\frac{247-162}{\frac{4}{85}}$ 

$$=\frac{33}{4}=21.25$$

Ans.(C) First 6 prime numbers = 2, 3, 5, 7, 11, 13  $\therefore$  Mean =  $\frac{2 + 3 + 5 + 7 + 11 + 13}{6}$ =  $\frac{41}{6}$ Ans.(C)

Ascending order of given data – 2, 3, 4, 7, 7, 7, 9, 9, 13, 17, 21 n = 11 (Odd) Median  $= \frac{11+1}{2}$  th term = 6 th term = 7Ans.(C)

Arranging given data in ascending order – 0, 1, 2, 2, 3, 4, 5, 5, 5, 7, 8, 9 n = 12 Even Median =  $\frac{1}{2} \left[ \frac{12^{th}}{2} \text{ term } + \left( \frac{12}{2} + 1 \right)^{th} \text{ term} \right]$ =  $\frac{1}{2} [6^{th} \text{ term } + 7^{th} \text{ term}]$ =  $\frac{1}{2} (4 + 5) = \frac{9}{2} = 4.5$ Ans.(B)

0, 0, 1, 1, 2, 2, x, 3, 3, 4, 5, 7 n = 12 (Even) Median =  $\frac{1}{2} \left[ \frac{n^{th}}{2} \text{ term } + \left( \frac{n}{2} + 1 \right)^{th} \text{ term} \right]$ 2.5 =  $\frac{1}{2} \left[ \frac{12^{th}}{2} \text{ term } + \left( \frac{12}{2} + 1 \right)^{th} \text{ term} \right]$ =  $\frac{1}{2} [6^{th} \text{ term } + 7^{th} \text{ term}]$ 2.5 =  $\frac{1}{2} [2 + x]$   $\Rightarrow 2 + x = 5$  $\Rightarrow x = 3$ 

## 73. Ans.(B)

71.

72.

Arrange in ascending order, 11, 23, 25, 26, 29, 31, 39 Number of terms = 7 (Odd)  $\therefore$  Median =  $\left(\frac{7+1}{2}\right)^{th}$  term =  $4^{th}$ term = 26

## 74. Ans.(B)

Arranging numbers in ascending order – 31, 53, 55, 56, 59, 61, 69 n = 7(Odd) Median =  $\frac{n+1}{2}^{th}$  term =  $\left(\frac{7+1}{2}\right)^{th}$  term = 4<sup>th</sup> term

### = 56 **75. Ans.(C)**

76.

2, 3, 4, 3, 0, 5, 1, 1, 3, 2 In ascending order 0, 1, 1, 2, 2, 3, 3, 4, 5 n = 10 (Even) Median =  $\frac{1}{2} \left[ \frac{n^{th}}{2} \text{ term } + \left( \frac{n}{2} + 1 \right)^{th} \text{ term} \right]$ =  $\frac{1}{2} \left[ \frac{10^{th}}{2} \text{ term } + \left( \frac{10}{2} + 1 \right)^{th} \text{ term} \right]$ =  $\frac{1}{2} [5^{th} \text{term } + 6^{th} \text{ term}]$ =  $\frac{1}{2} (3 + 2) = \frac{5}{2} = 2.5$ Ans.(A)

Given number 3, 6, 7, 11, x, 15, 19, 20, 25, 28 Number of terms here = 10 (even)  $\therefore$  Median =  $\frac{\frac{n^{th}}{2} \text{ term} + (\frac{n}{2} + 1)^{th} \text{ term}}{2}$ 

$$13 = \frac{10^{e^{th} \text{ term } + (\frac{10}{2} + 1)^{e^{th} \text{ term}}}{2}$$

$$13 = \frac{5^{e^{th} \text{term } + 6^{e^{th} \text{ term}}}{2}$$

$$26 = x + 15$$

$$x = 11$$
77. Ans.(B)  
In ascending order -  

$$-5, -3, -2, 0, 1, 4, 4, 5, 7, 10$$

$$n = 10 (Even)$$

$$\therefore \text{ Median } = \frac{1}{2} \left[ \frac{n^{e^{th}}}{2} \text{ term } + \left(\frac{n}{2} + 1\right)^{e^{th}} \text{ term} \right]$$

$$= \frac{1}{2} (5^{e^{th} \text{ term } + 6^{e^{th} \text{ term}}]$$

$$= \frac{1}{2} \times [1 + 4]$$

$$= 2.5$$
78. Ans.(C)  
Numbers in ascending order -  

$$3, 3, 5, 7, 8, 8, 8, 9, 11, 12, 12$$

$$\Rightarrow number of terms (n) = 11$$
If the number of terms is odd -  
Median  $= \frac{n + 1}{2}^{e^{th}} \text{ term}$ 

$$= \frac{11 + 1^{e^{th}}}{2} \text{ term} = 6^{e^{th}} \text{ term} = 8$$
79. Ans.(C)  
Numbers in ascending order  
12, 12, 21, 23, 23, 23, 53, 53, 56, 64, 86, 87, 87, 87, 98
Total number of digits n = 15 (odd)  
Median  $= \left(\frac{n+1}{2}\right)^{e^{th}} \text{ the value of the term}$ 
Hence, median = the value of  $\left(\frac{15 + 1}{2}\right)^{e^{th}} \text{ term}$ 

$$= Value of 8^{th} \text{ term}$$
Hence median = 53  
80. Ans.(D)  
32, 12, 23, 17, 28, 25, 43  
When arranged in ascending order, 12, 23, 25, 28, 29, 32, 43
 $n = 7(odd)$   
Median  $= \left(\frac{n+1}{2}\right)^{e^{th}} \text{ term}$ 
 $= \left(\frac{2 + 1}{2}\right)^{e^{th}} \text{ term}$ 
 $= 4^{e^{th}} \text{ term}$ 
 $= 28$ 
81. Ans.(A)  
Figures 12, 1, 10, 1, 9, 3, 4, 9, 7, 9 have the highest frequencies of 9 (3 times). Hence the mode of the given figure is 9.  
82. Ans.(C)  
32, 34, 35, 36, 35, 34, 33, 35, 33, 31, 37
The frequency of 35 is the highest 3 in numbers.  
Hence Mode = 35  
83. Ans.(C)

in

(MODE) - If the frequency of a number is the most frequent in the data, then that number is the mode of the given data. Hence, mode = 1584. Ans.(C) 2, 4, 5, 6, 5, 4, 3, 5, 3, 1, 7 Frequency of 5 is the highest in the given data.  $\therefore$  Mode = 5 85. Ans.(B) ·· Data mode = 52  $\therefore x - 3 = 52$  $\Rightarrow x = 55$ 86. Ans.(B) : The frequency of  $\frac{1}{2}$  is the highest (3) in the figures.  $\therefore$  Mode =  $\frac{1}{2}$ 87. Ans.(B) Variance = (standard deviation)<sup>2</sup>  $= (9.5)^2$ = 90.25 88. Ans.(A) Variance = (standard deviation)<sup>2</sup>  $= (4.5)^2 = 20.25$ 89. Ans.(B) Standard deviation of population = 11 Variance of population = (standard deviation)<sup>2</sup> =  $(11)^2 = 121$ 90. Ans.(C) Standard Deviation = 4 : Variance (standard deviation)<sup>2</sup> =  $(4)^2 = 16$ 91. Ans.(C) Total number of innings played by all five players =  $5 \times 9 = 45$ Total number of innings of four players = 13 + 9 + 5 + 11 = 38: Fifth player's total number of innings = 45 - 38 = 792. Ans.(C) Sum of seven observations = 3 + 15 + 7 + 19 + 12 + 17 + 8 = 81  $\therefore$  Eighth observation = 8 ×10.5 – 81 = 84.0 - 81 = 393. Ans.(C) Variance Coefficient =  $\frac{\text{Standard Deviation}}{\text{Airthmetic mean}} \times 100$  $=\frac{5}{14} \times 100$  $=\frac{500}{14}=35.7\%$ 94. Ans.(D) The figures 3, 10, 10, 4, 7, 10, 5 (Mean) =  $\frac{3+10+10+4+7+10+5}{7} = \frac{49}{7}$ (Mean) = 7(Mean deviation) =  $\sum_{i=1}^{N} \frac{|M-Xi|}{N}$ 

 $= \frac{|7-3|+|7-10|+|7-10|+|7-4|+|7-7|+|7-10|+|7-5|}{7}$   $= \frac{\frac{4+3+3+3+0+3+2}{7}}{7}$ Mean deviation  $= \frac{18}{7}$ Ans (B) 95. Ans.(B)  $\overline{x} = \frac{10+11+12+9+8}{5} = \frac{50}{5} = 10$   $\sum_{i=1}^{5} (x_i - \overline{x})^2 = (10 - 10)^2 + (11 - 10)^2 + (12 - 10)^2 + (9 - 10)^2$  $+(8-10)^{2}$ = 0 + 1 + 4 + 1 + 4 = 10Standard deviation =  $\sqrt{\frac{\sum_{i=1}^{5} (x_i - \bar{x})^2}{N}} = \sqrt{\frac{10}{5}} =$  $\sqrt{2}$ 96. Ans.(C) Variance = (standard deviation)  $= (6)^2 = 36$ 97. Ans.(B) Standard deviation =  $\sqrt{Variance}$  $=\sqrt{196} = 14$ 98. Ans.(B) Standard deviation of data =  $\sqrt{121}$  = 11 99. Ans.(B) Standard deviation of data =  $\sqrt{81}$  $= \pm 9 = 9$ 100. Ans.(B) Standard deviation =  $\sqrt{64}$  = +8 = 8 101. Ans.(B) Standard deviation =  $\sqrt{Variance}$  $=\sqrt{361}$ = +19Since the standard deviation is not negative. Thus, standard deviation = 19 102. Ans.(B) Standard deviation =  $\sqrt{Variance}$  $=\sqrt{169}$ = 13103. Ans.(B) Standard deviation =  $\int_{i=1}^{n} \frac{\sum_{i=1}^{n} f_i (x_i - \overline{x})^2}{\sum_{i=1}^{n} f_i}$ where  $\overline{x}$  = Mean 104. Ans.(B) Standard deviation (S.D.) =  $\sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n}}$ Where  $\sum_{1}^{n} (x_1 - \bar{x})^2 = \text{Variable}$ 105. Ans.(A) White cushion = 3 Red cushion = 4Blue cushion = 5Probability =  $\frac{\text{favorable probabilities}}{\text{total probabilities}}$ Total probabilities=  ${}^{12}C_1$ 

Favorable chances to choose 1 white or 1 blue cushion=  ${}^{3}C_{1} + {}^{5}C_{1}$ 

Probability: 
$$\frac{{}^{3}C_{1} + {}^{5}C_{1}}{{}^{12}C_{1}}$$

 $= \frac{3+5}{12} = \frac{8}{12} = \frac{2}{3}$ 

106. Ans.(B) When a coin is tossed, the probability of a head =  $\frac{\text{Favorable probability}}{\text{total probability}} = \frac{1}{2}$ So, probability of tail =  $\frac{1}{2}$ Ans.(D) Lowest limit = 4

# 107.

Highest limit = 9 : Range (Diffusion) = Highest – Lowest Limit = 9 - 4 = 5

#### 108. Ans.(D)

Lowest limit = 1 Highest limit = 7 Range = Highest - Lowest limit  $\therefore$  Range = 7 - 1 = 6

#### 109. Ans.(B)

Difference of the highest and lowest values of the given data is called range. (Range) = 28 - 11 = 17

### 110. Ans.(B)

The numbers of figures have doubled, so their variance will also double. : Variation =  $2 \times 23.33 = 46.66$ 

#### 111. Ans.(C)

Range of Numbers = High Range - Low Range = 21 - 1 = 20

#### 112. Ans.(B)

 $60\Sigma x^2 = 18000$  $\Sigma x^2 = \frac{18000}{60}$  $\Rightarrow \Sigma x^2 = 300$  $\Sigma x = 960$ Average of 60 terms  $=\frac{960}{60} = 16$  $\Sigma x^2 = (16)^2 \Rightarrow \Sigma x^2 = 256$ 

: Variation = 
$$300 - 256 = 44$$

113. Ans.(C)

Write the given number in ascending order 1, 1, 3, 3, 4, 4, 5, 6, 7, 8 Range of data = large number - small number = 8 - 1 = 7

#### 114. Ans.(D)

Write data in ascending order, 3, 3, 3, 3, 4, 4, 5, 5, 6 Mean  $=\frac{3+3+3+3+4+4+5+5+6}{9}=\frac{36}{9}=4$ Mode = 3 (is the highest frequency)  $\therefore$  Number of terms (n) = 9 (odd)

 $\therefore$  Median =  $\left(\frac{n+1}{2}\right)^{th}$  term =  $\left(\frac{9+1}{2}\right)^{th}$  term  $= 5^{th} term = 4$ 115. Ans.(C) Write the data in ascending order, 5, 7, 8, 8, 8, 9, 9, 9, 9  $\therefore$  Number of terms = 9 (odd)  $\therefore \text{ Median } = \left(\frac{n+1}{2}\right)^{th} \text{ term}$  $= \frac{9+1}{2} = 5^{th} \text{ term } = 8$ Mode = 9 (most frequently included.) Mean =  $\frac{5+7+8+8+8+9+9+9}{9}$  $=\frac{72}{9}=8$ Ans.(C) 116. Numbers in ascending order, 6, 6, 6, 7, 7, 8, 8, 8, 8 Mode = 8 (maximum frequency) Number of terms = 9 (odd)Median  $= \left(\frac{9+1}{2}\right) = 5^{th}$  term = 7117. Ans.(C) Mean of data =  $\frac{1+9+5+4+2+1+9+9+2+1+9+1+2+1}{14}$  $=\frac{56}{14}=4$ Mode of data = 1 (term with highest frequency) 118. Ans.(C) Variance Coefficient =  $\frac{\text{Standard Deviation}}{\text{Mean}} \times 100$  $=\frac{7}{13} \times 100 = 53.85\%$ 119. Ans.(C) Total of 20 observations =  $20 \times 19 = 380$ Sum of inclusion of new observation  $= 21 \times 20 = 420$  $\therefore$  Value of 21st observation = 420 - 380 = 40 120. Ans.(B) Mean of distribution = 18 Standard deviation = 4.5  $\therefore$  Variance coefficient =  $\frac{4.5}{18} \times 100$  $=\frac{450}{18}=25\%$ 121. Ans.(A) Variance coefficient =  $\frac{\text{Variance coefficient}}{\text{Mean}} \times 100$  $=\frac{\sigma}{r} \times 100$  $=\frac{5}{11} \times 100$ = 45.45%122. Ans.(A) Variance coefficient =  $\frac{\text{Variance coefficient}}{\text{Mean}} \times 100$  $=\frac{5}{10} \times 100 = 50\%$ 123. Ans.(A) Standard deviation of population = 8 Variance = (standard deviation)<sup>2</sup>

 $= (8)^2 = 64$ 124. Ans.(C) Mean of distribution = 24 Standard Deviation = 8 Variance coefficient =  $\frac{\text{Variance coefficient}}{\text{Market}} \times 100$  $=\frac{8}{24}\times 100$  $=\frac{\frac{14}{100}}{100}$ = 33.33% 125. Ans.(B) Mean = 20 Standard deviation = 4 Variance coefficient =  $\frac{Variance coefficient}{Mean} \times 100$  $=\frac{4}{20} \times 100 = 20$ 126. Ans.(D) Mean = 18Standard Deviation = 7 Variance coefficient =  $\frac{\text{Variance coefficient}}{\text{Mean}} \times 100$  $=\frac{7}{18} \times 100$ = 700/18 = 38.88%127. Ans.(C) Variance coefficient =  $\frac{7}{21} \times 100 = 33.33\%$ 128. Ans.(C) Average of 35 results = 21 Sum of 35 results = 35 x 21 = 735 Average of 17 results = 19 Total of 17 results = 17 x 19 = 323 Average of last 17 results = 22 Total sum =  $17 \times 22 = 374$ Value of 18th results = 735 - 374 - 323 = 38 129. Ans.(C) Variance coefficient  $= \frac{\text{Variance coefficient}}{\text{Mean}} \times 100$  $=\frac{5}{15} \times 100$  $=\frac{100}{3}=33.33\%$ 130. Ans.(A) Mode =  $3 \times \text{Median} - 2 \times \text{Arithmetic mean}$  $14 = 3 \times \text{Median} - 2 \times 5$  $3 \times \text{Median} = 14 + 10$ Median  $=\frac{24}{2} = 8$ 131. Ans.(A) 3, 4, 5, 5, 3, 6, 7, 3, 5, 5, 6 In ascending order 3, 3, 3, 4, 5, 5, 5, 5, 6, 6, 7 Mode = 5 (highest frequency)  $\therefore \text{ where } n = 11 (\text{ odd})$ Median  $= \left(\frac{n+1}{2}\right) = \frac{11+1}{2} = 6^{th} \text{ term} = 5$ 132. Ans.(B) Standard deviation =  $\sqrt{variance}$  $\therefore$  Variance = 324  $\therefore$  Standard deviation =  $\sqrt{324}$ 

 $= \pm 18$ = 18 133. Ans.(B) Total sum = number × mean Sum of length of 8 women =  $8 \times 1.60$ = 12.8 m. 134. Ans.(B) Mean of distribution = 80 standard deviation = 16 Variance coefficient =  $\frac{\text{Variance coefficient}}{\text{Mean of distribution}} \times 100$  $=\left(\frac{16}{80}\right) \times 100$  $=\frac{1}{5} \times 100$ = 20% 135. Ans.(D) Required variance = (standard deviation)<sup>2</sup>  $= 13 \times 13 = 169$ 136. Ans.(C) Ascending order of numbers 1, 2, 3, 5, 8, 8, 9, 9, 9 = 9 (odd)Median =  $\left(\frac{n+1}{2}\right)^{th}$  term =  $\frac{9+1}{2}^{th}$  term  $= 5^{th} term = 8$  $Mean = \frac{Sum \text{ of all numbers}}{Total number}$  $= \frac{9+8+3+5+1+9+8+2+9}{9} = \frac{54}{9} = 6$ Mode = 9 (Most frequent frequency) Hence the median, mode and mean are 8, 9, 6 respectively. 137. Ans.(C) Variance = (standard deviation)<sup>2</sup>  $= (9)^2 = 81$ 138. Ans.(B) The mean of the length of 6 rods = 44.2 cm. Total length of 6 rods =  $44.2 \times 6 = 265.2$ Mean length of 5 rods = 46cm Total length of 5 rods =  $46 \times 5 = 230$ Length of 6th rod = 265.2 - 230 = 35.2cm 139. Ans.(B) D (mm) (x) 43 44 45 47 48 46 13 15 22 21 16 14 सं. (f) 559 660 990 966 752 fx 672 Mean =  $\frac{\Sigma f x}{\Sigma f}$  $= \frac{\frac{27}{559+660+990+966+752+672}}{13+15+22+21+16+14}$  $=\frac{4599}{101}=45.53$ **140**. Ans.(B)

Ascending order -1.9, 3.6, 5.8, 8.4 n = 4

Median 
$$= \frac{1}{2} \left[ \frac{n^{th}}{2} \text{ term } + \left( \frac{n}{2} + 1 \right)^{th} \text{ term } \right]$$
  
Median  $= \frac{1}{2} \left[ 2^{th} \text{ term } + 3^{th} \text{ term } \right]$   
 $= \frac{1}{2} \left[ 3.6 + 5.8 \right] = \frac{1}{2} \times 9.4 = 4.7$ 

141. Ans.(A) Range = 21 − 12 = 9 Mode = 13 (highest frequency) By placing data in ascending order, 12, 13, 13, 13, 14, 15, 16, 18, 21  $\therefore n = 9 \text{ (odd)}$  $\therefore \text{ Median } = (\frac{9+1}{2})^{th} \text{ term } = 5^{th} \text{ term } = 14$ 

## 142. Ans.(A)

Profit %	x	Number of shops	f. x
0 – 10	5	12	60
10 – 20	15	18	270
20 – 30	25	27	675
30 – 40	35	х	35x
40 – 50	45	17	765
50 - 60	55	6	330

$$\sum f = 80 + x \sum f x = 2100 + 35x$$

Arithmetic mean = 
$$\frac{27x}{\Sigma f}$$
  
28 =  $\frac{2100 + 35x}{80 + x}$   
2240 + 28x = 2100 + 25x

$$2240 + 28x = 2100 + 35x$$
  
$$7x = 140$$

$$7x = 14$$
  
 $x = 20$ 

$$30 = \frac{K + 2K + 1 + 2K + 5 + 2K + 9}{4}$$

$$120 = 7K + 15^4$$

$$7K = 105$$

Numbers in ascending order –  
(a - 3.5), (a - 3), (a - 2.5), (a - 2), (a - 0.5), (a  
+ 0.5), (a + 2) (a + 4),  
Number of term (n) = 8 (even)  
Median = 
$$\frac{\left(\frac{n}{2}\right)^{th} \text{term} + \left(\frac{n}{2} + 1\right)^{th} \text{term}}{2}$$
  
=  $\frac{4\text{th term} + 5\text{th term}}{2}$   
=  $\frac{a-2 + a - 0.5}{2}$   
=  $\frac{2a-2.5}{2}$ 

Daily income (Rs.) 9.5 – 14.5	Number of employees	Cumulative frequency 5
14.5 - 19.5	10	15
19.5 - 24.5	15	30 =cf
24.5 - 29.5	20	50
29.5 - 34.5	10	60
34.5 - 39.5	5	65
n = 65 n = 65 = 325		

 $\frac{1}{2} = \frac{1}{2} = 32.5$ It is included in the cumulative frequency 50. Hence, the median class interval will be (24.5 - 29.5). Low limit (L) = 24.5High limit = 5Frequency (f) = 20Cumulative frequency (cf) of the class before the mean class = 30

∴ Median = 
$$L + \left(\frac{\frac{n}{2} - cf}{f}\right) \times h$$
  
= 24.5 +  $\left(\frac{32.5 - 30}{20}\right) \times 5$   
= 24.5 +  $\frac{2.5}{4}$   
= 24.5 + 0.625  
= 25.125 ≈ 25.13  
Ans.(D)

146.

The highest frequency is in the class (30 - 40)Hence, Mode class (30 - 40) $L_1 = 30, L_2 = 40$  $F_1 = 31, F_2 = 16, F_0 = 26$   $M_0 = L_1 + \frac{(L_2 - L_1)(F_1 - F_0)}{2F_1 - F_0 - F_2}$   $M_0 = 30 + \frac{(40 - 30)(31 - 26)}{2 \times 31 - 26 - 16}$  $M_0 = 30 + \frac{50}{20}$  $M_0 = 30 + 2.5$  $M_0 = 32.5$ Ans.(B)

If each value is increased by k, there will be no effect on the standard deviation. Variance = (standard deviation)<sup>2</sup>  $= (4.5)^2 = 20.25$ 

#### 148. Ans.(D)

147.

We know that -Standard Deviation =  $\sqrt{Variance}$ Standard Deviation = 4 Note - If the figures are added, subtracted, multiplied or divided by a given number, then the same process happens in standard deviation. Thus, new standard deviation =  $4 \times 2 = 8$ 

#### 149. Ans.(A)

150.

Variation =  $\sigma^2$ Standard deviation =  $\sqrt{\sigma^2} = \sqrt{36}$ Standard deviation  $= \sigma = 6$ New standard deviation =  $\lambda \sigma$ (where  $\lambda = n$  times of each value)  $= 2 \times 6$ = 12Ans.(A) 9 12 4 x 6 12 7 8 4 3 15 d = 0 -2 +4 1 -1-4 -5 +4+7 -4 (x - x)d<sup>2</sup> 4 16 1 25 16 49 1 0 16 16  $\Sigma d^2 = 144$ Arithmetic mean  $(\bar{x}) =$  $\frac{6+12+9+7+8+4+3+12+15+4}{6+12+9+7+8+4+3+12+15+4} = 8$ 10 Standard deviation =  $\sqrt{\frac{\Sigma d^2}{n}} = \sqrt{\frac{144}{10}}$  $=\sqrt{14.4} = 3.8$ 151. Ans.(A)  $\sigma(S.D) = \sqrt{\frac{(\Sigma x_i^2)}{n} - (\frac{\Sigma x_i}{n})^2}$ First 'n' natural number  $\Sigma x_i = 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$ 
$$\begin{split} (\Sigma x_i)^2 &= \frac{n(n+1)(2n+1)}{6} \\ &= 1^2 + 2^2 + 3^2 + \dots + n^2 \\ \sigma &= \sqrt{\frac{n(n+1)(2n+1)}{6 \times n} - \left(\frac{n(n+1)}{2n}\right)^2} \end{split}$$
 $\sigma = \sqrt{\frac{(n+1)(2n+1)}{6} - \frac{(n+1)^2}{4}}$  $\sigma = \sqrt{(n+1)\frac{(4n+2-3n-3)}{12}}$  $\sigma = \sqrt{\frac{(n+1)(n-1)}{12}} = \sqrt{\frac{n^2-1}{12}}$ 

#### 152. Ans.(B)

Total number of two digits = 90 Total two digit prime numbers = 21 Total two digit composite numbers = 69  $\therefore \text{ Probability } = \frac{\text{Number of favorable results}}{\text{Number of favorable results}}$ Number of total results  $=\frac{69}{90}=\frac{23}{30}$ Ans.(D)

## 153.

When two dice are thrown, the probability of total occurrence is n(s) = 36Possibility of odd addition of numbers = n(E)= 18

∴ Probability of sum being odd =  $\frac{n \in}{n(s)}$ 

$$=\frac{18}{36}=\frac{1}{2}=0.5$$

154. Ans.(D) Probability of piercing  $(A) = \frac{1}{2}$ And the probability of A not piercing  $(A') = 1 - \frac{1}{2} = \frac{1}{2}$ Probability of piercing of B  $(B) = \frac{2}{3}$ And the probability of B to not piercing  $(B') = 1 - \frac{2}{3} = \frac{1}{3}$ Probability of piercing of C  $(C) = \frac{3}{4}$ And the probability of not piercing of C  $(C') = 1 - \frac{3}{4} = \frac{1}{4}$ Penetrating probability  $= (A \times B' \times C') + (A' \times B \times C') + (A' \times B' \times C)$   $= \frac{1}{2} \times \frac{1}{3} \times \frac{1}{4} + \frac{1}{2} \times \frac{2}{3} \times \frac{1}{4} + \frac{1}{2} \times \frac{1}{3} \times \frac{3}{4}$   $= \frac{1}{24} + \frac{2}{24} + \frac{3}{24} = \frac{6}{24} = \frac{1}{4}$ **Ans.(C)** 

155.

The probability of the sum of numbers exceeding 17 or 17 when throwing all three dice together -(5, 6, 6), (6, 5, 6), (6, 6, 5), (6, 6, 6)

Total possibilities =  $6 \times 6 \times 6 = 216$   $\therefore$  Required probability =  $\frac{4}{216}$ =  $\frac{1}{54}$ 

156. Ans.(A)

(Variance)  $(\sigma^2) = \frac{\Sigma x^2}{n} - \left(\frac{\Sigma x}{n}\right)^2$ 

### 157. Ans.(A)

First 7 prime number = 2, 3, 5, 7, 11, 13, 17 Range = Maximum Number – Minimum Number Range = 17 - 2 = 15

# 28. (Data Interpretation)

3.

1. The following pie chart shows the various expenses of company XYZ in Q3 2015.



If company XYZ spent a total of Rs.100 lakh crore on various departments then how much was spent in R&D (in lakh crore)?

	RRB Group-D - 04/10/2018 (Shift-I)
<b>(A)</b> 30	<b>(B)</b> 20
(C) 10	<b>(D)</b> 40

2. The following chart gives information about mobile manufacturer companies in India.



If the total number of mobile phones manufactured by the companies is 12,40,000, then how many mobiles were manufactured by the company XYZ?

RRB Gro	up-D - 08/10/2018 (Shift-III)
<b>(A)</b> 1,48,800	<b>(B)</b> 7,200
<b>(C)</b> 28,800	<b>(D)</b> 57,600

The following pie diagram shows information on the sale of sports kits by the company XYZ. Revenue received during the year 2016 was 36,82,000.



4. The following pie chart shows the sales information of toy making company "XYZ" during the financial year 2017-18.



The total revenue from the sale of toys was Rs.38,72,000.

Which type of toy earned the highest revenue for the company?

### RRB Group-D - 19/11/2022 (Shift-I)

(A) Toddler Toy	(B) Musical toy
(C) Soft toy	(D) Learning toy

 The pie chart given shows information on different types of textile production made in 2015 by a company XYZ.



If the total production of cloth in the year 2015 is 1,50,000 tons, then how many total fabrics of satin were produced (in tons) in 2015?

RRB Gr	'oup-D - 08/10/2018 (Shift-I
<b>(A)</b> 7500	<b>(B)</b> 60,000
(C) 15000	<b>(D)</b> 30,000

6. The given diagram shows the expenses of a publishing company in Karnataka. If the total cost is Rs.50,000, what is the binding cost?



**7.** The pie graph shows the expenses of a publishing agency in Karnataka. If the total expenditure is Rs.50,000, then the expenditure on transportation is-



### RRB Group-D - 24/10/2018 (Shift-I)

(A) rs. 5000	(B) rs. 7000
(C) rs. 10000	(D) rs. 2500

The following table gives emissions of CO<sub>2</sub> (in million metric tons) over three years

8.

1			
	year	Emitted from homes CO 2	
	2015	100	
	2016	110	
	2017	150	

What percentage did  $CO_2$  emissions increase between 2016 and 2017?

RRB Gr	oup-D - 17/11/2022 (Shift-II)
<b>(A)</b> 63.63%	<b>(B)</b> 36.36%
<b>(C)</b> 36.45%	<b>(D)</b> 26.36%

**9.** The following table gives details of 3 years of sales of a company.

	Sales in Lakh (Area 1)	Sales in Lakh (Area 2)
2014	7	3
2015	15	5
2016	18	7
RRB Group-D - 12/11/2018 (Shift-III)		

RRB Group-D - 12/11/2018 (Shift-III) 5% increase (B) 1.5% decrease

A) 1.5% increase	<b>(B)</b> 1.5
C) 150% increase	(D) 15

- **D)** 150% decrease
- **10.** Uma is organizing a terrace party. She determines the total estimated expenditure according to the table given in following five items.

Items of expenditure	% Expenditure
1	30
2	20
3	10
4	25
5	15

If she spends Rs. 850 on item 3, then what is his total expenditure on item 2 and item 5?

## RRB Group-D -19/11/2022(Shift-II)

	•
(A) rs.1795	<b>(B)</b> rs. 2975
(C) rs. 1275	<b>(D)</b> rs. 1175

**11.** Expenditure on various items of a company is shown here (all expenditure is in lakh rupees).

year	salary	Bonus	Тах	Interest on loan
year 1	200	10	70	20
year 2	200	10	70	22
year 3	450	10	120	20

What is the total expenditure of year 1 as the total expenditure of year 3?

# RRB Group-D - 19/11/2022 (Shift-II)

<b>(A)</b> 100%	<b>(B)</b> 5%
<b>(C)</b> 0.5%	<b>(D)</b> 50%

**12.** The sales figures for 3 years of a particular brand of sugar in 3 states are given in the table below. Figures are in lakh rupees.

	state 1	state 2	state 3
year 1	15	12	9
year 2	12	14	8
year 3	14	15	13

What is percentage difference between year 1 and year 3 sales?

## RRB Group-D - 26/11/2022 (Shift-I)

<b>(A)</b> 18 %	<b>(B)</b> 16.67%
(C) 19.67%	<b>(D)</b> 15.67%

**13.** The operating cost of a company is given below.

	2016	2017
loan interest	25%	25%
salary	50%	55%
Tax	25%	20%

The total money spent on operations in 2016 is Rs. 120 lakhs and total money spent in 2017 is Rs. 150 lakhs.

How much was salary higher in 2017 than in 2016?

## RRB Group-D - 28/11/2022 (Shift-II)

(A) rs. 20 lakh	<b>(B)</b> rs.10 lakh
<b>(C)</b> rs. 22.5 lakh	<b>(D)</b> rs. 5 lakh

**14.** Based on the following table, number of punches produced in which months was more than the average number of punches produced in each month?

Month	Number of	
	screws produced	
	(in thousands)	
January	200	
February	300	
March	250	
April	250	
May	230	
June	270	

RRB Group-D - 05/10/2018 (Shift-II)

- (A) Only june
- (B) February and June
- (C) January and February
- (D) May and june

**15.** The following table gives average price per quarter of vegetables in 2 years. In which quarter was maximum difference in price?

	Price per kg (in rupees) year 1	Price per kg (in rupees) year 2
Quarter 1	36	40
Quarter 2	80	80
Quarter 3	65	40
Quarter 4	43	40
RRB	Group-D - 11/10	)/2018 (Shift-II)
(A) quarter 4	<b>(B)</b> qu	arter 1
(C) quarter 2	(D) quarter 3	

**16.** According to the following table, for how many months should prices of vegetables remain same for a period of 2 years?

month	Price per kg (in rupees) year 1	Price per kg (in rupees) year 2
January	40	35
February	30	50
March	40	35
April	80	80
May	80	80
June	80	80
July	80	80
August	50	60
September	50	40
October	50	50
November	40	35
December	40	35
RRB Group-D - 08/10/2022 (Shift-I)		
<b>(A)</b> 6	<b>(B)</b> 5	
(C) 3	<b>(D)</b> 2	

**17.** A football team scored the following goals in 6 matches. Based on the following table, what is their average score in game?

	<u></u>	
game	Number of goals	
game 1	2	
game 2	1	
game 3	0	
game 4	4	
game 5	3	
game 6	2	
RRB Group-D - 22/10/2018 (Shift-II)		
<b>(A)</b> 4	<b>(B)</b> 3	

**18.** The monthly fees charged by a sports complex house for various facilities are as follows, Rs. 500 for gym, Rs. 1,500 for

(D) 2

(C) 1

swimming pool and Rs. 2,000 for tennis court, list of consumers using these facilities is given below. How much do they earn per month from consumers using the gym?

field beneathere doing the gym.	
Features	Number of
	consumers
gym	300
swimming	200
pool	
Tennis Court	100

RRB Group-D - 18/11/2022 (Shift-III)

(A) rs. 1,50,000	<b>(B)</b> rs. 15,000
(C) rs. 25,000	(D) rs. 50,000

**19.** The figures given below report the number of vehicle locomotives manufactured by the company 'ABC' in the last 5 years.



In which year were the largest number of locomotives manufactured?

 RRB Group-D - 19/11/2022 (Shift-II)

 (A) 2015
 (B) 2014

 (C) 2016
 (D) 2012

**20.** In which year is the sale of shop C lower than the other two years?



- (A) year 3
- (B) year 1
- (C) Sales are the same in three years.

(D) year 2

**21.** According to the given chart, in which year sales of Store B are more than 13 lakhs?



22. A private gym can accommodate 25 people in a time slot. It has three different time slots for its users and the following chart shows the average visitors for a week.

On which day they cannot accommodate more members?



**<sup>23</sup>**. The graph below shows the sales information of private computers in the last 10 years by the company "XYZ".



24. The following bar graph gives information about the passed students of the institute 'ABC' in the national level entrance examination in the last 5 years.



in institute 'ABC'?

 RRB Group-D - 15/10/2018 (Shift-I)

 (A) 40
 (B) 50

 (C) 30
 (D) 60

25. The following bar graph shows the information of personal computers sold by the company "XYZ" in the last 10 years.



26. The following bar graph shows the information of personal computers sold by the company "XYZ" in the last 10 years.



(A) 10 (B) 15 (C) 20 (D) 30

27. The following bar graph shows the information of personal computers sold by the company "XYZ" in the last 10 years.


In which year was the maximum number of computers (in lakhs) sold by the company XYZ?

RRB C	Group-D - 22/10/2018 (Shift-III)
<b>(A)</b> 2014	<b>(B)</b> 2012
(C) 2013	<b>(D)</b> 2007

28. According to the following chart, which retailer offers Product 2 in the price range of Rs 16 to Rs 18?



Note: The Y axis indicates the price in Rupees and the X axis represents the retail sellers.

RRB Group-D - 27/11/2022 (Shift-III)

- (A) retail salesperson 1
- (B) retail salesperson 6
- (C) retail salesperson 7
- (D) retail salesperson 2
- **29**. Which two forms have the same number of sheep based on the given graph?

## Number of sheeps



**30**. The following bar graph shows the information of personal computers sold by the company "XYZ" in the last 10 years.



During the years 2004 to 2010, in which year was the sales maximum?

RRB Group-D - 24/10/2018 (Shift-III)

- (A) 2010 (B) 2006
- (C) 2008
- (D) 2004
- **31.** Sales figures are shown in the following graph in a sport goods store. Which month has the least sales?



32. A library has 10 different sections and the librarian classifies books over 20 days. Which section has the fewest books?



33. What is the percentage change in CO2 concentration from the year 1995 to 2015

(D) Section 9

(C) Section 8



#### RRB Group-D - 26/11/2022 (Shift-II)

1.26 %	( <b>B)</b> 11.31 %
1.00 %	( <b>D)</b> 11.11 %

34. Based on the graph below, which section has more than 360 books?

(A) 1

(C) 1

#### **Book Categorised**



- (C) Section 3 and Section 5
- (D) Section 5 and Section 6
- 35. This chart represents the household expenditure per month of a family. If the family income is Rs.33,650, then the total expenditure incurred on entertainment and food by the family in a month is-



36. The percentage distribution of Ramu's monthly household expenses is the following in four sections. If he earns Rs. 55000 per month, then what is the EMI paid by him in each month?



KKB KI	2F SI - 11/01/2019 (Shift-III)
( <b>A)</b> Rs. 25300	<b>(B)</b> Rs. 24000
( <b>C)</b> Rs. 26300	(D) Rs. 25000

**37**. The given pie graph shows the total sales made by various mobile companies in the year 2017.



If the total sales in the year 2017 was 5000 crores, then the sales made by Vivo company was ----- crores.

RRB RP	'F Constable - 17/01/2019 (Shift-I)
<b>(A)</b> 300	<b>(B)</b> 250
( <b>C)</b> 350	<b>(D)</b> 2000

**Direction: (38-40)** The pie chart given below shows the instrumentalities played by the students of the instrumental school, read the chart and answer the following questions based on them.



**38**. The angle of the violin related sector is

RRB RPF	Constable - 22/01/2019 (Shift-I)
<b>(A)</b> 16.8 <sup>0</sup>	<b>(B)</b> 16 <sup>0</sup>
(C) 57.6 <sup>0</sup>	<b>(D)</b> 48 <sup>0</sup>

**39**. If there are 300 students in total, then what is the difference between tabla players and veena players?

 RRB RPF Constable - 22/01/2019 (Shift-I)

 (A) 30
 (B) 90

 (C) 3
 (D) 9

**40**. What is the ratio of students who play guitar to violinists?

 RRB RPF Constable - 22/01/2019 (Shift-I)

 (A) 5: 4
 (B) 5: 6

 (C) 25: 16
 (D) 8: 15

**41.** What is the total percentage of illiterate people in all four cities (rounded off to one decimal place)?

City	Population	Literate	Illiterate	% Of literate people
А	200	150	50	-
В	-	200	100	66.6
С	150	50	100	-
D	120	-	90	25
		nstahla -	25/01/2010	(Shift_I)

 RRB RPF Constable - 25/01/2019 (Shift-I)

 (A) 44.1
 (B) 44.3

 (C) 44.5
 (D) 44.2

**42**. The given pie chart displays information about India's mobile phone manufacturing companies. The total number of mobile phones manufactured is 12,40,000. How many mobile phones were manufactured by the company 'PQR'?



**43.** In which month less than 250 (Thousand) screws were manufactured based on the following chart?



Number of screws in thousand

**44.** The given graph X shows the bike registration and total vehicles (in thousands) in the city during 6 months in the year 2017. Note: In the chart, the first column shows the bike and the second column shows the total vehicles. Based on the given data, what is the number of registered vehicles in addition to



**45.** The following graph gives the income from the laundry and dry cleaner chains of four different stores. Its values are given in rupees.



What is the percentage difference in income between month 1 and month 4?

#### RRB RPF SI - 12/01/2019 (Shift-III)

- (A) 20% less income
- (B) 25% higher income
- (C) 50% higher income
- (D) 25% less income

**46.** On the basis of the given graph, what percentage of the CO<sub>2</sub> concentration changed from 2005 to 2015?



**47.** The data given shows the proportion of people traveling to China for business, country-wise and age-wise. If, in a given year 5,00,000 people have visited China, what is the ratio of Americans in the age group of 20 to 40 years traveling to China with Russians under the age of 20:



**48**. The given graph shows the amount of minerals in the human body. What is the ratio of calcium and sodium found in human body based on the given data?



The following pie chart gives the annual 49. production (in tons) of some crops. If the total production was 9000 tons, the quantity of rice production should be expressed in tons.



	RRB ALP & Tec. (09-08-18 Shift-III)
(A) 3000	<b>(B)</b> 1000
( <b>C)</b> 2000	<b>(D)</b> 1500

50. The table below gives the details of the students of class 10, A and B who have appeared in the mid-term and final examinations.

Result	Section A 10 'A'	Section B 10 'B'
Total number of students who failed both the exams.	28	23
Total number of students who failed the mid-term examination but were successful in the final examination.	14	12
Total number of students who failed the final examination but were successful in the mid-term examination.	6	17
Total number of students who were successful in both the exams.	64	55

Based on the above data, what percentage of Class 10 'A' students were successful in the final exam?

	RRB ALP & Tec. (31-08-18 Shift-I)
64	<b>(B)</b> 69 70

<b>(A)</b> 69.64	<b>(B)</b> 69.70
<b>(C)</b> 69.69	<b>(D)</b> 69.54

**51.** Given a maximum score of 100 in each subject, the given table represents the scores of four students W, X, Y and Z in four subjects P. C. B and M.

Stu/Sub	Ρ	С	В	М
W	70	90	50	85
Х	55	80	95	60
Y	60	20	90	40
Z	90	80	40	65

Based on the data given, the student who gets the lowest percentage by combining P, C, B and M is:

	RRB ALP & Tec. (31-08-18 Shift-I)
<b>(A)</b> Y	(B) Z
(C) X	<b>(D)</b> W

**52.** Based on the table given, what percentage (in nearest integer) of salary increased per year during the period 2001-2006.

Item of expenditure			
salary	Food	Treatme	Тах
		nt	
1500 rs.	200 rs.	500 rs.	100 rs.
2600 rs.	300 rs.	600 rs.	200 rs.
3200 rs.	150 rs.	700 rs.	150 rs.
4100 rs.	250 rs.	650 rs.	125 rs.
5000 rs.	200 rs.	800 rs.	150 rs.
5200 rs.	100 rs.	750 rs.	175 rs.
	Item of example of exa	Item of expenditure           salary         Food           1500 rs.         200 rs.           2600 rs.         300 rs.           3200 rs.         150 rs.           4100 rs.         250 rs.           5000 rs.         200 rs.           5200 rs.         100 rs.	Item of expenditure           salary         Food         Treatme nt           1500 rs.         200 rs.         500 rs.           2600 rs.         300 rs.         600 rs.           3200 rs.         150 rs.         700 rs.           4100 rs.         250 rs.         650 rs.           5000 rs.         200 rs.         800 rs.           5200 rs.         100 rs.         750 rs.

 RRB ALP & Tec. (30-08-18 Shift-I)

 (A) 248
 (B) 247

 (C) 246
 (D) 245

**53.** During the years 2001 to 2006, what is the ratio of salary to expenditure per year?

year	Item of expenditure			
	salary	Food	Treatme	Tax
			nt	
2001	1500 rs.	200 rs.	500 rs.	100 rs.
2002	2600 rs.	300 rs.	600 rs.	200 rs.
2003	3200 rs.	150 rs.	700 rs.	150 rs.
2004	4100 rs.	250 rs.	650 rs.	125 rs.
2005	5000 rs.	200 rs.	800 rs.	150 rs.
2006	5200 rs.	100 rs.	750 rs.	175 rs.
	RR	B ALP & 1	Гес. (21-08-	-18 Shift-I)
(A)	71/108		<b>(B)</b> 71/105	-
(C)	105/71		<b>(D)</b> 216/61	

**54.** The table below details the marks of students appearing in the mid-term and term-end examination of sections 'A' and 'B' of class 10.

What is the percentage of students who have passed at least one examination in section 'A'?

Result	section 'A'	section 'B'
Total number of students failed in both exams	28	23
Total number of students failed in mid-term examination but pass in term-end examination.	14	12
Total number of students who passed the mid- term examination but failed in the evening examination	6	17
Total number of students passed in both the examinations	64	55
RRB ALP & T	ec. (14-08-	18 Shift-III)
<b>(A)</b> 80	<b>(B)</b> 75	

(D) 70

**55.** Based on the given data, what is the total percentage of educated overall in the four cities? (Rounded off to one decimal)

(C) 65

City	Population	Literate	Illiterate	% of literates
А	200	150	50	-
В	-	200	100	66.6
С	150	50	100	-
D	120	-	90	25
RRB ALP & Tec. (10-08-18 Shift-III)				
	<b>(A)</b> 55.9	(	<b>B)</b> 55	

(C) 55.7 (D) 55.856. The chart given shows the daily average income of men and women in Company X.

■ Men (21 years and above)



Based on the data depicted, in which year was the percentage increase in men's average daily income the maximum compared to the previous year?

	RRB ALP & Tec. (30-08-18 Shift-I)
(A) 2003	<b>(B)</b> 2001
(C) 2002	<b>(D)</b> 2004

**57.** The graph given shows sales of bikes by color in India in 20**09**.



If the total number of bikes sold in the year 20**09** is 50,000, then how much was the number of sales of white bikes compared to the sales of yellow and red bikes?

 RRB ALP & Tec. (20-08-18 Shift-I)

 (A) 5,000
 (B) 2,500

 (C) 10,000
 (D) 3,000

**58.** In which year the percentage increase in population is the highest as compared to the previous year?



**59.** Read the following graph and answer the question that follows.



**Direction: (60-62)** The pie chart shows the favorite stars of a family (Bollywood stars SRK, SK, AK, HR and VD).

Study the pie chart carefully and answer the questions based on it.



60. The ratio of people who like SK to those who like SRK is:

	RRB NTPC 02/02/2021Shift :2
<b>(A)</b> 6/5	<b>(B)</b> 5/6
<b>(C)</b> 1/2	<b>(D)</b> 2/1

61. What is the corresponding sector angle of HR?

#### RRB NTPC 02/02/2021Shift : 2

<b>(A)</b> 36 <sup>0</sup>	<b>(B)</b> 72 <sup>0</sup>
( <b>C)</b> 54 <sup>0</sup>	<b>(D)</b> 108 <sup>0</sup>

**62**. If there are 40 people in the family, tell the difference between those who like AK and those who like VD.

RRB	NTPC	02/02	/2021	Shift	:	2
	(E	<b>3)</b> 3				

(C) 4 (D) 6

(A) 2

**63**. In a school, 1200 students were asked about their arrival vehicles and the information received is shown by the following pie chart. So based on the information given, find out how many students come to school by car?



RRB NTPC 23/07/2022 Shift : 2 (B) 900

(A) 1000	( <b>D</b> ) 900
<b>(C)</b> 500	<b>(D)</b> 750

**Direction (64-66):** The following pie chart shows the forest area of five states P, Q, R, S and T. Consider the chart and answer the questions based on it.



**64**. What will be the area of the state Q if the total area is 61700 sq. km?

 RRB NTPC 10/08/2022 Shift : 2

 (A) 11686 sq. km
 (B) 12,340 sq. km

 (C) 13,574 sq. km
 (D) 19,744 sq. km

65. The sector angle of state P is ...... RRB NTPC 10/08/2022 Shift : 2 (A) 50.4° (B) 64.8° (C) 43.2° (D) 79.2° 66. The ratio of forest area of State R to the combined forest area of State T and S is:

RRB NTPC 10/08/2022 Shift : 2

<b>(A)</b> 17/16	<b>(B)</b> 17/15
( <b>C)</b> 11/15	<b>(D)</b> 11/16

Direction: (67-68) The table below shows the percentage distribution of the total expenses of the company Zeta Interactive Services under various heads during 2003-

infrastructure	20
transportation	12.5
advertisement	15
Tax	10
R&D	5
salary	20
Interest on loan	17.5

**67.** If the amount of interest on loans is Rs.2.45 crore, then what is the total amount spent on advertisement, taxes and amendment and development (R&D) of Zeta Interactive Services?

	RRB NTPC 12/08/2022Shift : 2
(A) 7 Crore	(B) 5.4 Crore
(C) 4.2 Crore	(D) 3 Crore

**68.** If the expenditure on advertisement of Zeta Interactive Services is 2.10 crores, what is the difference between transport and taxes?

#### RRB NTPC 12/08/2022Shift : 2

(A) 1.25 Crore	<b>(B)</b> 95 lakh
(C) 65 lakh	(D) 35 lakh

**Direction (69-71):** Read the information given below and answer the questions given below:

The details of the number of candidates sitting, passing and selected from Delhi in the competitive examination between 1997 and 2001 are given below.

year	Sit in exam	Passed	Selected
1997	8000	850	94
1998	4800	500	48
1999	7500	640	82
2000	9500	850	90
2001	9000	800	70

**69**. In which year was the minimum percentage of candidates selected from the candidates appearing for examination?

#### RRB NTPC 09/05/2022 Shift : 2

<b>(A)</b> 1998	<b>(B)</b> 2000
(C) 2001	<b>(D)</b> 1999

**70**. In which year was ratio of the number of selected candidates to maximum number of qualified candidates?

RRB NTPC 09/05/2022 Shift : 2

(A) 1998	<b>(B)</b> 2000
(C) 2001	<b>(D)</b> 1999

**71**. What is the average number (in nearest integer) of selected candidates in given period?

#### RRB NTPC 09/05/2022 Shift : 2

<b>(A)</b> 79	<b>(B)</b> 77
(C) 76	<b>(D)</b> 74

Direction (72-73): The following table shows the population percentage distribution based on poverty line and gender in five states M, N, O, <u>P</u> and Q.

State	Population below poverty line	Ratio of males (M) and females (F)		
pc		below the poverty line	Above poverty line	
		M:F	M:F	
М	40	7:6	8:7	
Ν	30	3:2	6:5	
0	26	1:1	4:3	
Р	17	1:2	4:5	
Q	20	2:3	3:4	

**72**. If male population above poverty line of state O is 1.7 million, then what will be total population of state O?

#### RRB NTPC 09/05/2022 Shift : 1

(A) 4.62 million	(B) 11.44 million
(C) 5.63 million	(D) 4.02 million

**73**. What will be female population above poverty line of state P , if it is known that total population of State P is 9 million?

RRB NTPC 09/05/2022 Shift : 1

(A) 4.32 million	(B) 5.32 million
(C) 4.15 million	(D) 6.32 million

**Direction- (74)** The following table shows the record (recorded) of a football team's performance in 7 tournaments played throughout the year

Details of tournament played	Won the match	Match Ioser	Number of matches played
First	5	3	8
Second	4	4	8

Third	5	2	7
Fourth	6	3	9
Fifth	4	2	6
Sixth	3	3	6
Seventh	2	4	6

74. In what percentage of all matches played, did the team win?

	RRB NIPC 19.01.2017 Shift : 3
<b>(A)</b> 58%	<b>(B)</b> 80%
<b>(C)</b> 75%	<b>(D)</b> 52%

**Direction (75-77):** Study the following table and answer the questions based on it. The following table gives expenditure (in lakhs of rupees) of a company for a few years.

year	Expense details				
	salary	Fuel and	Bonus	Interest	Тах
		transportation		on	
				ioans	
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

**75**. The total expenditure of the company on goods during the year 2001 is-

#### RRB NTPC 02/02/2021Shift : 1

(A) Rs. 590 lakhs	<b>(B)</b> Rs. 598 lakhs
(C) Rs. 597 lakhs	(D) Rs. 597.08 lakhs

**76**. What is the ratio between total expenditure on taxes for all rainfall and total bonus for all the years respectively?

#### RRB NTPC 02/02/2021Shift : 1

<b>(A)</b> 9: 40	<b>(B)</b> 25: 13
(C) 451: 17	<b>(D)</b> 1: 25

77. What is the percentage of expenditure on salary in year 2001on fuel and transport forms?

#### RRB NTPC 02/02/2021Shift :1

<b>(A)</b> 34.54%	<b>(B)</b> 39.58%
(C) 33.57%	(D) 37.58%

**Direction (78-80):** The following table shows the number of fans of MSD, VK, RD and SR in different areas of the city. Consider the following information and answer the following questions based on it-

	Area 1	Area 2	Area 3	Area 4
VK	2500	1700	2300	5000
MSD	3000	3000	4000	3100
RD	1500	3500	4500	5200
SR	1500	4000	3500	2500

**78**. What is the difference between total number of fans of SR and MSD?

RRB NTPC 11/08/2022 Shift : 2

<b>(A)</b> 1500	<b>(B)</b> 1600
( <b>C)</b> 3000	<b>(D)</b> 3200

79. Who has highest number of fans?

vino nas i	lightest number of lans?	
	RRB NTPC 11/08/2022	Shift: 2
(A) VK	<b>(B)</b> MSD	

( <b>C)</b> RD	<b>(D)</b> SR

**80**. What is the difference in number of fans of area 2 compared to area 3?

#### RRB NTPC 11/08/2022 Shift : 2

- (A) 2200 fans is more from area 2
- (B) 2100 fans is less from area 2
- (C) 2100 fans is more from area 2

(D) 2200 fans is less from area 2

**Direction (81-83):** Study the given data and answer the questions that follow.

Agricultural area (in lakh hectares) -

state	2011	2012	2013
Panjab	220	256	264
Haryana	120	108	151
Uttar	100	143	128
Pradesh			
Madhya	40	85	90
Pradesh			
Maharashtra	80	150	175
Rajasthan	30	26	24

**81**. What was the percentage of increase in agricultural land in Punjab in 2013 compared to the year 2011?

	RRB NTPC 18.01.2017 Shift : 2
<b>(A)</b> 20	<b>(B)</b> 16.36
( <b>C)</b> 25.8	<b>(D)</b> 22.33

**82**. What is the difference between total agricultural area (in lakh hectare) of Maharashtra and Madhya Pradesh on a combined basis in all 3 years?

RRB NTPC 18.01.2017 Shift : 2

- (A) 135(lakh hectare)
- (B) 34(lakh hectare)
- (C) 190(lakh hectare)
- (D) 174(lakh hectare)
- **83.** What was maximum agricultural area in Uttar Pradesh as compared to Rajasthan in year 2012?

RRB NTPC 18.01.2017 Shift : 2

- (A) 35(lakh hectare)(B) 117(lakh hectare)
- (C) 113(lakh hectare)
- (D) 58(lakh hectare)
- **Direction (84-86):** Study the following table and answer the questions based on it. The marks earned by the students in various subjects in an examination are given below.

	Subject			
Student	Physics (Out of 120)	chemistry (Out of 120)	Biology (Out of 120)	Mathematics (Out of 100)
Anil	95	53	61	70
Beenu	105	84	42	80
Chirag	95	65	73	90
Dhavan	85	65	84	60
Elza	85	66	95	50
Frah	75	77	85	40
Jorj	<mark>65</mark>	38	75	80

**84.** How many students have scored more than 60% marks in the exam?

	RRB NTPC 10/08/2022 Shift : 3
<b>A)</b> 7	<b>(B)</b> 6
<b>C)</b> 5	<b>(D)</b> 4

**85.** Who stood first in the class in terms of total percentage marks in the examination?

	RRB NTPC 10/08/2022 Shift : 3
(A) Beenu	<b>(B)</b> Chirag
<b>(C)</b> Dhavan	<b>(D)</b> Elza

**86.** What is the average of marks scored by Dhawan in all the four subjects?

# RRB NTPC 10/08/2022 Shift : 3(A) 65.3(B) 71.3(C) 68.3(D) 73.5

**Direction: (87-89)** Study this bar chart and answer the following questions. The following table shows the year-wise distribution of sales of TV sets.



**87**. What was the percentage increase in sales of TV sets from 2001 to 2002?

RRB NTPC 23/07/2022 Shift : 2

<b>(A)</b> 115%	<b>(B)</b> 128%
(C) 122%	<b>(D)</b> 118%

88. The sum of sales of TV sets in the year 1999 and 2001 is equal to the sales of which year?

RRB NTPC 23/07/2022 Shift : 2

<b>A)</b> 1997	<b>(B)</b> 1993
<b>C)</b> 2000	<b>(D)</b> 2002

- **89**. The rate of change for TV sets was the lowest between which two years?
  - RRB NTPC 23/07/2022 Shift : 2

(A) 1998 and 1999	<b>(B)</b> 1999 and 2000
(C) 1997 and 1998	( <b>D</b> ) 2001 and 2002

**Direction (90-92):** Answer the questions based on the following information:

The bar graph below shows the percentage of distribution of the total production of various models of Samsung TV over the course of two years.



Total number of TV produced in 2000 = 350000 Total number of TV produced in 2001 = 400000

**90**. If the percentage of production of Samsung TV in the year 2001 was the same as it was in the year 2000, then what would have been the number of production of P type Samsung TV in 2001?

#### RRB NTPC 23/07/2022 Shift : 1

<b>(A)</b> 1,40,000	<b>(B)</b> 1,20,000
<b>(C)</b> 1,17,000	<b>(D)</b> 1,05,000

**91**. If 85% of the S Type Samsung TVs were sold annually by the company, then how many S Type Samsung TVs were not sold?

#### RRB NTPC 23/07/2022 Shift : 1

(A) 76500	<b>(B)</b> 93500
(C) 11250	<b>(D)</b> 122500

**92**. What is the total number of Samsung TVs manufactured in P, Q and T models in the year 2000?

#### RRB NTPC 23/07/2022 Shift :

<b>(A)</b> 2,45,0000	<b>(B)</b> 2,27,5000
(C) 2,10,000	(D) 1,92,5000

**Direction (93-95):** Answer the following questions based on the information. The Coca-Cola company manufactures drinks in three different flavor mints (M), apples (A) and ranges (O).

The bar graph below shows the output of the three flavors for six years.



**93**. What is the difference between the average production of Flavor Mint in the years 1995, 1996 and 1997 and the average production of

Flavored Apple in the years 1998, 1999 and 2000?

RRB NTPC 12/08/2022Shift : 3

(A) 5,000 Bottles	(B) 80,000 Bottles
(C) 2,40,000 Bottles	(D) 5,00,000 Bottles

94. Which flavor has the highest annual average production over a given period? RRB NTPC 12/08/2022Shift : 3

(A) Flavor mint	(B) Flavor apple
(C) Flavor orange	(D) Mint and apple

**95**. How much production of Flavored Orange decreased in the year 2000 compared to the year 1998?

	RRB NTPC 12/08/2022Shift : 3
<b>(A)</b> 50%	<b>(B)</b> 42%
( <b>C)</b> 33%	<b>(D)</b> 25%

**Direction (96-97)** Answer the questions based on the following bar chart:

The following bar chart shows the trend of mutual fund investment in India from all over the world.



**96.** If India's mutual fund investment from countries around the world in 1992 and 1997 was proportionally the same as the total mutual fund investment of the entire world, and if the mutual fund investment from these countries in 1992 was 2 million Euros, then what was the amount of mutual fund investment from these countries in 1997?

RRB NTPC 12/08/2022Shift : 1 (B) 0.72

<b>(A)</b> 11	<b>(B)</b> 0.72
<b>(C)</b> 11.28	<b>(D)</b> 11.5

**97.** What was the net difference in mutual fund investment in India between 1996 and 1997?

	RRB NTPC 12/08/2022Shift : 1
<b>(A)</b> 7.29	<b>(B)</b> 7.13
(C) 8.13	<b>(D)</b> 7.77

**Direction (98-100)** The bar diagram below shows the figures of paper (in lakh tons) produced by the three companies Amber Paper Mill, MAC Paper Mill and Tanvir Paper Mill, respectively, over the years, represented by A, M, T. Answer the following questions.



**98.** Which company had the highest average production over five years?

RRB NTPC 11/08/2022Shift : 1

- (A) Amber Paper Mill
- (B) MAC paper mill
- (C) Tanveer paper mill

**(D)** Both, Amber Paper Mill and Tanveer Paper Mill

**99.** In which year the production percentage of Tanvir paper mill was maximum than the production percentage of MAC paper mill?

RRB NTPC 11/08/2022Shift : 1

:1

- (A) 1996
  (B) 1997
  (C) 1998
  (D) 1999
- **100**. What is the ratio between the average production of Amber paper mill and the average production of MAC paper mill from the period 1998-2000?

	RRB NTPC 11/08/2022Shift
<b>(A)</b> 1: 1	<b>(B)</b> 15: 17
(C) 23: 25	<b>(D)</b> 27: 29

**Direction: (101-103)** This bar chart shows the percentage marks of four students in history and geography. Consider the bar chart and answer the questions based on it.



101. What is the difference in the average percentage of total marks obtained in geography and history? RRB NTPC 10/08/2022 Shift :2

<b>(A)</b> 7.58 %	<b>(B)</b> 7%
<b>(C)</b> 4.13%	<b>(D)</b> 5.5%

**102.** What is the average of the percentage marks obtained by all the students in history?

	RRB NTPC 10/08/2022 Shift : 2
<b>(A)</b> 78 %	<b>(B)</b> 75%
<b>(C)</b> 72.5%	<b>(D)</b> 70%

(D) U

103. Who has the highest combined percentage marks in both subjects?
 RRB NTPC 10/08/2022 Shift : 2
 (A) Both V and W
 (B) V

## **Solution**

7.

#### 1. Ans.(D)

Spent in R&D =  $100 \times \frac{40}{100}$ = Rs. 40 (Lakh crore)

Ans.(A)
 Percentage of mobile phone manufactured by XYZ = 12%

$$= 12,40,000 \times \frac{12}{100} = 1,48,800$$

Thus, the number of mobile phones manufactured by the company XYZ is 1,48,800.

#### 3. Ans.(A)

According to Question Revenue Received during 2016 = 36,82000 Cricket kit sales = 30% Revenue from the sale of cricket kit  $= \frac{36,82,000 \times 30}{100} = 1104600$ 

#### 4. Ans.(B)

Total Revenue = Rs. 3872000 Maximum revenue =  $\frac{3872000 \times 45}{100}$ 

= Rs. 1742400 Hence the revenue of musical toys was maximum.

#### 5. Ans.(A)

Total production of clothes by company XYZ in the year 2015 = 1,50,000 ton Total production of satin by company XYZ in year  $2015 = \frac{1,50,000 \times 5}{100} = 7500$  ton Hence, total production of satin by company XYZ in the year 2015 = 7500 tonnes.

6. Ans.(B)

Total expenditure = Rs. 50,000 Binding cost = ?  $50,000 \times \frac{20}{100}$ Binding Cost = <u>Rs. 10,000</u> **Ans.(A)** The total expenditure of the publishing agency is Rs 50000 100% = 50000

1% = 500 Transportation cost = 10% = 5000

#### 8. Ans.(B)

(C) W

Increase in percentage of carbon emissions between 2016 and 2017

$$=\frac{150-110}{110}\times 100 = \frac{40}{110}\times 100 = 36.36\%$$

9. Ans.(C)

% difference =  $\frac{(18+7)-(7+3)}{(7+3)} \times 100$ =  $\frac{25-10}{10} \times 100 = \frac{15}{10} \times 100$ = 150% increase

## 10. Ans.(B)

The total amount spent by Uma on item 3 was Rs. 850 which is 10 percent of the total amount.

 $\therefore \text{ Full amount} = \frac{850 \times 100}{10} = Rs.8500$  $\therefore \text{ Amount spent on item 2}$  $= \frac{8500 \times 20}{100} = Rs.1700$  $\therefore \text{ Amount spent on item 5}$ 

$$=\frac{8500\times15}{100}$$
 = Rs. 1275

Hence, Uma carried on item 2 and item 5

Total expenditure = 1700 + 1275 = Rs. 2975 11. Ans.(D) From the given table -Total expenditure for 1 year = 200 + 10 + 70 + 20 = 300 lakh rupees Total expenditure for 3 year = 450 + 10 + 120 + 20 = 600 lakh rupees  $\therefore \text{ Required percentage} = \frac{300}{600} \times 100 = 50\%$ 12. Ans.(B) Total sales for 1 year = 15 + 12 + 9 = 36Total sales for 3 year = 14 + 15 + 13 = 42Difference = 6Required % =  $\frac{6}{36} \times 100 = 16.67\%$ 13. Ans.(C) Expenditure on salaries in 2016  $= 120 \times \frac{50}{100}$ = 60 lakhs Amount spent on salary in 2017  $= 150 \times \frac{55}{100}$ = 82.5 Lakh Rs. Increase in salary in 2017 compared to 2016 = 82.5 - 60 = Rs 22.5 lakhs 14. Ans.(B) Average number of screws 200 + 300 + 250 + 250 + 230 + 2706  $=\frac{1500}{6}=250$ Therefore, the months of production of screws above the average number of screws are in February and June. 15. Ans.(D) Difference in guarter 1 = 40 - 36 = 4Difference in quarter 2 = 80 - 80 = 0Difference in guarter 3 = 65 - 40 = 25Difference in quarter 4 = 43 - 40 = 3The difference of quarter 3 is the highest among the four quarters. 16. Ans.(B) The months in which the prices of vegetables remained the same over a period of 2 years -April, May, June, July, October so the prices of vegetables remained the same for five months. 17. Ans.(D) Number of games = 6Total number of goals = 2 + 1 + 0 + 4 + 3 + 2= 12 Game average score = 12/6 = 218. Ans.(A) Number of gym users = 300 Gym fee = Rs. 500

Hence earning per month from gym

= 300 × 500 = Rs. 1,50,000

#### 19. Ans.(A)

According to the given data -

Years	Production of
	engines (In lakhs)
2012	2 lakh
2013	4 lakh
2014	2 lakh
2015	8 lakh
2016	6 lakh

It is clear from the table that the highest production of locomotives (8 lakhs) has been done in the year 2015.

### 20. Ans.(A)

Sale of C in year 1 = 14Sale of C in year 2 = 13Sale of C in year 3 = 5Hence C's sales in year 3 were lower than other years.

#### 21. Ans.(C)

On studying the given chart, it is known that the sales of store B in 1 year = 14 lakhs Sales of store B in year 2 = 12 lakhs And sales of store B in year 3 = 8 lakhs Therefore, it is clear that in year 1, the sale of Store B was more than Rs. 13 lakhs.

#### 22. Ans.(B)

According to the chart given, the maximum number of people in all slots on Sunday is (25).

Hence, on Sunday they cannot accommodate more members.

#### 23. Ans.(B)

The bar graph given below shows that the sales of private computers by the company XYZ in the year 2009 are 20 lakhs.

#### 24. Ans.(B)

It is clear from the given bar graph that the number of students passed from Institute ABC in the year 2016 = 50

#### 25. Ans.(D)

In the given graph, 2004 graph is at the bottom of all other years. Therefore, it is clear from this that in 2004 the sales of personal computers reached the lowest of 10 lakhs.

#### 26. Ans.(C)

It is clear from the given bar graph that in the year 2006, the company XYZ sold 2 million units of personal computers.

#### 27. Ans.(A)

Company XYZ has sold the most personal computers (8 million) in the year 2014.

#### 28. Ans.(B)

According to the chart given, the price range of Rs.16 to Rs.18 is available under retailer 6.

#### 29. Ans.(D)

In the given graph, there are the same number of sheep in Form 5 and Form 3.

#### 30. Ans.(C)

The highest sales during the year 2004 - 10 were in 2008 which was 50 lakhs.

#### 31. Ans.(B)

It is clear from the data given in the graph that the sales were lowest in July (10000).

#### 32. Ans.(A)

It is clear from the graph given that section 7 has the least number of books (125).

#### 33. Ans.(D)

Percent change in CO<sub>2</sub> concentrations =  $\frac{400-360}{100} \times 100$ 

$$40^{360}$$

 $= \frac{1}{360} \times 100$ 

Thus, there is an 11.11% change in concentration of CO<sub>2</sub>.

#### 34. Ans.(C)

According to the graph, there are 400 and 400 books in section 3 and section 5 respectively. Which is more than the number of 360 books in question.

#### 35. Ans.(B)

Total expenditure on family entertainment and food

$$= 33650 \times \frac{25 + 9}{100}$$
  
= 33650 \times \frac{34}{100}  
= Rs. 11,441

## 36. Ans.(A)

EMI payment every month

$$= \frac{46}{100} \times 55000 = 46 \times 550 = Rs.25300$$

37. Ans.(A)

Vivo company sales =  $\frac{6}{100} \times 5000$ = 300 crore.

#### 38. Ans.(C)

Total angle =  $360^{\circ}$ Violin percentage = 16%Violin angle =  $\frac{360 \times 16}{100}$  =  $57.6^{\circ}$ 

#### 39. Ans.(C)

40.

Total number of students = 300 Number of students playing tabla =  $\frac{300 \times 29}{100}$  = 87 Number of students playing veena =  $\frac{300 \times 30}{100}$  = 90 Required difference = 90 - 87 = 3 **Ans.(C)** Let the total students be 100. Then the guitarist = 25Violinist = 16Required ratio = 25: 16

#### 41. Ans.(D)

Here the total population of the four cities = 200 + 300 + 150 + 120 = 770Percentage of total illiterate people in the four cities

$$= (50 + 100 + 100 + 90)\frac{100}{770}$$
$$= \frac{340 \times 100}{770}$$

x = 44.2% approx.

## 42. Ans.(B)

Total number of mobile phones manufactured = 12,40,000

Hence the number of mobile phones manufactured by the company PQR

$$= 12,40,000 \times \frac{25}{100} = 3,10,000$$

#### 43. Ans.(D)

It is clear from the chart that 200 screws have been manufactured in the month of January which is less than 250 screws manufactured in March. Hence option (d) is correct

#### 44. Ans.(B)

Number of bikes in March 2017 = 15000 Total number of vehicles in March 2017 = 25000 Thus the number of vehicles regist

Thus, the number of vehicles registered without bikes = 25000 - 15000 = 10000

#### 45. Ans.(A)

Difference between month 1 and month 4 = 25000 - 20000 = 5000 Difference % =  $\frac{5000}{25000} \times 100 = 20\%$ Hence the income of month 4 is 20% less than the income of month 1.

## 46. Ans.(D)

Change in CO<sub>2</sub> concentration from year 2005 to 2015 = 400 - 380 = 20 Percent increase in CO<sub>2</sub> concentration =  $\frac{20}{380} \times 100 = 5.26\%$ 

#### 47. Åns.(A)

American population =  $500000 \times \frac{60}{100}$ = 300000 Number of American people aged between 20 and 40 years =  $300000 \times \frac{20}{100} = 60000$ And Number of Russians under 20 years of age =  $\left(500000 \times \frac{5}{100}\right) \times \frac{60}{100} = 15000$ 

Therefore, Americans between 20 and 40 years old = 60000 Russian people under the age of 20 15000  $=\frac{4}{1}=4:1$ 48. Ans.(D) Calcium = 40% Sodium = 8% Hence calcium: sodium = 40: 8 = 5: 1 49. Ans.(B) Production of rice =  $9000 \times \frac{40^{\circ}}{360^{\circ}} = 1000$  tons 50. Ans.(A) Number of students passed in the final exam = 64 + 14 = 78Total number of students = 14 + 28 + 6 + 64= 112Percentage of successful students in the final examination of 10'A ' =  $\frac{78}{112} \times 100$ = 69.6451. Ans.(A) According to the given question Total of full marks of P, C, B, M = 400 Marks obtained by W student in P, C, B, M = 70 + 90 + 50 + 85 = 295 percentage marks  $=\frac{295}{400} \times 100$ = 73.75%Marks obtained by X student in P, C, B, M = 55 + 80 + 95 + 60 = 290percentage mark =  $\frac{290}{400} \times 100$ = 72.5% Marks obtained by Y student in P, C, B, M = 60 + 20 + 90 + 40= 210 percentage mark =  $\frac{210}{400} \times 100$ = 52.5% Marks obtained by Z student in P, C, B, M = 90 + 80 + 40 + 65= 275 percentage mark =  $\frac{275}{400} \times 100$ = 68.75%Hence it is clear that Y gets the lowest percentage. 52. Ans.(B) Salary in the year 2001 = Rs. 1500 Salary in the year 2006 = Rs 5200. Increase = 5200 - 1500 ⇒ 3700 Rs. Percentage increase  $\Rightarrow \frac{3700 \times 100}{1500}$  $\Rightarrow$  246.67 or 247 percent approx Ans.(D)

Total salary from 2001 to 2006 = 1500 + 2600 + 3200 + 4100 + 5000 + 5200 = 21600 Similarly, Total expenditure from 2001 to 2006 =  $2001 \Rightarrow 200 + 500 + 100 = 800$  $2002 \Rightarrow 300 + 600 + 200 = 1100$  $2003 \Rightarrow 150 + 700 + 150 = 1000$  $2004 \Rightarrow 250 + 650 + 120 = 1025$  $2005 \Rightarrow 200 + 800 + 150 = 1150$  $2006 \Rightarrow 100 + 750 + 175 = 1025$  $\frac{\text{salary}}{\text{expense}} = \frac{21600}{6100} = 216:61$ Ans.(B) Total number of students in section 'A' = (Total pass + total failed) Number of students = 28 + 14 + 6 + 64 = 112And the total number of students passed in at least one examination = the number of students passed in one examination + the number of students passed in both examinations = 14 + 6 + 64 = 84Hence the percentage of students "passed" in at least one examination in section 'A' =  $\frac{84}{112} \times 100 = 75$ Ans.(D) Total population of city B = 200 + 100 = 300Educated population of city D = 120 - 90 = 30Total population = 200 + 300 + 150 + 120 = 770 Total educated people = 150 + 200 + 50 + 30= 430Percentage of educated people  $=\frac{430\times100}{770}=55.84$ Ans.(A) Daily average income in year 2000 = Rs. 35.80 Increase in daily average income in 2001 = 40.90 - 35.80 = Rs.5.10 Increase in 2002 = 48.60 - 40.90 = 7.7. Increase in 2003 = 59.50 - 48.60 = 10.9. (Maximum) increase in 2004 = 66.90 - 59.50 = Rs. 7.4 Therefore, it is clear that in the year 2003, the increase in daily average income of men was maximum. Percent increase  $=\frac{10.9 \times 100}{48.60} = 22.43\%$ Ans.(B) Number of yellow colored bikes =  $50000 \times \frac{10}{100} = 5000$ Number of red colored bikes =  $50000 \times \frac{20}{100}$  = 10000 Sale of yellow and red colored bikes = 10000

54.

55.

56.

57.

53.

+5000 = 15000

Number of white bikes (Sales) =  $50000 \times \frac{25}{100}$ = 12500Required decrease in sales = 15000 - 12500 = 250058. Ans.(D) Population growth in the year 2001  $= \frac{70 - 60}{60} \times 100$  $= \frac{10}{60} \times 100$  $=\frac{100}{6}=16.66\%$ Population increase in the year 1981  $= \frac{50 - 40}{40} \times 100$  $= \frac{10}{40} \times 100$  $=\frac{100}{4}=25\%$ Population increase in the year 1961  $=\frac{30-10}{10}\times 100$  $=\frac{20}{10} \times 100$ = 200%Population increase in the year 1971  $= \frac{40 - 30}{30} \times 100$  $= \frac{10}{30} \times 100 = \frac{100}{3}$ = 33.33% Therefore, in the year 1961, the percentage increase over the previous year is the highest. 59. Ans.(A) Total sale = 10000Green motorcycle sales =  $10000 \times \frac{8}{100}$ = 800 Yellow bike sales =  $10000 \times \frac{10}{100}$ = 1000Required difference = 1000 - 800 = 20060. Ans.(B) SRK = 25% SK = 30% SRK : SK = 25: 30 = 5: 6 61. Ans.(B) HR percentage = 20% Total angle 360<sup>0</sup> Corresponding field angle of HR  $= 360 \times \frac{20}{100} = 72^{0}$ Ans.(A) 62. Number of family members = 40 Number of people who like AK =  $40 \times \frac{15}{100}$ 

Number of people who like VD =  $40 \times \frac{10}{100}$ Required difference = 6 - 4= 2 63. Ans.(C) Total students = 1200 Angle of students coming from car out of 360°  $= 150^{\circ}$ Number of students coming by car =  $1200 \times \frac{150^0}{360^0} = 500$ **64**. Ans.(C) Q Area of the state  $= 61700 \times \frac{22}{100} = 617 \times 22 = 13574 sq \cdot km$ 65. Ans.(A) Sum of sector angle of all states =  $360^{\circ}$ State P's Sector Angle =  $\frac{360 \times 14}{100}$  $= 50.4^{\circ}$ 66. Ans.(B) Required Ratio = (Forest Area of State R): (Forest Area of State T and S) = 34%: (18 + 12)%= 34:30= 17:15 $= \frac{17}{15}$ 67. Ans.(C) Let the amount spent above mentioned scheme be y. And the total expenditure on advertising, taxes and amendments and development = (15 + 10 + 5)% = 30%By question,  $\frac{17.5\%}{24500000} = \frac{30\%}{y}$ 2450000<u>0×30</u> = v17.5 y = 4.2 crore. 68. Ans.(D) Difference between transport and taxes% = 12.5 - 10 = 2.5and expenditure on advertisement = 15%  $\frac{10000000}{21000000} = \frac{2.5\%}{100000000000}$  $2100000 \times 2.5$ ---=x⇒ 15 x = 35 lakh  $\Rightarrow$ **69**. Ans.(C) % of selected candidates in 1997 =  $\frac{94 \times 100}{8000}$ = 1.175% % of selected candidates in  $1998 = \frac{48 \times 100}{4800}$ = 1% % of selected candidates in 1999 =  $\frac{82 \times 100}{7500}$ = 1.093%% of selected candidates in 2000 =  $\frac{90 \times 100}{0500}$ = 0.947%

% of selected candidates in 2001 =  $\frac{70 \times 100}{9000}$ = 0.7778%

Therefore, in the year 2001, the percentage of selected candidates is minimum.

#### 70.

Ans.(D)

Ratio in 1998 =  $\frac{48}{500}$  = 0.096 Ratio in 2000 =  $\frac{90}{850}$  = 0.1058 Ratio in 2001 =  $\frac{70}{800}$  = 0.0875 Ratio in 1999 =  $\frac{82}{640}$  = 0.128

Hence the ratio of the number of selected candidates to the number of gualified candidates in 1999 is the maximum.

#### 71. Ans.(B)

Average number of selected candidates 94 + 48 + 82 + 90 + 70

$$= \frac{5}{5} = \frac{384}{5} = 76.8 \approx 77$$

Male population above poverty line of state O = 1.7 million

 $\therefore$  Female population =  $\frac{3}{4} \times 1.7 = \frac{5.1}{4}$ 

= 1.275 million

Total Population above Poverty Line = 1.7 + 1.275 = 2.975

Population above state poverty line (%) = 100- 26 = 74 %

$$\therefore$$
 Total Population of State O =  $\frac{2.975 \times 100}{74}$ 

= 4.02 million

73. Ans.(C) : Total population of state P = 9 million

Poverty above state P = 83% of 9 million population

 $= 9 \times \frac{83}{100} = \frac{747}{100} = 7.47$  million : Ratio of male to female in population above poverty line of state P = 4:5.: Female population above poverty line

$$= \frac{3}{4+5} \times 7.47$$
  
=  $\frac{5}{9} \times 7.47 = \frac{37.35}{9}$   
= 4.15 millon.

74. Ans.(A)

Total Matches Played = 50 Total Matches Won = 29 Required percentage =  $\frac{29}{50} \times 100$ ⇒ 58%

Total expenditure of the company on goods during the year 2001 = 336 + 133 + 3.68 + 36.4 + 88

= Rs. 597.08 lakh

## 76.

77.

78.

79.

80.

81.

82.

83.

Ans.(C) Total expenditure on taxes for all years = 83 + 108 + 74 + 88 + 98 = 451 Total bonus for all years = 3 + 2.52 + 3.84 + 3.68 + 3.96= 17.00 $\therefore$  Required ratio = 451: 17 Ans.(B) In the year 2001, Expenditure on fuel and transport = 133 lakhs Salary expenditure = 336 lakh : Required percent =  $\frac{133}{336} \times 100$ = 39.58% Ans.(B) Total number of SR fans = 1500 + 4000 + 3500 + 2500 = 11500Total number of MSD fans = 3000 + 3000 + 4000 + 3100 = 1 3100 Difference = 13100 - 11500= 1600Ans.(C) Number of VK fans = 2500 + 1700 + 2300 + 5000 = 11500Number of MSD fans = 3000 + 3000 + 4000 + 3100 = 13100 Number of RD fans = 1500 + 3500 + 4500 + 5200 = 14700Number of SR fans = 1500 + 4000 + 3500 + 2500 = 11500It is clear that RD has the highest number of fans (14700). Ans.(C) Number of fans of Region - 2 = 1700 + 3000 + 3500 + 4000 = 12200 Number of fans of Region – 3 = 2300 + 4000 + 4500 + 3500 = 14300Difference = 14300 - 12200 = 2100 Therefore it is clear that Region - 2 has 2100 fans less than Area - 3. Ans.(A) % Increase =  $\frac{(264-220)\times100}{220}$  $\Rightarrow \frac{44 \times 100}{220} = 20\%$ Ans.(C) Difference in total agricultural area of Maharashtra and Madhya Pradesh  $\Rightarrow$  (80 + 150 + 175) - (40 + 85 + 90)  $\Rightarrow$  405 – 215 = 190 (Lakh hectare) Ans.(B) Agriculture sector of Uttar Pradesh in 2012 -Rajasthan agriculture of 2012 = 143 - 26 = 117 (lakh hectare)

84. Ans.(B) Anil's percentage marks  $= \frac{95 + 53 + 61 + 70}{120 + 120 + 120 + 100} \times 100$  $= \frac{279}{460} \times 100 = 60.65\%$ Similarly, the percentage score of Bhinu  $= \frac{105 + 84 + 42 + 80}{440} \times 100$ 460  $=\frac{311}{460} \times 100 = 67.60\%$ Chirags percentage marks =  $\frac{95+65+73+90}{460} \times 100$ =  $\frac{323}{460} \times 100 = 70.21\%$ Dhawan's percentage marks  $\frac{85 + 65 + 84 + 60}{460} \times 100 = \frac{294}{460} \times 100$ = 63.91%Alja's percentage marks =  $\frac{85 + 66 + 95 + 50}{460} \times 100 = \frac{296}{460} \times 100$ = 64.34%Farah's average score  $= \frac{75 + 77 + 85 + 40}{460} \times 100 = \frac{277}{460} \times 100$ = 60.21%George's percentage marks  $=\frac{65+38+75+80}{460}\times100$  $=\frac{258}{460} \times 100 = 56.08\%$ Hence, the remaining 6 students, except George, have scored more than 60%. 85. Ans.(B) Chirag has the highest percentage in the class (70.21%). See the explanation of the above question. 86. Ans.(D) Dhawan's average score =  $\frac{85+65+84+60}{4}$  $=\frac{294}{4}=73.5$ Ans.(C) % Increase in sales of TV sets from 2001 to 2002  $\frac{40000-18000}{18000}\times100$  $\frac{22000 \times 100}{18000} = 122.22\%$ =  $\therefore$  % increase  $\approx$  122% Sales of TV sets made in the year 1999 and year 2001 = 30,000 + 18,000 = 48000 Thus, 48000 sales is equal to 1997 sales. Ans.(B)

Difference between sales of TV sets between 1998 and 1999 = 40000 - 30000 = 10,000 Sales of TV sets between 1999 and 2000 = 30000 - 25000 = 5.000Difference in sales of TV sets between 1997 and 1998 = 48000 - 400000 = 8,000 The difference in sales of TV sets between 2001 and 2002 = 40000 - 18000 = 22,000 Therefore, the difference between the sales of TV sets in 1999 and 2000 was minimam.

#### 90. Ans.(B)

Number of production of P Type Samsung TV in 2001 20

$$= 400000 \times \frac{30}{100}$$

#### = 120000 91. Ans.(C)

Number of S Type Samsung TVs not sold -----400000) ---- 450

$$= 750000 \times \frac{13}{100} \times \frac{10}{100} = 11250$$

#### 92. Ans.(C)

year 2000 में P(30%), Q(15%) and T(15%) Total number of Samsung TVs manufactured in 2000.

$$= P (30\%) + Q (15\%) + T (15\%)$$
  
= 350000 ×  $\frac{60}{100}$  = 210000

#### 93. Ans.(D)

Average Production of flavor Mint in the years 1995, 1996 and 1997 =  $\frac{50+40+55}{3} = \frac{145}{3}$  Lakh **Bottles** 

Average production of flavored apple in the years 1998, 1999 and 2000.

$$=\frac{55+50+55}{3}=\frac{160}{3}$$
 Lakh Bottles

 $\therefore$  Required difference  $=\frac{160}{3}-\frac{145}{3}=5$  Lakh Bottles = 5,00,000 Bottles

#### 94. Ans.(B)

Total annual average production of flavor  $mints = \frac{50 + 40 + 55 + 45 + 60 + 50}{6}$ 

 $=\frac{300}{6}=50$  Lakh bottles

Flavor Apple's total annual average production

$$55 + 60 + 50 + 55 + 50 + 55$$

6

 $=\frac{325}{6}=54.166$  Lakh bottles

Total annual average production of flavor arrange =  $\frac{45 + 50 + 60 + 60 + 45 + 40}{2}$ 

 $=\frac{300}{6}=50$  Lakh bottles

Thus, the total annual average production of flavored apple is the highest.

87.

89.

# 95. Ans.(C)

Required decrease % =  $\left(\frac{60-40}{60}\right) \times 100$ = 33.33% = 33%

Ratio of mutual fund investment in 1992 and  $1997 = \frac{5.7}{31.36} = \frac{570}{3136} = \frac{285}{1568}$ Suppose mutual fund investments in 1992 and 1997 are 285x and 1568x million euros respectively.  $\therefore 285x = 2$  million euros  $x = \frac{2}{285}$ 

∴ Volume of Mutual Fund Investment from Countries in 1997

$$= 1568 \times \frac{2}{285} = 11.003$$

 $\simeq$  11 million euros

#### 97. Ans.(B)

Difference between mutual fund investment in India between 1996 and 1997 = 31.36 - 24.23 = 7.13

#### 98. Ans.(D)

Average production of Amber Paper Mill 30 + 45 + 25 + 50 + 40 190

$$(A) = \frac{50 + 15 + 25 + 50 + 10}{5} = \frac{150}{5}$$

Average production of MAC paper mill 25+35+35+40+50

$$M = \frac{185}{5} = 37$$

Average production of Tanveer paper mill  $= \frac{35+40+45+35+35}{2}$ 

$$T = \frac{190}{5} = 38$$

Therefore, the average production of Amber paper mill and Tanvir paper mill will be equal.

#### 99. Ans.(A)

Production of Tanveer in 1996 = 35 MAC production in 1996 = 25 Percentage =  $\frac{35 \times 100}{25}$  = 140% Tanveer production in 1997 = 40 Mac production in 1997 = 35 Percentage =  $\frac{40 \times 100}{35}$  = 114.2% Production of Tanveer in 1998 = 45 Mac production in 1998 = 35 Percentage  $=\frac{45\times100}{35}=\frac{9\times100}{7}=1.28\times$ 100 = 128% Thus, in 1996, Tanvir's production percentage

was the highest than the production percentage of MAC.

#### 100. Ans.(C)

Average production of Amber Paper Mill =  $\frac{25+50+40}{2}$ 

$$\frac{115}{115}$$

 $= \frac{3}{3}$ Average production of MAC paper mill  $= \frac{35 + 40 + 50}{3} = \frac{125}{3}$ Required ratio  $= \frac{115}{3} : \frac{125}{3} = 23:25$ 

#### 101. Ans.(D)

Total marks obtained in Geography = 80 + 87 + 70 + 75 = 312Total marks obtained in history

= 75 + 63 + 80 + 72 = 290

Required difference% = 
$$\left(\frac{312}{4}\right)\% - \left(\frac{290}{4}\right)\% = \frac{22}{2}\% = 5.5\%$$

$$\frac{-4}{4}\% = 5.5\%$$

#### 102. Ans.(C)

The percentage marks obtained by all the students in history

$$= \left(\frac{75 + 63 + 80 + 72}{4}\right) = \frac{290}{4}\%$$
$$= 72.5\%$$

#### 103. Ans.(D)

Percentage marks obtained by U in history and geography =  $\frac{(75+80)}{2}$ %

$$=\frac{155}{2}\% = 77.5\%$$

Percentage marks obtained by V in History and Geography =  $\left(\frac{63+87}{2}\right)\%$ 

$$=\frac{150}{2}\% = 75\%$$

The percentage marks obtained by W in the history and geography =  $\left(\frac{80+70}{2}\right)\%$ 

#### = 75%

The percentage marks obtained by X in the history and geography =  $\binom{72+75}{2}$ %

#### = 73.5%

So U has the highest percentage marks in both subjects.