Youth Competition Times

RRB

(NTPC, Group-D, Paramedical, RRB JE, ALP Stage-I & II, RPF SI & Constable)

MATHEMATICS

Chapterwise Solved Papers

(Computer Based Test)

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12, Church Lane Prayagraj-211002
Mob. : 9415650134
Email : yctap12@gmail.com
website : www.yctbooks.com

Publisher Declaration
Edited and Published by A.K. Mahajan printed by Printex India, Prayagraj.
Youth Competition Times 12, Church Lane, Prayagraj

In order to publish the book, full attention has been taken by the editor and the publisher, yet it is necessary to present your cooperation and suggestions for any errors

Rs. : 595/-

In case of any dispute, the judicial area will be Prayagraj.

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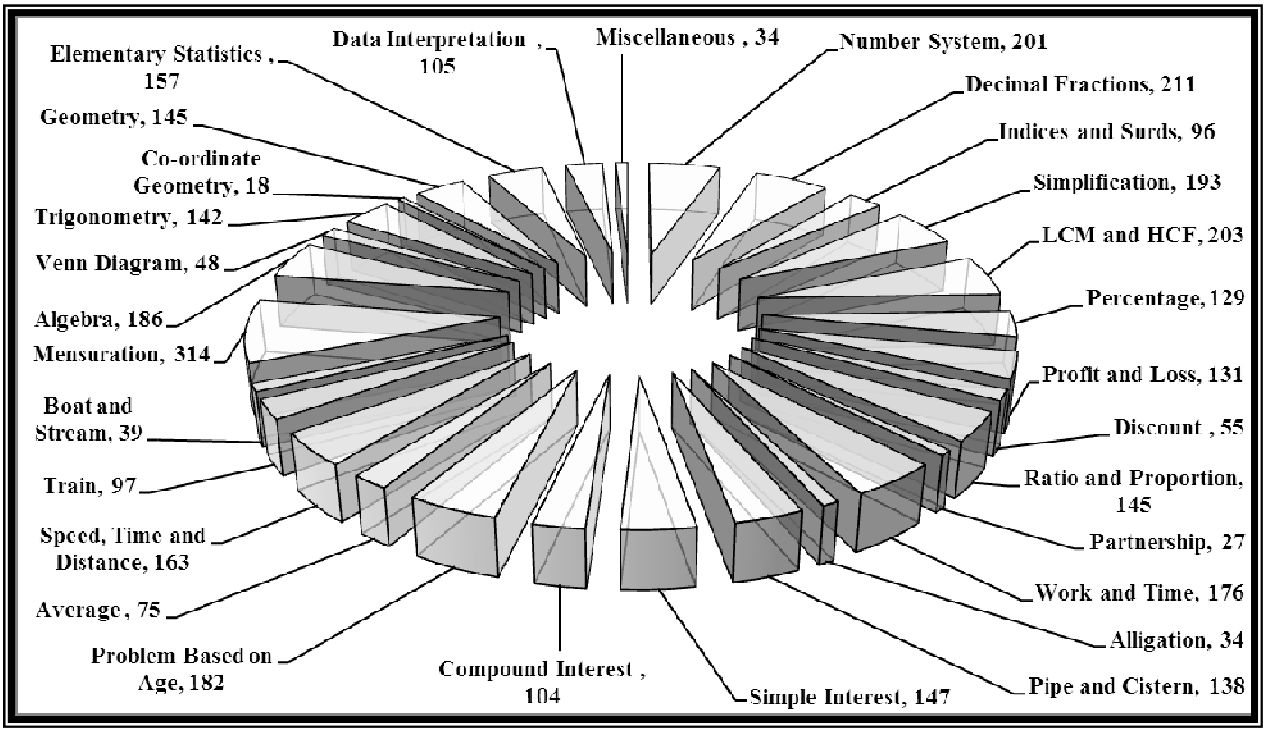
231.	RRB Group D 05.11.2018	Shift-III	22
232.	RRB Group D 02.11.2018	Shift-I	23
233.	RRB Group D 02.11.2018	Shift-II	25
234.	RRB Group D 02.11.2018	Shift-III	24
235.	RRB Group D 01.11.2018	Shift-II	25
236.	RRB Group D 01.11.2018	Shift-III	24
237.	RRB Group D 31.10.2018	Shift-I	23
238.	RRB Group D 31.10.2018	Shift-II	24
239.	RRB Group D 31.10.2018	Shift-III	25
240.	RRB Group D 30.10.2018	Shift-I	24
241.	RRB Group D 30.10.2018	Shift-II	23
242.	RRB Group D 30.10.2018	Shift-III	25
243.	RRB Group D 29.10.2018	Shift-III	24
244.	RRB Group D 26.10.2018	Shift-II	22
245.	RRB Group D 26.10.2018	Shift-III	24
246.	RRB Group D 25.10.2018	Shift-II	25
247.	RRB Group D 24.10.2018	Shift-I	23
248.	RRB Group D 24.10.2018	Shift-II	25
249.	RRB Group D 24.10.2018	Shift-III	23
250.	RRB Group D 23.10.2018	Shift-I	24
251.	RRB Group D 23.10.2018	Shift-II	25
252.	RRB Group D 23.10.2018	Shift-III	23
253.	RRB Group D 22.10.2018	Shift-I	25
254.	RRB Group D 22.10.2018	Shift-II	24
255.	RRB Group D 22.10.2018	Shift-III	24
256.	RRB Group D 16.10.2018	Shift-I	23
257.	RRB Group D 16.10.2018	Shift-II	22
258.	RRB Group D 16.10.2018	Shift-III	25
259.	RRB Group D 15.10.2018	Shift-I	22
260.	RRB Group D 15.10.2018	Shift-II	23
261.	RRB Group D 15.10.2018	Shift-III	24
262.	RRB Group D 12.10.2018	Shift-I	25
263.	RRB Group D 12.10.2018	Shift-II	23
264.	RRB Group D 12.10.2018	Shift-III	25
265.	RRB Group D 11.10.2018	Shift-I	23
266.	RRB Group D 11.10.2018	Shift-II	25
267.	RRB Group D 11.10.2018	Shift-III	24
268.	RRB Group D 10.10.2018	Shift-I	23
269.	RRB Group D 10.10.2018	Shift-III	25
270.	RRB Group D 09.10.2018	Shift-I	22
271.	RRB Group D 09.10.2018	Shift-II	24
272.	RRB Group D 09.10.2018	Shift-III	25
273.	RRB Group D 08.10.2018	Shift-I	24
274.	RRB Group D 08.10.2018	Shift-II	22
275.	RRB Group D 08.10.2018	Shift-III	23

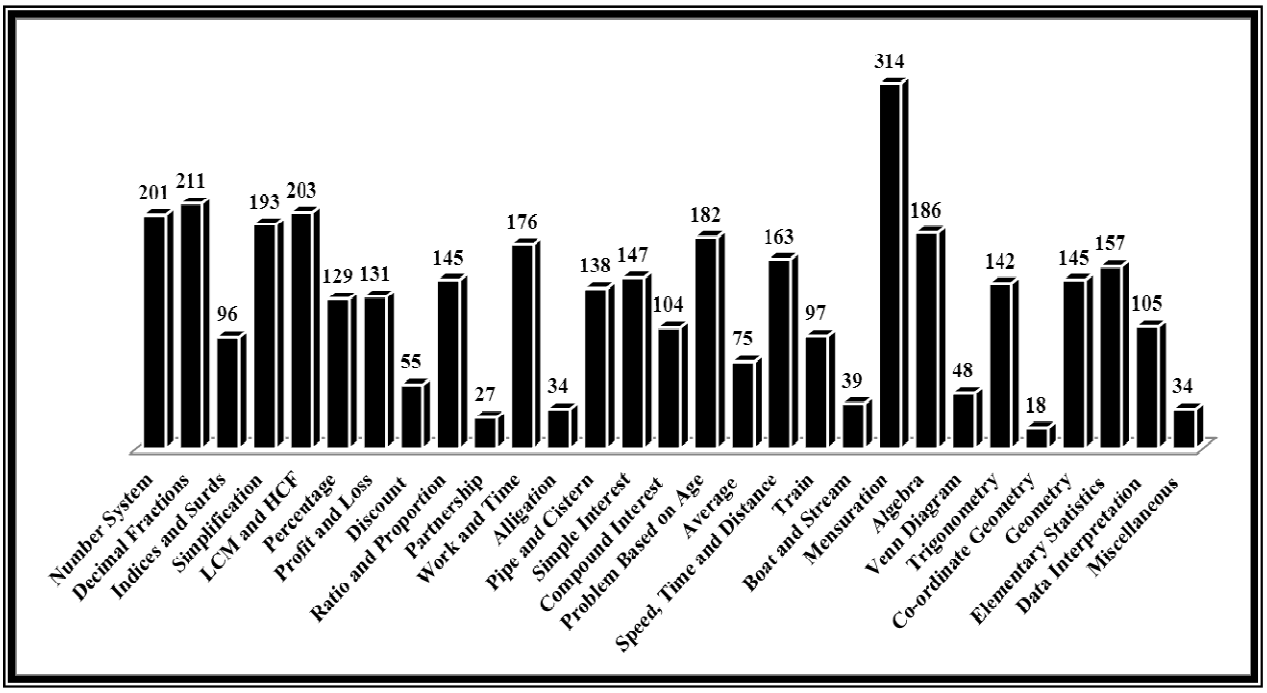
276.	RRB Group D 05.10.2018	Shift-I	25
277.	RRB Group D 05.10.2018	Shift-II	24
278.	RRB Group D 05.10.2018	Shift-III	22
279.	RRB Group D 04.10.2018	Shift-I	23
280.	RRB Group D 04.10.2018	Shift-II	25
281.	RRB Group D 03.10.2018	Shift-I	24
282.	RRB Group D 03.10.2018	Shift-II	23
283.	RRB Group D 03.10.2018	Shift-III	25
284.	RRB Group D 01.10.2018	Shift-I	24
285.	RRB Group D 01.10.2018	Shift-II	25
286.	RRB Group D 01.10.2018	Shift-III	23
287.	RRB Group D 28.09.2018	Shift-I	24
288.	RRB Group D 28.09.2018	Shift-III	25
289.	RRB Group D 27.09.2018	Shift-I	23
290.	RRB Group D 27.09.2018	Shift-III	25
291.	RRB Group D 26.09.2018	Shift-I	24
292.	RRB Group D 26.09.2018	Shift-II	23
293.	RRB Group D 26.09.2018	Shift-III	25
294.	RRB Group D 25.09.2018	Shift-I	25
295.	RRB Group D 25.09.2018	Shift-II	23
296.	RRB Group D 25.09.2018	Shift-III	24
297.	RRB Group D 24.09.2018	Shift-I	24
298.	RRB Group D 24.09.2018	Shift-II	25
299.	RRB Group D 24.09.2018	Shift-III	23
300.	RRB Group D 23.09.2018	Shift-I	25
301.	RRB Group D 23.09.2018	Shift-II	23
302.	RRB Group D 22.09.2018	Shift-I	21
303.	RRB Group D 22.09.2018	Shift-II	25
304.	RRB Group D 22.09.2018	Shift-III	24
305.	RRB Group D 20.09.2018	Shift-I	23
306.	RRB Group D 20.09.2018	Shift-II	25
307.	RRB Group D 20.09.2018	Shift-III	24
308.	RRB Group D 19.09.2018	Shift-I	21
309.	RRB Group D 19.09.2018	Shift-II	24
310.	RRB Group D 19.09.2018	Shift-III	23
311.	RRB Group D 18.09.2018	Shift-I	23
312.	RRB Group D 18.09.2018	Shift-II	25
313.	RRB Group D 18.09.2018	Shift-III	25
314.	RRB Group D 17.09.2018	Shift-I	23
315.	RRB Group D 17.09.2018	Shift-II	24
316.	RRB Group D 17.09.2018	Shift-III	25
		Total	**8418**

Note– After Detailed Analysis of the above **316** Question papers of RRB (NTPC, Group-D, JE, ALP Stage-I & II, RPF SI & Constable) Exam Related to Mathematics **8418** questions have been presented chapterwise.

Question of repetitive and Similar Nature have been included so that the technique of asking question can benefit the competitors.

Trend Analysis of Previous Year RRB NTPC, Group-D, Paramedical, JE, ALP, RPF SI & Constable, Papers Through Pie Chart and Bar Graph





01.

Number System

Type - 1

1. Find the least number that is divisible by 12, 18, 21, and 30.

(a) 1060 (b) 1260
(c) 1620 (d) 1020

RRB JE - 25/05/2019 (Shift-III)

Ans : (b) LCM of the numbers 12, 18, 21 and 30 = 420
So the smallest number = 420 k
where k = 1, 2, 3, ----------
When taking the number k = 3
Number = 420 × 3 = 1260

2. A student divided a number by 12 instead of 21 and received 35. Find the correct answer.

(a) 20 (b) 15
(c) 26 (d) 25

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

Ans : (a) Let the number be x.
According to the question,
dividing by 12

$$\frac{x}{12} = 35$$

x = 35 × 12
x = 420
The number is 420
Dividing 420 by 21-

$$\frac{420}{21} = 20$$

Hence, the correct answer = 20

3. Find the least number to be added to 231228 to make it exactly divisible by 33.

(a) 3 (b) 4
(c) 2 (d) 1

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

Ans : (a)

```
        7006
33 ) 231228
     231
     ×××228
       198
        30
```

Hence, the required number = 33 – 30 = 3

4. Find the greatest number that will exactly divide 25, 35, 40 and 30.

(a) 35 (b) 15
(c) 20 (d) 5

RRB JE - 01/06/2019 (Shift-II)

Ans : (d) HCF of the numbers 25, 35, 30 and 40
25 = 5 × 5
35 = 5 × 7
40 = 5 × 8
30 = 5 × 6
HCF = 5
Hence, the required number will be 5.

5. Which of the following numbers is not divisible by 8?

(a) 12676 (b) 11504
(c) 12832 (d) 12360

RRB RPF Constable -24/01/2019 (Shift-II)

Ans : (a)

(a) $\frac{12676}{8} = 1584.5$

(b) $\frac{11504}{8} = 1438$

(c) $\frac{12832}{8} = 1604$

(d) $\frac{12360}{8} = 1545$

Hence, the number 12676 is not divisible by 8.
Note: Divisibility rule by 8- If the last three digits of a number is divisible by 8, the number will be divisible by 8.

6. 276x1, is divisible by 3. What is the sum of the possible values of x?

(a) 18 (b) 21
(c) 12 (d) 15

RRB RPF SI-12/01/2019 (Shift-I)

Ans. (d) If the sum of all digits of a number is divisible by 3, the number will be divisible by 3.
276x1, is divisible by 3.
2 + 7 + 6 + x + 1 = 16 + x
The number will be completely divisible by 3, by putting the possible values of x 2, 8, and 5.
Hence, the sum of the possible values of x = 2+8+5 =15

7. By dividing 14528 by a certain number, Suresh gets 83 as quotient and 3 as remainder. What is the divisor?

(a) 165 (b) 185
(c) 195 (d) 175

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

Ans : (d) Let the divisor is 'x'.
Given- Dividend = 14528
Quotient = 83
Remainder = 3
Dividend = (Divisor × Quotient + Remainder)

$\Rightarrow 14528 = (x \times 83) + 3$

$\Rightarrow 83x = 14528 - 3$

$\Rightarrow 83x = 14525$

$\Rightarrow x = \frac{14525}{83} \quad \Rightarrow x = 175$

8. Find the smallest number which, when added to 20000, the sum is divisible by 12,15 and 25.

(a) 180 (b) 150
(c) 200 (d) 100

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

Ans : (d) LCM of 12, 15 and 25 = 300

$$\text{Remainder} = \frac{20000}{300} = 200$$

The required number which should be added to 2000

$= (300 - 200) = 100$

9. Find the smallest cube number more than 1000, that is divisible by 2, 4, and 6.

(a) 1296 (b) 5832
(c) 1728 (d) 4096

RRB RPF Constable -19/01/2019 (Shift-I)

Ans. (c) : LCM of 2, 4 and 6 = 12
Hence, the cube of the number 12 = $(12)^3$ = 1728

10. If the number X4461 is divisible by 11, find the value of x.

(a) 2 (b) 4
(c) 3 (d) 5

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (d) Rule of divisibility by 11- if the difference between sum of even places of the number and the sum of digit odd places and the result is 0 or any number divisible by 11, then the number will also be divisible by 11.
The number – x 4 4 6 1

$x + 4 + 1 - (4 + 6) = 0$

$x + 5 - 10 = 0$

$x = 5$

11. Which number is divisible by 9?

(a) 56112 (b) 89445
(c) 49653 (d) 58556

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (c) If the sum of all the digits of a number is divisible by 9, the number will also be completely divisible by 9.
Hence, from option-
(a) The sum of the digits of 56112 = 15 (×)
(b) The sum of the digits of 89445 = 30 (×)
(c) The sum of the digits of 49653 = 27 (√)
(d) The sum of the digits of 58556 = 29 (×)
Hence, the number divisible by 9 = 49653

12. Which of the following numbers is perfectly divisible by 4?

(a) 6542176 (b) 7253566
(c) 5632654 (d) 4187290

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (a) : Rule of divisibility by 4-
If the number formed with last two digit of a number, is divisible by 4, the whole number will be divisible by 4.
From option (a)-

$$\begin{array}{r} 19 \\ 4\overline{)76} \\ 4 \\ \hline 36 \\ 36 \\ \hline \times\times \end{array}$$

13. If a natural number is divided by 4, 5, 6 or 7, leaves remainder 1 in each case. Find that smallest number.

(a) 421 (b) 61
(c) 841 (d) 211

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (a) LCM of 4,5,6 and 7 = 420
The required number = 420 + 1 = 421
Hence, each condition 421 leaves remainder 1, when divided by 4, 5, 6 and 7.

14. Which of the following is the largest such number, which leaves remainder 9 and 20, when divides 105 and 164 respectively?

(a) 36 (b) 48
(c) 24 (d) 96

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) 105 – 9 = 96 and 164 – 20 = 144

$$\begin{array}{r} 1 \\ 96\overline{)144} \\ 96 \\ 48\overline{)96}(2 \\ 96 \\ \hline \times\times \end{array}$$

Hence, so that largest number = HCF of 96 and 144 = 48

15. Which is the largest such number which leaves remainder 2 and 3, when divides 258 and 323 respectively?

(a) 40 (b) 24
(c) 64 (d) 132

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (c) : 258 – 2 = 256
323 – 3 = 320
320 – 256 = 64 that is HCF
Hence, the required number is 64.
So dividing of 258 and 323 will give the remaining 2 and 3 respectively.

16. Which of the following numbers is divisible by 6?

(a) 12378 (b) 12363
(c) 12370 (d) 12388

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (a) Divisibility rule by 6 – If a given number is divisible by 2 and 3, then the number will also be divisible by 6.
Divisibility rule by 2 – If the unit digit of a given number is divisible by 2, then the number will also be divisible by 2.
Divisibility rule by 3 – If the sum of all the digits of the number is divisible by 3, then the number will also be divisible by 3.
From option (a)- $1 + 2 + 3 + 7 + 8 = 21$

$$= \frac{21}{3} = 7$$

Hence, the number 12378 is divisible by 6.

17. Choose the missing digit 'x' from the options given for the number 987x54, so that the number is completely divisible by 6.

(a) 2 (b) 5
(c) 3 (d) 1

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (c) : The given number will be divisible by 6 if it is divisible by 2 and 3.
Divisibility rule by 2 – If the unit digit is divisible by 2, then the number will also be divisible by 2.
Divisibility rule by 3 – If the sum of all the digits of the given number is divisible by 3, then the number will also be divisible by 3.
option (c) is

$$\Rightarrow \frac{9+8+7+x+5+4}{3} = \frac{33+x}{3}$$

Hence, the value of x will be 3.

18. What number should be deducted from 1265 to make it divisible by 29 exactly?

(a) 15 (b) 16
(c) 18 (d) 17

RRB NTPC 05.04.2016 Shift : 3

Ans : (c) To get the number divide 1265 by 29.

```
      43
  29)1265
     116
     ×105
       87
       18
```

Hence, 18 should be subtracted out of 1265 to make it completely divisible by 29.

19. What number, from the following, should be deducted from 1184 to make it exactly divisible be 21?

(a) 15 (b) 12
(c) 8 (d) 7

RRB NTPC 31.03.2016 Shift : 2

Ans.: (c) To get the required number divide 1184 by 21.

```
      56
  21)1184
     105
     ×134
      126
      ××8
```

Hence, 8 should be subtracted from 1184 to make it exactly divisible by 21.

20. Find the least number to be added to 1739 so that it is exactly divisible by 11.

(a) 11 (b) 2
(c) 1 (d) 10

RRB NTPC 30.03.2016 Shift : 1

Ans : (d) To get the required number divide 1739 by 11 then deduce the remainder from the divisor.

```
      158
  11)1739
     11
     ×63
      55
      ×89
       88
       ×1
```

Hence, the required number will be 11 – 1 = 10.

21. Find the least number which should be added to 1456 so that it is divisible by 6, 5 and 4 without leaving a remainder.

(a) 6 (b) 61
(c) 44 (d) 16

RRB NTPC 18.01.2017 Shift : 1

Ans : (c) LCM of 6, 5 and 4 = 60
For the least number,

$$\frac{1456}{60} = 24\frac{16}{60}$$

Hence, the required number = 60 – 16 = 44
By adding 44 in 1456 we get 1500 that is divisible by 6, 5 and 4.

22. Find the remainder, when 3^{10} is divided by 7.

(a) 4 (b) 3
(c) 5 (d) 6

RRB NTPC 18.04.2016 Shift : 3

Ans : (a) $3^{10} = 3\times3\times3\times3\times3\times3\times3\times3\times3\times3$
$= 59049$

$\therefore \quad \frac{59049}{7} = 4$ remainder

23. Which of the following numbers is divisible by 12?

(a) 93412 (b) 63412
(c) 73412 (d) 83412

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (d) : The number which is divisible by 12, should be divisible by 3 and 4 also.
If the sum of all the digits of a number is divisible by 3, the number will also be divisible by 3.
If the last two digit of a number are divisible by 4, the number will also be divisible by 4.
From option (d),
Then 8+3+4+1+2 = 18, Which is divisible by 3.
The last 2-digit of the number are 12, Which is also divisible by 4.
Hence, the number 83412 is divisible by 12.

24. Which of the following numbers is divisible by 9?
(a) 56765 (b) 47862
(c) 54321 (d) 87654
RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (b) If the sum of all the digits of a number is divisible by 9, the number will be divisible by 9.
Hence, from option (b),
47852 $\Rightarrow$ 4+7+8+6+2 = 27, which is divisible by 9.
Hence option (b) will be true.

25. If $3x^2 + ax + 4$ is perfectly divisible by $x - 5$, then the value of a is:
(a) – 12 (b) – 5
(c) – 15.8 (d) – 15.6
RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (c) According to the question,
$3x^2 + ax + 4 = 0$ --------- (i)
$\because$ equation (i), is divisible by ($x-5$)
Hence,
$\Rightarrow$ $x - 5 = 0$
$\Rightarrow$ $x = 5$
Putting the value of x in equation(i),
$3(5)^2 + a \times 5 + 4 = 0$
$75 + 5a + 4 = 0$
$5a = -79$
$a = -15.8$

Type - 2

26. The sum of three consecutive odd numbers is more than first number of it by 20. Find the largest number among them.
(a) 13 (b) 9
(c) 11 (d) 7
RRB JE - 28/06/2019 (Shift-III)

Ans. (c) Let the three consecutive odd numbers are x, x +2, x +4.
According to the question,
$x + x+2 + x+4 = x + 20$
$3x + 6 = x + 20$
$2x = 14$
$x = 7$
Hence, the required number = x + 4 = 7 + 4 = 11

27. If 3/11 < x/3 < 7/11, which of the following can be value of 'x'?
(a) 0.5 (b) 1
(c) 2 (d) 3
RRB JE - 23/05/2019 (Shift-I)

Ans : (b) From option,
When X = .5 then .272 < .166 < .636 (False)
When X = 1 then .272 < .333 < .636 (True)
When X = 2 then .272 < .666 < .636 (False)
When X = 3 then .272 < 1 < .636 (False)
Hence, It is clear that the value of X will be 1.

28. The product of 4 consecutive numbers is always divisible by which of the following numbers?
(a) 10 (b) 22
(c) 24 (d) 48
RRB RPF SI -05/01/2019 (Shift-I)

Ans : (c) Let 4 consecutive numbers are n, (n+1), (n+2) and (n+3) respectively.
According to the question,
The Product of four consecutive numbers
= n(n+1)(n+2)(n+3)
Where n = 1,2,3,…….
Putting n = 1,
Product,
= 1 (1+ 1) (1+ 2) (1 + 3)
$= 1 \times 2 \times 3 \times 4 = 24$
Putting n = 2,
Product,
$= 2\times3\times4\times5 = 24 \times 5 = 120$
Hence, the product of 4 consecutive numbers is always divisible by 24.

29. If the first number and the second number is 25% and 50% more than the third number respectively, find the ratio between the first and second number.
(a) 5 : 6 (b) 2 : 1
(c) 6 : 5 (d) 1 : 2
RRB JE - 27/05/2019 (Shift-I)

Ans : (a) Let the third number be 100.
Then the first number = 125
And the second number = 150
First number : Second number = 125 : 150
= $\boxed{5:6}$

30. Three times the first of three consecutive odd integers is 3 more than two times the third. Find the third integer.
(a) 15 (b) 13
(c) 11 (d) 9
RRB JE - 26/06/2019 (Shift-III)

Ans : (a) Let three consecutive odd integers = x, x+2, x+4
$3x = 2(x + 4) +3$
$3x = 2x + 8 + 3$
$x = 11$
Hence, the third integer = x + 4 = 11 + 4 = 15

31. How many total tens digit in the calculation from series 1 to 99?

(a) 98 (b) 90
(c) 99 (d) 100

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

Ans : (b) The number of tens from 1 to 10 = 1
The number of tens from 11 to 90 = 80
The number of tens from 91 to 99 = 9
Hence, the total number of tens from series 1 to 99
= 1 + 80 + 9 = 90

32. Find the 10th number in the series 12, 19, 26, 33 ……..

(a) 89 (b) 75
(c) 82 (d) 68

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (b) The given series 12, 19, 26, 33 …….. belongs to A.P.(Arithmetical progression)
Hence, the first term 'a' = 12, common difference 'd' = 19 – 12 = 7 and the number of terms 'n' = 10
Hence, the Nth term of the series,

$$T_n = a + (n-1)d$$

$$T_{10} = 12 + (10-1) \times 7 = 12 + 63 = 75$$

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

(a) $\frac{4}{-9}$ (b) $\frac{-7}{18}$
(c) $\frac{5}{-6}$ (d) $\frac{-2}{3}$

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (c)
Given rational numbers = $\frac{4}{-9}, \frac{-7}{18}, \frac{5}{-6}$ and $\frac{-2}{3}$

$$\frac{4}{-9} = -0.44$$

$$\frac{-7}{18} = -0.38$$

$$\frac{5}{-6} = -0.83$$

$$\frac{-2}{3} = -0.66$$

The first number, when arranged in ascending order

$$= -0.83 = \frac{5}{-6}$$

34. How many terms in the series 7, 14, 21, 28, …… sum of 952?

(a) 16 (b) 17
(c) 18 (d) 19

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) The given series- 7, 14, 21, 28, ……
Let the sum of n terms = 952
7 + 14 + 21 + 28 +……..= 952
$\Rightarrow$ 7 (1 + 2 + 3 + 4 +……) = 952
$\Rightarrow$ 1 + 2 + 3 + 4 +……= 136

$$\Rightarrow \frac{n(n+1)}{2} = 136$$

$\because$The sum of n consecutive numbers $= \frac{n(n+1)}{2}$

$\Rightarrow n^2 + n = 272$
$\Rightarrow n^2 + n - 272 = 0$
$\Rightarrow n^2 + 17n - 16n - 272 = 0$
$\Rightarrow (n - 16)(n + 17) = 0$
$n - 16 = 0 \Rightarrow n = 16$
Hence, the sum of 16 terms is 952.

35. Find two consecutive numbers where thrice the first number is more than twice the second number by 5.

(a) 5 and 6 (b) 6 and 7
(c) 7 and 8 (d) 9 and 10

RRB NTPC 28.03.2016 Shift : 1

Ans : (c) Let the consecutive numbers be x and x+1.
According to the question-

$$3x = 2(x+1) + 5$$

$$\Rightarrow 3x = 2x + 7$$

$$\Rightarrow x = 7$$

Hence, the required consecutive numbers will be 7 and 8.

36. Find the value of 6 + 11 + 16 + 21 + …. + 71

(a) 539 (b) 561
(c) 661 (d) 639

RRB NTPC 19.04.2016 Shift : 2

Ans : (a) Given series-
6 + 11 + 16 + 21 + ……. + 71
$\because$ This is an arithmetical progression in which-
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

Hence, the required sum of the series $S_n = \frac{n}{2}(a + \ell)$

$$= \frac{14}{2}(6 + 71) = 7 \times 77 = \boxed{539}$$

37. If 11, 17, 23…….. be in an arithmetical progression. Find it's 12th term.

(a) 77 (b) 83
(c) 71 (d) 89

RRB NTPC 29.04.2016 Shift : 3

Ans. (a) : 11, 17, 23, ……..
a = 11
d = 17–11= 6
$\therefore$ T_n = a + (n –1).d
T_{12} = 11 + (12 – 1) 6
= 11 + 11 × 6 = 77

Type - 3

38. Which of the following numbers is prime?
(a) 263 (b) 243
(c) 253 (d) 273
RRB RPF Constable -17/01/2019 (Shift-III)

Ans : (a) Identifying the prime number
To identify a prime number, compare the given number with its nearest square. For example option (a), 263 (Which is between the squares of 16 and 17)

$$16^2 = 256$$

$$17^2 = 289$$

Then, divide all the prime numbers by 16 and 17. If the number is not divisible by any number then it is a prime number.
$\Rightarrow$ 263 (is less than the square of 17)
Which is not divisible by 2,3,5,7, 11 and 13.
Hence, it is a prime number.

39. Find the largest two-digit prime number.
(a) 93 (b) 89
(c) 91 (d) 97
RRB JE - 23/05/2019 (Shift-II)

Ans : (d) The number which is only 1 and divided itself is called prime number.
Hence, It is clear that the largest two digit prime number = 97

40. What will be the product of the smallest prime number (except 0) and any whole number?
(a) Always 0 (b) Always 1
(c) Always even number
(d) Always odd number
RRB RPF Constable -20/01/2019 (Shift-II)

Ans : (c) The smallest prime number = 2,
The result of the product of any whole number(except 0) and 2 is always an even number.

41. Find the sum of the prime numbers between 50 and 80.
(a) 392 (b) 390
(c) 463 (d) 396
RRB RPF Constable -18/01/2019 (Shift-I)

Ans : (c) Sum of prime numbers between 50 and 80 = 53 + 59 + 61 + 67 + 71 + 73 + 79 = 463

42. Which four odd prime numbers sum of 34?
(a) 1, 3, 5, 7 (b) 3, 5, 7, 9
(c) 3, 5, 11, 13 (d) 3, 7, 11, 13
RRB NTPC 04.04.2016 Shift : 2

Ans : (d) From option- (d)
$3+7+11+13=34$

43. How many times does the digit 2 come in place of tens in counting from 1 to 100?
(a) 20 (b) 11
(c) 10 (d) 19
RRB NTPC 31.03.2016 Shift : 1

Ans : (c) From 11 to 20 = 1 time
From 21 to 30 = 9 times
From 31 to 100 = 0 times
$\therefore$ Total number = 1 + 9 = 10

44. In a prime number……..
(a) There are more than two divisors.
(b) Divided by itself and 1.
(c) It has no divisor.
(d) Is not a positive integer.
RRB NTPC 30.03.2016 Shift : 2

Ans : (b) A prime number is divided by itself and 1 only.

45. How many times does the digit 5 come in the counting from 1 to 100?
(a) 21 (b) 22
(c) 20 (d) 19
RRB RPF SI-16/01/2019 (Shift-I)

Ans : (c) The total numbers in which 5 comes from 1 to 49 = 5
And from 50 to 60, such number = 11
And from 61 to 100, such number = 4
Hence, total required number = 5 + 11 + 4 = 20

46. How many total prime numbers are in first 200 odd natural numbers?
(a) 45 (b) 49
(c) 50 (d) 46
RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (a) Total prime numbers in 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

47. Which of the following pairs are co-primes?
(a) 348, 296 (b) 114, 213
(c) 59, 97 (d) 3025, 4920
RRB Group-D – 20/09/2018 (Shift-II)

Ans : (c) Such two numbers are called co-prime whose HCF is 1.
From option (c),
59, 97 is the appropriate co-prime pair in the alternatives.

48. Which of the following numbers is divisible?
(a) 719 (b) 709
(c) 729 (d) 739
RRB Group-D – 20/09/2018 (Shift-I)

Ans. (c) The number- 729 is divisible by 3, 9 and 81.

49. How many prime numbers are in first 100 natural numbers?
(a) 25 (b) 27
(c) 24 (d) 26
RRB Group-D – 26/11/2018 (Shift-III)

Ans : (a) Prime numbers in 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
Therefore, total such numbers are 25.

50. Find out which of the following sets form co-prime numbers.
(a) (12, 7) (b) (21, 42)
(c) (3, 9) (d) (43, 129)
RRB NTPC 18.01.2017 Shift : 1

Ans : (a) Co-prime numbers- The set of two such numbers which HCF 1, is called co-prime numbers.
∴ In option (a) (12, 7), HCF of the numbers = 1

51. Which of the following is an odd composite number?
(a) 13 (b) 17
(c) 12 (d) 15
RRB NTPC 18.01.2017 Shift : 2

Ans : (d) The odd composite number will be 15.

52. Find the sum of first 8 odd prime numbers.
(a) 77 (b) 98
(c) 75 (d) 100
RRB NTPC 19.04.2016 Shift : 2

Ans : (b) First 8 odd prime numbers = 3, 5, 7, 11, 13, 17, 19, 23
Sum of the numbers = 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 = 98

53. How many prime numbers are between positive integers 60 and 100?
(a) 9 (b) 6
(c) 7 (d) 8
RRB NTPC 06.04.2016 Shift : 1

Ans : (d) The prime numbers between 60 and 100 = 61, 67, 71, 73, 79, 83, 89, 97
Hence, Total 8 prime numbers will be between 60 and 100.

54. Which of the following numbers is a prime number?
(a) 121 (b) 141
(c) 181 (d) 161
RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c) Prime numbers are divisible by 1 and itself only.
Example:- 5,11,13,19
From options,
Factors of the numbers,
181 = 1, 181
121 = 1, 11, 121
141 = 1, 3, 47, 141
161 = 1, 7, 23, 161

55. Which of the following pairs is NOT a pair of twin primes?
(a) 11, 13 (b) 71, 73
(c) 131, 133 (d) 191, 193
RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c) 131 and 133 does not have 133 prime number, because the factors of 1, 9, 7, 133.
From option (c),
Factors of 133 = 1, 7, 19, 133.
Hence, this pair is not a pair of twin primes.

56. Which of the following is the prime number series from 1 to 20?
(a) 3, 5, 7, 11, 13, 17, 19
(b) 2, 5, 7, 9, 11, 13, 17, 19
(c) 2, 3, 5, 7, 11, 13, 17, 19
(d) 1, 2, 3, 5, 7, 11, 13, 17, 19
RRB ALP & Tec. (20-08-18 Shift-I)

Ans : (c) Prime numbers:- The number divisible by 1 and itself only.
Hence, from options, the required series will be 2,3,5,7,11,13,17,19.

57. Which of the following number is not composite?
(a) 209 (b) 203
(c) 161 (d) 109
RRB ALP & Tec. (14-08-18 Shift-I)

Ans : (d) The number is called composite, which is formed by multiplying whole numbers.
Hence, 209 = 11 × 19
203 = 7 × 29
161 = 7 × 23
But, 109 cannot be expressed in the form of factors (except 1).

Type - 4

58. If x + y = 11, then $(-1)^x+(+1)^y$ is equal to ..... (where x and y are whole numbers).
(a) -1 (b) 1
(c) 2 (d) 0
RRB JE - 23/05/2019 (Shift-I)

Ans : (d) Given –
x + y = 11
$(-1)^x + (-1)^y = ?$
Note- When the sum of two whole numbers is an odd number then one will be even and second will be odd.
Hence,
$(-1)^{even/odd} + (-1)^{odd/even} = 0$

59. From a cloth of 30 m long, 12 pieces each measuring 225 cm are cut and sold. How much is left of the original length?
(a) 1/3 (b) 1/9
(c) 1/10 (d) 3/10
RRB JE - 23/05/2019 (Shift-III)

Ans : (c) The total length of the cloth = 30 m [1m = 100 cm] = 3000 cm
Total length of the cloth that is sold = 225 × 12 = 2700 cm
The length of the remaining cloth = 3000 – 2700 = 300 cm
The remaining part = $\frac{300}{3000} = \frac{1}{10}$ fraction

60. If 1/7 of a number is subtracted from the number, the result is 30 less than the number. Find the number.
(a) 105 (b) 140

(c) 120 (d) 210

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) Let the number be x.

$$x - \frac{x}{7} = x - 30$$

$$\frac{7x - x}{7} = x - 30$$

$6x = 7x - 210$

$x = 210$

61. If the product of two numbers is 24, and their square's sum is 52, then find their sum.

(a) 5 (b) 10

(c) 15 (d) 20

RRB RPF Constable -24/01/2019 (Shift-I)

Ans :(b) Let the numbers be x and y.

According to the question,

$x.\ y = 24$……..(1)

$x^2 + y^2 = 52$……(2)

$\because (x + y)^2 = x^2 + y^2 + 2xy$

$= 52 + 2\times24$

$= 52 + 48 = 100$

$x + y = \sqrt{100} = 10$

62. If 10 is subtracted from the 5 times of a number, then that number will be equal to the number found when adding 8 to 4 times that number, what is that number?

(a) 15 (b) 18

(c) 22 (d) 21

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

Ans. (b) : Let the number be x.

According to the question,

$5x - 10 = 4x + 8$

$x = 18$

Hence, the required number will be 18.

63. When 8 times of a number is added to 4, the result obtained is the smallest 3-digit number. What is that number?

(a) 12 (b) 10

(c) 15 (d) 8

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

Ans : (a) Let the number be x,

$\because$ The smallest 3-digit number = 100

According to the question,

$8x + 4 = 100$

$8x = 96$

$$x = \frac{96}{8} = 12$$

Hence, the required number will be 12.

64. The sum of two numbers is 22. Five times of one number is equal to 6 times the other. Find the larger of the two numbers.

(a) 12 (b) 15

(c) 10 (d) 16

RRB JE - 25/05/2019 (Shift-I)

Ans : (a) Let the numbers are x and y,

According to the question

$x + y = 22$ .....(i)

and $5x = 6y$ .....(ii)

$$x = \frac{6}{5}y$$

Putting the value of x in equation (i) -

$$\frac{6}{5}y + y = 22$$

$$\frac{11}{5}y = 22$$

$$y = \frac{22\times5}{11} = 10$$

$y = 10$

$$\therefore\ x = \frac{6}{5}\times10 = 12$$

Hence, the larger number is 12.

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

(a) 3 (b) 4

(c) 6 (d) 2

RRB JE - 25/05/2019 (Shift-II)

Ans : (b) Let the number be = x

According to the question,

$2x + 20 = x \times 8 - 4$

$2x + 20 = 8x - 4$

$24 = 6x$

$\boxed{x = 4}$

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

(a) 400 (b) 380

(c) 425 (d) 395

RRB JE - 30/05/2019 (Shift-II)

Ans : (a) Let the smaller number be = x

$\therefore$ Larger number = 15x

According to the question,

$x \times 15x = 9375$

$15x^2 = 9375$

$x^2 = 625$

x = 25 first number

$\therefore$ 15x = 15 × 25 = 375 second number

Hence, the sum of the numbers = 375 + 25 = 400

67. If 2/3rd of 1/4th of a number is 32. Find the number.

(a) 202 (b) 198

(c) 196 (d) 192

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

Ans : (d) Let the number be x,

$$x \times \frac{1}{4} \times \frac{2}{3} = 32$$

$x = 32 \times 6 = 192$

68. If the sum of two numbers is 13 and the sum of their squares is 97, what is their product?

(a) 72 (b) 36
(c) 110 (d) 84

RRB JE - 28/06/2019 (Shift-III)

Ans. (b) Let both numbers are X and Y.
Given,

$x + y = 13$, $x^2 + y^2 = 97$, $xy = ?$

$\because (x + y)^2 = x^2 + y^2 + 2xy$ ..... (i)

Putting the value in equation (i),

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

$169 = 97 + 2xy$

$2xy = 169 - 97$

$xy = \frac{72}{2}$

$xy = 36$

69. Which of the fractions given below, when added to $\frac{13}{5}$, gives 1?

(a) $-\frac{48}{30}$ (b) $-\frac{7}{5}$
(c) $-\frac{28}{10}$ (d) $-\frac{8}{15}$

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) : Let the unknown fraction be x.
According to the question,

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

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

$x = \frac{-8}{5}$

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

70. Find the answer of $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56}$

(a) $\frac{11}{24}$ (b) $\frac{3}{8}$
(c) $\frac{7}{16}$ (d) $\frac{13}{28}$

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (b) From the question,

$$\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56}$$

$$= \frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \frac{1}{7} - \frac{1}{8}$$

$$= \frac{1}{2} - \frac{1}{8} = \frac{4-1}{8} = \frac{3}{8}$$

71. Shalini, Tanvir and Rashid shared a cake. Shalini had $\frac{1}{6}$ part of it, Tanvir had $\frac{1}{4}$ part of it and Rashid had the remaining part. What was fraction of Rashid's cake?

(a) $\frac{5}{6}$ (b) $\frac{3}{5}$
(c) $\frac{13}{15}$ (d) $\frac{7}{12}$

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (d) Shalini's share of the cake $= \frac{1}{6}$ part

Tanvir's share of the cake $= \frac{1}{4}$ part

Total share of Shalini and Tanvir's cake

$$= \frac{1}{6} + \frac{1}{4} = \frac{2+3}{12} = \frac{5}{12}$$

Hence, Rashid's share of the cake $= 1 - \frac{5}{12} = \boxed{\frac{7}{12}}$ part

72. The sum of two numbers is 9. The sum of their reciprocals is 1/2. One of the number is.

(a) 2 (b) 4
(c) 5 (d) 6

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (d) : Let the first number be x and the second number be y.
According to the question,

$x + y = 9$ .....(i)

$\frac{1}{x} + \frac{1}{y} = \frac{1}{2}$ ..... (ii)

From equation (i),

$x + y = 9$

$y = 9 - x$

From equation (ii)

$\frac{1}{x} + \frac{1}{y} = \frac{1}{2}$

$\frac{x+y}{xy} = \frac{1}{2}$

$\frac{9 \times 2}{xy} = 1$

$2 \times 9 = xy$

Putting the value of y,

$18 = x(9 - x)$

$18 = 9x - x^2$

$x^2 - 9x + 18 = 0$

$x^2 - 6x - 3x + 18 = 0$

$x(x - 6) - 3(x - 6) = 0$

$(x - 3)(x - 6) = 0$

$(x - 3) = 0$ or $x = 3$

$(x - 6) = 0$ or $x = 6$

73. There are a total of 200 students in a school, of which $\frac{7}{10}$ are boys. Find the number of girls in the school.

(a) 80 (b) 60
(c) 40 (d) 120

RRB NTPC 17.01.2017 Shift-3

Ans : (b) The number of boys in the school

$= \text{total students} \times \frac{7}{10}$

$= 200 \times \frac{7}{10} = 140$

$\therefore$ The number of girls in the school = 200–140 = 60

74. If the sum of two numbers is 26 and their difference is 12. Find the difference of their squares.

(a) 296 (b) 312
(c) 324 (d) 336

RRB NTPC 05.04.2016 Shift : 2

Ans : (b) Let the numbers be x and y.
x + y = 26
x – y = 12
$\therefore$ The difference of the squares,
$= x^2 - y^2$
$= (x + y)(x - y)$
$= 26 \times 12 = 312$

75. If the product of two numbers is thrice of their sum, if 1st number is 12 find the 2nd number.

(a) 2 (b) 3
(c) 4 (d) 5

RRB NTPC 04.04.2016 Shift : 1

Ans : (c) Let the 2nd number be x.
$x \times 12 = (x + 12) \times 3$
$12x = 3x + 36$
$9x = 36$
Hence, x = 4

76. If the sum of two digits is 15 and difference is 3. The digits are-

(a) 8 and 7 (b) 6 and 9
(c) 5 and 10 (d) 3 and 12

RRB NTPC 31.03.2016 Shift : 1

Ans : (b) Let the digits be x and y.
Then, x + y = 15 …… (1)
x – y = 3 ……. (2)
Solving equation (1) and (2),
x = 9
y = 6

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

(a) 12 (b) 18
(c) 16 (d) 14

RRB NTPC 29.03.2016 Shift : 3

Ans : (d) Let three consecutive even numbers are x, x + 2 and x+4
$\therefore x + x + 2 + x + 4 = 42$
$3x = 36$
$x = 12$
$\therefore$ middle number = 12+2=14

78. Two partners M and N buy a car. M pays his share of $\frac{3}{7}$th of the total cost of the car. M pays ₹31,540 as compared to N. What is the cost of the car?

(a) ₹2,32,680 (b) ₹2,03,175
(c) ₹2,20,780 (d) ₹1,85,780

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (c) Let the cost of the car is x rupee
According to the question,

M's share $= \frac{3x}{7}$

N's share $= \frac{3x}{7} + 31540$

Then, $\frac{3x}{7} + 31540 + \frac{3x}{7} = x$

$x = 31540 \times 7$
x = ₹2,20,780

79. If $\frac{2}{3}$ part of a pizza costs Rs. 300, then $\frac{3}{5}$ part of a pizza will cost:

(a) ₹180 (b) ₹250
(c) ₹225 (d) ₹270

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (d) The cost of 2/3 part of the pizza = ₹300

Then, the cost of 1 share of the pizza $= \frac{300 \times 3}{2} =$ ₹450

The cost of 3/5th share of the pizza $= 450 \times \frac{3}{5}$
$= 90 \times 3 =$ ₹270

80. When 472 pieces of plywood, each 0.23 cm thick, are placed on top of each other, what would be the height of the pillar in metre?

(a) 10.856 (b) 1.0856
(c) 108.56 (d) 1.856

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (b) The required height of the pillar,

$= \frac{0.23 \times 472}{100} = 1.0856$ metre

81. 15 small rods, each of length $23\frac{2}{7}$m are joined to make a big rod. What then is the length of the big rod?

(a) $349\frac{3}{7}$ m (b) $349\frac{1}{7}$ m
(c) $349\frac{2}{7}$ m (d) $349\frac{5}{7}$ m

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (c) The length of each rod $= 23\frac{2}{7} = \frac{163}{7}$ m

In this way, the length of all 15 rods $= 15 \times \frac{163}{7}$

$= \frac{2445}{7} = 349\frac{2}{7}$ m

Type - 5

82. Calculate the difference between the largest and the smallest two-digit prime number.

(a) 82 (b) 83
(c) 84 (d) 86

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

Ans : (d) The largest two digit prime number = 97
The smallest two digit prime number = 11
Hence, the required number = 97 – 11 = 86

83. Find the largest number of four digit that is completely divisible by 49.

(a) 9998 (b) 9994
(c) 9992 (d) 9996

RRB RPF-SI -10/01/2019 (Shift-II)

Ans : (d) The largest 4-digit number is 9999.

```
49)9999(204
   98
   199
   196
     3
```

Hence, the required number = 9999-3 = 9996, which is exactly divisible by 49.

84. Find the greatest 4-digit number that is divisible by 15, 25, 40 and 75.

(a) 9200 (b) 9600
(c) 9400 (d) 9000

RRB JE - 24/05/2019 (Shift-I)

Ans : (b) The largest 4-digit number = 9999
LCM of 15, 25, 40 and 75 = 600

```
600)9999(16
    600
    3999
    3600
     399
```

Hence, the largest 4-digit number that is divisible by 15, 25, 40 and 75 = 9999 – 399 = 9600

85. What should be added to 135642 to get the largest six digit number?

(a) 864350 (b) 863357
(c) 864357 (d) 864347

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (c) From option, Let the required number is x.
Adding x to 135642 gives a largest six digit number
∴ 135642 + x = 999999
x = 999999 – 135642
x = 864357

86. Find the largest 4 digit number that is completely divisible by 88.

(a) 9944 (b) 9844
(c) 9768 (d) 8894

RRB JE - 02/06/2019 (Shift-I)

Ans : (a) The largest 4 digit number = 9999

```
      113
88)9999
   88
   119
   88
   319
   264
    55   Remainder
```

Hence, the required number = 9999 – 55 = 9944

86. Find the largest number of four digits that is completely divisible by 27, 18, 15 and 12.

(a) 9730 (b) 9710
(c) 9700 (d) 9720

RRB JE - 26/06/2019 (Shift-III)

Ans : (d) LCM of 12, 15, 18 and 27 = 540

```
540)  9999  (18
      540
      4599
      4320
       279
```

Hence, the required number = 9999 – 279 = 9720

88. What is the largest four-digit number that is completely divisible by 49?

(a) 9992 (b) 9994
(c) 9998 (d) 9996

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (d) : The largest 4 digit number = 9999

```
49)9999(204
   98
   199
   196
   ××3
```

Hence, the largest 4 digit number completely divisible by 4 = 9999 – remainder = 9999 – 3 = 9996

89. Find the smallest four digit number divisible by 47.

(a) 1200 (b) 1025
(c) 1034 (d) 1360

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (c) : The smallest four digit number = 1000

```
      21
47)1000
   94
   60
   47
   13
```

Hence, the smallest four digit number divisible by 47,
= 1000 + (47–13) 1000+34 = 1034

90. Find the largest 3-digit number that is completely divisible by 10, 8 and 12.

(a) 940 (b) 960
(c) 980 (d) 999

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) LCM of 10, 12 and 8

2	10,	8,	12
2	5,	4,	6
2	5,	2,	3
3	5,	1,	3
5	5,	1,	1
	1,	1,	1

LCM = 2 ×2×2×3×5 = 120
The largest 3-digit number = 999
According to the question-

$$120\overline{)999}\ (8,\ 960,\ 39)$$

Hence, the required number = 999 – 39 = 960.

91. Find the smallest four digit number which is a perfect square.

(a) 1000 (b) 1024
(c) 1081 (d) 1064

RRB NTPC 04.04.2016 Shift : 1

Ans : (b) The smallest 4 digit number = 1000

	32
3	1000
+3	9
62	100
2	124
	–24

Hence, the smallest 4 digit number = 1000 + 24 = 1024

92. Find the least 6 digit number that is a multiple of 18.

(a) 100000 (b) 999900
(c) 100008 (d) 100006

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) The smallest 6 digit number = 100000

$$18\overline{)100000}\ (5555,\ 90,\ 100,\ 90,\ 100,\ 90,\ 100,\ 90,\ 10)$$

The remainder is 10, hence 8 is added to the number will make it divisible totally.
Hence, the required number = 100000 + 8 = 100008

Type - 6

93. Which from the following is not a rational number?

(a) $\sqrt[3]{1728}$ (b) π
(c) 2.487627287 (d) 8.36712846781

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

Ans : (b) Irrational numbers is a real number cannot be expressed as p/q. where p and q are integers and q is not 0. It means, irrational number cannot be expressed as fractions. From example the square root of 2 π are irrational number.

94. Which from the following is not irrational?

(a) $\sqrt{5428}$ (b) $\sqrt{6084}$
(c) π (d) $\sqrt{7652}$

RRB RPF Constable -18/01/2019 (Shift-III)

Ans. (b) : The real numbers which cannot be expressed as p/q, where p and q are integers and q is not 0, are called irrational numbers. These numbers are represented by Q^C or Q^I.
For example- $\sqrt{2}, 1+\sqrt{3}, \pi$
$\sqrt{6084} = \sqrt{78\times 78} = 78$ (Rational number)

95. Denote $\overline{0.125}$ as a rational number.

(a) 119/993 (b) 113/990
(c) 125/999 (d) 100/999

RRB JE - 25/05/2019 (Shift-I)

Ans : (c) Let x = $0.\overline{125}$
x = 0.125125 ..... (i)
1000x = 125.125125 ..... (ii)
From equation (ii)- equation (i) –
999x = (125.125125.....) – (0.125125.....)
999x = 125.0
$x = \frac{125}{999}$

96. Denote 5.025 as a fraction:

(a) $\frac{203}{40}$ (b) $5\frac{1}{40}$
(c) $5\frac{1}{4}$ (d) $5\frac{1}{8}$

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

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

97. Find the smallest fraction.

(a) 3/4 (b) 11/13
(c) 5/7 (d) 9/11

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) (a) 3/4 = 0.75
(b) 11/13 = 0.84
(c) 5/7 = 0.71
(d) 9/11 = 0.81
Hence, the smallest fraction will be 5/7.

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

(a) $\frac{\left(5-\sqrt{3}\right)}{22}$ (b) $5+\frac{\sqrt{3}}{22}$

(c) $5-\frac{\sqrt{3}}{20}$ (d) $\frac{\left(5-\sqrt{3}\right)}{20}$

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (a)
According to the question-

$$\frac{1}{\left(5+\sqrt{3}\right)}=\frac{\left(5-\sqrt{3}\right)}{\left(5+\sqrt{3}\right)\left(5-\sqrt{3}\right)}$$

$$=\frac{\left(5-\sqrt{3}\right)}{(5)^2-\left(\sqrt{3}\right)^2}$$

$$=\frac{\left(5-\sqrt{3}\right)}{25-3} \qquad =\frac{\left(5-\sqrt{3}\right)}{22}$$

99. Which of the following square roots is irrational?

(a) 21025 (b) 18025

(c) 13225 (d) 15625

RRB Paramedical Exam – 21/07/2018 (Shift-I)

Ans. (b) : $\sqrt{21025}=\sqrt{5\times5\times29\times29}$
= 145 (Rational number)

$\sqrt{18025}=\sqrt{5\times5\times7\times103}$
= 135.257 (Irrational number)

$\sqrt{13225}=\sqrt{5\times5\times23\times23}$
= 5×23=115 (Rational number)

$\sqrt{15625}=\sqrt{5\times5\times5\times5\times5\times5}$
= 5×5×5=125(Rational number)

Hence, it is obvious that the square root of 18025 is irrational number.

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

(a) 2 + $\sqrt{3}$ (b) 2 – $\sqrt{3}$

(c) 1 (d) 4 + $\sqrt{3}$

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (b) Rationalizing the denominator of $\frac{1}{2+\sqrt{3}}$,

$$\frac{1}{2+\sqrt{3}}\times\frac{2-\sqrt{3}}{2-\sqrt{3}}$$

$$=\frac{2-\sqrt{3}}{2^2-\left(\sqrt{3}\right)^2}$$

$$=\frac{2-\sqrt{3}}{4-3}=2-\sqrt{3}$$

101. Find the rational value of the denominator of $\frac{1}{(5+2\sqrt{3})}$

(a) $\frac{(5-2\sqrt{3})}{12}$ (b) $\frac{(5-2\sqrt{3})}{13}$

(c) $5-\frac{2\sqrt{3}}{13}$ (d) $5+\frac{2\sqrt{3}}{13}$

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (b) Rationalizing the denominator of the given fraction,

$$=\frac{1}{(5+2\sqrt{3})}\times\frac{(5-2\sqrt{3})}{(5-2\sqrt{3})}$$

$$=\frac{(5-2\sqrt{3})}{(5)^2-(2\sqrt{3})^2} \qquad [(a+b)(a-b) = a^2-b^2]$$

$$=\frac{5-2\sqrt{3}}{25-12}=\frac{5-2\sqrt{3}}{13}$$

102. $(4)^{\frac{-3}{2}}$ = ?

(a) 1/4 (b) 8

(c) 1/8 (d) 4

RRB NTPC 07.04.2016 Shift : 3

Ans :(c) $(4)^{\frac{-3}{2}}=(2)^{2\times\frac{-3}{2}}$

$$=2^{-3}=\frac{1}{2^3}=\frac{1}{8}$$

103. From the given options, find the rational number between the range 2/4 and 0.6.

(a) $\frac{11}{25}$ (b) $\frac{21}{40}$

(c) $\frac{3}{4}$ (d) $\frac{11}{4}$

RRB NTPC 19.01.2017 Shift : 2

Ans : (b) The rational number between $\frac{2}{4}=0.5$ and 0.6

$=\frac{21}{40}=0.525$

Hence, 0.5< 0.525< 0.6

104. Which of the following numbers is irrational?

(a) $\sqrt[3]{64}$ (b) $\sqrt{64}$

(c) $\sqrt[6]{64}$ (d) $\sqrt[4]{64}$

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (d) From options,

$\sqrt[3]{64}=(64)^{\frac{1}{3}}=\left(4^3\right)^{\frac{1}{3}}=4$ (Rational number)

$\sqrt{64}=(64)^{\frac{1}{2}}=\left(8^2\right)^{\frac{1}{2}}=8$ (Rational number)

$\sqrt[6]{64}=(64)^{\frac{1}{6}}=\left(2^6\right)^{\frac{1}{6}}=2$ (Rational number)

$\sqrt[4]{64}=\sqrt[4]{16}\times\sqrt[4]{4}=2\times\sqrt[4]{4}=$ (Irrational number)

105. Among the following which is a rational number?

(a) $\sqrt[3]{2}$ (b) $\sqrt[3]{8}$

(c) $\sqrt[3]{4}$ (d) $\sqrt[3]{12}$

RRB ALP & Tec. (13-08-18 Shift-III)

Ans : (b) Rational number can be written as p/q ;(q $\neq$ 0).
From option (b), is rational number

$$\sqrt[3]{8} = 2$$

106. Which of the numbers given below is NOT rational number?

(a) $\sqrt{64}$ (b) $\sqrt[3]{64}$

(c) $\sqrt[3]{8}$ (d) $\sqrt{8}$

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (d) $\sqrt{64} = 8$ (Rational number)

$\sqrt[3]{64} = 4$ (Rational number)

$\sqrt[3]{8} = 2$ (Rational number)

$\sqrt{8} = 2\sqrt{2}$ (Irrational number)

Hence $2\sqrt{2}$ is not number a rational

A number which we can write as p/q where p and q both are integers but q $\neq$ 0 is called rational numbers.

107. All irrational number are---------numbers.

(a) Integers (b) Imaginary

(c) Whole (d) Real

RRB NTPC 19.01.2017 Shift : 3

Ans : (d) All irrational numbers are real numbers.
As- $\sqrt{2}$

108. Which from the following is irrational?

(a) $\sqrt{1000000}$ (b) $\sqrt[3]{1000000}$

(c) $\sqrt[6]{1000000}$ (d) $\sqrt[4]{1000000}$

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (d) From option-

(a) $\sqrt{1000000}$

$\sqrt{100\times100\times100} = 10\times10\times10 = 1000$ (Rational)

(b) $\sqrt[3]{1000000} = \left(100^3\right)^{1/3} = 100$ (Rational)

(c) $\sqrt[6]{1000000} = \left(10^6\right)^{1/6} = 10$ (Rational)

(d) $\sqrt[4]{1000000} = 10\sqrt[4]{100}$ (Irrational)

109. Which from the following is an irrational number?

(a) $\sqrt[4]{4}$ (b) $\sqrt[3]{8}$

(c) $\sqrt{16}$ (d) $\sqrt[6]{1}$

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (a) : Irrational number – The number which cannot be expressed as p/q. Example- $\sqrt{3}, \sqrt{6}.....\sqrt[4]{4}$

Note- π is an irrational number while 22/7 is a rational number.
According to the question,

$\sqrt[3]{8} = \sqrt[3]{2\times2\times2} = 2$ (Rational number)

$\sqrt{16} = \sqrt{2\times2\times2\times2} = 2\times2 = 4$ (Rational number)

$\sqrt[6]{1} = 1$ (Rational number)

110. Which from the following is a rational number?

(a) $\sqrt[3]{2} - 2$ (b) $\sqrt[3]{8} - 2$

(c) $\sqrt[3]{4} + 4$ (d) $\sqrt[3]{12} + 1$

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (b)
Rational number – Such numbers which can be expressed as p/q ;(q $\neq$ 0), are called rational numbers.
Example:- $\sqrt[3]{8}, \sqrt{4}$ etc;
Irrational number – Such numbers which cannot be expressed as p/q. Example:- $\pi, \sqrt[3]{2}, \sqrt{2}$ etc;
From options,
(b) $\sqrt[3]{8} - 2 = 0$ is a rational number while others $\sqrt[3]{2} - 2$, $\sqrt[3]{4} + 4$ are irrational numbers.

111. Which from the following is an irrational number?

(a) $\sqrt[4]{1024}$ (b) $\sqrt[10]{1024}$

(c) $\sqrt{1024}$ (d) $\sqrt[5]{1024}$

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a) From option,

(a) $\sqrt[4]{1024} = 4\sqrt[4]{4}$ (Irrational number)

(b) $\sqrt[10]{1024} = 2$ (Rational number)

(c) $\sqrt{1024} = 32$ (Rational number)

(d) $\sqrt[5]{1024} = 4$ (Rational number)

112. Which from the following is not a rational number?

(a) $\sqrt[5]{32}$ (b) $\sqrt[3]{64}$

(c) $\sqrt[4]{32}$ (d) $\sqrt[3]{27}$

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (c) from options,

$\sqrt[5]{32} =$ 2(Rational)

$\sqrt[3]{64} = 4$ (Rational)

$\sqrt[3]{27} = 3$ (Rational)

$\sqrt[4]{32} = 2\sqrt[4]{2}$ (Irrational)

113. Which from the following is a rational number?

(a) $\sqrt[5]{1551}$ (b) $\sqrt[3]{1331}$

(c) $\sqrt{1221}$ (d) $\sqrt[4]{1441}$

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (b) A rational number can be written as p/q ;(q $\neq$ 0).
Hence, $\sqrt[3]{1331} = \sqrt[3]{11\times11\times11} = 11$
Therefore, 11/1 is a rational number.
Note- All other numbers cannot be written as p/q. So they are irrational.

114. Whose square root from the following numbers is a rational number?

(a) 576 (b) 512
(c) 480 (d) 544

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (a) From the options, the square root of 576 is rational.

$\sqrt{576} = 24$
$\sqrt{512} = 16\sqrt{2}$
$\sqrt{480} = 4\sqrt{30}$
$\sqrt{544} = 4\sqrt{34}$

Hence, square root of 576 is 24, which is a rational number.

115. Whose square root from the following numbers will be rational?

(a) 46232 (b) 46233
(c) 14448 (d) 34225

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (d) : The square root of 34225 is 185, which is a rational number.

116. Whose square root from the following numbers is irrational?

(a) 5184 (b) 4465
(c) 3025 (d) 8836

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (b) From options,

(a) $\sqrt{5184} = 72$
(b) $\sqrt{4465} = \sqrt{5\times19\times47}$ (Irrational)
(c) $\sqrt{3025} = 55$
(d) $\sqrt{8836} = 94$

Hence, the square root of 4465 is irrational.

117. Whose square root from the following numbers is rational?

(a) 336 (b) 344
(c) 320 (d) 324

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (d) $\sqrt{324} = \sqrt{18\times18} = 18$

Hence, the square root of 324 will be 18, which is a rational number.

118. Whose square root from the following numbers will be irrational?

(a) 6441 (b) 9604
(c) 7921 (d) 5776

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (a) From option,

$\sqrt{6441} = 80.25$ is irrational
$\sqrt{9604} = \sqrt{98\times98} = 98$
$\sqrt{7921} = \sqrt{89\times89} = 89$
$\sqrt{5776} = \sqrt{76\times76} = 76$

Hence, the square root of 6441 will be irrational.

119. Whose square root from the following numbers is a rational number?

(a) 144 (b) 136
(c) 128 (d) 120

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (a)

$\sqrt{144} = 12$
$\sqrt{136} = 2\sqrt{34}$
$\sqrt{128} = 8\sqrt{2}$
$\sqrt{120} = 2\sqrt{30}$

Hence, the square root of 144 is 12, that is a rational number.

120. Express $\frac{1}{(2+\sqrt{3})}$ as a rational number.

(a) $5-2\sqrt{3}/12$ (b) $(2-\sqrt{3})/1$
(c) $(5-2\sqrt{3})/13$ (d) $5+2\sqrt{3}/13$

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (b) : Rationalizing the number $\frac{1}{(2+\sqrt{3})}$

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

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

Type - 7

121. Find the least number that the sum obtained by to be adding in 1780 to is a perfect square.

(a) 46 (b) 49
(c) 69 (d) 72

RRB JE - 27/05/2019 (Shift-II)

Ans : (c) The number 1780 when added to 69 will be 1849 which is a perfect square number.

Thus-

1780 + 69 = 1849
1849 = 43 × 43
$(43)^2 = 1849$

122. Find the smallest integer whose cube is equal to itself.

(a) -1 (b) 2
(c) 1 (d) 0

RRB JE - 22/05/2019 (Shift-I)

Ans : (a) -1 and 1 are such integers whose cube is equal to itself.

Hence, the smallest integer = -1

$\because (-1)^3 = -1$

123. If the cube of a number and subtracting from $(153)^2$ to the result gives 1457. Find the number.

(a) 18 (b) 16
(c) 28 (d) 24

RRB JE - 24/05/2019 (Shift-I)

Ans : (c) Let the number be x.
According to the question,

$(153)^2 - x^3 = 1457$
$x^3 = (153)^2 - 1457$
$x^3 = 23409 - 1457$
$x^3 = 21952$
$\therefore\ x = \sqrt[3]{21952} = \sqrt[3]{28\times28\times28} = 28$

124. Five times of a positive integer is 3 less than twice of its square. Find the integer.
(a) 3 (b) 8
(c) 2 (d) 5
RRB RPF Constable -19/01/2019 (Shift-I)

Ans : (a) Let the positive integer is x.
According to the question-

$5x = 2x^2 - 3$
$2x^2 - 5x - 3 = 0$
$2x^2 - 6x + x - 3 = 0$
$2x(x-3) + 1(x-3) = 0$
$(x-3)(2x+1) = 0$
$x - 3 = 0\ 2x + 1 = 0$
$x = 3$ या $x = -½$ (Invalid)

125. Find the least perfect square that is divisible by 21, 36 and 66.
(a) 214344 (b) 231444
(c) 214434 (d) 213444
RRB JE - 25/05/2019 (Shift-III)

Ans : (d) LCM of 21, 36 and 66 –

2	21	36	66
2	21	18	33
3	21	9	33
3	7	3	11
7	7	1	11
11	1	1	11
	1	1	1

Hence, To get the required number, multiply by 7 and 11 in LCM of 21, 36, and 66.
The required perfect square number
$= 2\times2\times3\times3\times7\times7\times11\times11 = 213444$

126. Which of these square numbers cannot be expressed as the sum of two prime numbers?
(a) 81 (b) 49
(c) 121 (d) 144
RRB JE - 30/05/2019 (Shift-II)

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.

127. Three times the square of a number subtracting by 4 times the number is equal to 50 more than the number. Find the number.
(a) 5 (b) 4
(c) 6 (d) 10
RRB JE - 28/05/2019 (Shift-II)

Ans : (a) Let the number be = x
According to the question,

$3x^2 - x \times 4 = x + 50$
$3x^2 - 4x - x - 50 = 0$
$3x^2 - 5x - 50 = 0$
$3x^2 - 15x + 10x - 50 = 0$
$3x(x-5) + 10(x-5) = 0$
$(x-5)(3x+10) = 0$
$x - 5 = 0$
$x = 5$

128. Which of the following is not a perfect square?
(a) 2025 (b) 16641
(c) 1250 (d) 9801
RRB RPF Constable -20/01/2019 (Shift-I)

Ans : (c) From options- 1250 is not a perfect square, while others are perfect squares.
$1250 = (35.36)^2$ is not a perfect square
$2025 = (45)^2$
$16641 = (129)^2$
$9801 = (99)^2$

129. Which of these numbers is not a sum of two squares?
(a) 41 (b) 13
(c) 23 (d) 37
RRB JE - 26/06/2019 (Shift-I)

Ans : (c) From option-
(a) $41 = 5^2 + 4^2$ (b) $13 = 2^2 + 3^2$
(c) 23 (d) $37 = 6^2 + 1^2$
Hence the number 23 is not the sum of two square.

130. Which of these is a perfect square?
(a) 9801 (b) 9887
(c) 9013 (d) 9016
RRB JE - 01/06/2019 (Shift-III)

Ans. (a) From option (a),

	99
9	98 01
9	81
189	17 01
9	17 01
	××××

Hence, 9801 is a perfect square of 99.

131. If the last digit of the square of a number is 1. Find the last digit of it's cube.
(a) Only 9 (b) 1 or 9
(c) Any odd number (d) Only 1
RRB JE - 27/06/2019 (Shift-I)

Ans : (b) Let the number be 9. The last digit of whose square is 1. Which is as follows-

$9^2 = 81$

Last digit of 729 which is cube of 9 = 9

Let the number be 11. The last digit of whose square is 1. Which is as follows-

$11^2 = 121$

The last digit of the cube of 11-

$11^3 = 1331$

Hence the last digit = 1

Hence the number will be 1 or 9.

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

(a) 165 (b) 75
(c) 154 (d) 140

RRB JE - 27/06/2019 (Shift-III)

Ans : (b) Let the two numbers are x and y

$x + y = 25$ ----(i)

$x - y = 3$ ----(ii)

$x^2 - y^2 = (x + y)(x-y) = 25 \times 3 = 75$

Hence, the difference of their squares = 75

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

(a) 7 (b) 4
(c) 6 (d) 5

RRB JE - 27/06/2019 (Shift-III)

Ans : (b) Perfect square numbers greater than 100 or nearest to 100 = 121 = $(11)^2$

Perfect square numbers greater than 200 or nearest to 200

= 196 = $(14)^2$

The numbers from $(11)^2$ to $(14)^2$ are = 121, 144, 169, 196

Therefore, there will be 4 such perfect square numbers between 100 and 200.

134. Find the least number that should be added to 4042 to make it a perfect square.

(a) 41 (b) 54
(c) 64 (d) 58

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (b) : Square root of 4042,

	63
6	4042
+6	36
123	442
	369
	73

Square of 64 = 64 × 64 = 4096

Hence, the required number = 4096–4042 = 54

By adding 54, the number 4042 will be come perfect square.

135. Divide the number 137592 by the smallest number that leaves no remainder and quotient is a perfect cube. Find the cube root of the quotient.

(a) 8 (b) 2
(c) 4 (d) 6

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d)

$137592 = 2\times2\times2\times3\times3\times3\times7\times7\times13$

Hence, it is clear that, 137592 leaves no remainder when divided by $7\times7\times13 = 637$

And quotient 216 will be a perfect cube.

$216 = 2\times2\times2\times3\times3\times3$

Hence, the required cube root = $2\times3 = 6$

136. A positive number exceed its positive square root by 30. Find the number.

(a) 16 (b) 36
(c) 25 (d) 49

RRB NTPC 02.04.2016 Shift : 3

Ans : (b) Let the number be x, then-

$x = \sqrt{x} + 30$

$x - 30 = \sqrt{x}$

Squaring in both side-

$(x-30)^2 = (\sqrt{x})^2$

$x^2 + 900 - 60x = x$

$x^2 - 60x - x + 900 = 0$

$x^2 - 61x + 900 = 0$

$x^2 - 36x - 25x + 900 = 0$

$x(x-36) - 25(x-36) = 0$

$(x-36)(x-25) = 0$

$x - 36 = 0$ or $x - 25 = 0$

$x = 36$ or $x = 25$

According to condition, 25 is not more that its square root, which does not follow the condition.

Hence, the required number will be x = 36.

137. What smallest number should be added to the sum of squares of 15 and 14, so that the resulting number is a perfect square?

(a) 17 (b) 20
(c) 11 (d) 9

RRB NTPC 29.03.2016 Shift : 1

Ans : (b) $15^2 + 14^2 = 225 + 196 = 421$

Let the number to added be x,

$421 + x = 441$

$\Rightarrow x = 441 - 421 = 20$

Hence, the required number = 20

138. Calculate the sum of squares of numbers from 1 to 9.

(a) 284 (b) 285
(c) 385 (d) 380

RRB NTPC 27.04.2016 Shift : 1

Ans : (b) The sum of squares of first n numbers

$$= \frac{n(n+1)(2n+1)}{6}$$

$\therefore$ the sum of squares from 1 to 9 will be-

$$= \frac{9(9+1)(18+1)}{6} = \frac{9\times10\times19}{6} = 285$$

139. Calculate the sum of squares of number from 1 to 10.

(a) 384 (b) 285
(c) 385 (d) 380

RRB NTPC 30.04.2016 Shift : 2

Ans : (c) The sum of squares of first n numbers

$$= \frac{n(n+1)(2n+1)}{6}$$

the sum of squares of the numbers from 1 to 10 will be-

$$= \frac{10(10+1)(20+1)}{6} = \frac{10\times11\times21}{6} = 385$$

140. How many of the factors of 256 are perfect squares?

(a) 5 (b) 3
(c) 6 (d) 4

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

Ans : (a) Perfect square factors of 256 = 1, 4, 16, 64, 256
Hence, the required number of perfect square factors = 5

141. Find the least number which should be added to 7864, to make it a perfect square.

(a) 61 (b) 57
(c) 71 (d) 79

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (b) When 57 is added to 7864, to make it 7921 which is a perfect square of 89.
Hence, it is clear that adding 57 to 7864 will make the number is perfect square.

142. The number 4050 becomes a perfect square when multiplying by a positive integer. Find the square root of the number.

(a) 95 (b) 80
(c) 90 (d) 85

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (c) $\because 4050 = 2\times\overline{3\times3}\times\overline{3\times3}\times\overline{5\times5}$
Hence, number 4050 becomes a perfect square when multiplied by 2 = $4050\times2 = 8100$
$\therefore$ The required square root of the number 8100
$= 2\times3\times3\times5 = 90$

143. Which of the following numbers is a perfect square?

(a) 0.09 (b) 8.1
(c) 0.025 (d) All

RRB NTPC 29.03.2016 Shift : 2

Ans : (a) $0.09 = (0.3)^2$
Hence, only 0.09 is a perfect square number.

144. Calculate- $\sqrt{30+\sqrt{30+\sqrt{30+\sqrt{30+\sqrt{...}}}}}$**?**

(a) 5 (b) $\sqrt{30}$
(c) 6 (d) 5.8

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (c)

$$\sqrt{30+\sqrt{30+\sqrt{30+\sqrt{30+\sqrt{...}}}}} = x$$

$x = \sqrt{30+x}$
Squaring in both side,
$x^2 = 30 + x$
$x^2 - x - 30 = 0$
$x^2 - 6x + 5x - 30 = 0$
$x(x-6) + 5(x-6) = 0$
$(x+5)(x-6) = 0$
$x + 5 = 0$
$x = -5$ (invalid)
$x - 6 = 0$
$\boxed{x = 6}$ (valid)

Type - 8

145. Which of these numbers has the highest number of divisors?

(a) 156 (b) 240
(c) 172 (d) 200

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

Ans : (b)
$156 = 2^2 \times 3^1 \times 13^1 = (2+1)(1+1)(1+1) = 12$ (divisor)
$240 = 2^4 \times 3^1 \times 5^1 = (4+1)(1+1)(1+1) = 20$ (divisor)
$172 = 2^2 \times 43^1 = (2+1)(1+1) = 6$ (divisor)
$200 = 2^3 \times 5^2 = (3+1)(2+1) = 12$ (divisor)
Hence, It is obvious that the number of the divisors of 240 is more.

146. Find the unit digit in given factor of $(3451)^{51} \times (531)^{43}$.

(a) 6 (b) 4
(c) 1 (d) 9

RRB RPF-SI -11/01/2019 (Shift-I)

Ans : (c) The given expression $(3451)^{51} \times (531)^{43}$
According to the question it is clear that the unit digit of 3451 and 531 is 1, so the unit digit of their product will also be 1.

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

(a) 288 (b) 168
(c) 576 (d) 464

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) : The number of factors of $2^8 \times 3^2 \times 5^3 \times 7^5$ = (8 + 1) (2 + 1) (3 + 1) (5 + 1) = 648
$\therefore$ The number of even factors (multiples) = 648 – The number of total odd factors
= 648 – {(2 + 1) (3 + 1) (5 + 1)}
= 648 – {3 × 4 × 6}
= 648 – 72 = 576

148. How many factors of 729 are perfect squares?

(a) 5 (b) 4
(c) 3 (d) 2

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (c) : The factors of 729,

3	729
3	243
3	81
3	27
3	9
3	3
	1

Perfect squares $= \overline{3\times3}\times\overline{3\times3}\times\overline{3\times3}$

Hence, total 3 factors of 729 (9,9,9) are perfect squares.

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

(a) 288 (b) 144
(c) 210 (d) 140

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (c) : The required odd multiple number

$= (5+1) \times (4+1) \times (6+1)$
$= 6 \times 5 \times 7 = 210$

150. Find the last digit of 213^6 ?

(a) 6 (b) 3
(c) 7 (d) 9

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d) The unit digit of 213^6

$213^6 = (213^4 \times 213^2)$
$1 \times 9 = 9$

151. The smallest natural number, by which 216 should be multiplied, so that the number of factors of the product is odd.

(a) 4 (b) 6
(c) 12 (d) 8

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (b) :

The number of multiples of $(216 = 2^3 \times 3^3)$ is:

$= (3+1)(3+1) = 4 \times 4 = 16$ (even)

The smallest natural number, by which 216 should be multiplied, so that the number of factors of the product is odd = 6

$\therefore$ Required number of multiples in $216 \times 6 = 2^4 \times 3^4$

$= (4 + 1)(4 + 1) = 25$

152. What is the unit digit of $[4523^{1632} \times 2224^{1632} \times 3225^{1632}]$

(a) 1 (b) 0
(c) 4 (d) 5

RRB NTPC 18.01.2017 Shift : 3

Ans : (b) $\left[(4523)^{1632} \times (2224)^{1632} \times (3225)^{1632}\right]$

$\Rightarrow (3)^4 \times (4)^4 \times (5)^4$

$81 \times 256 \times 625$

$1 \times 6 \times 5$

$30 \Rightarrow \boxed{0}$

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

(a) 45 (b) 54
(c) 52 (d) 65

RRB NTPC 18.04.2016 Shift : 2

Ans : (c) $(8)^{10} \times (9)^7 \times 7^8$

$= \left((2)^3\right)^{10} \times \left((3)^2\right)^7 \times (7)^8$

$= 2^{30} \times 3^{14} \times 7^8$

Hence, the total prime factors = 30+14+8 = 52

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

(a) 28 (b) 43
(c) 55 (d) 56

RRB NTPC 16.04.2016 Shift : 2

Ans : (c) Total prime factors $\{(16)^7 \times (27)^6 \times 5^9\}$

$= \left(2^4\right)^7 \times \left(3^3\right)^6 \times 5^9$

$= 2^{28} \times 3^{18} \times 5^9$

$= 28 + 18 + 9 = 55$

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

(a) 3 (b) 1
(c) 4 (d) 7

RRB NTPC 16.04.2016 Shift : 3

Ans : (b)

The required unit digit in $(4211)^{102} \times (361)^{52}$

$\Rightarrow (1)^{102} \times (1)^{52} = 1 \times 1 = 1$

156. Find the unit digit in. $(1234)^{102} + (1234)^{103}$

(a) 2 (b) 4
(c) 0 (d) 1

RRB NTPC 28.04.2016 Shift : 2

Ans : (c) Given expression: $(1234)^{102} + (1234)^{103}$

The unit digit,

$= (4)^{102} + (4)^{103}$
$= (4^2)^{51} + (4^2)^{51} \times 4^1$
$= (16)^{51} + (16)^{51} \times 4^1$
$= 6 + 6 \times 4$
$= 6 + 24 = 30$

Hence, the unit digit will be 0.

Type - 9

157. Find the greatest number that will divide 115, 149 and 183 leaving remainders 3, 5, 7 respectively.

(a) 20 (b) 16
(c) 18 (d) 14

RRB JE - 24/05/2019 (Shift-II)

Ans : (b) HCF of the numbers

$= (115–3), (149–5)$ and $(183–7)$
$= 112, 144$ and 176
$= 16$

Hence, the required number is 16.

158. Find the least number which when divided by 5, 6, 7, 8, leaves a remainder 3, and is also a multiple of 9.

(a) 1683 (b) 843
(c) 1677 (d) 1983

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

Ans : (a) LCM of 5, 6, 7 and 8 = 840
Required no. = 840k + 3
= 840 × 2 +3 = 1683
[The closest number to 1680 will be 1683 because when dividing by 3 remains 3 as remainder and that is also a multiple of 9.]

159. A number when divided by 10, 9 and 8 separately leaves remainders 9, 8, and 7 respectively. What is the least of such numbers?

(a) 353 (b) 719
(c) 1359 (d) 359

RRB JE - 27/05/2019 (Shift-II)

Ans : (d) (10–9) = (9–8) = (8–7) = 1
∴ The required number = (LCM of 10, 9 and 8) – 1
= 360–1
= 359

160. When a number is divided by a divisor, leaves remainder 24. And twice of the same number is divided by the same divisor, leaves remainder 15. Find the divisor.

(a) 9 (b) 33
(c) 23 (d) 35

RRB RPF-SI -12/01/2019 (Shift-II)

Ans : (b) Let the divided is x, divisor is y and quotient is 1.
Dividend = Divisor × Quotient + Remainder
x = y + 24.....(i)
2x = y + 15.....(ii)
Subtracting equation (i) from equation (ii),
x = –9
Putting the value of x in equation (i),
– 9 = y + 24
$\boxed{y = 33}$

161. Find the least number when divided by 8, 12, 18 leaving remainders 6, 10, 16 respectively.

(a) 74 (b) 144
(c) 146 (d) 70

RRB JE - 30/05/2019 (Shift-I)

Ans : (d) 8 – 6 = 2, 12 – 10 = 2, 18 – 16 = 2
The difference of the digits is equal.
LCM of 8, 12 and 18 = 72
Hence, the required number = 72 – 2 = 70

162. Find the smallest number which, when is reduced 6, it is completely divided by 12, 15, 20 and 27.

(a) 542 (b) 540
(c) 546 (d) 500

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (c) LCM of 12, 15, 20 and 27,
12 = 2 × 2 × 3
15 = 3 × 5
20 = 2 × 2 × 5
27 = 3 × 3 × 3
LCM = 2 × 2 × 3 × 5 × 3 × 3
= 540
Hence, the required number = 540 + 6 = 546

163. Find the greatest number which on dividing 3050 and 5200 leaves remainders 7 and 9 respectively.

(a) 149 (b) 111
(c) 153 (d) 179

RRB NTPC 19.04.2016 Shift : 1

Ans : (d)
3050 – 7 = 3043
5200 – 9 = 5191
3043)5191(1
3043
2148)3043(1
2148
×895)2148(2
1790
×358)895(2
716
179)358(2
358
×××
Hence, the required number = HCF of 3043 and 5191 = 179.

164. When a number is divided by 627 leaves remainder 43. Find the remainder when the same number is divided by 19.

(a) 5 (b) 18
(c) 13 (d) 7

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) 627 is divisible by 19.
Hence, the required remainder
19) 43 (2
38
×5
The remainder will be 5.

165. N is a whole number when, divided by 6 leaves the remainder 4. Find the remainder when 2N is divided by 6.

(a) 4 (b) 8
(c) 2 (d) शून्य

RRB NTPC 28.04.2016 Shift : 1

Ans : (c) Let the quotient be "a" when N is divided by 6.

$\therefore$ N = 6a + 4…….(i)

By equation (i) ×2

2N = 2 × 6a + 8

2N = 12a + 6 + 2

2N = 6 (2a +1) + 2

Hence, the required remainder will be 2.

Type - 10

166. 18 by adding to a two digit number and the digits of the number are interchanged. The product of the digits is '8'. Find the number.

(a) 42 (b) 18

(c) 32 (d) 24

RRB JE - 27/06/2019 (Shift-I)

Ans : (d) Let the unit digit = x.

tens digit = y

The number = 10y + x

xy = 8 ---(i)

According to the question,

10y + x + 18 = 10x + y

9x – 9y = 18

x – y = 2

From equation (i)– $x = \frac{8}{y}$

$\therefore \quad \frac{8}{y} - y = 2$

$8 - y^2 = 2y$

$y^2 + 2y - 8 = 0$

$y^2 + 4y - 2y - 8 = 0$

y (y + 4) –2 (y + 4) = 0

(y –2) (y + 4) = 0

y = 2

Putting the value of y in equation (i)-

x × 2 = 8

x = 4

Number = 10y + x = 10 × 2 + 4 = 24

167. The sum of the digits of a two digit number is 10. When the digits are interchanged is less 36 than the number. Find the changed number.

(a) 82 (b) 73

(c) 37 (d) 28

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

Ans : (c) Let the number = 10 x + y

According to the question,

x + y = 10 …….(i)

The number obtained by interchanging digits = (10y + x)

According to the question

(10 x+y) – (10y + x) = 36

$\Rightarrow$ 9x – 9y = 36

x – y = 4 ……(ii)

By adding equation (i) and (ii),

2x = 14

x = 7

$\therefore$ y = 3

Hence, the changed number (10y + x) = 10 × 3 +7 = 37

168. The sum of a two digit number and the number made by interchanging its digits is 132. If the difference of the digits is 4, find the number.

(a) 37 (b) 84

(c) 73 (d) 62

RRB RPF-SI -16/01/2019 (Shift-III)

Ans : (b) Let the tens digit of the number is x and the unit digit is y.

So, the number = 10x + y,

According to the question,

x – y = 4.....(i)

and, $10x + y + 10y + x = 132$

$11x + 11y = 132$

$x + y = 12$.....(ii)

from equation (i) and (ii),

x – y = 4

x + y = 12

2x = 16

x = 8, y = 4

Hence, the required number $= 10x + y = 10 \times 8 + 4 = 84$

169. The sum of the digits of a two digit number is 12. The new number formed when the digits are interchanged is 18 more than the original number. What is the original number?

(a) 39 (b) 48

(c) 75 (d) 57

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (d) Let the tens digit of the number is x and the unit digit is y.

x + y = 12 .....(i)

Hence, the two digit number = 10x + y

the number obtained by the digit to the interchange

according to the question,

10 y + x = 10x + y + 18

9y – 9x = 18

9x – 9y = –18

$\boxed{x - y = -2}$.....(ii)

By adding equation (i) and (ii),

x + y = 12

x – y = –2

2x = 10

$\boxed{x = 5}$

$\boxed{y = 7}$

Hence, the required number = 10x+y = 10×5+7 = 57

170. The sum of the digits of a two digits number is 9. Also nine times this number is twice the number obtained by reversing the order of the digits. Find the number.

(a) 19 (b) 18

(c) 28 (d) 30

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : Let the tens digit is x and the unit digit is y.
∴ The number = 10x + y
According to the first condition,
$x + y = 9$ .....(i)
According to the second condition,
$(10x + y) \times 9 = (10y + x) \times 2$
$90x + 9y = 20y + 2x$
$88x = 11y$
$y = 8x$
Putting the value of y in equation (i),
$x + 8x = 9$
$x = 1$
Putting the value of x in equation (i),
$1 + y = 9$
$y = 8$
Hence, the number = 10x + y
$= 10 \times 1 + 8 = 18$

171. The sum of the digits of a two digit number is 11. The new number formed when the digits interchanged is 45 less than the original number. Find the original number.
(a) 92 (b) 56
(c) 65 (d) 83

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) : Let the tens digit of the number is a and the unit digit is b.
So, the number = 10a + b
According to the question,
$a + b = 11$ .....(i)
According to the question,
$10b + a = 10a + b - 45$
$9a - 9b = 45$
$a - b = 5$ .....(ii)
Adding equation (i) and (ii),
$a + b = 11$
$a - b = 5$
$2a = 16$
$a = 8$
Putting the value of a in equation (i),
$8 + b = 11$
$b = 3$
Hence, the required number = $10 \times 8 + 3 = 83$

172. The difference between a number of two digits and the new number formed when the digits are interchanged is 45. Find the difference between the two digits.
(a) 4 (b) 5
(c) 6 (d) 7

RRB NTPC 05.04.2016 Shift : 2

Ans : (b) Let the tens digit be x.
And the unit digit be y.
The number = 10x + y
According to the question,
$(10x + y) - (10y + x) = 45$
$9x - 9y = 45$
Hence, the required difference will be $x - y = 5$

173. The sum of the digits of a two digit number is 11. If the digits are interchanged, the number decreases to 63. Find the number.
(a) 83 (b) 92
(c) 29 (d) 38

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) Let the tens digit be x and the unit digit be y of the number.
∴ The number = $10x + y$
According to the question-
$x + y = 11$ ..... (i)
and $10y + x = 10x + y - 63$
$9x - 9y = 63$
$x - y = 7$ ..... (ii)
By adding equation (i) and (ii)
$2x = 18 \Rightarrow x = 9,\ y = 2$
Hence, the number = $10x + y = 10 \times 9 + 2 = 92$

174. The sum of the digits of a two digit number is 9. When 27 is added to the number, the digits are interchanged. Find the number.
(a) 45 (b) 36
(c) 18 (d) 27

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) Let the unit digit be x in the two digit number.
Then,
According to the question,
the tens digit = $9 - x$ And the number = $10(9 - x) + x$
Again According to the question,
$10(9 - x) + x + 27 = 10x + 9 - x$
$\Rightarrow 90 - 10x + x + 27 = 9x + 9$
$\Rightarrow 90 + 27 - 9 = 18x$
$\Rightarrow 18x = 108$
$x = 6$
Then, the number $= 10(9-x) + x$
$= 10(9-6) + 6 = 36$

175. The sum of the digits of a two digit number is 13. If those digits are interchanged, the number gets decreased by 27. Find the changed number.
(a) 85 (b) 76
(c) 67 (d) 58

RRB NTPC 02.04.2016 Shift : 1

Ans : (d) Let the tens digit is x,
the unit digit = $13 - x$
∴ The number = $10 \times x + (13 - x)$
According to the question,
$10 \times (13 - x) + x = 10 \times x + (13 - x) - 27$
$130 - 10x + x = 10x + 13 - x - 27$
$18x = 144$
$x = 8$
∴ The changed number,
$= 10 \times (13 - x) + x$
$= 10 \times (13 - 8) + 8$
$= 10 \times 5 + 8 = 58$

176. The sum of a two digit number is 9. The number is reduces from 45, when the digits are interchanged, find the changed number.
(a) 45 (b) 72
(c) 63 (d) 27

RRB NTPC 02.04.2016 Shift : 2

Ans : (d) Let the tens digit be = x
And the unit digit be = y
Number = 10 x + y
Then, x + y = 9 ……..(1)
According to the question, interchanging the place-
(10 x + y) – (10 y + x) = 45
9x – 9y = 45
x – y = 5 ..... (2)
From, equation (1) + (2)
$2x = 14 \Rightarrow x = 7$
From, equation (1),
y = 9–7 = 2
Hence, The required number = 10y+x = 10×2+7 = 27

177. The sum of digits of a two-digit number is 10. When the digits are reversed, the number decreases by 54. Find the new number.
(a) 73 (b) 28
(c) 82 (d) 37
RRB NTPC 02.04.2016 Shift : 3

Ans : (b) Let the tens digit of the number is x and the unit digit is y.
∴ The number = 10x + y
According to the question,
$x + y = 10$ ––––––––(i)
and $10x + y = 10y + x + 54$
$\Rightarrow 9x - 9y = 54 \Rightarrow x - y = 6$ –––––(ii)
By adding equation (i) and (ii),
$2x = 16 \Rightarrow x = 8, y = 2$
Hence, the new number
$= 10y + x = 10 \times 2 + 8 = 28$

178. The sum of digits of a two-digit number is 10. When the digits are inter changed, the number increases by 18. Find the number.
(a) 46 (b) 64
(c) 19 (d) 28
RRB NTPC 29.03.2016 Shift : 1

Ans : (a) Let the tens digit of the number is x and the unit digit is y.
∴ The number $= 10x + y$
According to the question-
$x + y = 10$ ---------- (i)
$10x + y = 10y + x - 18$
$9x - 9y = -18$
$x - y = -2$ ---------- (ii)
By adding equation (i) and (ii) -
$2x = 8 \Rightarrow x = 4$, $y = 6$
Hence, The required number $= 10 \times 4 + 6 = 46$

179. A two digits number and its digits the sum of the number formed by interchanging its digits, is 99. Find the number if the difference of the digits is 3.
(a) 27 (b) 63
(c) 45 (d) 54
RRB NTPC 10.04.2016 Shift : 3

Ans : (b) Let the unit digit be y and the tens digit be x.
∴ The number = 10x + y
According to the question,
(10x + y) + (10y + x) = 99
11x + 11y = 99
x + y = 9 ……(i)
x – y = 3 ……..(ii)
By adding equation (i) and (ii),
2x = 12
x = 6
From equation (i), y = 3
∴ The required number = 10x+y = 10×6+3 = 60+3= 63

180. The difference of a number and the number formed by interchanging its digits, is 54. Find the difference between the digits of the number.
(a) 6 (b) 7
(c) 8 (d) 9
RRB NTPC 06.04.2016 Shift : 1

Ans : (a) Let the tens digit of the number be x and the unit digit be y.
∴ The number = 10x + y
According to the question-
$(10x + y) - (10y + x) = 54$
$10x + y - 10y - x = 54$
$9x - 9y = 54$
$x - y = \frac{54}{9} = 6$
Hence, the difference between the digits is 6.

181. The sum of the digits of a two digit number is 5. When the digits are reversed the number decreases by 9. Find the changed number.
(a) 32 (b) 23
(c) 41 (d) 14
RRB NTPC 28.04.2016 Shift : 3

Ans : (b) Let the tens digit of the number be x and the unit digit be y.
∴ the number = 10x + y
According to first condition,
x + y = 5 ……(i)
The obtained number after reversing the digits = 10y+x
According to the question,
(10x+y) – (10y+x) = 9
$\Rightarrow 9x - 9y = 9$
$\Rightarrow x - y = 1$ .....(ii)
By adding equation (i) and (ii),
2x = 6
x = 3
From equation (ii)
3 – y = 1
y = 3–1 = 2
Hence, the changed number = 10y + x
= 10 × 2 + 3 = 23

Type - 11

182. What is the difference between the place and face values of '5' in the number 3675149?
(a) 5000 (b) 4995
(c) 495 (d) 4990
RRB JE - 23/05/2019 (Shift-I)

Ans : (b) The place value of 5 in the number 3675149 = 5×1000 = 5000
And the face value of 5 = 5
The difference = 5000–5 = 4995

183. What is the place value of 8 in 634785?
(a) 8 (b) 80
(c) 800 (d) 80,000
RRB RPF Constable -20/01/2019 (Shift-I)

Ans : (b) The place value of 8 in 634785 = 8 ×10 = 80

184. Find the sum of the face value and place value of 6 in the number 206743?
(a) 6749 (b) 12743
(c) 6006 (d) 12
RRB Group-D – 28/11/2018 (Shift-I)

Ans : (c) The face value of 6 in the number 206743 = 6
And the place value of 6 = 6 × 1000 = 6000
Face value + Place value = 6 + 6000 = 6006

185. The difference between two place values of 3 in 935071360 is-
(a) 29999700 (b) 29999701
(c) 2999600 (d) 29999400
RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) : The place value of 3 in 935071360,
935071360
↓ ↓→ = 3×100=300
↓→ =3×10000000=30000000
The required difference = 30000000–300 = $\boxed{29999700}$

186. Calculate the sum of the face value and the place value of 7 in the number 3728456.
(a) 700007 (b) 0
(c) 7 (d) 700000
RRB Group-D – 01/10/2018 (Shift-I)

Ans. (a) : The place value of 7 = 7 × 100000 = 700000
The face value of 7 = 7.
Hence, the required sum = 700000 + 7 = 700007

187. Find the face value of 4 in 145.390.
(a) 40,000 (b) 4
(c) 140,000 (d) 45
RRB NTPC 04.04.2016 Shift : 2

Ans : (b) The face value of any digit is the same digit.
in the number 145.390
the face value = 4

188. Find the difference between the place value and face value of the digit 9 in the number 229301?
(a) 9292 (b) 8991 (c) 0 (d) 220
RRB NTPC 03.04.2016 Shift : 2

Ans : (b) The place value of 9 in the number 229301 = 9 × 1000 = 9000
And the face value of 9 = 9
Hence, the required difference = 9000- 9 = 8991

189. What is the difference between the place value and face value of 3 in 273965?
(a) 2035 (b) 3962
(c) 2997 (d) 0
RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (c) : In the number 273965,
The place value of 3 = 3 x 1000 = 3000
And the face value = 3
Hence, the required difference = 3000 – 3 = 2997

190. The difference between the place values of '4' and '2' in the number 833749502 is:
(a) 49998 (b) 30098
(c) 39098 (d) 39998
RRB ALP & Tec. (10-08-18 Shift-II)

Ans : (d) The given number = 833749502
The place value of 2 = 2
The place value of 4 = 4 x 10000 = 40000
Hence, the required difference = 40000 – 2 = 39998

Type - 12

191. Solve: $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+.....$
(a) 2 (b) 1/50
(c) 3 (d) 1/22
RRB JE - 23/05/2019 (Shift-I)

Ans : (a)
$1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+.....$
This is a geometrical progression-
$a=1,\quad r=\frac{1}{2}$
Let the sum be S.
$S=\frac{a}{1-r}$, $S_\infty=\frac{1}{1-\frac{1}{2}}$
$S_\infty=\frac{1}{\frac{1}{2}}=2$ $\boxed{S_\infty=2}$

192. In a school picnic group, 2/9th part were adults and the number of children was more than adults by 95. How many children were present there?
(a) 95 (b) 133
(c) 190 (d) 103
RRB JE - 27/06/2019 (Shift-I)

Ans : (b) Let the total number = x
The number of adults = $x\times\frac{2}{9}=\frac{2x}{9}$
The number of children = $x-\frac{2x}{9}=\frac{9x-2x}{9}=\frac{7x}{9}$
$\frac{7x}{9}-\frac{2x}{9}=95$
$\frac{7x-2x}{9}=95$

$\frac{5x}{9} = 95$

x = 171

Hence, the number of children $= \frac{7x}{9} = \frac{7}{9} \times 171 = 133$

193. Find the value of 52-|8-20|=

(a) 45 (b) 40
(c) 65 (d) 64

RRB RPF Constable -18/01/2019 (Shift-I)

Ans : (b) The given value = $52 - |8 - 20|$

$= 52 - |-12|$

$|-A| = A$ The value of Mod is always +ve.

Hence, the required value $= 52 - 12 = 40$

194. If one dozen of apples weigh 1.8 kg, then find the number of apples of three boxes whose total weight is 23.25 kg.

(a) 280 (b) 155
(c) 465 (d) 215

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

Ans : (b) Total weight = 23.25 kg

One apples's weight $= \frac{1.8}{12}$ kg

The required number of apples,

$= \frac{\text{Total weight}}{\text{1 apple's weight}} = \frac{23.25 \times 12}{1.8} = 155$

Number of apples is box is = 155

195. Pick out the set that forms the factors of 36.

(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)

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

Ans : (c) All the factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
Hence, the required set that is formed by the factors of 36 will be = (2, 3, 4, 6, 9, 12, 18)

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

(a) 21 (b) 37
(c) 28 (d) 51

RRB JE - 26/06/2019 (Shift-I)

Ans. (b) Let the numbers be x and y respectively.

$x - y = 5$ (i)

$xy = 336$ (ii)

$(x + y)^2 = (x-y)^2 + 4xy$

From equation (i) and (ii),

$(x + y)^2 = (5)^2 + 4 \times 336$

$(x + y)^2 = 25 + 1344$

$(x + y)^2 = 1369$

$(x + y) = \sqrt{1369}$

$x + y = 37$

Hence, the required sum of the numbers =37

197. The square of a number is 3 more than twice the number. What is the possible number.

(a) 1 or 3 (b) 1 or -3
(c) -1 or -3 (d) -1 or 3

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (d) Let the number be x

According to the question,

$x^2 = 2x + 3$

$x^2 - 2x - 3 = 0$

$x^2 - 3x + x - 3 = 0$

$x(x - 3) + 1(x - 3) = 0$

$(x - 3)(x + 1) = 0$

$x - 3 = 0$

$x = 3$

$x + 1 = 0$

$x = -1$

Hence, the possible number is -1 or 3.

198. $\left(\frac{3}{10} + \frac{8}{15}\right)$ is directly proportional to-

(a) $\frac{11}{10}$ (b) $\frac{11}{15}$
(c) $\frac{6}{5}$ (d) $\frac{3}{15}$

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (c) $\left(\frac{3}{10} + \frac{8}{15}\right)$ is directly proportional to-

$\frac{9+16}{30} = \frac{25}{30} = \frac{5}{6}$

$\frac{5}{6}$ is directly proportional to $= \frac{1}{\frac{5}{6}} = \frac{6}{5}$

199. Subtract 64.37 out of 1000.03 and add the resultant obtained from it to the sum of 3.4 and 7.56. What will be its value?

(a) 948.62 (b) 944.62
(c) 945.62 (d) 946.62

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (d) According to the question,

$1000.03 - 64.37 = 935.66$

$935.66 + (3.4 + 7.56) = 935.66 + 10.96 = 946.62$

200. Seema got ₹ 50 from her father and purchased toffee from ₹ 15. Her mother gave her ₹ 30 while her brother took ₹ 42 from her. How much money did she have left?

(a) ₹ 23 (b) ₹ 24
(c) ₹ 20 (d) ₹ 25

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (a) Total sum of money that Seema have left
= 50-15+30-42 = 80-57 = ₹ 23

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

(a) 15.729 kg (b) 25.964 kg
(c) 26.964 kg (d) 28.964 kg

RRB NTPC 29.03.2016 Shift : 1

Ans :(c) Geeta's weight $= 11.235$ kg

$\therefore$ The weight of Geeta's sister

$= 11.235 \times 1.4 = 15.729$ kg

The total weight of both is

$= 11.235 + 15.729 = 26.964$ kg

02.

Decimal Fractions

Type - 1

1. Find the greatest among these fractions.
5/6, 6/11, 2/3, 8/9, 6/7
(a) 2/3 (b) 8/9
(c) 5/6 (d) 6/7
RRB JE - 01/06/2019 (Shift-III)

Ans. (b) From question :-
$\frac{5}{6} = 0.83$
$\frac{6}{11} = 0.54$
$\frac{2}{3} = 0.67$
$\frac{8}{9} = 0.89$
$\frac{6}{7} = 0.85$
Hence, the greatest fraction is $0.89 = \frac{8}{9}$

2. Find the difference between the greatest and the least fraction among 2/3, 3/4, 4/5, 5/6.
(a) 3/5 (b) 1/7 (c) 1/6 (d) 2/5
RRB JE - 22/05/2019 (Shift-I)

Ans : (c) $\frac{2}{3} = 0.66$ the least fraction,
$\frac{3}{4} = 0.75$
$\frac{4}{5} = 0.8$
$\frac{5}{6} = 0.83$ the greatest fraction,
Hence, the required difference = $\frac{5}{6} - \frac{2}{3} = \frac{5-4}{6} = \frac{1}{6}$

3. Which of the following is the greatest?
(a) 15/16 (b) 24/25
(c) 34/35 (d) 19/20
RRB JE - 02/06/2019 (Shift-II)

Ans. (c) 15/16 = 0.937
24/25 = 0.96
34/35 = 0.97 (the greatest fraction)
19/20 = 0.95

4. Find the greatest among these fractions.
5/11, 3/15, 12/11, 4/7, 9/12
(a) 12/11 (b) 3/15
(c) 9/12 (d) 4/7
RRB RPF-SI -10/01/2019 (Shift-I)

Ans : (a)
$\frac{5}{11} = 0.45,\ \frac{3}{15} = 0.2,\ \frac{12}{11} = 1.09,\ \frac{4}{7} = 0.57,\ \frac{9}{12} = 0.75$
Hence, the required largest fraction will be $= \frac{12}{11}$

5. Find the least among these fractions.
$\frac{1}{10}, \frac{1}{100}, \frac{9}{1000}, \frac{500}{10000}$
(a) $\frac{500}{10000}$ (b) $\frac{1}{100}$
(c) $\frac{1}{10}$ (d) $\frac{9}{1000}$
RRB RPF Constable -17/01/2019 (Shift-I)

Ans. (d) : $\frac{1}{10} = 0.1$
$\frac{1}{100} = 0.01$
$\frac{9}{1000} = 0.009$
$\frac{500}{10000} = 0.05$
0.1 > 0.05 > 0.01 > 0.009
Hence, it is clear that the required fraction is $\frac{9}{1000}$.

6. Which of the following fractions is the greatest?
(a) 8/19 (b) 9/22
(c) 10/23 (d) 11/24
RRB RPF-SI -11/01/2019 (Shift-III)

Ans : (d) From options
$\frac{8}{19} = 0.421, \frac{9}{22} = 0.409, \frac{10}{23} = 0.43, \frac{11}{24} = 0.458$
Hence, the required greatest fraction is $\frac{11}{24}$.

7. Arrange the following ratios in decreasing order, which number will be the last?
11:14, 17:21, 5:7, 2:3
(a) 17:21 (b) 5:7
(c) 2:3 (d) 11:14
RRB Group-D – 05/10/2018 (Shift-II)

Ans. (c) The given proportional numbers are-
$\frac{11}{14}, \frac{17}{21}, \frac{5}{7}, \frac{2}{3} = \frac{33}{42}, \frac{34}{42}, \frac{30}{42}, \frac{28}{42}$
The decreasing order of the numbers,
$\frac{17}{21} > \frac{11}{14} > \frac{5}{7} > \frac{2}{3}$
Hence, the least proportional number will be 2/3.

8. Which of the following fractions is the largest?

$\frac{1}{8}, \frac{2}{12}, \frac{3}{16}, \frac{4}{20}$

(a) $\frac{3}{16}$ (b) $\frac{4}{20}$

(c) $\frac{1}{8}$ (d) $\frac{2}{12}$

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (b) $\frac{1}{8} = 0.125$

$\frac{2}{12} = 0.166$

$\frac{3}{16} = 0.187$

$\frac{4}{20} = 0.200$

Hence, it is clear that $\frac{4}{20}$ is the greatest fraction.

9. Which of the following fractions is the largest?

$\frac{3}{15}, \frac{5}{20}, \frac{8}{64}, \frac{25}{1000}$

(a) $\frac{5}{20}$ (b) $\frac{8}{64}$

(c) $\frac{3}{15}$ (d) $\frac{25}{1000}$

RRB Group-D – 10/10/2018 (Shift-III)

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 largest fraction is $\frac{5}{20}$.

10. Which of the following is the smallest fraction?

$\frac{4}{9}, \frac{5}{4}, \frac{3}{8}, \frac{6}{7}$

(a) $\frac{3}{8}$ (b) $\frac{4}{9}$

(c) $\frac{6}{7}$ (d) $\frac{5}{4}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (a)

$\frac{4}{9} = 0.444$

$\frac{5}{4} = 1.25$

$\boxed{\frac{3}{8} = 0.375}$

$\frac{6}{7} = 0.857$

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

11. Which of the following fractions is the largest?

(a) $\frac{29}{77}$ (b) $\frac{8}{21}$

(c) $\frac{5}{14}$ (d) $\frac{25}{66}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (b) $\frac{29}{77} = 0.376$

$\boxed{\frac{8}{21} = 0.380}$

$\frac{5}{14} = 0.357$, $\frac{25}{66} = 0.378$

Hence, it is clear that $\frac{8}{21}$ is the largest fraction.

12. Which of the following is the smallest fraction?

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

(a) $\frac{19}{36}$ (b) $\frac{13}{18}$

(c) $\frac{6}{11}$ (d) $\frac{5}{6}$

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (a) : $\frac{6}{11}, \frac{13}{18}, \frac{15}{22}, \frac{19}{36}, \frac{5}{6}$

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

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

$\frac{5}{6} = 0.83$

Hence, it is clear that the smallest fraction is $\frac{19}{36}$.

13. $\frac{8}{6}, \frac{6}{4}, \frac{5}{3}, \frac{9}{5}$

The largest fraction among the given fractions is:

(a) $\frac{5}{3}$ (b) $\frac{6}{4}$

(c) $\frac{9}{5}$ (d) $\frac{8}{6}$

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans. (c) : $\frac{8}{6} = 1.33$, $\frac{6}{4} = 1.50$

$\frac{5}{3} = 1.66$, $\frac{9}{5} = 1.80$

Hence, it is clear that the required largest fraction is $\frac{9}{5}$.

14. Which of the following is the smallest fraction?

$\frac{3}{15}, \frac{5}{20}, \frac{8}{64}, \frac{25}{1000}$

(a) $\frac{8}{64}$ (b) $\frac{25}{1000}$

(c) $\frac{5}{20}$ (d) $\frac{3}{15}$

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (b)

$\frac{3}{15} = 0.2, \quad \frac{5}{20} = 0.25$

$\frac{8}{64} = 0.125, \quad \frac{25}{1000} = 0.025$

Hence, the required smallest fraction is $\frac{25}{1000}$.

15. Which of the following fractions is the least of all?
3/4, 3/5, 3/8, 3/11

(a) 3/4 (b) 3/7

(c) 3/11 (d) 3/8

RRB NTPC 31.03.2016 Shift : 3

Ans : (c) $\frac{3}{4}, \frac{3}{5}, \frac{3}{8}, \frac{3}{11}$

$\because$ The numerators of all the fractions are same, so the fraction of the greatest denominator will be the least of all.

Hence, the required fraction will be $\frac{3}{11}$.

16. Which of the following fractions is the least of all?

(a) 6/5 (b) 4/3

(c) 3/2 (d) 5/4

RRB NTPC 29.03.2016 Shift : 3

Ans : (a)

$\frac{6}{5} = 1.2, \quad \frac{4}{3} = 1.33$

$\frac{3}{2} = 1.5, \quad \frac{5}{4} = 1.25$

Hence, it is clear that $\frac{6}{5}$ is the required least fraction of all.

17. Which of the following fractions is largest?

(a) 3/4 (b) 4/5

(c) 5/6 (d) 7/8

RRB NTPC 27.04.2016 Shift : 1

Ans : (d) $\frac{3}{4} = 0.75$, $\frac{4}{5} = 0.80$, $\frac{5}{6} = 0.833$, $\frac{7}{8} = 0.875$

Hence, the required largest fraction is $\frac{7}{8}$.

18. The smallest of the fractions among 5/8, 3/4, 13/16, 7/12 is_____.

(a) 5/8 (b) 3/4

(c) 13/16 (d) 7/12

RRB NTPC 27.04.2016 Shift : 2

Ans : (d)

$\frac{5}{8} = 0.625, \quad \frac{3}{4} = 0.75, \quad \frac{13}{16} = 0.8125$

$\frac{7}{12} = 0.58$

Hence, the smallest fraction is $\frac{7}{12}$.

19. Which of the following fractions is the least?

(a) $\frac{3}{4}$ (b) $\frac{4}{5}$

(c) $\frac{5}{6}$ (d) $\frac{6}{7}$

RRB NTPC 29.04.2016 Shift : 3

Ans. (a) : From options,

$\frac{3}{4} = 0.75, \quad \frac{4}{5} = 0.80$

$\frac{5}{6} = 0.83, \quad \frac{6}{7} = 0.85$

Hence, the required least fraction is $\frac{3}{4}$.

20. Which of the following is the least fraction?

(a) 3/5 (b) 5/6

(c) 2/3 (d) 4/5

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) $\frac{3}{5} = 0.6, \frac{5}{6} = 0.83, \frac{2}{3} = 0.66, \frac{4}{5} = 0.8$

Hence, it is clear that the least fraction will be $\frac{3}{5}$.

21. Which of the following is a reducible fraction?

(a) $\frac{91}{15}$ (b) $\frac{79}{26}$

(c) $\frac{105}{112}$ (d) $\frac{41}{17}$

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (c) A fraction whose fractional shares have a common factor, is called reducible fraction.

$\frac{105}{112} = \frac{7 \times 15}{7 \times 16}$

Type - 2

22. Arrange the following fractions in descending order.
5/6, 3/7, 8/9, 3/14

(a) 8/9, 5/6, 3/7, 3/14 (b) 8/9, 3/14, 3/7, 5/6

(c) 5/6, 8/9, 3/7, 3/14 (d) 3/7, 8/9, 5/6, 3/14

RRB JE - 22/05/2019 (Shift-III)

Ans : (a)

$\frac{5}{6} = 0.83, \quad \frac{3}{7} = 0.42, \quad \frac{8}{9} = 0.88, \quad \frac{3}{14} = 0.21$

Hence, the descending order of the fractions is $\frac{8}{9}, \frac{5}{6}, \frac{3}{7}, \frac{3}{14}$.

23. Which of the following fractions are in descending order?

(a) 5/8, 7/12, 3/4, 13/16
(b) 7/12, 13/16, 3/4, 5/8
(c) 5/8, 7/12, 13/16, 3/4
(d) 13/16, 3/4, 5/8, 7/12

RRB JE - 26/06/2019 (Shift-III)

Ans : (d) Arranging 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 = 0.58
Hence, option (d) is in descending order.

24. Which of the following fractions are in ascending order?

(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

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

Ans : (c)
$0.65 < 0.67 < 0.76 < 0.86$
Hence, option (c) is in ascending order.

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

(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<32/47<25/27

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

Ans : (c) The given fractions–
$\frac{13}{33} = 0.\overline{39}, \frac{20}{47} = 0.42$
$\frac{32}{47} = 0.68, \frac{25}{27} = 0.92$
$0.\overline{39} < 0.42 < 0.68 < 0.92$
Hence, $\frac{13}{33} < \frac{20}{42} < \frac{32}{47} < \frac{25}{27}$

26. Which from the following is in descending order?

(a) 2/3, 3/4, 4/5, 1/2
(b) 3/4, 4/5, 1/2, 2/3
(c) 4/5, 3/4, 2/3, 1/2
(d) 4/5, 1/2, 2/3, 3/4

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

Ans : (c) From option (c),
$\frac{4}{5}, \frac{3}{4}, \frac{2}{3}, \frac{1}{2}$
$\because$ LCM of the denominators = 60
Hence, again from option (c),
$= \frac{48}{60} > \frac{45}{60} > \frac{40}{60} > \frac{30}{60}$
Hence, $\frac{4}{5}, \frac{3}{4}, \frac{2}{3}, \frac{1}{2}$ are in descending order.

27. Whose ascending order from the following numbers is correct?

(a) $\frac{5}{6}, \frac{3}{5}, \frac{7}{9}$
(b) $\frac{3}{5}, \frac{5}{6}, \frac{7}{9}$
(c) $\frac{3}{5}, \frac{7}{9}, \frac{5}{6}$
(d) $\frac{7}{9}, \frac{3}{5}, \frac{5}{6}$

RRB RPF Constable -20/01/2019 (Shift-I)

Ans : (c) The given fractions,
$\frac{5}{6} = 0.83$ $\frac{3}{5} = 0.6$
$\frac{7}{9} = 0.77$
The required ascending order is 0.6, 0.77, 0.83
$= \frac{3}{5}, \frac{7}{9}, \frac{5}{6}$

28. Find the value of $\sqrt{2}$ to eight digits of decimal.

(a) 1.41421356
(b) 1.41421354
(c) 1.41421346
(d) 1.41421366

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (a) Extracting the square root of $2.\overline{00}\,\overline{00}\,\overline{00}\,\overline{00}\,\overline{00}\,\overline{00}\,\overline{00}\,\overline{00}$ by division method, the result of 8-digit number 1.41421356, is obtained.
That is $\sqrt{2} = 1.41421356$

29. Which among the following is the correct ascending order of the numbers?

(a) $\frac{1}{3}, \frac{4}{15}, 0.33$
(b) $\frac{1}{3}, 0.33, \frac{4}{15}$
(c) $\frac{4}{15}, 0.33, \frac{1}{3}$
(d) $0.33, \frac{4}{15}, \frac{1}{3}$

RRB NTPC 17.01.2017 Shift-1

Ans : (c) From the given fractions,
$\frac{1}{3} = 0.333, \frac{4}{15} = 0.266$ and 0.33
$0.266<0.33<0.333$
$\frac{4}{15} < 0.33 < \frac{1}{3}$
Hence, the required ascending order of the numbers will be $\frac{4}{15}, 0.33, \frac{1}{3}$.

30. The correct ascending order of the given numbers is:

(a) $\frac{3}{10}, \frac{9}{15}, \frac{1}{3}$
(b) $\frac{4}{15}, \frac{1}{3}, \frac{1}{10}$
(c) $\frac{1}{3}, \frac{3}{10}, \frac{4}{15}$
(d) $\frac{4}{15}, \frac{3}{10}, \frac{1}{3}$

RRB NTPC 17.01.2017 Shift-3

Ans : (d) $\frac{3}{10} = 0.30, \frac{4}{15} = 0.26, \frac{1}{3} = 0.33$
$0.26 < 0.30 < 0.33$
Hence, the required ascending order is $\frac{4}{15} < \frac{3}{10} < \frac{1}{3}$.

31. Which of the following is correct for the given numbers?
(a) 12/43<32/67<45/81<22/55
(b) 12/43<22/55<45/81<32/67
(c) 12/43<32/67<22/55<45/81
(d) 12/43<22/55<32/67<45/81

RRB NTPC 04.04.2016 Shift : 3

Ans : (d) From options,

$$\frac{12}{43}=0.27,\ \frac{32}{67}=0.47,\ \frac{45}{81}=0.55,\ \frac{22}{55}=0.4$$

$$\frac{12}{43}<\frac{22}{55}<\frac{32}{67}<\frac{45}{81}$$

Hence, $0.27 < 0.4 < 0.47 < 0.55$

32. Which one is correct for the following given numbers?
(a) 25/51 < 12/19 < 47/63 < 63/79
(b) 25/51 < 63/79 < 12/19 < 47/63
(c) 12/19 < 25/51 < 63/79 < 47/63
(d) 63/79 < 47/63 < 12/19 < 25/51

RRB NTPC 03.04.2016 Shift : 3

Ans : (a)

$$\frac{25}{51}=0.490 \qquad \frac{12}{19}=0.631$$

$$\frac{47}{63}=0.746 \qquad \frac{63}{79}=0.797$$

The correct order is 0.490 < 0.631 < 0.746 < 0.797

Hence, $\frac{25}{51}<\frac{12}{19}<\frac{47}{63}<\frac{63}{79}$

33. Which of the following is correct for the given numbers?
(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

RRB NTPC 02.04.2016 Shift : 1

Ans : (d) $\frac{13}{21}=0.619,\qquad \frac{57}{97}=0.587$

$$\frac{52}{94}=0.553,\qquad \frac{36}{79}=0.455$$

Hence, $\frac{36}{79}<\frac{52}{94}<\frac{57}{97}<\frac{13}{21}$

34. Which of the following is correct for the given numbers?
(a) 3/8 < 19/73 < 29/47 < 17/39
(b) 19/73 < 3/8 < 17/39 < 29/47
(c) 19/73 < 3/8 < 29/47 < 17 / 39
(d) 19/73 < 29/47 < 3/8 < 17/39

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) From the given fractions,

$$\frac{3}{8}=0.37$$

$$\frac{19}{73}=0.26$$

$$\frac{29}{47}=0.61$$

$$\frac{17}{39}=0.43$$

Hence, the correct order is $\frac{19}{73}<\frac{3}{8}<\frac{17}{39}<\frac{29}{47}$

35. Which of the following is in ascending order?
(a) 2/3, 3/4, 4/5, 1/2
(b) 3/3, 4/5, 1/2, 2/3
(c) 1/2, 2/3, 3/4, 4/5
(d) 4/5, 1/2, 2/3, 3/4

RRB NTPC 30.03.2016 Shift : 1

Ans : (c) Solving the options,

(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 an ascending order of the given fractions.

36. Arrange the following fractions in correct descending order.
(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

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) The given fractions,

$$\frac{24}{29}=0.827,\qquad \frac{5}{13}=0.384$$

$$\frac{7}{9}=0.777,\qquad \frac{11}{47}=0.234$$

Hence, arranging into descending order-

$$\frac{24}{29},\frac{7}{9},\frac{5}{13},\frac{11}{47}$$

37. Which is the correct ascending order of the given numbers?
(a) $\frac{2}{3},\frac{5}{6},\frac{3}{4}$ (b) $\frac{3}{4},\frac{2}{3},\frac{5}{6}$
(c) $\frac{2}{3},\frac{3}{4},\frac{5}{6}$ (d) $\frac{5}{6},\frac{3}{4},\frac{2}{3}$

RRB NTPC 11.04.2016 Shift : 1

Ans : (c) From the given fractions,

$$\frac{2}{3}=0.66.....$$

$$\frac{5}{6}=0.83.....$$

$$\frac{3}{4}=0.75.....$$

Arranging into ascending order- 0.66 < 0.75 < 0.83

$$\Rightarrow \frac{2}{3},\frac{3}{4},\frac{5}{6}$$

38. Which is the correct ascending order of the given numbers?

(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

RRB NTPC 11.04.2016 Shift : 2

Ans : (c) $\frac{1}{3} = 0.33$

$\frac{1}{5} = 0.2$, $\frac{2}{5} = 0.4$

Hence, the required ascending order is 0.2, 0.3, 0.4

$= \frac{1}{5}, \frac{1}{3}, \frac{2}{5}$

39. Whose ascending order is correct from the given fractions?

(a) $\frac{5}{8}, \frac{19}{24}, \frac{11}{16}$ (b) $\frac{11}{16}, \frac{5}{8}, \frac{19}{24}$

(c) $\frac{5}{8}, \frac{11}{16}, \frac{19}{24}$ (d) $\frac{19}{24}, \frac{11}{16}, \frac{5}{8}$

RRB NTPC 11.04.2016 Shift : 3

Ans : (c) $\frac{5}{8} = 0.625$ $\frac{19}{24} = 0.791$ $\frac{11}{16} = 0.687$

Hence, the required ascending order is 0.625 < 0.687 < 0.791

$\Rightarrow \frac{5}{8} < \frac{11}{16} < \frac{19}{24}$

40. Which one is correct for the following given numbers?

(a) 13/41 < 32/67<45/81<23/53

(b) 13/41 < 23/53 < 45/81 < 32/67

(c) 13/41<32/67 < 23/53 < 45/81

(d) 13/41 < 23/53 < 32/67 < 45/81

RRB NTPC 10.04.2016 Shift : 3

Ans : (d) From given fractions,

$\frac{13}{41} = 0.31$, $\frac{32}{67} = 0.47$

$\frac{45}{81} = 0.55$, $\frac{23}{53} = 0.43$

0.31 < 0.43 < 0.47 < 0.55

$\Rightarrow \frac{13}{41} < \frac{23}{53} < \frac{32}{67} < \frac{45}{81}$

41. Arrange the following fractions in ascending order.

(a) 11/17 < 41/63 < 3/7 <21/29

(b) 41/63 < 3/7 < 21/29 <11/17

(c) 3/7 < 11/17 < 41/63 < 21/29

(d) 3/7 < 11/17 < 21/29 < 41/63

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) $\frac{11}{17} = 0.64, \frac{41}{63} = 0.65$

$\frac{3}{7} = 0.42, \frac{21}{29} = 0.72$

Hence, the required ascending order is 0.42, 0.64, 0.65, 0.72 = $\frac{3}{7} < \frac{11}{17} < \frac{41}{63} < \frac{21}{29}$

42. Which of the following given numbers is in ascending order?

(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) $\frac{1}{3}, \frac{2}{8}, 0.3$

RRB NTPC 07.04.2016 Shift : 2

Ans : (c) From given fractions,

$\frac{1}{3} = 0.33, \frac{2}{8} = 0.25$ and 0.3

Arranging in ascending order-

$0.25 < 0.3 < 0.33 = \frac{2}{8}, 0.3, \frac{1}{3}$

43. What is the correct ascending order of the following numbers?

$\frac{3}{4}, \frac{17}{24}, \frac{2}{3}$

(a) $\frac{17}{24}, \frac{3}{4}, \frac{2}{3}$ (b) $\frac{3}{4}, \frac{2}{3}, \frac{17}{24}$

(c) $\frac{2}{3}, \frac{3}{4}, \frac{17}{24}$ (d) $\frac{2}{3}, \frac{17}{24}, \frac{3}{4}$

RRB NTPC 19.01.2017 Shift : 1

Ans : (d)

$\frac{3}{4} = 0.75$, $\frac{17}{24} = 0.708\overline{3}$, $\frac{2}{3} = 0.\overline{6}$

Hence, the correct ascending order is $\frac{2}{3}, \frac{17}{24}, \frac{3}{4}$.

44. Which is the correct ascending order of the given numbers?

(a) $\frac{3}{7}, 0.3, \frac{2}{7}$ (b) $0.3, \frac{2}{7}, \frac{3}{7}$

(c) $\frac{2}{7}, 0.3, \frac{3}{7}$ (d) $\frac{2}{7}, \frac{3}{7}, 0.3$

RRB NTPC 22.04.2016 Shift : 2

Ans : (c) Denoting the given fractions in decimals,

$0.3, \frac{3}{7} = 0.42, \frac{2}{7} = 0.28$

Hence, the required ascending order is 0.28, 0.3, 0.42 = $\frac{2}{7}, 0.3, \frac{3}{7}$

45. Which is the correct ascending order of the given numbers?

(a) $\frac{1}{2}, \frac{2}{3}, \frac{7}{12}$ (b) $\frac{7}{12}, \frac{2}{3}, \frac{1}{2}$

(c) $\frac{1}{2}, \frac{7}{12}, \frac{2}{3}$ (d) $\frac{2}{3}, \frac{1}{2}, \frac{7}{12}$

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) Denoting the given fractions in decimals,

$\frac{1}{2} = 0.5$, $\frac{2}{3} = 0.66$, $\frac{7}{12} = 0.58$

Hence, the correct ascending order is 0.5, 0.58, 0.66

$= \frac{1}{2} < \frac{7}{12} < \frac{2}{3}$.

46. Which is the correct ascending order of the given numbers?

(a) $\frac{1}{3},\frac{3}{4},\frac{5}{8}$ (b) $\frac{5}{8},\frac{3}{4},\frac{1}{3}$

(c) $\frac{1}{3},\frac{5}{8},\frac{3}{4}$ (d) $\frac{3}{4},\frac{1}{3},\frac{5}{8}$

RRB NTPC 26.04.2016 Shift : 3

Ans : (c) $\frac{1}{3}=0.33,\ \frac{3}{4}=0.75,\ \frac{5}{8}=0.625$

Hence, the required ascending order is $\frac{1}{3},\frac{5}{8},\frac{3}{4}$.

47. What is the correct ascending order for the given fractions?

(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

RRB NTPC 28.04.2016 Shift : 2

Ans : (b) $\frac{22}{7}=3.14,\ \frac{13}{17}=0.76$

$\frac{11}{19}=0.57,\ \frac{2}{3}=0.67$

Hence, the ascending order will be $\frac{11}{19}<\frac{2}{3}<\frac{13}{17}<\frac{22}{7}$

48. Write the correct ascending order of the given fractions.

(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

RRB NTPC 28.04.2016 Shift : 3

Ans : (b) From options,

$\because \frac{15}{41}=0.365,\quad \frac{3}{7}=0.428$

$\frac{19}{35}=0.542,\quad \frac{7}{11}=0.636$

Hence, the ascending order is $\frac{15}{41}<\frac{3}{7}<\frac{19}{35}<\frac{7}{11}$.

49. Which is the correct ascending order of the given numbers?

(a) $\frac{5}{6},\frac{11}{12},\frac{8}{9}$ (b) $\frac{8}{9},\frac{5}{6},\frac{11}{12}$

(c) $\frac{5}{6},\frac{8}{9},\frac{11}{12}$ (d) $\frac{11}{12},\frac{8}{9},\frac{5}{6}$

RRB NTPC 30.04.2016 Shift : 3

Ans : (c) from options,

$\frac{5}{6}=0.83$

$\frac{11}{12}=0.92$

$\frac{8}{9}=0.88$

Hence, the required ascending order of the numbers is $\frac{5}{6},\frac{8}{9},\frac{11}{12}$.

Type - 3

50. Which of the following is terminating decimal?

(a) $\frac{1}{32}$ (b) $\frac{1}{24}$

(c) $\frac{1}{96}$ (d) $\frac{1}{48}$

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

Ans : (a) From options,

$\frac{1}{32}=0.03125$

$\frac{1}{24}=0.416666667$

$\frac{1}{96}=0.0104166667$

$\frac{1}{48}=0.0208333333$

If the number obtained by dividing a number, the digits do not repeat over and over. We call it a terminating decimal.

$\therefore\ \frac{1}{32}=0.03125$

Hence, option (a) $\frac{1}{32}$ is in terminating decimal.

51. Which of the following will have a terminating decimal expansion?

(a) $\frac{57}{120}$ (b) $\frac{47}{150}$

(c) $\frac{61}{110}$ (d) $\frac{43}{140}$

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (a) From options,

(a) $\frac{57}{120}=0.475$

(b) $\frac{47}{150}=0.31\overline{3}$

(c) $\frac{61}{110}=0.55\overline{45}$

(d) $\frac{43}{140}=0.30\overline{714285}$

Hence, $\frac{57}{120}$ will have a terminating decimal expansion.

52. Which of the following numbers will have a value of terminating decimal?

(a) $\frac{9}{45}$ (b) $\frac{6}{45}$

(c) $\frac{3}{45}$ (d) $\frac{12}{45}$

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (a) $\frac{9}{45} = 0.2$

$\frac{6}{45} = 0.1333$

$\frac{3}{45} = 0.06667$

$\frac{12}{45} = 0.26667$

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

53. Which of the following will give expiration decimal?

(a) $\frac{12}{72}$ (b) $\frac{6}{72}$

(c) $\frac{9}{72}$ (d) $\frac{3}{72}$

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) $\frac{12}{72} = \frac{1}{6} = 0.166666---$

$\frac{6}{72} = \frac{1}{12} = 0.083333---$

$\frac{9}{72} = \frac{1}{8} = 0.125$

$\frac{3}{72} = \frac{1}{24} = 0.041666----$

Hence, option (c) $\frac{9}{72} = \frac{1}{8} = 0.125$ is correct.

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

(a) $\frac{20}{56}$ (b) $\frac{25}{56}$

(c) $\frac{10}{56}$ (d) $\frac{21}{56}$

RRB Group-D – 20/09/2018 (Shift-I)

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 option (d) $\frac{21}{56} = 0.375$ is not in recurring decimal.

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

(a) $\frac{24}{60}$ (b) $\frac{24}{90}$

(c) $\frac{24}{120}$ (d) $\frac{24}{30}$

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (b) (a) $\frac{24}{60} = 0.4$ (b) $\frac{24}{90} = 0.266$

(c) $\frac{24}{120} = 0.2$ (d) $\frac{24}{30} = 0.8$

Hence, option (b) $\frac{24}{90}$ is an example of recurring decimal.

56. Which of the following vulgar fractions, when written as a decimal and its value will not be found in a terminating decimal?

(a) $\frac{27}{480}$ (b) $\frac{21}{640}$

(c) $\frac{81}{450}$ (d) $\frac{240}{450}$

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (d) (a) $\frac{27}{480} = 0.05625$

(b) $\frac{21}{640} = 0.0328125$

(c) $\frac{81}{450} = 0.18$

(d) $\frac{240}{450} = 0.5333 = 0.5\overline{3}$

Hence, it is clear that option (d) $\frac{240}{450} = 0.5333 = 0.5\overline{3}$ is not giving a value in terminating decimal.

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

(a) $\frac{6}{144}$ (b) $\frac{12}{144}$

(c) $\frac{3}{144}$ (d) $\frac{9}{144}$

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (d) $\frac{6}{144} = \frac{3}{72} = \frac{1}{24} = 0.041\overline{6}$

$\frac{12}{144} = \frac{1}{12} = 0.08\overline{3}$

$\frac{3}{144} = \frac{1}{48} = 0.0208\overline{3}$

$\frac{9}{144} = \frac{1}{16} = 0.0625$

Hence, it is clear that option (d) $\frac{9}{144} = \frac{1}{16} = 0.0625$ is a terminating decimal fraction.

58. Which of the following is terminating decimal expansion?

(a) $\frac{1}{6}$ (b) $\frac{17}{25}$

(c) $\frac{10}{3}$ (d) $\frac{1}{11}$

RRB NTPC 17.01.2017 Shift-2

Ans : (b) (a) $\frac{1}{6} = 0.166$ ……. (Non-terminating)

(b) $\frac{17}{25} = 0.68$ …….. (Terminating)

(c) $\frac{10}{3} = 3.33$ …….... (Non-terminating)

(d) $\frac{1}{11} = 0.090909$ … (Non-terminating)

Hence, option (b) is terminating decimal.

59. Which of the following will yield a recurring decimal?

(a) $\frac{21}{30}$ (b) $\frac{21}{120}$

(c) $\frac{21}{60}$ (d) $\frac{21}{90}$

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

Ans : (d) $\frac{21}{30} = 0.7$, $\frac{21}{120} = 0.175$, $\frac{21}{60} = 0.35$

$\frac{21}{90} = 0.23333 \Rightarrow 0.2\overline{3}$

Hence option (d) is recurring decimal.

60. Which of the following will give a terminating decimal?

(a) $\frac{3}{36}$ (b) $\frac{12}{36}$

(c) $\frac{9}{36}$ (d) $\frac{6}{36}$

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

Ans : (c) From option (c),

$$\frac{9}{36} = \frac{1}{4} = 0.25$$

Hence, it is clear that option (c) is a fraction of terminating decimal.

61. The fraction from the ones listed below that will not lead to a recurring decimal is:

(a) $\frac{8}{56}$ (b) $\frac{6}{56}$

(c) $\frac{4}{56}$ (d) $\frac{7}{56}$

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (d) From options,

(a) $\frac{8}{56} = 0.142857.....$

(b) $\frac{6}{56} = 0.107142.....$

(c) $\frac{4}{56} = 0.071428.....$

(d) $\frac{7}{56} = 0.125$

Type - 4

62. Evaluate:

$0.6\overline{23}$

(a) $\frac{623}{999}$ (b) $6\frac{23}{999}$

(c) $\frac{617}{990}$ (d) $6\frac{23}{990}$

RRB JE - 31/05/2019 (Shift-II)

Ans : (c) $0.6\overline{23}$

$= \frac{623-6}{990}$ (From decimal fraction system)

$= \frac{617}{990}$

63. Find the value of $0.1\overline{8}$.

(a) 27/90 (b) 17/90

(c) 17/100 (d) 18/100

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

Ans : (b) $0.1\overline{8}$

$= \frac{18-1}{10\times 9} = \frac{17}{90}$

64. What is the correct expression of $0.06\overline{54}$ [(¯) sign represents continuous decimal)]?

(a) $\frac{18}{275}$ (b) $\frac{18}{277}$

(c) 654 (d) $\frac{654}{1000}$

RRB RPF-SI -10/01/2019 (Shift-III)

Ans : (a) $0.06\overline{54}$

$= \frac{654-6}{9900} = \frac{648}{9900} = \frac{18}{275}$

65. $0.\overline{047619}$, when written as a vulgar fraction, is equal to-

(a) $\frac{1}{21}$ (b) $\frac{1}{19}$

(c) $\frac{1}{23}$ (d) $\frac{1}{17}$

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) : From given number,

$$0.\overline{047619} = \frac{047619}{999999} = \frac{1}{21}$$

66. Convert $0.\overline{6}$ into fraction:

(a) $\frac{6}{3}$ (b) $\frac{2}{3}$

(c) $\frac{2}{6}$ (d) $\frac{4}{3}$

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (b) : Given,

$0.\overline{6} = \frac{6}{9} = \frac{2}{3}$, …….. (From decimal fraction system)

67. Which of the following fractions' result will not be a recurring decimal?

(a) $\frac{10}{30}$ (b) $\frac{12}{30}$

(c) $\frac{14}{30}$ (d) $\frac{8}{30}$

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (b) From options,

(a) $\frac{10}{30} = \frac{1}{3} = 0.\overline{3}$

(b) $\frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 0.4$

(c) $\frac{14}{30} = \frac{7}{15} = 0.4\overline{6}$

(d) $\frac{8}{30} = \frac{4}{15} = 0.2\overline{6}$

Hence, it is clear that option (b) is not in recurring decimal.

68. Which of the following vulgar fractions will not end when represented in decimal?

(a) $\frac{81}{150}$ (b) $\frac{80}{150}$

(c) $\frac{15}{48}$ (d) $\frac{21}{600}$

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (b) From options,

(a) $\frac{81}{150} = 0.54$

(b) $\frac{80}{150} = 0.5333333$

(c) $\frac{15}{48} = 0.3125$

(d) $\frac{21}{600} = 0.035$

Hence, it is clear that option (b) is not and decimal.

69. $0.02\overline{36}$ when written as the simplest form, what will be the obtained vulgar fraction?

(a) $\frac{13}{1100}$ (b) $\frac{13}{9999}$

(c) $\frac{13}{3300}$ (d) $\frac{13}{550}$

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (d) $0.02\overline{36}$

$0.02\overline{36} = \frac{0.2\overline{36}}{10}$

$= \frac{236-2}{10\times 990} = \frac{234}{9900}$

$= \frac{117}{4950} = \frac{13}{550}$

70. Express $\frac{7}{11}$ in the form of decimal.

(a) $0.\overline{623}$ (b) $0.\overline{633}$

(c) $0.\overline{63}$ (d) $0.\overline{62}$

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (c) The decimal of $\frac{7}{11}$

```
      .6363
11)70
   66
   ---
    40
    33
    ---
     70
     66
     ---
      40
      33
      ---
       7
```

Hence, in 0.6363, two digits of the number (6 and 3) are repeating itself.

71. Show $0.08\overline{36}$ in the form of vulgar fraction.

(a) $\frac{46}{555}$ (b) $\frac{23}{1100}$

(c) $\frac{23}{275}$ (d) $\frac{828}{9900}$

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (c) : $0.08\overline{36} = ?$

$= \frac{836-8}{9900}$

$= \frac{828}{9900} = \frac{23}{275}$

72. $\frac{1}{450}$, when written as recurring decimal, will be equal to:

(a) 0.2 (b) 0.02

(c) 0.002 (d) 0.0002

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (c) : Given, $\frac{1}{450}$

On dividing,

```
      0.0022
450)  1000
       900
       ----
       1000
        900
        ----
         100
```

Hence, $\frac{1}{450} = 0.00\overline{2}$

73. Express $0.09\overline{87}$ as a vulgar fraction in its lowest form?

(a) $\frac{163}{1650}$ (b) $\frac{329}{9990}$

(c) $\frac{326}{3300}$ (d) $\frac{163}{1665}$

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (c) Let x = $0.09\overline{87}$

$100x = 9.\overline{87}$ Multiplying by 100 in both side,

= 9.8787 .....

= 9.78 + 0.098787 .....

100x = 9.78 + x

99x = 9.78

$x = \frac{9.78}{99}$

$= \frac{978}{9900} = \frac{326}{3300}$

74. Which of the following fractions will yield a recurring decimal?

(a) $\frac{27}{60}$ (b) $\frac{27}{72}$

(c) $\frac{27}{48}$ (d) $\frac{27}{84}$

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (d) (a) $\frac{27}{60} = 0.45$ (b) $\frac{27}{72} = 0.375$

(c) $\frac{27}{48} = 0.5625$ (d) $\frac{27}{84} = 0.32\overline{142857}$

Hence, the fraction $\frac{27}{84}$, gives a recurring decimal.

75. If $0.\overline{41}$ is expressed as the vulgar fraction $\frac{41}{999.....9(\text{n times})}$. Find n.

(a) 1 (b) 3

(c) 4 (d) 2

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (d) Let $0.\overline{41} = x$

0.414141 ..... = x

Multiplying by 100 in both sides,

100x = 41.4141 .....

100x = 41 + x

99x = 41

$x = \frac{41}{99}$

Hence, it is clear that the number of digit 9 in denominator is twice. So n = 2.

76. Which of the following is equivalent to $0.\overline{56}$? ('—' represents recurring decimal)

(a) $\frac{56}{100}$ (b) $\frac{56}{1000}$

(c) $\frac{56}{99}$ (d) $\frac{560}{90}$

RRB NTPC 17.01.2017 Shift-1

Ans : (c) $0.\overline{56} = 0 + \frac{56}{99}$

$\boxed{0.\overline{56} = \frac{56}{99}}$

77. Correct expression of $1.4\overline{27}$ = ? (Bar sign indicates to recurring decimal)

(a) $\frac{1427}{1000}$ (b) $\frac{157}{110}$

(c) $\frac{1427}{10000}$ (d) $\frac{157}{111}$

RRB NTPC 17.01.2017 Shift-3

Ans : (b) $1.4\overline{27} = 1 + 4\overline{27}$

$= 1 + \frac{427-4}{990}$

$= 1 + \frac{423}{990} = 1 + \frac{47}{110} = \frac{157}{110}$

78. Correct expression of $0.0\overline{18}$ = ?

(a) $\frac{1}{55}$ (b) $\frac{18}{100}$

(c) $\frac{18}{1000}$ (d) $\frac{1}{66}$

RRB NTPC 11.04.2016 Shift : 2

Ans : (a) $x = .0\overline{18} = \frac{18-0}{990}$

$= \frac{18}{990} = \frac{1}{55}$ …….(From decimal fraction system)

79. Correct expression of $0.0\overline{234}$ = ?

(a) $\frac{13}{555}$ (b) $2\frac{34}{100}$

(c) $\frac{134}{990}$ (d) $\frac{234}{1000}$

RRB NTPC 07.04.2016 Shift : 2

Ans : (a) Rule for converting mixed-recurring decimal fraction into common or vulgar fraction:-

First non-recurring part is subtracted from recurring part, as numerator, then take 9, equal to the number of recurring digits, and add 0, equal to the number of non-recurring digits, as denominator.

From question,

$0.0\overline{234} = \frac{234-0}{9990}$

$= \frac{234}{9990} = \frac{78}{3330} = \frac{13}{555}$

80. What is the correct expression of $2.\overline{56}$ (Bar sign represents to recurring decimal)

(a) $2\frac{560}{90}$ (b) $2\frac{56}{99}$

(c) $2\frac{56}{1000}$ (d) $2\frac{56}{100}$

RRB NTPC 19.01.2017 Shift : 3

Ans : (b) $2.\overline{56}$

$2+\frac{56}{99}=2\frac{56}{99}$ ….(From decimal fraction system)

81. Correct expression of $0.02\overline{36}$ = ?

(a) $\frac{13}{550}$ (b) $\frac{236}{1000}$

(c) $2\frac{36}{1000}$ (d) $\frac{13}{555}$

RRB NTPC 22.04.2016 Shift : 2

Ans : (a) $0.02\overline{36}=\frac{236-2}{9900}$

$=\frac{234}{9900}=\frac{13}{550}$

82. Correct expression of $0.126\overline{36}$ = ?

(a) $\frac{139}{1100}$ (b) $126\frac{36}{1000}$

(c) $\frac{139}{2200}$ (d) $126\frac{36}{10000}$

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) from question,

$0.126\overline{36}=\frac{12636-126}{99000}=\frac{12510}{99000}$

$=\frac{1251}{9900}=\frac{139}{1100}$

Type - 5

83. In decimal system $\frac{73}{8}$ can be written:

(a) 9.50 (b) 9.125

(c) 8.150 (d) 8.125

RRB RPF Constable -19/01/2019 (Shift-II)

Ans. (b) : Given fraction, $\frac{73}{8}$,

$\frac{73}{8}=8\overline{)73}$ (9.125)

72

10

8

20

16

40

40

××

Hence, In decimal system $\frac{73}{8}$ can be written 9.125

84. Express $\frac{44}{5}\%+\frac{4}{5}\%+\frac{0.4}{5}\%$ in the form of decimal number.

(a) 0.0888 (b) 0.0998

(c) 0.0896 (d) 0.0968

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

Ans : (d) From given expression,

$\frac{44}{5}\%+\frac{4}{5}\%+\frac{0.4}{5}\% = \frac{48.4}{5}\%$

$=\frac{48.4}{500}=\frac{0.484}{5}=0.0968$

85. Which of these fractions cannot be reduced further?

14/21, 33/43, 18/24, 41/82

(a) 33/43 (b) 92/24

(c) 18/24 (d) 41/82

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

Ans : (a)

$\frac{14}{21}=\frac{2}{3}$, $\frac{33}{43}=\frac{33}{43}$

$\frac{18}{24}=\frac{3}{4}$

$\frac{41}{82}=\frac{1}{2}$

Hence, it is clear that $\frac{33}{43}$ cannot be reduced further.

86. Reduce to lowest terms 368/575 :–

(a) 28/29 (b) 30/25

(c) 25/29 (d) 16/25

RRB JE - 27/05/2019 (Shift-I)

Ans : (d) Given fraction,

$\frac{368}{575}=\frac{16}{25}$

87. Which of the following fractions equals to 18/25?

(a) 72/100 (b) 36/75

(c) 54/100 (d) 50/100

RRB JE - 30/05/2019 (Shift-III)

Ans : (a)

From the given fraction, $\frac{18}{25}$,

$\Rightarrow \frac{18}{25}=\frac{18\times4}{25\times4}=\frac{72}{100}$

88. Simplify : $\frac{6}{27}\div\frac{27}{30}\div\frac{20}{81}$

(a) 9 (b) 6

(c) 3 (d) 1

RRB RPF Constable -20/01/2019 (Shift-II)

Ans : (d) $\frac{6}{27}\div\frac{27}{30}\div\frac{20}{81}$

$=\frac{6}{27}\times\frac{30}{27}\times\frac{81}{20}=\frac{6\times3\times3}{27\times2}=\frac{6}{3\times2}=1$

89. $\frac{0.3}{1000}$ **equals to :**

(a) 3×10^{-4} (b) 3×10^{-6}
(c) 3×10^{5} (d) 3×10^{-5}

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (a) $\frac{0.3}{1000} = ?$

$\frac{0.3}{1000}$

$= \frac{0.3}{10^3}$

$= 0.3 \times 10^{-3}$

$= 3 \times 10^{-1} \times 10^{-3}$

$? = 3 \times 10^{-4}$

90. Convert $\frac{\frac{4}{9}}{12}$ **in its simple form:**

(a) $\frac{1}{26}$ (b) $\frac{1}{29}$
(c) $\frac{1}{25}$ (d) $\frac{1}{27}$

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d)

$\frac{\frac{4}{9}}{12} = \frac{4}{9} \times \frac{1}{12} = \frac{1}{27}$

91. $1\frac{2}{3}$ **inversely proportional to :**

(a) $2\frac{2}{3}$ (b) $\frac{3}{5}$
(c) $3\frac{1}{2}$ (d) $\frac{2}{3}$

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (b) $1\frac{2}{3}$

$= \frac{5}{3}$

Writing in inverse $= \frac{3}{5}$

92. The lowest fractional value of 4.025 =?

(a) $\frac{161}{40}$ (b) $\frac{116}{20}$
(c) $\frac{161}{20}$ (d) $\frac{116}{40}$

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a) The fractional form of 4.025,

$= \frac{4025}{1000}$

$= \frac{161}{40}$

93. Which of the following fractions is not equivalent to 4/11?

(a) $\frac{64}{176}$ (b) $\frac{20}{55}$
(c) $\frac{84}{209}$ (d) $\frac{32}{88}$

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (c) From question,

(a) $\frac{64}{176} = \frac{4}{11}$ (b) $\frac{20}{55} = \frac{4}{11}$

(c) $\frac{84}{209} = 0.401$ (d) $\frac{32}{88} = \frac{4}{11}$

Hence, option (c) is not equivalent to 4/11.

94. $2\frac{1}{25} = ?$

(a) 0.24 (b) 2.4
(c) 2.004 (d) 2.04

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (d) $2\frac{1}{25} = \frac{51}{25} = 2.04$

95. What fraction of a day equals to 7 minutes and 12 second?

(a) $\frac{1}{240}$ (b) $\frac{1}{225}$
(c) $\frac{1}{200}$ (d) $\frac{1}{300}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (c) The number of hours in a day = 24

= 24 × 60 × 60 sec

7 min 12 sec = (7 × 60 + 12)

= (420 + 12)

= 432 sec

The required fraction $= \frac{432}{24 \times 60 \times 60} = \boxed{\frac{1}{200}}$

96. Solve : 0.05 × 0.4

(a) 2 (b) 0.2
(c) 0.02 (d) 0.002

RRB NTPC 28.03.2016 Shift : 2

Ans :(c) 0.05 × 0.4 = 0.02

97. The value of 0.000825 ÷ 0.05 = ?

(a) 0.0165 (b) 0.65
(c) 0.00165 (d) 0.015

RRB NTPC 28.03.2016 Shift : 3

Ans : (a) $\frac{0.000825}{0.05} = 0.0165$

98. Find the solution of 0.275 + 0.569 – 0.336 =?

(a) 0.123 (b) 0.508
(c) 0.457 (d) 0.594

RRB NTPC 18.01.2017 Shift : 3

Ans : (b) 0.275 + 0.569 – 0.336

= 0.844–0.336 = 0.508

99. Change $\frac{13}{55}$ in decimal.

(a) 0.20 (b) 0.236
(c) 0.245 (d) 0.257

RRB NTPC 28.04.2016 Shift : 1

Ans :(b) $\frac{13}{55} = 0.236$

100. 414÷54 is written for which mixed fraction of the following?

(a) $7\frac{36}{54}$ (b) $7\frac{6}{9}$
(c) $7\frac{2}{3}$ (d) $7\frac{1}{3}$

RRB NTPC 04.04.2016 Shift : 2

Ans : (c) $414 \div 54 = \frac{414}{54} = \frac{23\times18}{3\times18} = 7\frac{2}{3}$

101. Solve: $\left(\frac{2}{7}+\frac{3}{5}\right)\div\left(\frac{2}{5}+\frac{2}{7}\right)$

(a) $\frac{31}{24}$ (b) $\frac{24}{31}$
(c) $\frac{26}{25}$ (d) $\frac{12}{13}$

RRB NTPC 02.04.2016 Shift : 2

Ans : (a) Given,

$\left(\frac{2}{7}+\frac{3}{5}\right)\div\left(\frac{2}{5}+\frac{2}{7}\right)$

$\left(\frac{10+21}{35}\right)\div\left(\frac{14+10}{35}\right)$

$\frac{31}{35}\div\frac{24}{35} = \frac{31}{35}\times\frac{35}{24} = \frac{31}{24}$

102. Simplify : $\frac{3}{7\frac{1}{3}}+\frac{3}{3\frac{1}{7}}$

(a) $1\frac{3}{11}$ (b) $1\frac{4}{11}$
(c) $2\frac{3}{7}$ (d) $2\frac{4}{7}$

RRB NTPC 29.03.2016 Shift : 2

Ans : (b) $\frac{3}{7\frac{1}{3}}+\frac{3}{3\frac{1}{7}} = \frac{3}{\frac{22}{3}}+\frac{3}{\frac{22}{7}}$

$= \frac{9}{22}+\frac{21}{22}$

$= \frac{30}{22}$

$= \frac{15}{11} = 1\frac{4}{11}$

103. Simplify: $8\frac{1}{3}\times4\frac{1}{5}\div5\frac{1}{4}$

(a) $4\frac{2}{5}$ (b) $5\frac{3}{4}$
(c) $7\frac{1}{3}$ (d) $6\frac{2}{3}$

RRB NTPC 29.03.2016 Shift : 2

Ans : (d) $8\frac{1}{3}\times4\frac{1}{5}\div5\frac{1}{4} = \frac{25}{3}\times\frac{21}{5}\div\frac{21}{4}$

$= \frac{25}{3}\times\frac{21}{5}\times\frac{4}{21}$

$= \frac{20}{3} = 6\frac{2}{3}$

104. Choose the different fraction.
15/20, 48/60, 21/28, 75/100

(a) 15/20 (b) 48/60
(c) 21/28 (d) 75/100

RRB NTPC 28.03.2016 Shift : 3

Ans : (b) $\frac{15}{20} = \frac{5\times3}{5\times4}$, $\frac{48}{60} = \frac{12\times4}{12\times5}$

$\frac{21}{28} = \frac{7\times3}{7\times4}$, $\frac{75}{100} = \frac{25\times3}{25\times4}$

All the fractions are the equivalent fractions of $\frac{3}{4}$, except $\frac{48}{60}$.

105. Find the solution of :– 4/11 + 2/7 + 3/5

(a) 37/35 (b) 481/385
(c) 13/35 (d) 37/385

RRB NTPC 18.01.2017 Shift : 3

Ans : (b) $\frac{4}{11}+\frac{2}{7}+\frac{3}{5}$

$= \frac{35\times4+2\times55+3\times77}{385}$

$= \frac{140+110+231}{385}$

$= \boxed{\frac{481}{385}}$

106. Simplify : $\frac{5}{28}\div\frac{28}{35}\div\frac{20}{112}$

(a) 4/5 (b) 5/4
(c) 4/7 (d) 7/4

RRB NTPC 11.04.2016 Shift : 2

Ans : (b) $\frac{5}{28}\div\frac{28}{35}\div\frac{20}{112}$

$\frac{5}{28}\times\frac{35}{28}\times\frac{112}{20}$

$= \frac{5}{4}$

107. Simplify: $\frac{4}{28} \div \frac{28}{35} \div \frac{20}{112}$

(a) 7 (b) 4
(c) 2 (d) 1

RRB NTPC 07.04.2016 Shift : 2

Ans : (d) Given−

$= \frac{4}{28} \div \frac{28}{35} \div \frac{20}{112}$

$= \frac{4}{28} \times \frac{35}{28} \times \frac{112}{20} = 1$

108. Which of the below given fractions is NOT equal to $\frac{9}{17}$?

(a) $\frac{108}{221}$ (b) $\frac{27}{51}$
(c) $\frac{63}{119}$ (d) $\frac{153}{289}$

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) Given: $\frac{9}{17}$

$\frac{9 \times 3}{17 \times 3} = \frac{27}{51}$

$\frac{9 \times 7}{17 \times 7} = \frac{63}{119}$

$\frac{9 \times 17}{17 \times 17} = \frac{153}{289}$

$\frac{108}{221}$ will not give any equivalent fraction of $\frac{9}{17}$.

109. $\frac{182}{130}$ when written in the simplest form is :

(a) $\frac{28}{20}$ (b) $\frac{91}{65}$
(c) $\frac{14}{10}$ (d) $\frac{7}{5}$

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

Ans : (d) $\frac{182}{130}$

$= \frac{91}{65} = \frac{7}{5}$

110. How many kilometres are there in one metre?

(a) 0.0001 (b) 0.1
(c) 0.001 (d) 0.01

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

Ans : (c) 1000m = 1km.

$1\text{m} = \frac{1}{1000}\text{km.} = 0.001 \text{ km.}$

Hence, one metre has 0.001 km.

Type - 6

111. The sum of $\frac{5}{12}$ and $\frac{12}{5}$ =?

(a) $\frac{17}{17}$ (b) $\frac{17}{60}$
(c) $\frac{60}{17}$ (d) $\frac{169}{60}$

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

Ans. (d) The sum of $\frac{5}{12}$ and $\frac{12}{5} = \frac{5}{12} + \frac{12}{5}$

$= \frac{25+144}{60} = \frac{169}{60}$

112. A fraction added to its inverse is $2\frac{25}{66}$. Find the greater number of the two:

(a) $1\frac{15}{22}$ (b) $1\frac{5}{6}$
(c) $1\frac{20}{33}$ (d) $1\frac{5}{11}$

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (b) Let the fraction be x and its inverse be $\frac{1}{x}$.

According to the question,

$x + \frac{1}{x} = 2\frac{25}{66}$ -----(I)

From option (b),

Putting the value $x = 1\frac{5}{6} = \frac{11}{6}$ in equation (I),

$\frac{11}{6} + \frac{6}{11} = 2\frac{25}{66}$

$\Rightarrow \frac{121+36}{66} = 2\frac{25}{66}$

$\Rightarrow \frac{157}{66} = 2\frac{25}{66}$

$\Rightarrow 2\frac{25}{66} = 2\frac{25}{66}$

Hence greatest fraction $= 1\frac{5}{6}$

113. Sum of $\frac{5}{11}$ and $\frac{11}{5}$ =?

(a) $\frac{146}{55}$ (b) $\frac{16}{16}$
(c) $\frac{16}{55}$ (d) $\frac{110}{55}$

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (a) : $\frac{5}{11} + \frac{11}{5}$

$= \frac{25+121}{55} = \frac{146}{55}$

114. The difference of a positive fraction and its inverse is $6\frac{39}{160}$. Find the fraction.

(a) $\frac{32}{5}$ (b) $\frac{13}{8}$

(c) $\frac{15}{8}$ (d) $\frac{16}{5}$

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (a) Let the positive fraction be x

So, inverse $=\frac{1}{x}$

According to the question,

$$x-\frac{1}{x}=6\frac{39}{160}$$

$$\frac{x^2-1}{x}=\frac{999}{160}$$

$160x^2 - 160 = 999x$

$160x^2 - 999x - 160 = 0$

$160x^2 - (1024–25)x - 160 = 0$

$160x^2 - 1024x + 25x - 160 = 0$

$32x (5x - 32) + 5 (5x - 32) = 0$

$(32x + 5) (5x - 32) = 0$

$32x + 5 = 0$, $5x - 32 = 0$

$32x = - 5$, $5x = 32$

$\boxed{x=\frac{-5}{32}}$, $\boxed{x=\frac{32}{5}}$

115. The difference of a fraction and its inverse is $\frac{9}{11}$. Then the difference of cubes of the fraction and its inverse will be:

(a) $-\frac{1331}{2538}$ (b) $-\frac{2538}{1331}$

(c) $\frac{3996}{1331}$ (d) $\frac{729}{1331}$

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (c)

Let the fraction be $\frac{x}{1}$, then its inverse will be $\frac{1}{x}$,

According to the question,

$$\frac{x}{1}-\frac{1}{x}=\frac{9}{11}$$

$$\Rightarrow x-\frac{1}{x}=\frac{9}{11}$$

Cubing in both side,

$$x^3-\frac{1}{x^3}=\left(\frac{9}{11}\right)^3+3\times\frac{9}{11} \quad \left[a^3-b^3=(a-b)^3+3ab(a-b)\right]$$

$$=\frac{729}{1331}+\frac{27}{11}$$

$$=\frac{729+(27\times121)}{1331}=\frac{729+3267}{1331}$$

$$\therefore x^3-\frac{1}{x^3}=\frac{3996}{1331}$$

116. The sum of a fraction and its inverse is $5\frac{1}{5}$. Find the fraction.

(a) 1/5 (b) 1/6

(c) 1/3 (d) 4

RRB NTPC 29.04.2016 Shift : 1

Ans : (a) Let the fraction be x, so its inverse be $\frac{1}{x}$.

According to the question,

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

$$\Rightarrow \frac{x^2+1}{x}=\frac{26}{5}$$

$$\Rightarrow 5x^2+5=26x$$

$$\Rightarrow 5x^2-26x+5=0$$

$$\Rightarrow 5x^2-25x-x+5=0$$

$$\Rightarrow 5x(x-5)-1(x-5)=0$$

$$\Rightarrow (5x-1)(x-5)=0$$

$$\therefore 5x-1=0$$

$$\Rightarrow 5x=1$$

$$\Rightarrow x=\frac{1}{5}$$

117. How much does one need to add to $\frac{4}{5}$ to obtain $\frac{5}{4}$?

(a) $\frac{1}{-1}$ (b) $\frac{16}{20}$

(c) $\frac{9}{20}$ (d) $\frac{1.25}{0.8}$

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c) Let the adding number be x.

According to the question,

$$x+\frac{4}{5}=\frac{5}{4}$$

$$x=\frac{5}{4}-\frac{4}{5},\ x=\frac{25-16}{20},\ x=\frac{9}{20}$$

Hence $\frac{9}{20}$ is the required number.

118. The sum of $\frac{5}{8}$ and $\frac{8}{5}$ is :

(a) $\frac{13}{13}$ (b) $\frac{80}{40}$

(c) $\frac{13}{40}$ (d) $\frac{89}{40}$

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

Ans : (d) According to the question,

Adding the given fractions,

$$\frac{5}{8}+\frac{8}{5}=\frac{25+64}{40}=\frac{89}{40}$$

Type - 7

119. The fraction which, when subtracted from $\frac{1}{2}$ gives $\frac{3}{4}$ is:

(a) $\frac{1}{4}$ (b) $-\frac{1}{4}$

(c) $\frac{1}{3}$ (d) $-\frac{1}{3}$

RRB RPF-SI -12/01/2019 (Shift-III)

Ans. (b) : Let the fraction be $\frac{1}{x}$,

According to the question,

$$\frac{1}{2}-\frac{1}{x}=\frac{3}{4}\Rightarrow -\frac{1}{x}=\frac{3}{4}-\frac{1}{2}\Rightarrow -\frac{1}{x}=\frac{3-2}{4}$$

$$\boxed{\frac{1}{x}=-\frac{1}{4}}$$

Hence, the required fraction is $-\frac{1}{4}$.

120. The sum of two fractions is $\frac{9}{10}$. If one is $\frac{8}{9}$, find the another.

(a) $\frac{1}{5}$ (b) $\frac{1}{1}$

(c) $\frac{1}{90}$ (d) $\frac{72}{90}$

RRB RPF Constable -24/01/2019 (Shift-I)

Ans. (c) : Let the another fraction be $\frac{x}{y}$,

According to the question,

$$\therefore \frac{x}{y}+\frac{8}{9}=\frac{9}{10}$$

$$\frac{x}{y}=\frac{9}{10}-\frac{8}{9}$$

$$\frac{x}{y}=\frac{81-80}{90}$$

$$\frac{x}{y}=\frac{1}{90}$$

Hence, the another fraction is $\frac{1}{90}$.

121. The value of $\frac{3}{15}+\frac{13}{14}-\frac{19}{21}+\frac{31}{35}-\frac{23}{30}$=?

(a) $\frac{8}{21}$ (b) $\frac{1}{3}$

(c) $\frac{2}{5}$ (d) $\frac{12}{35}$

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (d)

$$\frac{3}{15}+\frac{13}{14}-\frac{19}{21}+\frac{31}{35}-\frac{23}{30}$$

(LCM of 15, 14, 21, 35 and 30 is 210)

$$=\frac{42+195-190+186-161}{210}$$

$$\Rightarrow \frac{423-351}{210}$$

$$\Rightarrow \frac{72}{210}=\frac{12}{35}$$

Hence, the required value is $\frac{12}{35}$.

122. The subtracted value of a fraction from $\frac{1}{6}$ is $\frac{1}{13}$. Find the fraction.

(a) $\frac{7}{78}$ (b) $\frac{5}{13}$

(c) $\frac{1}{7}$ (d) $\frac{11}{39}$

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) Let the fraction be $\frac{x}{y}$,

$$=\frac{1}{6}-\frac{x}{y}=\frac{1}{13}$$

$$\frac{x}{y}=\frac{1}{6}-\frac{1}{13}$$

$$\frac{x}{y}=\frac{13-6}{78}$$

$$\frac{x}{y}=\frac{7}{78}$$

Hence, the required fraction is $\frac{7}{78}$.

123. The sum of two fractions is $\frac{7}{4}$. If one is $\frac{5}{3}$, find the another.

(a) $\frac{1}{5}$ (b) $\frac{2}{1}$

(c) $\frac{1}{12}$ (d) $\frac{1}{10}$

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) : Let the required fraction be $\frac{x}{y}$,

Then the another fraction is given = $\frac{5}{3}$,

According to the question,

$$\frac{x}{y}+\frac{5}{3}=\frac{7}{4}$$

$$\frac{x}{y}=\frac{7}{4}-\frac{5}{3}=\frac{21-20}{12}=\frac{1}{12}$$

Hence, the required fraction is $\frac{1}{12}$.

124. Find the difference between 0.02 and 0.002.

(a) 0.018 (b) 0.0018
(c) 1.8 (d) 0.18

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (a) : The difference of 0.02 and 0.002,

$\Rightarrow \frac{0.02\times100}{100}-\frac{0.002\times1000}{1000}$

$\Rightarrow \frac{2}{100}-\frac{2}{1000}$

$\Rightarrow \frac{20-2}{1000}$

$\Rightarrow \frac{18}{1000}=0.018$

Hence, the required difference is 0.018.

125. Which fraction of the following when subtracted from $\frac{3}{4}$ is $\frac{5}{12}$?

(a) $\frac{1}{3}$ (b) $\frac{2}{8}$
(c) $\frac{1}{6}$ (d) $\frac{2}{3}$

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (a) : Let the fraction be $\frac{1}{x}$,

According to the question,

$\frac{3}{4}-\frac{1}{x}=\frac{5}{12}$

$-\frac{1}{x}=\frac{5}{12}-\frac{3}{4}$

$-\frac{1}{x}=\frac{20-36}{48}$

$-\frac{1}{x}=\frac{-16}{48}$

$\frac{1}{x}=\frac{1}{3}$

Hence, the required fraction is $\frac{1}{3}$.

126. What should be added to $\frac{10}{11}$ to get $\frac{11}{10}$?

(a) $\frac{21}{110}$ (b) $\frac{1}{-1}$
(c) $\frac{1}{55}$ (d) $\frac{2}{11}$

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (a) : Let the adding number be x.
According to the question,

$\frac{10}{11}+x=\frac{11}{10}$

$x=\frac{11}{10}-\frac{10}{11}=\frac{121-100}{110}=\frac{21}{110}$

Hence the adding number is $\frac{21}{110}$.

127. What should be added to $5\frac{3}{5}$ to get $8\frac{3}{7}$?

(a) $\frac{99}{35}$ (b) $\frac{96}{35}$
(c) $\frac{99}{33}$ (d) $\frac{94}{35}$

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (a) : Let the required number be x.
According to the question,

$5\frac{3}{5}+x=8\frac{3}{7}$

$x = 8\frac{3}{7}-5\frac{3}{5} = \frac{59}{7}-\frac{28}{5}$

$=\frac{295-196}{35} = \frac{99}{35}$

Hence, the required number is $\frac{99}{35}$

128. The sum of two fractions is $\frac{7}{6}$. One is $\frac{3}{4}$. Find the other.

(a) $\frac{4}{12}$ (b) $\frac{5}{12}$
(c) $\frac{4}{2}$ (d) $\frac{1}{12}$

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) Let the other fraction is x.
According to the question,

$\Rightarrow x+\frac{3}{4}=\frac{7}{6} \Rightarrow x=\frac{7}{6}-\frac{3}{4}$

$\Rightarrow x=\frac{14-9}{12}=\frac{5}{12}$

Hence, the required fraction is $\frac{5}{12}$.

129. A fraction when added to $\frac{7}{3}$, gives 4. Find the fraction.

(a) $1\frac{2}{3}$ (b) $\frac{11}{2}$
(c) $-\frac{1}{2}$ (d) $\frac{2}{3}$

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (a) Let the required fraction be x.
According to the question,

$\Rightarrow \frac{x}{1}+\frac{7}{3}=4$

$\Rightarrow \frac{3x+7}{3}=4$

$\Rightarrow 3x+7=4\times3$

$\Rightarrow 3x+7=12 \Rightarrow 3x=12-7 \Rightarrow 3x=5$

$\Rightarrow x=\frac{5}{3}=\left(1\frac{2}{3}\right)$

Hence, the required fraction is $1\frac{2}{3}$.

130. The difference between two fractions is $\frac{5}{6}$. The smaller one is $\frac{3}{4}$. Find the other.

(a) $\frac{1}{12}$ (b) $\frac{19}{24}$

(c) $\frac{19}{12}$ (d) $\frac{8}{10}$

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (c) Let the other fraction be x.
According to the 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 other fraction is $\frac{19}{12}$.

131. The value of $\frac{5}{3}+\frac{3}{5}$=?

(a) $\frac{15}{8}$ (b) $\frac{8}{15}$

(c) $2\frac{4}{15}$ (d) $\frac{8}{8}$

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (c) From given expression,

$$\Rightarrow \frac{5}{3}+\frac{3}{5}$$

$$=\frac{25+9}{15}$$

$$=\frac{34}{15}=2\frac{4}{15}$$

132. The difference of $\frac{25}{12}$ and $\frac{15}{8}$ = ?

(a) $\frac{10}{24}$ (b) $\frac{7}{13}$

(c) $\frac{10}{4}$ (d) $\frac{5}{24}$

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (d) The difference of $\frac{25}{12}$ and $\frac{15}{8}$,

$$\frac{25}{12}-\frac{15}{8}=\frac{50-45}{24}=\frac{5}{24}$$

133. To get $\frac{5}{12}$, $\frac{25}{3}$ should be multiplied by:

(a) 10 (b) 20

(c) $\frac{4}{5}$ (d) $\frac{5}{4}$

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (b) Let the required number be x.
According to the question,

$$\frac{5}{12}\times x=\frac{25}{3}$$

$$\frac{x}{4}=5$$

$$x=20$$

134. The square root of a positive fraction, when added to 1, is $3\frac{1}{4}$. Find the fraction.

(a) $2\frac{1}{4}$ (b) $6\frac{1}{4}$

(c) $5\frac{1}{16}$ (d) $3\frac{1}{16}$

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (c)

Let the fraction be $=\frac{x}{y}$

According to the question,

$$\sqrt{\frac{x}{y}}+1=3\frac{1}{4}$$

$$\sqrt{\frac{x}{y}}=\frac{13}{4}-1$$

$$\sqrt{\frac{x}{y}}=\frac{9}{4}$$

$$\frac{x}{y}=\frac{81}{16},\quad \frac{x}{y}=5\frac{1}{16}$$

135. The difference between $\frac{11}{12}$ and $\frac{7}{8}$=?

(a) $\frac{1}{4}$ (b) $\frac{4}{4}$

(c) $\frac{4}{24}$ (d) $\frac{1}{24}$

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (d) The difference between $\frac{11}{12}$ and $\frac{7}{8}$

$$=\frac{11}{12}-\frac{7}{8}$$

$$=\frac{88-84}{96}$$

$$=\frac{4}{96}$$

$$=\frac{1}{24}$$

Hence, the required difference is $\frac{1}{24}$.

136. What is the fraction which, when taken away from $\frac{3}{4}$, gives $\frac{2}{5}$?

(a) $-\frac{1}{1}$ (b) $\frac{7}{20}$

(c) $\frac{1}{20}$ (d) $\frac{3}{10}$

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (b) Let the fraction be $\frac{x}{y}$.

According to the question,

$$\frac{3}{4}-\frac{x}{y}=\frac{2}{5}$$

$$\Rightarrow \frac{x}{y}=\frac{3}{4}-\frac{2}{5}$$

$$\Rightarrow \frac{x}{y}=\frac{15-8}{20}$$

$$\frac{x}{y}=\frac{7}{20}$$

137. What should be added to 3/5 to get 5/4?

(a) $\frac{15}{20}$ (b) $\frac{13}{20}$

(c) $\frac{2}{-1}$ (d) $\frac{1.25}{0.6}$

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (b) Let the required number be x.

According to the question,

$$\frac{5}{4}=\frac{3}{5}+x$$

$$\frac{5}{4}-\frac{3}{5}=x$$

$$\frac{25-12}{20}=x$$

$$x=\frac{13}{20}$$

Hence, the required number is $\frac{13}{20}$.

138. A fraction is subtracted from 1/5 and gives 1/12. Find the fraction.

(a) $\frac{1}{7}$ (b) $\frac{11}{30}$

(c) $\frac{7}{60}$ (d) $\frac{5}{12}$

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (c) Let the fraction be $\frac{x}{y}$.

According to the question,

$$\frac{1}{5}-\frac{x}{y}=\frac{1}{12}$$

$$\frac{1}{5}-\frac{1}{12}=\frac{x}{y}$$

$$\frac{12-5}{60}=\frac{x}{y}$$

$$\frac{x}{y}=\frac{7}{60}$$

139. A fraction when added to $\frac{17}{3}$ is 4. Find the fraction.

(a) $\frac{2}{3}$ (b) $-\frac{1}{1}$

(c) $-1\frac{2}{3}$ (d) $\frac{9}{2}$

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (c) Let the required fraction be $\frac{x}{y}$.

According to the question,

$$\therefore \frac{x}{y}+\frac{17}{3}=4$$

$$\frac{x}{y}=4-\frac{17}{3}$$

$$=\frac{12-17}{3}=\frac{-5}{3}$$

$$\frac{x}{y}=-1\frac{2}{3}$$

140. In which fraction, when 5/16 is added gives 1?

(a) $\frac{11}{32}$ (b) $\frac{13}{2}$

(c) $\frac{22}{32}$ (d) $\frac{6}{8}$

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (c) Let the fraction be x.

$$x+\frac{5}{16}=1, \qquad x=1-\frac{5}{16}$$

$$x=\frac{11}{16}, \qquad x=\frac{2\times 11}{2\times 16}=\frac{22}{32}$$

Hence, the require fraction is $\frac{22}{32}$.

141. What is the fraction which, when taken away from $\frac{1}{2}$, gives $\frac{2}{3}$?

(a) $\frac{1}{3}$ (b) $-\frac{1}{3}$

(c) $-\frac{1}{6}$ (d) $\frac{1}{6}$

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

Ans : (c) Let the fraction be $\frac{x}{y}$.

According to the problem,

$$\frac{1}{2}-\frac{x}{y}=\frac{2}{3} \qquad \frac{x}{y}=\frac{1}{2}-\frac{2}{3}$$

$$\frac{x}{y}=\frac{-1}{6}$$

142. The sum of two fractions is $\frac{3}{4}$ One of them is $\frac{2}{3}$. What is the other fraction?

(a) $\frac{1}{5}$ (b) $\frac{1}{12}$

(c) $\frac{1}{10}$ (d) $\frac{1}{1}$

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

Ans : (b) The sum of fractions = $\frac{3}{4}$

The first fraction = $\frac{2}{3}$

$\therefore$ The other fraction = $\frac{3}{4}-\frac{2}{3}$

$$=\frac{9-8}{12}=\frac{1}{12}$$

143. How much does one need to add to $\frac{2}{3}$ to obtain $\frac{3}{2}$?

(a) $\frac{4}{9}$ (b) $\frac{5}{6}$

(c) $\frac{1}{-1}$ (d) $\frac{1.5}{6}$

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (b) Let the adding number is x.

According to the question,

$$\frac{2}{3}+x=\frac{3}{2}$$

$$x=\frac{3}{2}-\frac{2}{3}=\frac{9-4}{6}=\frac{5}{6}$$

144. A fraction, when subtracted from $\frac{1}{3}$ gives $\frac{1}{12}$. The fraction is:

(a) $\frac{5}{12}$ (b) $\frac{1}{4}$

(c) $\frac{3}{4}$ (d) $\frac{1}{9}$

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

Ans : (b) Let the fraction be $\frac{x}{y}$.

According to the question,

$$\frac{1}{3}-\frac{x}{y}=\frac{1}{12}$$

$$\frac{x}{y}=\frac{1}{3}-\frac{1}{12}=\frac{4-1}{12}=\frac{3}{12}=\frac{1}{4}$$

$$\frac{x}{y}=\frac{1}{4}$$

145. The sum of two fractions is $\frac{5}{6}$. One of them is $\frac{3}{4}$. What is the other fraction ?

(a) $\frac{2}{5}$ (b) $\frac{1}{10}$

(c) 1 (d) $\frac{1}{12}$

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

Ans : (d) Let the other fraction be x.

According to the question,

$$x+\frac{3}{4}=\frac{5}{6}$$

$$\therefore \quad x=\frac{5}{6}-\frac{3}{4}=\frac{10-9}{12}=\frac{1}{12}$$

146. Which of the fractions given below, when added to $\frac{5}{7}$ gives 1 ?

(a) $\frac{4}{2}$ (b) $\frac{6}{21}$

(c) $\frac{5}{3}$ (d) $\frac{6}{14}$

RRB ALP & Tec. (30-08-18 Shift-II)

Ans : (b) Let the adding fraction be x.

According to the question,

$$x=1-\frac{5}{7}=\frac{2}{7}$$

Multiplying by 3 in the numerator and denominator of $\frac{2}{7}$,

$$=\frac{2\times3}{7\times3}=\frac{6}{21}$$

Hence, the required fraction is option (b) = $\frac{6}{21}$.

147. Which of the fractions given below, when added to $\frac{5}{8}$, gives 1?

(a) $\frac{6}{24}$ (b) $\frac{5}{2}$

(c) $\frac{6}{16}$ (d) $\frac{6}{3}$

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (c) Let the fraction be x.
According to the question,

$$\frac{5}{8} + x = 1$$

$$x = 1 - \frac{5}{8}$$

$$x = \frac{3 \times 2}{8 \times 2}$$

$$x = \frac{6}{16}$$

Hence the required fraction is option (c) $= \frac{6}{16}$.

148. Solve the following:
196 – 19.6 – 1.96 – 0.196 = ?
(a) 173.254 (b) 173.234
(c) 174.234 (d) 174.244

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) Given,
196−19.6−1.96−0.196
= 196–21.756
= 174.244

149. 0.196 + 1.96 + 19.6 + 196 = ?
(a) 217.756 (b) 216.856
(c) 216.756 (d) 217.676

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

Ans : (a) Given,
0.196 + 1.96 + 19.6 + 196 = 217.756

150. Solve the following :
123 + 12.3 + 1.23 + 0.123 + 0.0123 = ?
(a) 136.7659 (b) 136.653
(c) 136.6653 (d) 136.7760

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (c) Given,
123+12.3+1.23+0.123+0.0123=136.6653

Type - 8

151. If 0.001 ÷ x = 0.01, then find 'x'.
(a) 0.5 (b) 1
(c) 0.01 (d) 0.1

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

Ans : (d) Given,
0.001 ÷ x = 0.01

$$\frac{0.001}{x} = 0.01$$

$$\frac{0.1}{x} = 1 \Rightarrow x = 0.1$$

Hence, the value of x is 0.1 that is option (d).

152. The value of 0.0006697 to three digits of decimal will be:
(a) 0.000670 (b) 0.00669
(c) 0.001 (d) 0

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

Ans : (c) The value of 0.0006697 till three digits of decimal = 0.001,
After decimal if the right digit is 5 or more than 5, then we add 1 to the left digit.

153. Which fraction is not equal to $\frac{15}{23}$?
(a) $\frac{105}{162}$ (b) $\frac{75}{115}$
(c) $\frac{45}{69}$ (d) $\frac{30}{46}$

RRB RPF-SI -12/01/2019 (Shift-I)

Ans : (a) From question,
(a) $\frac{105}{162} = \frac{35}{54}$
(b) $\frac{75}{115} = \frac{15}{23}$
(c) $\frac{45}{69} = \frac{15}{23}$
(d) $\frac{30}{46} = \frac{15}{23}$

Hence, it is clear that option (a) is not equal to $\frac{15}{23}$.

154. 0.065 × 0.4 = ?
(a) 0.26 (b) 0.026
(c) 2.6 (d) 0.0026

RRB RPF-SI -11/01/2019 (Shift-I)

Ans : (b) Given,
0.065 × 0.4 = 0.026

155. Find the value of 0.1404 ÷ 0.06 = ?
(a) 0.234 (b) 2.34
(c) 234 (d) 23.4

RRB RPF Constable -18/01/2019 (Shift-I)

Ans :(b) Given,
0.1404 ÷ 0.06

$$= \frac{0.1404 \times 10000}{0.06 \times 10000} = \frac{1404}{600} = 2.34$$

156. Find the sum of the place value of 5 and 4 in $\frac{6}{8}$ and $\frac{6}{25}$ respectively.
(a) $\frac{8}{100}$ (b) $\frac{99}{100}$
(c) $\frac{9}{100}$ (d) $\frac{88}{100}$

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (c) $\frac{6}{8} = 0.75$

The place value of 5, in 0.75 = $0.05 = \frac{5}{100}$

and, $\frac{6}{25} = 0.24$

The place value of 4, in 0.24 = $0.04 = \frac{4}{100}$

So, the required sum of both values

$$= \frac{5}{100} + \frac{4}{100} = \frac{9}{100}$$

157. The whole value of 0.008594 to three digits of decimal will be?

(a) 0.008 (b) 0.009
(c) 0.00860 (d) 0.00859

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (b) As we know :- After decimal if the right digit is 5 or more than 5, then we add 1 to the left digit.
Hence, the whole value of 0.008594 to the three digits of decimal will be 0.009.

158. x and y, given correct to 2 decimal place, are given as 4.51 and 2.48 respectively. What is the upper bound of the value of x + y? (The value is correct to the two digits of decimal.)

(a) 7.000 (b) 6.995
(c) 7.010 (d) 6.990

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (a) x + y = 4.51 + 2.48 = 6.99
Hence, the nearest upper limit for the value of (x + y) that is 6.99 = 7.000.

159. Find the value of x.

$$\frac{144}{0.144} = \frac{14.4}{x}$$

(a) 0.0001 (b) 0.0144
(c) 0.1 (d) 0.01

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (b) : Given expression,

$$\frac{144}{0.144} = \frac{14.4}{x}$$

$$144 \times x = 14.4 \times 0.144$$

$$x = \frac{14.4 \times 0.144}{144}$$

$$x = \frac{144 \times 0.144}{144 \times 10}$$

$$x = 0.0144$$

160. If x is integer 0.80000, then what is interval of x?

(a) $0.79995 < x \le 0.80005$
(b) $0.799905 \le x < 0.800005$
(c) $0.799995 \le x < 0.800005$
(d) $0.79995 \le x < 0.80005$

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (c)
The required interval of x = $0.799995 \le x < 0.800005$

161. In $\frac{0.7}{1-6c}$ = -0.2 , then c = ?

(a) 0.8 (b) 0.5
(c) 0.75 (d) 0.075

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (c) : Given,

$$\frac{0.7}{1-6c} = -0.2$$

$$-0.2 + 1.2c = 0.7$$

$$1.2c = 0.9$$

$$c = \frac{0.9}{1.2}$$

$$c = 0.75$$

162. x is written as 15.84, to two digits of decimal. Which of the following is true?

(a) $15.835 < x \le 15.845$
(b) $15.835 < x < 15.845$
(c) $15.835 \le x \le 15.845$
(d) $15.835 \le x < 15.845$

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (d) : Analyzing option (d),
15.835 is less than x, and 15.835 is written to two digits of decimal as 15.84 (approx). While 15.845 will be definitely greater.

163. If x is 0.70000, to five digits of decimal, then interval of x will be:

(a) $0.6995 \le x < 0.70005$
(b) $0.699995 \le x < 0.700005$
(c) $0.699905 \le x < 0.700005$
(d) $0.69995 < x \le 0.70005$

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (b) If x is 0.70000, to five digits of decimal,
Then, $0.699995 \le x < 0.700005$ is correct.

164. The least value of x which makes $\frac{65}{x-14}$ an integer, is:

(a) 1 (b) –51
(c) 79 (d) –1

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (b) From question,
Putting the value of options in the place of x.

(a) $\frac{65}{1-14} = \frac{65}{-13} = -5$ (Integer)

(b) $\frac{65}{-51-14} = \frac{65}{-65} = -1$ is also an integer for which the value of x is the least.

(c) $\frac{65}{79-14} = \frac{65}{65} = 1$ (Integer)

(d) $\frac{65}{-1-14} = \frac{65}{-15} = -4.33$ (Non-Integer)

Hence, it is clear that the least required value of x is -1

165. The product of $\frac{144}{100}$ and $\frac{175}{216}$ will be = ?

(a) $\frac{7}{12}$ (b) $\frac{14}{3}$
(c) $\frac{7}{6}$ (d) $\frac{7}{3}$

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (c) $\frac{144}{100}\times\frac{175}{216}$

$=\frac{7}{6}$

166. x and y, are given correct to the two digits of decimal, are written as 3.57 and 3.42 respectively. What is the upper limit for x + y ?

(a) 7.000 (b) 7.010
(c) 6.990 (d) 6.995

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) : According to the question,
x and y are correct to the two digits of decimal.
x = 3.57 and y = 3.42,
then, x + y = 3.57 + 3.42 = 6.99
hence, the upper limit of x + y = 7.000

167. x and y, are given correct to the two digits of decimal, are written as 2.51 and 3.50 respectively. What is the lower limit for x + y ?

(a) 6.010 (b) 5.995
(c) 6.000 (d) 5.990

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (c) According to the question,
x = 2.51 and y = 3.50
then,
x + y = 2.51 + 3.50 = $\boxed{6.01}$
So the lower limit for x + y is 6.000

168. Find the value of x.

$$\frac{484}{4.84}=\frac{48.4}{x}$$

(a) 0.484 (b) 0.00484
(c) 0.0484 (d) 4.84

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (a) $\frac{484}{4.84}=\frac{48.4}{x}$

$\Rightarrow \quad x\times 484 = 48.4\times 4.84$

$\Rightarrow \quad x=\frac{484\times 484}{484\times 1000}$

Hence, x = 0.484

169. x and y, are given correct to the one digit of decimal, and written as 6.2 and 1.3 respectively. What is the upper limit of $\frac{x}{y}$?

(a) 4.96 (b) 5
(c) 4.77 (d) 5.05

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (b) $\frac{x}{y}=\frac{6.2}{1.3}=4.76$

Hence, the value of upper limit of $\frac{x}{y}$ is 5.

170. 1.008 = ?

(a) $1\frac{1}{125}$ (b) $1\frac{3}{25}$
(c) $1\frac{2}{25}$ (d) $1\frac{2}{125}$

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (a) : 1.008 = ?

$\Rightarrow \quad \frac{1008}{1000}=\frac{504}{500}=\frac{252}{250}=\frac{126}{125}=1\frac{1}{125}$

Hence, the value of 1.008 is $1\frac{1}{125}$.

171. If $X=\frac{63.5535}{13.05}$, find the value of X.

(a) 4.48 (b) 4.87
(c) 4.46 (d) 4.28

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (b) $X=\frac{63.5535}{13.05}$

$X=\frac{6355.35}{1305}=4.87$

Hence, the value of X is 4.87

172. If $\frac{1}{43.21}=0.2314$, then $\frac{1}{0.0004321}$ = ?

(a) 23.14 (b) 2314.27
(c) 0.0002314 (d) 231.4

RRB NTPC 19.01.2017 Shift : 2

Ans :(b) Given,

$\Rightarrow \frac{1}{43.21}=0.2314$

$=\frac{1}{43.21\times 10^{-5}}=\frac{10^5}{43.21}=2314.27$

173. $\frac{3.24\times 4}{0.2}$ = ?

(a) $\frac{324}{25}$ (b) $\frac{162}{25}$
(c) $\frac{162}{2}$ (d) $\frac{324}{5}$

RRB NTPC 19.01.2017 Shift : 3

Ans :(d) $\frac{3.24\times 4}{0.2}=\frac{3.24\times 4\times 100}{0.2\times 100}$

$=\frac{324\times 4}{20}=\boxed{\frac{324}{5}}$

174. If $\sqrt{5}=2.236$; then $\sqrt{5}/2$ is

(a) 1.851 (b) 1.118
(c) 2.236 (d) 1.782

RRB NTPC 27.04.2016 Shift : 3

Ans :(b)

$\frac{\sqrt{5}}{2}=\frac{2.236}{2}=1.118$

$(\because \sqrt{5}=2.236)$

175. Find the value of '?' – If 0.0043/?= 0.43

(a) 0.10 (b) 0.01
(c) 1.001 (d) 0.001

RRB NTPC 12.04.2016 Shift : 2

Ans : (b) $\frac{0.0043}{x} = 0.43$

$x = \frac{0.0043}{0.43}$

$x = \frac{43}{4300} = \frac{1}{100}$

$x = 0.01$

176. What is the value of 0.968 ÷ 0.11 = ?

(a) 88 (b) 8.8
(c) 0.88 (d) 8

RRB NTPC 30.04.2016 Shift : 3

Ans : (b) 0.968 ÷ 0.11

$= \frac{968}{110}$

$= 8.8$

177. If 2334/33.1 = 261, then 23.34/3.31 = ?

(a) 0.261 (b) 2.61
(c) 26.1 (d) 261

RRB NTPC 18.04.2016 Shift : 3

Ans : (c) Given,

$\frac{2334}{33.1} = 261$.....(1)

$\because \frac{23.34}{3.31} = \frac{2334}{331}$

$= \frac{2334}{33.1 \times 10}$

$= \frac{2334}{33.1} \times \frac{1}{10}$

$= \frac{261}{10}$ {from equation (1)}

$= 26.1$

178. 23 × 19 = 437. How much is 0.0437 ÷ 1.9 = ?

(a) 0.0023 (b) 2.3
(c) 0.023 (d) 0.23

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (c) Given,

$23 \times 19 = 437$

According to the question,

$\frac{0.0437}{1.9} = \frac{0.0437 \times 10000}{1.9 \times 10000}$

$= \frac{23 \times 19}{19 \times 1000}$

$= \frac{23}{1000} = 0.023$

179. 17 x 29 = 493. How much is 1700 x 0.0029 = ?

(a) 0.493 (b) 0.0493
(c) 4.93 (d) 49.3

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (c) : $17 \times 29 = 493$, तो $1700 \times 0.0029 = ?$

$\Rightarrow$ 1700×0.0029

$\Rightarrow$ $17 \times 100 \times 0.0029$

$\Rightarrow$ 17×0.29

$\Rightarrow$ 4.93

180. If 493 ÷ 29 = 17, then 4.93÷ 0.0017 = ?

(a) 290 (b) 0.29
(c) 2.9 (d) 2900

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (d) Given,

$493 \div 29 = 17$,

So,

$4.93 \div 0.0017 = \frac{4.93}{0.0017}$

$= \frac{4.93 \times 10000}{0.0017 \times 10000} = \frac{49300}{17}$

$= 2900$

181. 23 × 31=713. How much is 0.0713 ÷ 3.1?

(a) 0.0023 (b) 0.23
(c) 0.023 (d) 2.3

RRB ALP & Tec. (13-08-18 Shift-III)

Ans : (c) Given,

$23 \times 31 = 713$

So,

$0.0713 \div 3.1 = \frac{0.0713}{3.1}$

$= \frac{0.0713 \times 10000}{3.1 \times 10000} = \frac{713}{31000}$

$= 0.023$

182. Given 17 × 29 = 493, then 170 × 0.029 = ?

(a) 0.493 (b) 4.93
(c) 0.0493 (d) 49.3

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

Ans : (b) Given,

$17 \times 29 = 493$

So,

$170 \times 0.029 = 17 \times 10 \times \frac{29}{1000}$

$= \frac{17 \times 29}{100} = \frac{493}{100} = 4.93$

Type - 9

183. Which of the following fractions is greater than 7/12, and smaller than 11/16?

(a) 1/2 (b) 5/8
(c) 7/8 (d) 3/8

RRB JE - 27/06/2019 (Shift-I)

Ans : (b) From the given fractions,

$\frac{7}{12} = 0.58$ $\frac{11}{16} = 0.68$

From question,

(a) $\frac{1}{2} = 0.50$ (b) $\frac{5}{8} = 0.62$

(c) $\frac{7}{8} = 0.87$ (d) $\frac{3}{8} = 0.37$

Hence, option (b) is 0.62, which is greater than 0.58 and smaller than 0.68.

184. Which of the following is correct?

(a) $\frac{9}{16} \le \frac{13}{24}$ (b) $\frac{9}{16} > \frac{13}{24}$

(c) $\frac{9}{16} = \frac{13}{24}$ (d) $\frac{9}{16} < \frac{13}{24}$

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) From options,

(a) $\frac{9}{16} \le \frac{13}{24} = 0.56 \le 0.54$ (wrong)

(b) $\frac{9}{16} > \frac{13}{24} = 0.56 > 0.54$ (right)

(c) $\frac{9}{16} = \frac{13}{24} = 0.56 = 0.54$ (wrong)

(d) $\frac{9}{16} < \frac{13}{24} = 0.56 < 0.54$ (wrong)

185. Which of the following is a commutative fraction?

(a) $\frac{77}{72}$ (b) $\frac{5}{49}$

(c) $\frac{105}{112}$ (d) $\frac{104}{121}$

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (b) From question,

$\Rightarrow \frac{77}{72} = 1.0694$

$\Rightarrow \frac{5}{49} = 0.1020$

$\Rightarrow \frac{105}{112} = 0.9375$

$\Rightarrow \frac{104}{121} = 0.8595$

Hence, the commutative fraction is $\frac{5}{49}$.

186. Find the smallest of the following decimals.

(a) 0.1 × 0.1 × 0.1 (b) 0.03 / 3

(c) 0.01 / 2 (d) 0.1 × 0.02 × 0.2

RRB NTPC 05.04.2016 Shift-1

Ans : (d) From question,

(a) 0.1 × 0.1 × 0.1 = 0.001

(b) 0.03 / 3 = 0.01

(c) 0.01 / 2 = 0.005

(d) 0.1 × 0.02 × 0.2 = 0.0004

187. Find the smallest of the following decimals.

(a) 0.2 × 0.2 × 0.2 (b) 0.02 / 3

(c) 0.01 / 2 (d) 0.1 × 0.02 × 2

RRB NTPC 31.03.2016 Shift : 2

Ans : (d) From question,

$\Rightarrow$ 0.2 × 0.2 × 0.2 = 0.008

$\Rightarrow \frac{0.02}{3} = 0.0067$

$\Rightarrow \frac{0.01}{2} = 0.005$

$\Rightarrow$ 0.1 × 0.02 × 2 = 0.004

Hence, it is clear that option (d) is the smallest.

188. Find the fraction which is as much greater than $\frac{4}{7}$ as it is less than $\frac{5}{6}$:

(a) $\frac{59}{84}$ (b) $\frac{84}{59}$

(c) $\frac{58}{84}$ (d) $\frac{59}{85}$

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

Ans : (a) Let the fraction is x.

According to the question,

$$\frac{4}{7} < x > \frac{5}{6}$$

Then,

$$x\left(\text{Middle fraction}\right) = \frac{\text{Sum of both fractions}}{2}$$

$$x = \frac{\frac{4}{7}+\frac{5}{6}}{2} = \frac{\frac{24+35}{42}}{2} = \frac{59}{84}$$

189. The product of two numbers is 0.432. One of the number is 1.6. What is the other number?

(a) 2.7 (b) 0.027

(c) 0.27 (d) 27

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

Ans : (c)

$$\text{The required number} = \frac{\text{Prouduct of both numbers}}{\text{First number}}$$

$$= \frac{0.432}{1.6}$$

$$= 0.27$$

190. Which of the following is true?

(a) $\frac{29}{6} = \frac{53}{12}$ (b) $\frac{29}{6} = \frac{43}{12}$

(c) $\frac{29}{6} > \frac{43}{12}$ (d) $\frac{29}{6} < \frac{43}{12}$

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (c) From question,

(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) $\frac{29}{6} < \frac{43}{12}$ (false)

Type - 10

191. If 3 is added to the numerator and the denominator of a fraction, it becomes $\frac{10}{11}$. And if 4 is subtracted from the numerator and the denominator, then it becomes $\frac{3}{4}$. What is the fraction?

(a) $\frac{7}{8}$ (b) $\frac{6}{13}$

(c) $\frac{3}{4}$ (d) $\frac{3}{5}$

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

Ans : (a) Let the fraction is $\frac{x}{y}$

According to the question,

$$\frac{x+3}{y+3}=\frac{10}{11}$$

$$\Rightarrow 11x+33=10y+30$$

$$\Rightarrow 11x-10y=-3.....(i)$$

Again, $\frac{x-4}{y-4}=\frac{3}{4}$

$\Rightarrow$ 4x – 16 = 3y – 12

$\Rightarrow$ 4x – 3y = 4 .....(ii)

From equation (i) and (ii)–

x = 7 and y = 8

Hence, the required fraction is $\frac{7}{8}$.

192. The difference between 3/8 and another smaller number is 1/5. Find another number.

(a) $\frac{3}{40}$ (b) $\frac{2}{3}$

(c) $\frac{7}{40}$ (d) $\frac{8}{15}$

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) : Let the another smaller number is x.

According to the question,

$$\frac{3}{8}-x=\frac{1}{5}$$

$$-x=\frac{1}{5}-\frac{3}{8}$$

$$-x=\frac{8-15}{40}$$

$$-x=\frac{-7}{40}$$

$$x=\frac{7}{40}$$

Hence, another smaller number is option (c) = $\frac{7}{40}$.

193. The denominator of a fraction exceeds 5 by its numerator. If the numerator is multiplied by 4 and the denominator is multiplied by 3, then the fraction becomes $\frac{1}{2}$.

(a) $\frac{3}{8}$ (b) $\frac{2}{7}$

(c) $\frac{4}{9}$ (d) $\frac{1}{6}$

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (a)

Let the numerator is x, then the fraction $=\frac{x}{x+5}$

According to the question,

$$\frac{x\times 4}{(x+5)\times 3}=\frac{1}{2}$$

$$\frac{4x}{3x+15}=\frac{1}{2}$$

8x = 3x + 15

5x = 15

x = 3

Hence, the required fraction is $\frac{x}{x+5}=\frac{3}{3+5}=\frac{3}{8}$

194. If 2 is added to the square of a positive fraction is $4\frac{1}{4}$. Find the fraction.

(a) $2\frac{3}{4}$ (b) $1\frac{1}{4}$

(c) $2\frac{1}{4}$ (d) $1\frac{1}{2}$

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (d) Let the fraction is *x*.

According to the question,

$$x^2+2=4\frac{1}{4}$$

$$x^2+2=\frac{17}{4}$$

$$4x^2+8=17$$

$$4x^2=17-8$$

$$4x^2=9\ ,\ x^2=\frac{9}{4}$$

$$x=\frac{3}{2}=1\frac{1}{2}$$

195. 5/12 of a number is 3/4. What is the number?

(a) $3\frac{1}{5}$ (b) $1\frac{7}{5}$

(c) $1\frac{4}{5}$ (d) $1\frac{5}{16}$

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) : Let the number is x.
According to the question,

$x \times \frac{5}{12} = \frac{3}{4}$

$\Rightarrow x = \frac{9}{5}$

$x = 1\frac{4}{5}$

196. The sum of three fractions is 5. One of them is $1\frac{1}{2}$, and the difference of two others is $\frac{3}{4}$. Find the greatest of the three.

(a) $2\frac{1}{4}$ (b) $2\frac{1}{8}$

(c) $2\frac{1}{2}$ (d) $1\frac{7}{8}$

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (b) : Let other fractions are x and y.
According to the question,

$x + y + 1\frac{1}{2} = 5$

$\Rightarrow \quad x + y = \frac{7}{2}$ .....(i)

and $\quad x - y = \frac{3}{4}$ .....(ii)

Subtracting equation (ii) from equation (i),

$x + y = \frac{7}{2}$

$x - y = \frac{3}{4}$

$- \quad + \quad -$

$2y = \frac{7}{2} - \frac{3}{4}$

$2y = \frac{11}{4}$

$y = \frac{11}{8} = 1.4$

Putting the value of y in 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 greatest of the three fractions is $2\frac{1}{8}$.

197. Find the divisor of $\frac{1}{5 - 2\sqrt{3}}$.

(a) $\frac{(5-2\sqrt{3})}{12}$ (b) $\frac{5+2\sqrt{3}}{13}$

(c) $\frac{5-2\sqrt{3}}{13}$ (d) $\frac{5+2\sqrt{3}}{12}$

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (b) On rationalizing $\frac{1}{5-2\sqrt{3}}$

$= \frac{1}{5-2\sqrt{3}} \times \frac{5+2\sqrt{3}}{5+2\sqrt{3}}$

$= \frac{5+2\sqrt{3}}{25-12} = \frac{5+2\sqrt{3}}{13}$

198. Which fraction lies between $\frac{3}{5}$ and $\frac{7}{8}$?

(a) $\frac{8}{9}$ (b) $\frac{6}{7}$

(c) $\frac{12}{13}$ (d) $\frac{4}{7}$

RRB NTPC 18.01.2017 Shift : 1

Ans : (b) From given fractions,

$\frac{3}{5} = 0.60$, $\frac{7}{8} = 0.875$

From question,

(a) $\frac{8}{9} = 0.888$

(b) $\frac{6}{7} = 0.857$

(c) $\frac{12}{13} = 0.923$

(d) $\frac{4}{7} = 0.571$

Hence, it is clear that 0.857 lies between 0.60 and 0.875.

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

(a) 5 (b) 7

(c) 8 (d) 9

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) Total length of the rod $= 208\frac{4}{5} = \frac{1044}{5}$

According to the question,

The number of rods obtained = $\frac{\text{Total length}}{\text{Length of one part}}$

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

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

200. A steel rod of length $20\frac{3}{26}$ is cut out from a rod of length $56\frac{1}{5}$. What then is the remaining length of the rod ?

(a) $36\frac{3}{130}$

(b) $36\frac{1}{130}$

(c) $36\frac{11}{130}$

(d) $36\frac{7}{130}$

RRB ALP & Tec. (30-08-18 Shift-II)

Ans : (c) The cut out length of the rod $= 20\frac{3}{26}$

$= \frac{523}{26}$

Total length of the rod $= 56\frac{1}{5} = \frac{281}{5}$

The length of the remaining rod $= \frac{281}{5} - \frac{523}{26}$

$= \frac{7306-2615}{130} = \frac{4691}{130} = 36\frac{11}{130}$

201. If $\frac{3}{4}$ of the weight of a brick is $\frac{7}{8}$ kg, then $\frac{5}{7}$ of the weight of the brick will be:

(a) $\frac{20}{21}$ kg (b) $\frac{5}{6}$ kg

(c) $\frac{5}{8}$ kg (d) $\frac{15}{32}$ kg

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

Ans : (b) Let the weight of the brick is x kg.

According to the question,

$\frac{3x}{4} = \frac{7}{8}$

$x = \frac{7}{8} \times \frac{4}{3}$

Hence $\frac{5x}{7} = \frac{7}{8} \times \frac{4}{3} \times \frac{5}{7}$

$\frac{5x}{7} = \frac{5}{6}$

202. Tapan, Ravi and Trisha shared a cake. Tapan had $\frac{1}{4}$ of it, Trisha had $\frac{2}{3}$ of it and Ravi had the rest. What was Ravi's share of the cake?

(a) $\frac{4}{7}$ (b) $\frac{1}{12}$

(c) $\frac{1}{6}$ (d) $\frac{2}{6}$

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

Ans : (b) Tapan's share $= \frac{1}{4}$

Trisha's share $= \frac{2}{3}$

Hence, Ravi's share $= 1 - \left(\frac{1}{4} + \frac{2}{3}\right) = 1 - \frac{11}{12} = \frac{1}{12}$

Hence, Ravi's share of the cake is option (b) = $\frac{1}{12}$.

203. The product of two numbers is 0.324. One of the numbers is 1.2. What is the other number?

(a) 2.7 (b) 0.27

(c) 0.027 (d) 27

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (b) Let the other number is x.

The first number = 1.2

And product = 0.324

According to the question,

$x \times 1.2 = 0.324$

$\boxed{x = \frac{0.324}{1.2} = 0.27}$

204. Tapas, Avi and Rishi shared a cake. Tapas had $\frac{1}{2}$ of it, Rishi had $\frac{1}{3}$ of it and Avi had the rest. What was Avi's share of the cake?

(a) $\frac{2}{6}$ (b) $\frac{1}{6}$

(c) $\frac{3}{6}$ (d) $\frac{3}{5}$

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (b) Avi's share of the cake,

$= 1 - \left(\frac{1}{2} + \frac{1}{3}\right) = 1 - \left(\frac{3+2}{6}\right)$

$= \frac{6-5}{6} = \frac{1}{6}$

Type - 11

205. Sum of numerator and denominator of a fraction is 13. Adding 3 and 9 to the numerator and denominator respectively, the fraction becomes 2/3. What is the product of the numerator and denominator of the original fraction?

(a) 45 (b) 42

(c) 30 (d) 24

RRB JE - 25/05/2019 (Shift-II)

Ans : (b)

Let the numerator is x and the denominator is y.

So, $x + y = 13$ ..... (i)

$$\frac{x+3}{y+9} = \frac{2}{3}$$

$3x + 9 = 2y + 18$

$3x - 2y = 9$ ..... (ii)

From equation (i) and (ii),

$x = 7, y = 6$

So, the required product = $xy = 7 \times 6 = 42$

206. A cake is shared among five friends. Four of them get the share of the cake $\frac{1}{8}, \frac{1}{6}, \frac{5}{12}, \frac{1}{12}$ respectively. What is the 5th's share of the cake?

(a) $\frac{1}{6}$ (b) $\frac{5}{24}$

(c) $\frac{1}{4}$ (d) $\frac{3}{8}$

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) The share of the cake what all four get

$$= \frac{1}{8} + \frac{1}{6} + \frac{5}{12} + \frac{1}{12}$$

$$= \left(\frac{8+6}{48}\right) + \frac{6}{12} = \frac{14}{48} + \frac{6}{12} = \frac{7}{24} + \frac{6}{12} = \frac{19}{24}$$

Hence, the 5th's share of the cake $= 1 - \frac{19}{24} = \frac{5}{24}$

207. $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}$ are–

(a) Odd

(b) Irreducible

(c) Equivalent

(d) Alike (equal)

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (c) From given fractions,

$$\frac{2}{3} = 0.\overline{6}$$

$$\frac{4}{6} = 0.\overline{6}$$

$$\frac{6}{9} = 0.\overline{6} \quad \frac{2}{3} = \frac{4}{6} = \frac{6}{9}$$

Hence, it is clear that all the given fractions are Equivalent.

208. A tennis player, won 18 games out of 27 games played. Calculate the games won in terms of decimal.

(a) 0.667

(b) 0.067

(c) 0.50

(d) 0.333

RRB NTPC 29.04.2016 Shift : 2

Ans : (a) The number of games won $= \frac{18}{27} = 0.667$

209. Saniya won 18 games out of 27 games played. Calculate the games lost in terms of decimal.

(a) 0.333

(b) 0.033

(c) 0.50

(d) 0.667

RRB NTPC 12.04.2016 Shift : 1

Ans : (a)

The number of games lost, $= \frac{27-18}{27}$

$$= \frac{9}{27} = \frac{1}{3} = 0.333$$

210. 0.1, 0.9, 0.01, 0.09, ……., 0.009

(a) 0.0001 (b) 0.1010

(c) 0.001 (d) 0.0011

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

Ans : (c) Given,

<u>0.1, 0.9</u>, <u>0.01, 0.09</u>, ..., 0.009

So, the missing term is 0.001,

When we make pairs of two- two, then the pattern showed in blank is 0.001, 0.009.

211. If $\frac{60}{75}$ is equivalent to $\frac{4}{x}$ then the value of x is :

(a) 15 (b) 4

(c) 18 (d) 5

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (d) According to the question,

$$\frac{60}{75} = \frac{4}{x}$$

$$\Rightarrow \quad x = \frac{4 \times 75}{60}$$

$$\Rightarrow \quad x = 5$$

Hence, the value of x is 5.

03.

Surds and Indices

Type - 1

1. Solve :-

$$\frac{\sqrt{4375}}{\sqrt{7}} = ?$$

(a) 64 (b) 25
(c) 36 (d) 16

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

Ans. (b) Given,

$$\frac{\sqrt{4375}}{\sqrt{7}} = \sqrt{\frac{4375}{7}}$$

$$= \sqrt{625} = \sqrt{25 \times 25} = 25$$

2. The square root of 10201 is:

(a) 91 (b) 99
(c) 101 (d) 111

RRB RPF Constable -18/01/2019 (Shift-I)

Ans : (c) Finding the square root by division method,

	101
1	10201
+1	1
201	×0201
1	0201
	××××

Hence, the square root of 10201 is 101.

3. The square root of 519841 is:

(a) 721 (b) 629
(c) 631 (d) 731

RRB RPF SI -10/01/2019 (Shift-II)

Ans. (a) : Square root of 519841

	721
7	519841
+7	49
142	298
+2	284
1441	1441
1	1441
	××××

Hence, the square root of 519841 is 721.

4. What is the square root of 34596 ?

(a) 174 (b) 176
(c) 204 (d) 186

RRB RPF Constable -19/01/2019 (Shift-II)

Ans. (d) Square root of 34596

	186
1	34596
+1	1
28	245
+8	224
366	2196
6	2196
	××××

So, the required square root of the given number is 186.

5. What is the square root of 11881?

(a) 109 (b) 119
(c) 111 (d) 101

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) : Square root of 11881

	109
1	1 1 8 8 1
1	1
209	1 8 8 1
	1 8 8 1
	××××

So, the required square root is 109.

6. Which of the following is the square root of 14161 ?

(a) 129 (b) 121
(c) 119 (d) 131

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (c) Finding the square root of 14161

	119
1	14161
+1	1
21	×41
+1	21
229	2061
	2061
	××××

Hence, 119 is the square root of 14161.

7. What is the square root of 7569 ?

(a) 77 (b) 87
(c) 93 (d) 83

RRB Group-D–03/10/2018 (Shift-II)

Ans : (b) Square root of 7569

```
        87
   8 | 7569
   8 | 64
 167 | 1169
   7 | 1169
     | ××××
```

Hence, the square root of 7569 is 87

8. What is the square root of 8281 ?

(a) 81 (b) 91
(c) 89 (d) 99

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b) Square root of 8281

```
        91
   9 | 8 2 8 1
   9 | 8 1
 181 |   1 8 1
     |   1 8 1
     |     ××
```

Hence, the required square root is 91.

9. What is the square root of 3364 ?

(a) 64 (b) 62
(c) 58 (d) 52

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (c) Square root of 3364

```
        | 5  8
      5 | 3  3  6  4
    + 5 | 2  5
   10 8 |    8  6  4
        |    8  6  4
        |    ×  ×  ×
```

Hence, the required square root is 58.

10. What is the value of $\sqrt{183184}$?

(a) 414 (b) 432
(c) 428 (d) 416

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (c) $\sqrt{183184}$ = The square root of 183184.
So finding the square root of 183184,

```
          | 4  2  8
        4 | 1  8  3  1  8  4
      + 4 | 1  6
      8 2 |    2  3  1
    +   2 |    1  6  4
    8 4 8 |       6  7  8  4
        8 |       6  7  8  4
          |       ×  ×  ×  ×
```

Hence, the required value is 428.

11. The square root of 60025 is:

(a) 275 (b) 255
(c) 245 (d) 265

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (c) : Finding the square root of 60025 by factorization method,

```
5 | 60025
5 | 12005
7 |  2401
7 |   343
7 |    49
7 |     7
  |     1
```

$\sqrt{60025} = \sqrt{5\times5\times7\times7\times7\times7}$
$= 5 \times 7 \times 7$
$= 5 \times 49 = 245$

Hence, the required square root is 245.

12. The square root of 4624 is:

(a) 62 (b) 72
(c) 78 (d) 68

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (d) : Finding the square root by factorization method,

```
 2 | 4624
 2 | 2312
 2 | 1156
 2 |  578
17 |  289
17 |   17
   |    1
```

$\sqrt{4624} = \sqrt{2\times2\times2\times2\times17\times17}$
$= 2 \times 2 \times 17$
$= 4 \times 17 = 68$

Hence, the required square root is 68.

13. What is the square root of 5476?

(a) 84 (b) 74
(c) 66 (d) 76

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (b) Finding the square root of 5476 by division method,

```
        74
   7 | 5476
  +7 | 49
 144 |   576
   4 |   576
     |   ×××
```

Hence, the required square root is 74,

14. The square root of 4356 is:

(a) 76 (b) 64
(c) 84 (d) 66

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : Finding the square root by division method,

```
        66
   6 | 4356
   6 | 36
 126 | x 756
   6 |   756
     |   xxx
```

Hence, the required square root is 66.

15. Find the square root of 15625.

(a) 145 (b) 125
(c) 135 (d) 150

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (b) Finding the square root by division method,

	125
1	$\overline{1}\ \overline{56}\ \overline{25}$
+1	1
22	56
+2	44
245	1225
	1225
	xxxx

$\sqrt{15625} = 125$

Hence, the square root of 15625 is 125.

16. The square root of 10816 is:

(a) 106 (b) 96
(c) 114 (d) 104

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans. (d) : The square root of 10816

	104
1	10816
+1	1
20	08
+0	00
204	816
4	816
	×××

Hence, the required square root is 104.

17. Find the value of $\sqrt{37249}$ –

(a) 183 (b) 187
(c) 197 (d) 193

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (d) $\sqrt{37249}$ = square root of 37249.

So, finding the square root,

	193
1	$3\overline{72}\overline{49}$
+1	1
29	272
+9	261
383	1149
3	1149
	××××

Hence, the value of given number is 193.

18. If $\frac{x}{\sqrt{243}} = \frac{\sqrt{2187}}{x}$, and x is positive, then what is the value of x ?

(a) 29 (b) 27
(c) 23 (d) 21

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (b) Given,

$$\frac{x}{\sqrt{243}} = \frac{\sqrt{2187}}{x}$$

$$\Rightarrow \frac{x}{\sqrt{9\times9\times3}} = \frac{\sqrt{3\times9\times9\times9}}{x}$$

$$\Rightarrow \frac{x}{9\sqrt{3}} = \frac{27\sqrt{3}}{x}$$

$$\Rightarrow x^2 = 27\times9\times\sqrt{3}\times\sqrt{3}$$

$$x = \sqrt{27\times27} = 27$$

Hence, the value of x is 27.

19. Solve the following equation.

$\sqrt{54}\times\sqrt{6}=?$

(a) 18 (b) 19
(c) 20 (d) 16

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (a) From given equation,

$\sqrt{54}\times\sqrt{6}$

$\sqrt[a]{m}\times\sqrt[a]{n} = \sqrt[a]{m\times n}$ से

$= \sqrt{54\times6}$

$= \sqrt{324}$

$= 18$

20. Which from the following is irrational?

(a) $\sqrt[6]{4096}$ (b) $\sqrt[4]{4096}$
(c) $\sqrt[8]{4096}$ (d) $\sqrt[3]{4096}$

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (c) From options,

$\sqrt[6]{4096} = 4$

$\sqrt[4]{4096} = 8$

$\sqrt[3]{4096} = 16$

$\sqrt[8]{4096} = 2\sqrt[8]{(2)^4}$

Hence, $\sqrt[8]{4096}$ is irrational, because all others are rational.

21. What will be the square root of 25281?

(a) 149 (b) 143
(c) 139 (d) 159

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (d) finding the square root by division method,

	159
1	$2\overline{52}\overline{81}$
+1	1
25	152
+5	125
309	2781
9	2781
	××××

Hence, the required square root is 159.

22. What is the square root of 39204?

(a) 198 (b) 196
(c) 194 (d) 202

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (a) The square root of 39204

	198
1	39204
+1	1
29	292
+9	261
388	3104
8	3104
	××××

Hence the square root of 39204 will be 198.

23. Which of the following is the square root of 35721?

(a) 179 (b) 189
(c) 171 (d) 201

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (b) (a) $179 \rightarrow (179)^2 = 32041$
(b) $189 \rightarrow (189)^2 = \boxed{35721}$
(c) $171 \rightarrow (171)^2 = 29241$
(d) $201 \rightarrow (201)^2 = 40401$

24. The square root of 41616 is:

(a) 196 (b) 204
(c) 186 (d) 194

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (b) Square root of 41616

	204
2	41616
2	4
404	1616
4	1616
	××××

Hence, the square root of 41616 is 204.

25. What is the square root of 16641?

(a) 139 (b) 121
(c) 129 (d) 131

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (c) The square root of $16641 = \sqrt{16641}$
$= \sqrt{3\times3\times43\times43} = 3\times43 = 129$

26. If $\sqrt{108}+\sqrt{243} = 25.98$ find the value of $\sqrt{147}+\sqrt{192}$.

(a) 26.89 (b) 27.172
(c) 25.98 (d) 24.248

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) Given,

$\sqrt{108}+\sqrt{243} = 25.98$

$\Rightarrow \sqrt{2\times2\times3\times3\times3} + \sqrt{3\times3\times3\times3\times3} = 25.98$

$\Rightarrow 6\sqrt{3} + 9\sqrt{3} = 25.98$

$\Rightarrow 15\sqrt{3} = 25.98$ .....(I)

According to the question,

$\therefore \sqrt{147}+\sqrt{192} = \sqrt{7\times7\times3} + \sqrt{2\times2\times2\times2\times2\times2\times3}$

$= 7\sqrt{3}+8\sqrt{3} = 15\sqrt{3}$ (From equation- I)

$= 15 \times 1.732$

$= 25.980$

$= 25.98$

27. What is the square root of 243049?

(a) 497 (b) 503
(c) 493 (d) 487

RRB Group-D – 15/11/2018 (Shift-III)

Ans (c) Finding the square root by division method,

$\sqrt{243049} = ?$

	493
4	243049
+4	16
89	830
+9	801
983	2949
+3	2949
	××××

Hence, the required square root is 493.

28. How much is the square root of 21904?

(a) 144 (b) 146
(c) 152 (d) 148

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (d) Square root of 21904

	148
1	21904
+1	1
24	119
+4	96
288	2304
8	2304
	××××

Hence, the required square root is 148.

29. What is the square root of 16129?

(a) 143 (b) 137
(c) 127 (d) 117

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) Square root of 16129

	127
1	16129
+1	1
22	61
+2	44
247	1729
7	1729
	××××

Hence, the square root of 16129 is 127.

30. How much is the square root of 10404?

(a) 102 (b) 106
(c) 98 (d) 104

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (a) The square root of 10404,

$\sqrt{10404} = \sqrt{2\times2\times3\times3\times17\times17}$

$= 2 \times 3 \times 17 = 102$

Hence, the square root is 102.

31. How much is the square root of 1521?

(a) 41 (b) 39
(c) 31 (d) 49

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (b) The square root of 1521

	39
3	15 21
+3	9
69	621
+9	621
	×××

Hence, the required square root is 39.

32. The square root of 16900 is:

(a) 130 (b) 110
(c) 140 (d) 120

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (a) Square root of 16900

	130
1	16900
+1	1
23	×69
+3	69
260	××00
+ 0	00
	××

Hence, the required square root is 130.

Type - 2

33. The square root of 13.69 is:

(a) 3.7 (b) 37
(c) 0.037 (d) 0.37

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (a) The square root of 13.69 by division method,

	3.7
3	13.69
3	9
67	469
7	469
	×××

Hence, the required square root is 3.7.

34. $\sqrt{0.00069169}$ = ?

(a) 0.00243 (b) 0.000243
(c) 0.0263 (d) 0.243

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) : From given number,

$\sqrt{0.00069169} = \sqrt{\frac{69169}{100000000}}$

$= \sqrt{\frac{69169}{100000000}} = \sqrt{\frac{263\times263}{10000\times10000}} = \frac{263}{10000} = 0.0263$

35. Find the square root of 0.0324.

(a) 0.18 (b) 1.8
(c) 1.08 (d) 0.018

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (a) The square root of given number,

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

$= \sqrt{\frac{18\times18}{100\times100}}$

$= \frac{18}{100} = 0.18$

Hence, the required square root is 0.18.

36. Find the value of $\sqrt{4.2436}$

(a) 2.14 (b) 2.16
(c) 2.04 (d) 2.06

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : $\sqrt{4.2436}$ = Square root of 4.2436

	206
2	42436
+2	4
406	×2436
6	2436
	××××

$\sqrt{4.2436} = \sqrt{\frac{42436}{10000}} = \frac{206}{100} = 2.06$

37. Find the value of $\sqrt{0.5}$ –

(a) 0.707 (b) 0.947
(c) 0.787 (d) 0.897

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (a) $\sqrt{0.5}$ = Square root of 0.50000

	0.707
7	0.500000
+7	49
1407	10000
7	9849
	151

Hence, the square root of 0.5 is 0.707 (Approx). So, ($\sqrt{0.5}$ = 0.707)

38. Find the value of $\sqrt{0.6}$ –

(a) 0.944 (b) 0.874
(c) 0.894 (d) 0.774

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (d) : $\sqrt{0.6}$ = Square root of 0.600000
So, finding the square root by division method,

	0.774
7	0.600000
+7	49
147	1100
+7	1029
1544	7100
4	6176
	924

Hence the required value is 0.774 (approx).

39. What is the square root of 15625?
(a) 105 (b) 115
(c) 125 (d) 135
RRB Group-D – 12/11/2018 (Shift-II)

Ans : (c) The square root of $15625 = \sqrt{15625}$
$= \sqrt{5\times5\times5\times5\times5\times5}$
$= 5\times5\times5 = 125$

40. What is the value of $\sqrt{0.8}$
(a) 0.964 (b) 0.694
(c) 0.894 (d) 0.984
RRB Group-D – 12/10/2018 (Shift-II)

Ans : (c) $\sqrt{0.8}$ = square root of 0.80000
So, finding the square root

	0.	8	9	4
8	0.	80	00	00
+8		64		
169		16	00	
+ 9		15	21	
1784			79	00
4			71	36
			7	64

Hence, the value of $\sqrt{0.8}$ is 0.894.

41. The value of $\sqrt{0.0144}$ is:
(a) 0.12 (b) 0.012
(c) 1.2 (d) 0.0012
RRB NTPC 27.04.2016 Shift : 1

Ans : (a) $\sqrt{0.0144}$ = Square root of 0.0144
So, finding the square root of 0.0144 by division method,

	0.12
1	0.0144
1	01
22	44
+2	44
	××

Hence, the square root of 0.0144 = $\sqrt{0.0144}$ = 0.12

Type - 3

42. If $\sqrt{4225} = 65$. Find the value of $\sqrt{42.25}+\sqrt{0.4225}$.
(a) 6.5 (b) 7.25
(c) 6.25 (d) 7.15
RRB JE - 30/05/2019 (Shift-III)

Ans : (d) Given $\sqrt{4225} = 65$
Then, $= \sqrt{42.25}+\sqrt{0.4225}$
= 6.5 + .65 ..(Square root of 4225 = 65)
= 7.15
Hence, the required value is 7.15

43. If $\sqrt{7}$ = 2.6457 and $\sqrt{3}$ =1.732, Then find the value of $\frac{1}{\sqrt{7}-\sqrt{3}}$
(a) 1.0944 (b) 1.944
(c) 1.009 (d) 1.0844
RRB RPF Constable -25/01/2019 (Shift-III)

Ans : (a) Given,
$\sqrt{7} = 2.6457$
$\sqrt{3} = 1.732$
then,
$$\frac{1}{\sqrt{7}-\sqrt{3}} = \frac{\left(\sqrt{7}+\sqrt{3}\right)}{\left(\sqrt{7}-\sqrt{3}\right)\times\left(\sqrt{7}+\sqrt{3}\right)} = \frac{\sqrt{7}+\sqrt{3}}{4}$$
$$= \frac{2.6457+1.732}{4} = \frac{4.3777}{4} = 1.0944$$
Hence, the required value is 1.0944.

44. If $\frac{0.27}{p^2} = 27$, p = ?
(a) 0.001 (b) 0.1
(c) 0.01 (d) 1.0
RRB RPF SI -13/01/2019 (Shift-II)

Ans. (b) Given,
$$\frac{0.27}{p^2} = 27$$
$$p^2 = \frac{0.27}{27} = \frac{27}{2700}$$
$$p^2 = \frac{1}{100} = \left(\frac{1}{10}\right)^2$$
$$p = \frac{1}{10} = 0.1$$

45. If $\sqrt{3}$ = 1.732, Then what is the value of $\frac{1}{\sqrt{3}}$
(a) 0.577 (b) 2.577
(c) 1.577 (d) 0.770
RRB RPF Constable -22/01/2019 (Shift-I)

Ans : (a) Given,

$$\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$= \frac{1.732}{3} = 0.57733$$

Hence, the value of $\frac{1}{\sqrt{3}} = 0.57733$.

46. If $\sqrt{45} + \sqrt{20} = 11.180$, then find the value of $\sqrt{180} + 4\sqrt{5}$

(a) 22.360 (b) 24.595
(c) 20.124 (d) 17.888

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : Given,

$\sqrt{45} + \sqrt{20} = 11.180, \Rightarrow \sqrt{45} + 2\sqrt{5} = 11.180$

$\sqrt{180} + 4\sqrt{5} = 2\sqrt{45} + 4\sqrt{5}$

$2\left(\sqrt{45} + 2\sqrt{5}\right) = 2 \times 11.180 = 22.360$

47. If $3\sqrt{5} + \sqrt{125} = 17.84$ Then, how much will be $\sqrt{80} + 7\sqrt{5}$

(a) 33.3 (b) 24.53
(c) 22.0 (d) 22.3

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b) Given,

$3\sqrt{5} + \sqrt{125} = 17.84$

$3\sqrt{5} + 5\sqrt{5} = 17.84$

$8\sqrt{5} = 17.84$

$\sqrt{5} = \frac{17.84}{8} = 2.23$

According to the question, $\sqrt{80} + 7\sqrt{5}$

$\sqrt{16 \times 5} + 7\sqrt{5} = 4\sqrt{5} + 7\sqrt{5} = 11\sqrt{5}$

Putting the value of $\sqrt{5}$

$\sqrt{80} + 7\sqrt{5} = 11 \times 2.23 = 24.53$

48. If $\sqrt{50} + \sqrt{128} = \sqrt{N}$ then what is the value of N?

(a) 26 (b) 390
(c) 338 (d) 182

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (c) Given,

$\sqrt{50} + \sqrt{128} = \sqrt{N}$

$\sqrt{25 \times 2} + \sqrt{64 \times 2} = \sqrt{N}$

$5\sqrt{2} + 8\sqrt{2} = \sqrt{N}$

$13\sqrt{2} = \sqrt{N}$

Squaring in both side,

$\left(13\sqrt{2}\right)^2 = \left(\sqrt{N}\right)^2$

$169 \times 2 = N$

$338 = N$

$\boxed{N = 338}$

49. The square root of 41616 is:

(a) 196 (b) 194
(c) 204 (d) 214

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (c) Square root of 41616

	204
2	41616
+2	4
40	16
+0	00
404	1616
4	1616
	× × × ×

Hence, the square root of 41616 is 204.

50. Simplify the following expression:

$7\sqrt{48} + 7\sqrt{147}$

(a) $77\sqrt{7}$ (b) $76\sqrt{3}$
(c) $76\sqrt{7}$ (d) $77\sqrt{3}$

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (d) From given expression,

$7\sqrt{48} + 7\sqrt{147}$

$= 7\sqrt{16 \times 3} + 7\sqrt{49 \times 3}$

$= 7\sqrt{4 \times 4 \times 3} + 7\sqrt{7 \times 7 \times 3}$

$= 28\sqrt{3} + 49\sqrt{3}$

$= 77\sqrt{3}$

51. If $\frac{A}{\sqrt{512}} = \frac{\sqrt{162}}{A}$, find the value of A.

(a) 144 (b) $144\sqrt{2}$
(c) 288 (d) 72

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (c) Given,

$$\frac{A}{\sqrt{512}} = \frac{\sqrt{162}}{A}$$

$A \times A = \sqrt{512} \times \sqrt{162}$

$A \times A = \sqrt{8 \times 8 \times 8} \times \sqrt{2 \times 9 \times 9}$

$A^2 = \sqrt{8 \times 8 \times 16 \times 9 \times 9}$

$A = 8 \times 4 \times 9$

$A = 288$

52. If $\sqrt{0.0169}\ x = 1.3$, then x = ?

(a) 10 (b) 1
(c) 100 (d) 1000

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) Given,

$\sqrt{0.0169}\ x = 1.3$

$x = \frac{1.3}{\sqrt{0.0169}} = \frac{1.3}{.13}$

$\boxed{x = 10}$

Hence, the required value is 10.

53. If $X^2 = 841$, then what will be the value of x?

(a) 29 (b) 41
(c) 39 (d) 31

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) Given,

$x^2 = 841$

$x^2 = 29 \times 29$

$x = \sqrt{29 \times 29}$

$x = 29$

Hence, the value of x is 29.

54. The value of $\sqrt{214+\sqrt{107+\sqrt{196}}}$

(a) 23 (b) 15
(c) 24 (d) 18

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (b) : $\sqrt{214+\sqrt{107+\sqrt{196}}}$

$\Rightarrow \sqrt{214+\sqrt{107+14}}$

$\Rightarrow \sqrt{214+\sqrt{121}}$

$\Rightarrow \sqrt{214+11}$

$\Rightarrow \sqrt{225}$

$\Rightarrow \sqrt{15\times15}$

= 15

55. Solve the following:

$\sqrt{(8+2\sqrt{15})(8-2\sqrt{15})}$

(a) 1 (b) 2
(c) 3 (d) 4

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (b) Given,

$\sqrt{(8+2\sqrt{15})(8-2\sqrt{15})}$

from $\left(a^2-b^2\right)=(a+b)(a-b)$

$\sqrt{(8)^2-\left(2\sqrt{15}\right)^2}$

$=\sqrt{64-4\times15}$

$=\sqrt{64-60}=\sqrt{4}=2$

56. If $\sqrt{54}+\sqrt{150}=a$, What will be the value of $\sqrt{96}+\sqrt{216}$

(a) 1.20a (b) 1.50a
(c) 1.60a (d) 1.25a

RRB Group-D – 16/11/2018 (Shift-I)

Ans : (d) Given,

$\sqrt{54}+\sqrt{150}=a$

$\sqrt{2\times3\times3\times3}+\sqrt{2\times3\times5\times5}=a$

$3\sqrt{6}+5\sqrt{6}=a$

$8\sqrt{6}=a$

$\boxed{\sqrt{6}=\frac{a}{8}}$ ...(i)

According to the question,

$\sqrt{96}+\sqrt{216}=?$

$\sqrt{2\times2\times2\times2\times2\times3}+\sqrt{2\times2\times2\times3\times3\times3}$

$4\sqrt{6}+6\sqrt{6}$

$\Rightarrow$ $10\sqrt{6}$ ...(ii)

From equation (i) and (ii),

$\Rightarrow \frac{a}{8}\times10 \Rightarrow \frac{5a}{4}=1.25a$

57. If $\sqrt{324}=x8$, then what will the value of x?

(a) 3 (b) 2
(c) 1 (d) 4

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (c) : $\sqrt{324}=x8$

Squaring in both side,

$324=(x8)^2$

Putting x = 1,

$324=(18)^2$

$324=324$

58. Simplify –

$4\sqrt{18}+7\sqrt{32}-2\sqrt{50}$

(a) $30\sqrt{2}$ (b) $32\sqrt{3}$
(c) $36\sqrt{2}$ (d) $30\sqrt{3}$

RRB NTPC 04.04.2016 Shift : 1

Ans : (a) Given expression,

$4\sqrt{18}+7\sqrt{32}-2\sqrt{50}$

$=4\sqrt{3\times3\times2}+7\sqrt{4\times4\times2}-2\sqrt{5\times5\times2}$

$=12\sqrt{2}+28\sqrt{2}-10\sqrt{2}$

$=30\sqrt{2}$

59. If $\sqrt{x^2+y^2}=25$ and $y=2x$ then find the value of x.

(a) 5 (b) 25
(c) $\sqrt{125}$ (d) $\sqrt{5}$

RRB NTPC 28.03.2016 Shift : 2

Ans :(c) $\sqrt{x^2+y^2}=25$, $y=2x$

$\sqrt{x^2+y^2}=25$ ..... (i)

On squaring equation (i),

$x^2+y^2=625$

$x^2+(2x)^2=625$ $(\because y=2x)$

$x^2+4x^2=625$

$5x^2=625$

$x^2=125$

$x=\sqrt{125}$

60. If $x+\sqrt{x}=90$, Find x.

(a) 81 (b) 64
(c) 80 (d) 72

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) Given,

$x+\sqrt{x}=90$

$\Rightarrow \sqrt{x}=90-x$

Squaring in both side,

$\left(\sqrt{x}\right)^2=\left(90-x\right)^2$

$\Rightarrow x = 8100 + x^2 - 180x$

$\Rightarrow x^2 - 181x + 8100 = 0$
$\Rightarrow x^2 - 100x - 81x + 8100 = 0$
$\Rightarrow x(x-100) - 81(x-100) = 0$
$\Rightarrow (x-81)(x-100) = 0$
$\Rightarrow x = 81, 100$
From, options the value of x will be 81.

61. If $\sqrt{5} = 2.236$, then $\sqrt{5}/\sqrt{2} = ?$
(a) 1.581 (b) 1.851
(c) 2.236 (d) 1.782
RRB NTPC 29.04.2016 Shift : 2

Ans : (a) Given,
$\because \sqrt{5} = 2.236$ and as we know $\sqrt{2} = 1.414$
$$\frac{\sqrt{5}}{\sqrt{2}} = \frac{2.236}{1.414} = 1.581$$

Type - 4

62. If $\sqrt{0.0169 \times x} = 1.3$, then find the value of 'x'.
(a) 10 (b) 1000
(c) 50 (d) 100
RRB JE - 29/05/2019 (Shift-II)

Ans : (d) Given,
$$\sqrt{0.0169 \times x} = 1.3$$
$$\sqrt{\frac{169 \times x}{10000}} = \frac{13}{10}$$
Squaring in both side,
$$\frac{169 \times x}{10000} = \frac{169}{100}$$
$$x = 100$$

63. Find the square root of
$$\frac{a^2}{b^2} + \frac{b^2}{a^2} + 2$$
(a) $\frac{a}{2b} - \frac{b}{2a}$ (b) $\frac{a}{b} - \frac{b}{a}$
(c) $\frac{a-b}{2}$ (d) $\frac{a}{b} + \frac{b}{a}$
RRB JE - 02/06/2019 (Shift-II)

Ans. (d) The required square root,
$$= \sqrt{\frac{a^2}{b^2} + \frac{b^2}{a^2} + 2}$$
$$\sqrt{\left(\frac{a}{b} + \frac{b}{a}\right)^2} = \left(\frac{a}{b} + \frac{b}{a}\right)$$

64. If $\sqrt{169} = 13$, then $\frac{\left(\sqrt{.00000169}\right)}{13}$ is:
(a) 0.0013 (b) 0.001
(c) 0.0001 (d) 0.013
RRB RPF Constable -24/01/2019 (Shift-III)

Ans : (c) Given,
$\because \sqrt{169} = 13$
$$\frac{\sqrt{.00000169}}{13} = \sqrt{\frac{169}{100000000}} \times \frac{1}{13}$$
$$= \frac{13}{10000} \times \frac{1}{13} = \frac{1}{10000} = .0001$$

65. $(0.14/1.4)^2 - (0.11/1.1)^2 + (0.13/1.3)^2 = ?$
(a) 1.01 (b) 0.001
(c) 0.10 (d) 0.01
RRB RPF SI -11/01/2019 (Shift-II)

Ans : (d) From given expression,
$$\left(\frac{0.14}{1.4}\right)^2 - \left(\frac{0.11}{1.1}\right)^2 + \left(\frac{0.13}{1.3}\right)^2$$
$$= \left(\frac{14}{140}\right)^2 - \left(\frac{11}{110}\right)^2 + \left(\frac{13}{130}\right)^2$$
$$= \left(\frac{1}{10}\right)^2 - \left(\frac{1}{10}\right)^2 + \left(\frac{1}{10}\right)^2$$
$$= (0.1)^2 - (0.1)^2 + (0.1)^2$$
$$= 0.01 - 0.01 + 0.01$$
$$= 0.01$$

66. Find the value of $\sqrt{20^2 - 16^2}$
(a) 14 (b) 16
(c) 18 (d) 12
RRB RPF Constable -20/01/2019 (Shift-II)

Ans : (d) Given, $\sqrt{20^2 - 16^2}$
From- $a^2 - b^2 = (a + b)(a - b)$
$$\Rightarrow \sqrt{(20+16)(20-16)}$$
$$\Rightarrow \sqrt{36 \times 4}$$
$$\Rightarrow 6 \times 2$$
$$\Rightarrow 12$$

67. $\sqrt{\frac{?}{3136}} = \frac{1}{2}$ Find the value of '?'
(a) 56 (b) 784
(c) 1568 (d) 28
RRB Group-D – 31/10/2018 (Shift-II)

Ans : (b) Given,
$$\sqrt{\frac{?}{3136}} = \frac{1}{2}$$
Squaring in both side,
$$\left(\sqrt{\frac{?}{3136}}\right)^2 = \left(\frac{1}{2}\right)^2$$
$$\frac{?}{3136} = \frac{1}{4}$$
$$\boxed{? = 784}$$

68. What is the square root of $\frac{882}{1922}$ is:

(a) $\frac{21}{31}$ (b) $\frac{19}{31}$

(c) $\frac{22}{31}$ (d) $\frac{20}{31}$

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (a) Square root of

$$\sqrt{\frac{882}{1922}} = \sqrt{\frac{441}{961}} = \sqrt{\frac{21\times21}{31\times31}} = \frac{21}{31}$$

69. $1\frac{3}{11}$ the square of

(a) $\frac{16}{111}$ (b) $\frac{225}{112}$

(c) $\frac{196}{121}$ (d) $\frac{9}{121}$

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (c) : Square root of $1\frac{3}{11}$

$$= \left(\frac{14}{11}\right)^2$$

$$= \frac{196}{121}$$

70. The value of $\left(-\sqrt{\frac{144}{576}}\right)\times\left(-\frac{16}{\sqrt{64}}\right)$

(a) 4 (b) 9

(c) 1 (d) 0

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (c) Given expression,

$$\left(-\sqrt{\frac{144}{576}}\right)\times\left(-\frac{16}{\sqrt{64}}\right)$$

$$\Rightarrow \left(\frac{-12}{24}\right)\times\left(\frac{-16}{8}\right)$$

$$\Rightarrow \frac{12\times16}{24\times8} = \frac{192}{192} = 1$$

71. The value of $\sqrt{\frac{256\times289}{4^3}}$

(a) 4.25 (b) 17

(c) 8.50 (d) 34

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (d) Given expression,

$$\sqrt{\frac{256\times289}{4^3}} = \frac{16\times17}{\sqrt{4\times4\times4}} = \frac{16\times17}{2\times2\times2} = 34$$

72. $\frac{\sqrt{196}}{4.375}\times\frac{\sqrt{900}}{9.375} = ?$

(a) 8.25 (b) 8.24

(c) 10.24 (d) 9.24

Ans. (c) From given expression,

$$\Rightarrow \frac{\sqrt{196}}{4.375}\times\frac{\sqrt{900}}{9.375}$$

$$\Rightarrow \frac{14}{4.375}\times\frac{30}{9.375} = \frac{420}{41.01}$$

$$\Rightarrow 10.24$$

73. Find the value of $\frac{\sqrt{0.64}}{\sqrt{0.16}} = ?$

(a) 2 (b) 8

(c) 6 (d) 10

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (a) From given expression,

$$\Rightarrow \frac{\sqrt{0.64}}{\sqrt{0.16}} = ?$$

$$= \frac{0.8}{0.4} = \frac{8}{4} = 2$$

74. The value of $\frac{\sqrt{45}\times\sqrt{20}}{\sqrt{12}\times\sqrt{3}}$

(a) 9 (b) 6

(c) 15 (d) 5

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (d) Given,

$$\frac{\sqrt{45}\times\sqrt{20}}{\sqrt{12}\times\sqrt{3}} \Rightarrow \frac{3\sqrt{5}\times2\sqrt{5}}{2\sqrt{3}\times\sqrt{3}}$$

$$\Rightarrow \frac{30}{6} = \boxed{5}$$

75. Solve: $\frac{3\sqrt{121}-\sqrt{361}}{\sqrt{529}+2\sqrt{36}}$

(a) 3/5 (b) 4/7

(c) 1/4 (d) 2/5

RRB NTPC 28.03.2016 Shift : 3

Ans : (d) Given,

$$\frac{3\sqrt{121}-\sqrt{361}}{\sqrt{529}+2\sqrt{36}} = \frac{3\sqrt{11\times11}-\sqrt{19\times19}}{\sqrt{23\times23}+2\sqrt{6\times6}}$$

$$= \frac{33-19}{23+12}$$

$$= \frac{14}{35} = \frac{2}{5}$$

76. $(8)^{2/3} = ?$

(a) $\sqrt{4}$ (b) 2

(c) 4 (d) 64

RRB NTPC 11.04.2016 Shift : 1

Ans : (c) From the question,

$$8^{\frac{2}{3}} = \sqrt[3]{8^2} = \sqrt[3]{64} = \sqrt[3]{4\times4\times4} = 4$$

77. Simplify: $(25)^{\frac{3}{2}}$

(a) 625 (b) 15625

(c) 125 (d) $\sqrt{125}$

RRB NTPC 11.04.2016 Shift : 2

Ans : (c) From the given expression,

$$(25)^{\frac{3}{2}} = \left((5)^2\right)^{\frac{3}{2}} = 5^3 = 125$$

78. Simplify : $(27)^{\frac{-2}{3}}$

(a) 1/18 (b) 9
(c) 1/9 (d) 18

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) $(27)^{\frac{-2}{3}} = \frac{1}{(3)^{3\times\frac{2}{3}}} = \frac{1}{(3)^2} = \frac{1}{9}$

79. $(1000)^{\frac{-1}{3}} = ?$

(a) 10 (b) 100
(c) 1/10 (d) 1/100

RRB NTPC 26.04.2016 Shift : 3

Ans : (c) $(1000)^{\frac{-1}{3}} = \frac{1}{(1000)^{\frac{1}{3}}} = \frac{1}{(10^3)^{\frac{1}{3}}} = \frac{1}{10}$

80. If $\sqrt{225} = 15$ then $\left(\sqrt{0.00000225}\right)/15 =$

(a) 0.0015 (b) 0.001
(c) 0.0001 (d) 0.015

RRB NTPC 12.04.2016 Shift : 1

Ans : (c) $\sqrt{225} = 15$

According to the question,

$$\frac{\sqrt{0.00000225}}{15}$$

$$= \frac{\sqrt{\frac{225}{100000000}}}{15}$$

$$= \frac{15}{10000\times 15} = \frac{1}{10000} = 0.0001$$

81. If $\sqrt{256} = 16$ then the value of $\frac{\sqrt{0.00000256}}{16}$ will be:

(a) 0.0016 (b) 0.001
(c) 0.0001 (d) 0.016

RRB NTPC 29.04.2016 Shift : 3

Ans. (c) Given,

$\sqrt{256} = 16$

So,

$$= \frac{\sqrt{\frac{256}{100000000}}}{16}$$

$$= \frac{16}{10000\times 16}$$

$$= \frac{1}{10000} = 0.0001$$

82. If $\sqrt{9} = 3$ then the value of $\sqrt{81}/\sqrt{3}$

(a) 3 (b) $3/\sqrt{3}$
(c) $3\sqrt{3}$ (d) 9

RRB NTPC 29.04.2016 Shift : 3

Ans. (c) Given, $\sqrt{9} = 3$

So, $\frac{\sqrt{81}}{\sqrt{3}} = \frac{9}{\sqrt{3}} = \frac{3\times\sqrt{3}\times\sqrt{3}}{\sqrt{3}} = 3\sqrt{3}$

83. If $\sqrt{144} = 12$; then $(\sqrt{.00000144})/12$:

(a) 0.0012 (b) 0.001
(c) 0.0001 (d) 0.012

RRB NTPC 30.04.2016 Shift : 1

Ans : (c) Given,

$\sqrt{144} = 12$

So,

$$\frac{\sqrt{0.00000144}}{12} = \frac{\sqrt{\frac{144}{100000000}}}{12}$$

$$= \frac{12}{10000\times 12}$$

$$= \frac{1}{10000} = 0.0001$$

Type - 5

84. What is the smallest positive integer 'x', such that $\sqrt{486x}$ is an integer?

(a) 5 (b) 6
(c) 3 (d) 2

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

Ans : (b) Given,

$\sqrt{486x}$,

In order for $\sqrt{486x}$ to be an integer, $486x$ must be equal a^2 for some integer a .

$$486x = 2\times3\times3\times3\times3\times3\times x$$

$$= 2\times3^2\times3^2\times3\times x$$

$$= 3^2\times3^2\times6\times x$$

Therefore, $x = 6$ is the smallest integer that makes this the square of an integer.

85. The difference between 1/3 and 1/4 of a number is equal to its square root. Find the number.

(a) 136 (b) 144
(c) 72 (d) 120

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

Ans : (b) Let the number is x.

According to the question,

$$\frac{x}{3} - \frac{x}{4} = \sqrt{x}$$

$$\Rightarrow \frac{x}{12} = \sqrt{x}$$

Squaring in both side,

$$\frac{x^2}{144} = x$$

$$x = 144$$

86. A divisor has a reorganization number [1/(5+3√2)= ?].

(a) (5 – 2 √3)/12 (b) 5 + 2 √3/12
(c) 5 – 3 √3/12 (d) (5 – 3 √2)/7

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (d) From given expression,

$$\frac{1}{5+3\sqrt{2}} = ?$$

Rationalizing the denominator,

$$= \frac{1}{5+3\sqrt{2}} \times \frac{5-3\sqrt{2}}{5-3\sqrt{2}}$$

$$= \frac{5-3\sqrt{2}}{25-18}$$

$$= \frac{(5 - 3\sqrt{2})}{7}$$

87. $\sqrt{1849} \times \sqrt{X} = 2451$ what will be the value of 'X'?

(a) 3136 (b) 3481
(c) 3364 (d) 3249

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (d) Given,

$$\sqrt{1849} \times \sqrt{x} = 2451$$

$$\sqrt{43 \times 43} \times \sqrt{x} = 2451$$

$$\sqrt{x} = \frac{2451}{43}$$

$$\sqrt{x} = 57$$

Squaring in both side,

$$\left(\sqrt{x}\right)^2 = (57)^2$$

$$x = 3249$$

88. What is the value of $\sqrt{\left(3\sqrt{9} - 3\sqrt{8}\right)\left(9 + 2\sqrt{18}\right)}$

(a) 2 (b) 4
(c) 3 (d) 9

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) From given expression,

$$\sqrt{\left(3\sqrt{9} - 3\sqrt{8}\right)\left(9 + 2\sqrt{18}\right)}$$

$$= \sqrt{\left(3 \times 3 - 6\sqrt{2}\right)\left(9 + 6\sqrt{2}\right)}$$

$$= \sqrt{\left(9 - 6\sqrt{2}\right)\left(9 + 6\sqrt{2}\right)} \quad [\because (a-b)(a+b) = a^2 - b^2]$$

$$= \sqrt{(9)^2 - \left(6\sqrt{2}\right)^2}$$

$$= \sqrt{81 - 72} = \sqrt{9} = 3$$

89. Which of the following expressions expresses the square root of ($3^{38} + 3^{39}$)?

(a) $6^{38.5}$
(b) $\sqrt{2} \times 3^{19.25}$
(c) 2×3^{19}
(d) $3^{38.5}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (c) Given expression,

$$\sqrt{3^{38} + 3^{39}}$$

$$= \sqrt{3^{38}(1+3)}$$

$$= \sqrt{4 \times 3^{38}}$$

$$= \sqrt{2 \times 2 \times 3^{19} \times 3^{19}}$$

$$= \boxed{2 \times 3^{19}}$$

90. If the sum of square roots of two integers is $\sqrt{18+8\sqrt{5}}$. What is the sum of its squares?

(a) 164 (b) 388
(c) 624 (d) 144

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (a) Let both integers are x and y.

According to the question,

$$\left(\sqrt{x} + \sqrt{y}\right) = \sqrt{18 + 8\sqrt{5}}$$

On squaring both sides,

$$\left(\sqrt{x} + \sqrt{y}\right)^2 = \left(\sqrt{18 + 8\sqrt{5}}\right)^2$$

$$x + y + 2\sqrt{xy} = 18 + 8\sqrt{5}$$

$$x + y + 2\sqrt{xy} = 10 + 8 + 2\sqrt{80}$$

$$x + y + 2\sqrt{xy} = 10 + 8 + 2\sqrt{10 \times 8}$$

Hence, on comparison,

x = 10

y = 8

So, the sum of squares,

$x^2 + y^2$

$= 10^2 + 8^2$

= 100 + 64

= 164

91. $\sqrt[3]{0.000216} = ?$

(a) 0.06 (b) 6
(c) 0.6 (d) $2\sqrt{16}$

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (a) From given expression,

$\sqrt[3]{0.000216} = ?$

$\sqrt[3]{\frac{216}{1000000}}$

$\sqrt[3]{\frac{6\times6\times6}{100\times100\times100}}$

$= \frac{6}{100} = .06$

92. Which of the following expressions denotes the square root of $(3^{34} + 3^{35})$–

(a) $\sqrt{2}\times3^{17.25}$ (b) $6^{34.5}$

(c) 2×3^{17} (d) $3^{34.5}$

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (c) Square root of

$(3^{34}+3^{35})$

$=\sqrt{3^{34}+3^{35}}$

$=\sqrt{3^{34}(1+3)}$

$=\sqrt{4(3^{34})} = \sqrt{2\times2\times3^{17}\times3^{17}} = 2\times3^{17}$

93. The sum of the square roots of two integers is $\sqrt{14+8\sqrt{3}}$, what is the sum of their squares?

(a) 144 (b) 388

(c) 100 (d) 162

RRB Group-D – 02/11/2018 (Shift-II)

Ans : (c) Let the integers are x and y.

According to the question,

$$\sqrt{x}+\sqrt{y}=\sqrt{14+8\sqrt{3}}$$

On squaring both sides,

$(\sqrt{x}+\sqrt{y})^2$

$=(\sqrt{14+8\sqrt{3}})^2$

$x+y+2\sqrt{xy}$

$=14+8\sqrt{3}$

On comparison,

$x+y=14$ .....(I) $2\sqrt{xy}=8\sqrt{3}$

$\sqrt{xy}=4\sqrt{3}$

$xy=48$ ..... (II)

From equation (I),

$x+y=14$

On squaring both sides,

$(x+y)^2=(14)^2$

$x^2+y^2+2xy=196$

$x^2+y^2=196-2\times48=196-96=100$

Hence, the required sum will be 100.

94. If $\sqrt{1296}=(?)^2$ then the value of (?) is:

(a) 6 (b) 18

(c) 8 (d) 12

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (a) Given expression,

$\sqrt{1296}=(?)^2$

$1296=(?)^4$

$6\times6\times6\times6=?^4$

$6^4=?^4$

$\boxed{?=6}$

95. If $\sqrt{0.0361}$ x = 1.9, then x is:

(a) 1000 (b) 10

(c) 100 (d) 1

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (b) Given,

$\sqrt{0.0361}\ x=1.9$

$x=\frac{1.9}{\sqrt{0.0361}}$

$=\frac{1.9}{.19}=10$

96. A group of students decided that each member will give as much money as the number of members. If the total collection of money is Rs. 62.41, then the number of members is:

(a) 77 (b) 81

(c) 71 (d) 79

RRB Group-D – 27/11/2018 (Shift-III)

Ans : (d) Let the number of members is x.

So, received money by each member = x paise.

And total money received by members = $x\times x$ *paise*

$Rs.62.41 = Rs.\frac{x^2}{100}$ .....$(\because 1\ Rs.=100\ paise)$

$62.41\times100=x^2$ *paise*

$x^2=6241$ *paise*

$x=\sqrt{6241}$ *paise*

$x=79$ *paise*

Hence, the number of members in group is 79.

04.

Simplification

Type - 1

1. Simplify: 0.8 + 0.08 + 0.008 + 8

(a) 880.8 (b) 8.888
(c) 8.808 (d) 8.088

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

Ans : (b) 0.8 + 0.08 + 0.008 + 8
= 8.888

2. 3.4 + 3.5 + 4.9 + 66 + 1.9 + 6.03 + 55 + 4.004 + 23 + 60 = ?

(a) 327.734 (b) 27.734
(c) 127.734 (d) 227.734

RRB RPF Constable -18/01/2019 (Shift-I)

Ans. (d) : Given,
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

3. The value of 0.592 ÷ 0.8 = ?

(a) 7.4 (b) 0.74
(c) 740 (d) 0.074

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

Ans : (b) From given expression,
0.592 ÷ 0.8

$$= \frac{0.592}{.8}$$

$$= \frac{592 \times 10}{8 \times 1000}$$

$$= \frac{74}{100}$$

= 0.74

4. 33.33 - 0.03 + 333.333 - 3.33 = ?

(a) 366.633 (b) 363.303
(c) 366.663 (d) 369.963

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

Ans : (b) 33.33 - 0.03 + 333.333 - 3.33
$\Rightarrow$ 33.30 + 330.003 = 363.303

5. 6 kg 5 g = ?

(a) 6.05 kg (b) 0.65 kg
(c) 6.5 kg (d) 6.005 kg

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (d) 6kg 5g = $\left(6+\frac{5}{1000}\right)$kg

$= (6+0.005)$kg

= 6.005 kg

6. 5.52 – $(2.3)^2$ + $(0.8)^3$ × 0.12 ÷ $(0.4)^4$ − 3.14 = ?

(a) –0.51 (b) 0.42
(c) 0.51 (d) –0.63

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (a) 5.52 – $(2.3)^2$ + $(0.8)^3$ × 0.12 ÷ $(0.4)^4$ – 3.14
= 5.52 – 5.29 + 0.512 × 0.12 ÷ 0.0256 – 3.14
= 0.23 + 2.4 – 3.14
= – 0.51

7. 30.9 + 3.09 + 0.309 + 0.039 + 309 = ?

(a) 340.138 (b) 243.338
(c) 534.388 (d) 343.338

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (d) Given,
30.9 + 3.09 + 0.309 + 0.039 + 309
= 343.338

8. 7.892 + 35 – 0.005 + 10.345 = ?

(a) 53.232 (b) 52.232
(c) 23.322 (d) 0

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (a) Given,
= 7.892 + 35 – 0.005 + 10.345
= 7.892 + 10.345 + 35 – 0.005
= 53.237 – 0.005
= 53.232

9. 392 - 39.2 - 3.92 - 0.392 = ?

(a) 346.468 (b) 346.508
(c) 348.488 (d) 348.468

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (c) Given,
392 - 39.2 - 3.92 - 0.392
= 352.8 - 3.92 - 0.392
= 348.88 - 0.392
= 348.488

10. 0.098 + 0.98 + 9.8 + 98 = ?

(a) 108.338 (b) 108.428
(c) 108.878 (d) 108.378

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (c) Given,
0.098 + 0.98 + 9.8 + 98

$$= \frac{98}{1000} + \frac{98}{100} + \frac{98}{10} + 98$$

$$= \frac{98 + 980 + 9800 + 98000}{1000}$$

$$= \frac{108878}{1000}$$

= 108.878

11. $4 + 3 \times 4 + 3 \times 4^2 + 3 \times 4^3 + 3 \times 4^4 + 3 \times 4^5 = ?$

(a) 10×4^4 (b) 4^6
(c) 5×4^5 (d) 9×4^4

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (b) Given,
$4+3\ (4 + 4^2 + 4^3 + 4^4 + 4^5)$
$\Rightarrow 4 + 3 \times 4\ (1 + 4 + 4^2 + 4^3 + 4^4)$
$\Rightarrow 4 + 3 \times 4 \left[\frac{4^5 - 1}{4 - 1}\right]$ $\{\because S_n = \frac{a(r^n - 1)}{r - 1}\}$
$\Rightarrow 4 + 3 \times 4 \times \frac{4^5 - 1}{3}$ (When r > 1)
$\Rightarrow 4 + 4^6 - 4$
$= 4^6$

12. Multiply 8795 by 125:

(a) 1099375 (b) 1099345
(c) 1099305 (d) 1098375

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (a) : 8795 × 125 = 8795 × (100 + 25)
= 879500 + 219875
= 10,99,375

13. Fill in the blanks with the most appropriate option.
395 – 39.5– 3.95 – 0.395 = ...

(a) 351.055 (b) 351.145
(c) 351.155 (d) 351.045

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (c) : 395 – 39.5– 3.95 – 0.395
= 395 – 43.45 – 0.395
= 395 – 43.845
= 351.155

14. 35 – 7.892 + 0.005 – 10.345 = ?

(a) 16.768 (b) 26.768
(c) 29.768 (d) 19.768

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (a) 35 - 7.892 + 0.005 – 10.345 = ?
= 35.005 – 18.237
= 16.768

15. The value of 20.9 + 2.09 + 0.209 + 0.029 + 29

(a) 62.228 (b) 52.228
(c) 42.228 (d) 52.00

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (b) : 20.9 + 2.09 + 0.209 + 0.029 + 29
= 52.228

16. 0.295 + 2.95 + 29.5 + 295 = ?

(a) 327.856 (b) 327.756
(c) 327.746 (d) 327.745

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (d) : 0.295 + 2.95 + 29.5 + 295 = ?
⇒ 3.245 + 324.5 = ?
? = 327.745

17. Calculate: 4237.43 + 453.32 + 24.12 – 387.23

(a) 4327.64 (b) 4646.64
(c) 4676.64 (d) 4587.64

RRB NTPC 28.04.2016 Shift : 2

Ans : (a) 4237.43 + 453.32 + 24.12 – 387.23
= 4714.87 – 387.23
= 4327.64

18. Simplify: $\frac{9}{13} \div \frac{18}{26} \div \frac{90}{52}$

(a) 45/26 (b) 13/45
(c) 26/45 (d) 45/13

RRB NTPC 03.04.2016 Shift : 1

Ans : (c) From given expression,
$\frac{9}{13} \div \frac{18}{26} \div \frac{90}{52}$
$= \frac{9}{13} \times \frac{26}{18} \times \frac{52}{90}$
$= \frac{26}{45}$

19. 5.16 × 3.2 = ?

(a) 15.502 (b) 16.512
(c) 17.772 (d) 17.52

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) Given expression,
5.16 × 3.2 = 16.512

20. 1. 1 + 12. 12 + 123. 123 = ?

(a) 134. 343 (b) 133.433
(c) 132.123 (d) 136.343

RRB NTPC 30.03.2016 Shift : 1

Ans : (d) From given expression,
1.1 + 12.12 + 123.123 = 136.343

21. 128-43+57-143+94 = ?

(a) 142 (b) 285
(c) 236 (d) 93

RRB NTPC 30.03.2016 Shift : 2

Ans : (d) From given expression,
128 – 43 + 57 -143 + 94
= 85 – 86 + 94 = 93

22. Find the value of 5231405 × 99999.

(a) 523135278595
(b) 723135268595
(c) 523135268595
(d) 623135268595

RRB NTPC 19.04.2016 Shift : 3

Ans : (c) 5231405 × 99999 = 523135268595

23. Solve: 7342015 × 9999?

(a) 73416544985 (b) 73455322985
(c) 73412807985 (d) 73412907985

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) 7342015 × 9999
= 7342015 (10000-1)
= 73420150000 – 7342015
= 73412807985

24. Compute of 69696 × 9999 = ?

(a) 696980304 (b) 666890304
(c) 696809304 (d) 696890304

RRB NTPC 11.04.2016 Shift : 1

Ans : (d) From given expression,
69696 × 9999
= 69696 × (10000 –1)
= 696960000 – 69696
= 696890304

25. Calculate : 19170 ÷ 54 ÷ 5
(a) 17 (b) 1775
(c) 71 (d) 1757
RRB NTPC 11.04.2016 Shift : 3

Ans : (c) From given expression,
19170 ÷ 54 ÷ 5
= 355 ÷ 5
= 71

26. Calculate : 33333×9999
(a) 332396667 (b) 333297667
(c) 33329667 (d) 333296667
RRB NTPC 11.04.2016 Shift : 3

Ans : (d) 33333 × 9999 = 33333 (10000–1)
= 333330000 – 33333
= 333296667

27. Calculate :
0.00048 ÷ 0.08
(a) 0.06 (b) 0.006
(c) 0.0006 (d) 0.6
RRB NTPC 10.04.2016 Shift : 3

Ans : (b) From given expression,
0.00048 ÷ 0.08
$= \frac{0.00048}{0.08} = \frac{48\times100}{8\times100000} = \frac{6}{1000} = 0.006$

28. Calculate:
62160÷185÷24
(a) 41 (b) 8064
(c) 14 (d) 8046
RRB NTPC 07.04.2016 Shift : 1

Ans : (c) $= \frac{\frac{62160}{185}}{24} = \frac{62160}{185\times24} = 14$

29. Calculate:
66666 × 9999
(a) 665693334 (b) 666594334
(c) 666953334 (d) 666593334
RRB NTPC 07.04.2016 Shift : 1

Ans : (d) 66666 × 9999
= 66666 (10000 –1)
= 666660000 – 66666 = 666593334

30. 9876 + 34.567 – ? = 9908.221
(a) 23.45 (b) 234.6
(c) 2.345 (d) 2.346
RRB NTPC 06.04.2016 Shift : 2

Ans : (d) 9876 + 34.567 -? = 9908.221
9910.567 -? = 9908.221
? = 9910.567 – 9908.221
? = 2.346

31. Find the value of 1093 × 1093
(a) 1194649 (b) 1162481
(c) 1424649 (d) 1428481
RRB NTPC 22.04.2016 Shift : 1

Ans : (a) Given expression
1093 × 1093
= (1000 + 93) × 1093
= 1093000 + 1093 × 93
= 1093000 + 1093 × (100 – 7)
= 1093000 + 109300 – 1093 × 7
= 1093000 + 109300 – 1093 (10 – 3)
= 1093000 + 109300 – 10930 + 3279
= 1205579 – 10930 = 1194649

32. Calculate: 35968 ÷ 562 ÷ 8
(a) 80 (b) 512
(c) 8 (d) 521
RRB NTPC 22.04.2016 Shift : 2

Ans : (c) $\frac{\frac{35968}{562}}{8} = \frac{35968}{562}\times\frac{1}{8}$
$= \frac{4496}{562} = 8$

33. Calculate: 54367×9999
(a) 546315633
(b) 543655633
(c) 543651633
(d) 543615633
RRB NTPC 22.04.2016 Shift : 2

Ans : (d) 54367 × 9999
= 54367 × (10000 –1)
= 543670000–54367
= 543615633

34. $(64 \times 5^4) - (5^4 \times 16) = ?$
(a) 40,000 (b) 35,000
(c) 30,000 (d) 25,000
RRB NTPC 26.04.2016 Shift : 1

Ans : (c) $(64 \times 5^4) - (5^4 \times 16)$
= (64 × 625) – (625 × 16)
⇒ 40,000 – 10,000 = 30,000

35. The value of –261+(–380)–(–521)+821–(–121) is:
(a) 800 (b) 825
(c) 822 (d) 833
RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (c)
⇒ – 261 + (–380) – (–521) + 821 – (–121)
= – 261 – 380 + 521 + 821 + 121
= – 641 + 1463 = 822

Type - 2

36. Solve : $10^9 \times 10^2 \div 10^3$

(a) 10^8 (b) 10^6
(c) 10^2 (d) 10^5

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

Ans : (a) $10^9 \times 10^2 \div 10^3 = \frac{10^9 \times 10^2}{10^3} = 10^6 \times 10^2$
$= 10^8$

37. $\{20-(25-33)\} \div \{-5\times4-(-6)\} + 56 \div (-27+13) = ?$

(a) -2 (b) -6
(c) -4 (d) 4

RRB RPF Constable -20/01/2019 (Shift-I)

Ans. (b)
$\{20-(25-33)\} \div \{-5\times4-(-6)\} + 56 \div (-27+13) = ?$
$= \{20+8\} \div \{-20+6\} + 56 \div (-14)$
$= \{28\} \div \{-14\} - 4$
$= -2 - 4 = -6$

38. {40 – (90 ÷ 5 × $\overline{16-8}$ ÷ 2 ÷ 3)} = ?

(a) 16 (b) 28
(c) 14 (d) 64

RRB RPF-SI -11/01/2019 (Shift-II)

Ans : (a) {40 – (90 ÷ 5 × $\overline{16-8}$ ÷ 2 ÷ 3)} = ?
⇒ {40 – (90 ÷ 5 × 8 ÷ 2 ÷ 3) } = ?
⇒ {40 – (90 ÷ 5 × 4 ÷ 3) } = ?
⇒ { 40 – (18 × 4 ÷ 3) } = ?
⇒ { 40 – 24} = ?
? = 16

39. 2 – [3 – { 6 – (5 – 4 – 3 + 10)}] = ?

(a) –3 (b) 1
(c) 2 (d) 4

RRB RPF Constable -19/01/2019 (Shift-II)

Ans : (a) From given expression,
2 – [3 – { 6 – (5 – 4 – 3 + 10)}] = ?
= 2 – [3–{6–(8)}]
= 2–[3–(–2)]
= 2–5
= –3

40. Solve the following.
2550 – [510 – {270 – (90 – 80 + 70)}]

(a) 2240 (b) 2230
(c) 2220 (d) 2210

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

Ans : (b) = $2550-[510-\{270-(90-80+70)\}]$
= $2550-[510-\{270-80\}]$
= $2550-[510-190]$
= 2550 – 320
= 2230

41. Solve the following :
23 – [23 – {23 – (23 – 23 + 23)}]

(a) –1 (b) 23
(c) 1 (d) 0

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

Ans : (d) = 23 – [23 – {23 – (23 – 23 + 23)}]
= 23–[23–{23–23+23–23}]
= 23–[23–0]
= 23–23 = 0

42. Solve the following:
27 – [38 – {46 – (15 – 13 – 2)}]

(a) 35 (b) 31
(c) 29 (d) 30

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (a)
⇒ 27 – [38 – {46 – (15 – 13 – 2)}]
= 27 – [38– {46}]
= 27 – [38–46] = 27 – [–8]= 27 + 8 = 35

43. $56 \div \frac{1}{3}\left\{15+12-\left(9+6-\overline{5+7}\right)\right\} = ?$

(a) 9 (b) 8
(c) 12 (d) 7

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (d)
$56 \div \frac{1}{3}\left\{15+12-\left(9+6-\overline{5+7}\right)\right\}$
$= 56 \div \frac{1}{3}\left\{15+12-(15-12)\right\}$
$= 56 \div \frac{1}{3}\left\{15+12-3\right\}$
$= 56 \div \frac{1}{3}\left\{24\right\}$
$= 56 \div \frac{1}{3} \times 24$
$= 56 \div 8$
$= \frac{56}{8} = 7$

44. $77 \div [46-\{66-(52-63 \div 9 \times 3)\}] = ?$

(a) 5 (b) 6
(c) 7 (d) 11

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (c) $77 \div [46-\{66-(52-63 \div 9 \times 3)\}] = A$
$\Rightarrow 77 \div [46-\{66-(52-7\times3)\}] = A$
$\Rightarrow 77 \div [46-\{66-(31)\}] = A$
$\Rightarrow 77 \div [46-\{35\}] = A$
$\Rightarrow 77 \div [11] = A$
$\Rightarrow A = 7$

45. $140 \div [61-\{36-(40-60 \div 12 \times 6)\}] = ?$

(a) 2 (b) 5
(c) 4 (d) 10

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (c) From given expression,
$= 140 \div [61 - \{36 - (40 - 60 \div 12 \times 6)\}]$
$= 140 \div [61 - \{36 - (40 - 5 \times 6)\}]$
$= 140 \div [61 - \{36 - (10)\}]$
$= 140 \div [61 - 26]$
$= 140 \div 35 = 4$

46. (–5) {(20–(–2) × (–8)} = ?
(a) 180 (b) –20
(c) 20 (d) –180

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (b) From given expression,
(–5) {(20–(–2) × (–8)} = ?
= (–5) { 20–16)
= (–5) × 4
= –20

47. 78 – [5 + 3 of (25 – 2 × 10)] = ?
(a) 56 (b) 48
(c) 58 (d) 38

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (c) From given expression,
78 –[5 + 3 of (25 – 2 × 10)]
= 78 – [5 + 3 × (25 – 20)]
= 78 – [5 + 3 × 5]
= 78 – 20
= 58

48. 70 ÷ 5 × (10 – 8 ÷ 2) ÷ 3 = ?
(a) 7 (b) $\frac{1}{3}$
(c) 3 (d) 28

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (d) From given expression,
70 ÷ 5 × (10 – 8 ÷ 2) ÷ 3 = ?
70 ÷ 5 × (10 – 4) ÷ 3 = ?
70 ÷ 5 × 6 ÷ 3 = ?
70 ÷ 5 × 2 = ?
14 × 2 = ?
? = 28

49. $\left[\left\{2\frac{1}{3} - (5 + (2-3)\right\} + 3\frac{1}{2}\right] = ?$
(a) $\frac{11}{2}$ (b) $\frac{12}{6}$
(c) $\frac{11}{6}$ (d) 2

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (c) From given expression,
$\left[\left\{2\frac{1}{3} - (5 + (2-3)\right\} + 3\frac{1}{2}\right] = ?$
$\left[\left\{2\frac{1}{3} - (5 + (2-3)\right\} + 3\frac{1}{2}\right]$
$= \left[\left\{\frac{7}{3} - (5-1)\right\} + \frac{7}{2}\right]$
$= \left[\left\{\frac{7}{3} - 4\right\} + \frac{7}{2}\right]$
$= \left[\frac{-5}{3} + \frac{7}{2}\right]$
$= \left[\frac{-10+21}{6}\right]$
$= \frac{11}{6}$

50. 63 – (- 3) (-2 -8 -4) ÷ 3 of { 5 + (-2) (-1) } = ?
(a) -60 (b) 60
(c) 65 (d) 61

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (d) 63 – (–3) (–2 –8 – 4) ÷ 3 of { 5 + (–2) (–1)}
= 63 – (–3) (–14) ÷ 3 × { 5 + 2}
= 63 – (–3) (–14) ÷ 3 × 7
= 63 – (–3) (–14) ÷ 21
= 63 – 42 ÷ 21
= 63 – 2
= 61

51. 72 ÷ [27 – {35 – (42 – 45 ÷ 9 × 2) }] = ?
(a) 3 (b) 8
(c) 6 (d) 4

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (a) From given expression,
72 ÷ [27 – { 35 – (42 – 45 ÷ 9 × 2)}]
= 72 ÷ [27 – { 35 – (42 – 10)}]
= 72 ÷ [27- { 35 – 32 }]
= 72 ÷ [27 – 3]
= 72 ÷ 24
= 3

52. If T = (93 + 15) ÷(3 × 4) – 24 + 8, then what will be the value of T?
(a) –4 (b) –7
(c) –2 (d) –5

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (b) Given,
T = (93 + 15) ÷ (3 × 4) – 24 + 8
= (108) ÷ (12) – 24 + 8
= 108 ÷ 12 – 24 + 8
= 9 – 24 + 8
= 17 – 24
T = – 7

53. 75 ÷ [35 – {63 – (79 – 54 ÷ 9 × 6)}] = ?
(a) 5 (b) 3
(c) 15 (d) 25

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (a) From given expression,
75 ÷ [35 – {63 – (79 – 54 ÷ 9 × 6)}] = ?
⇒ 75 ÷ [35 – {63 – (79 – 6 × 6)}] = ?
⇒ 75 ÷ [35 – {63 – (79 – 36}] = ?
⇒ 75 ÷ [35 – {63 – 43}] = ?
⇒ 75 ÷ [35 – 20] = ?
⇒ 75 ÷ 15 = 5

54. 0.36 + 0.284 ÷ 0.4 × 0.8 – 0.038 = ?

(a) 0.548 (b) 0.89
(c) 1.25 (d) 1.2

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) From given expression,

0.36 + 0.284 ÷ 0.4 × 0.8 – 0.038
⇒ 0.36 + 0.71 × 0.8 – 0.038
⇒ 0.36 + 0.568 – 0.038
⇒ 0.928 – 0.038 = 0.89

55. $3+\left[32\div 8\times 52\div(4+9)\right]=?$

(a) 19 (b) 20
(c) 18 (d) 21

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : From given expression,

$3+\left[32\div 8\times 52\div(4+9)\right]=?$

$=3+\left[4\times 52\div 13\right]$

$=3+\frac{4\times 52}{13}$

$=3+4\times 4=3+16=19$

56. $144\div\left[40-\left\{37-\left(25-112\div\overline{7\times 4}\right)\right\}\right]$

(a) 4 (b) 8
(c) 2 (d) 6

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (d) : From given expression,

$144\div\left[40-\{37-(25-112\div\overline{7\times 4})\}\right]$

$\Rightarrow 144\div\left[40-\{37-(25-112\div 28)\}\right]$

$\Rightarrow 144\div\left[40-\{37-(25-4)\}\right]$

$\Rightarrow 144\div\left[40-\{37-21\}\right]$

$\Rightarrow 144\div\left[40-16\right]$

$\Rightarrow 144\div 24=6$

57. If G = (96 ÷12) + 14 × (12 +8) ÷ 2, then what will be 1/4th of G?

(a) 148 (b) 37
(c) 36 (d) 38

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (b) Given,

G = (96 ÷ 12) + 14 × (12 + 8) ÷ 2
= 8 + 14 × 20 ÷ 2
= 8 + 14 × 10
= 8 + 140
$\boxed{G=148}$

Then 1/4th of G,

$\frac{G}{4}=\frac{148}{4}=37$

58. $18\div\frac{1}{8}\{11+16-(10+7-\overline{6+8})\}=?$

(a) 6 (b) 9
(c) 18 (d) 3

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (a) From given expression,

$?=18\div\frac{1}{8}\{11+16-(10+7-\overline{6+8})\}$

$=18\div\frac{1}{8}\{11+16-(10+7-14)\}$

$=18\div\frac{1}{8}\{11+16-3\}$

$=18\div\frac{1}{8}\times 24$

$?=18\div 3=6$

59. $22-\left(\frac{1}{4}\right)\{-5-(-48)\div(-16)\}=?$

(a) 21 (b) 22
(c) 20 (d) 24

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (d) From given expression,

$22-\frac{1}{4}\{-5-(-48)\div(-16)\}=?$

$=22-\frac{1}{4}\{-5-3\}$

$=22+\frac{1}{4}\times 8=22+2=24$

60. What is the value of

$(-45+7\times 23-(247\div 13)-11)\div 2$?

(a) –47 (b) –14
(c) 43 (d) 86

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (c) From given expression,

(–45 + 7 × 23 – (247 ÷ 13) – 11) ÷ 2
= (–45 + 161 – 19 – 11) ÷ 2
= (161 – 75) ÷ 2
= 86 ÷ 2
= 43

61. $74-[85\div\{49-(41-3^5\div\overline{9\times 3})\}]=?$

(a) 59 (b) 79
(c) 49 (d) 69

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (d) From given expression,

$74-[85\div\{49-(41-3^5\div\overline{9\times 3})\}]$

$?=74-[85\div\{49-(41-3^5\div 27)\}]$

$=74-[85\div\{49-(41-243\div 27)\}]$

$=74-[85\div\{49-(41-9)\}]$

$=74-[85\div\{49-32\}]$

$=74-[85\div\{17\}]$

$=74-[85\div 17]$

$=74-[5]$

$?=74-5=69$

62. (12 - 1) of (16 + 15) × (119 + 113 - 16) = ?

(a) 73656 (b) 73660
(c) 73600 (d) 73650

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) From given expression,
(12 - 1) of (16 + 15) × (119 + 113 - 16)
= 11 of 31 × 216
= 11 × 31 × 216
= 73656

63. Sumplify:
25+15–(51)+(4×15 of 17) ÷ 20+ $\overline{6-2}$ = ?

(a) 45 (b) 44
(c) –44 (d) –45

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (b) From given expression,
25+15–(51)+(4×15 of 17) ÷ 20+ $\overline{6-2}$

$\Rightarrow \quad 25+15-51+\left(\frac{4\times15\times17}{20}\right)+4$

$\Rightarrow$ 40–51+51+4 = 44

64. Find the following:

$$10+\left\{26-15\times\left(20-5\div2\times\overline{7-5}\right)\right\}=?$$

(a) 189 (b) −198
(c) 198 (d) −189

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (d) : From given expression,

$$10+\left\{26-15\times\left(20-5\div2\times\overline{7-5}\right)\right\}=?$$

$$=10+\left\{26-15\times\left(20-5\times\frac{1}{2}\times2\right)\right\}$$

$$=10+\left\{26-15\times(20-5)\right\}$$

$$=10+\left\{26-15\times(15)\right\}$$

$$=10+\left\{26-225\right\}$$

$$=10+26-225$$

$$\boxed{=-189}$$

65. Solve: 6.9–[(3.19×0.7)–0.5 of (8.5-3.04)–2.85]

(a) –4.36 (b) 10.247
(c) 6.61 (d) 8.79

RRB NTPC 29.04.2016 Shift : 1

Ans :(b) From given expression,
6.9 – [(3.19×0.7)- 0.5 of (8.5-3.04)-2.85]

$$=6.9-\left[2.233-0.5\times5.46-2.85\right]$$

$$=6.9-\left[2.233-2.73-2.85\right]$$

$$=6.9-\left[-3.347\right]$$

$$=6.9+3.347=10.247$$

66. Solve: (50 + 0.5 × 20) ÷ 0.7

(a) 8.571 (b) 857.1
(c) 85.71 (d) 72.85

RRB NTPC 02.04.2016 Shift : 2

Ans : (c) From given expression,
(50 + 0.5 × 20) ÷ 0.7
= (50 + 10) ÷ 0.7
= 60 ÷ 0.7
= 85.71

67. Simplify: $\left[2\frac{1}{3}-1\frac{1}{2}\right]$ of $\frac{3}{5}+1\frac{2}{5}\div2\frac{1}{3}$

(a) $\frac{1}{10}$ (b) $\frac{3}{10}$
(c) $1\frac{1}{10}$ (d) 1

RRB NTPC 29.03.2016 Shift : 1

Ans : (c) From given expression,

$$\left[2\frac{1}{3}-1\frac{1}{2}\right]\text{of}\,\frac{3}{5}+1\frac{2}{5}\div2\frac{1}{3}$$

$$=\left[\frac{7}{3}-\frac{3}{2}\right]\times\frac{3}{5}+\frac{7}{5}\div\frac{7}{3}$$

$$=\frac{14-9}{6}\times\frac{3}{5}+\frac{7}{5}\times\frac{3}{7}$$

$$=\frac{5}{6}\times\frac{3}{5}+\frac{3}{5}=\frac{1}{2}+\frac{3}{5}=\frac{5+6}{10}=\frac{11}{10}=1\frac{1}{10}$$

68. Calcuplate : 4082 ÷ 157 – 23

(a) - 3 (b) 3
(c) 2041/67 (d) 2014/67

RRB NTPC 11.04.2016 Shift : 2

Ans : (b) From given expression,
4082 ÷ 157 – 23
4082 ÷ 157 – 23
26 – 23
= 3

69. $4+\frac{1}{6}\times[\{-12\times(24-13-3)\}\div(20-4)]=?$

(a) 4 (b) 6
(c) 5 (d) 3

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) From given expression,

$$4+\frac{1}{6}\times\left[\left\{-12\times(24-13-3)\right\}\div(20-4)\right]$$

$$=4+\frac{1}{6}\times\left[\left\{-12\times8\right\}\div16\right]$$

$$=4+\frac{1}{6}\times(-6)=4-1$$

$$=3$$

70. The value of 14 ÷ {(5 of 2 – 3)} × 4 (7 – 2) is:

(a) $\frac{1}{10}$ (b) 40
(c) 44 (d) $\frac{14}{19}$

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (b) From given expression,

$$14 \div \{(5\times2-3)\}\times4(7-2)$$
$$=14\div\{(10-3)\}\times4(7-2)$$
$$=14\div7\times4\times5$$
$$=2\times4\times5=40$$

71. 45 – [38 – {80 ÷ 4 – (8 – 12 ÷ 3) ÷ 4}] = ?

(a) 25 (b) 27
(c) 26 (d) 28

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (c) From given expression,

45 – [38 – {80 ÷ 4 – (8 – 12 ÷ 3) ÷ 4}]
= 45–[38–{80÷4–4÷4}]
= 45–[38–{20–1}]
= 45–[38–19]
= 45–19= 26

72. Solve the following:

$$72\div\frac{1}{2}\left\{15+12-\left(9+6-\overline{5+7}\right)\right\}=?$$

(a) 6 (b) 9
(c) 12 (d) 8

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a) From given expression,

$$72\div\frac{1}{2}\left\{15+12-\left(9+6-\overline{5+7}\right)\right\}=?$$
$$=72\div\frac{1}{2}\{15+12-(9+6-12)\}$$
$$=72\div\frac{1}{2}\{15+12-(15-12)\}$$
$$=72\div\frac{1}{2}\{15+12-3\}=72\div\frac{1}{2}\{27-3\}$$
$$=72\div\frac{1}{2}\times24=72\div12=6$$

73. Find the value of the given expression :
6–36 × 3 ÷ 6 + 5 = ?

(a) $\frac{42}{11}$ (b) 7
(c) $\frac{-42}{11}$ (d) –7

RRB ALP & Tec. (30-08-18 Shift-II)

Ans : (d) From given expression,

6–36 × 3 ÷ 6 + 5
$=6-36\times\frac{3}{6}+5$, $=6-36\times\frac{1}{2}+5$
$=6-18+5$, $=-7$

74. Solve the following:
(–6) [40 ÷ {7 – (–3)}] = ?

(a) 24 (b) –60
(c) 60 (d) –24

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (d) From given expression,

(–6) [40 ÷ {7 – (–3)}] = ?
(–6) [40 ÷ {10}]
(–6) [40 ÷ 10]
(–6) [4] = –24

75. 4 + (1/6) [{-10 × (25 - 13 - 3)} ÷ (-5)] = ?

(a) 8 (b) 9
(c) 6 (d) 7

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (d) From given expression,

$$4+\frac{1}{6}\left[\{-10\times(25-13-3)\}\div(-5)\right]$$
$$\Rightarrow 4+\frac{1}{6}\left[\{(-10\times9)\div(-5)\}\right]$$
$$\Rightarrow 4+\frac{1}{6}\left[(-90)\times\left(\frac{1}{-5}\right)\right]$$
$$\Rightarrow 4+\frac{1}{6}[18]\Rightarrow 4+3=7$$

76. Solve the following :
36 – [18 – {14 – (15 – 4 ÷ 2 × 2)}]

(a) 20 (b) 22
(c) 21 (d) 23

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (c) $36-\left[18-\{14-(15-4\div2\times2)\}\right]$
$=36-\left[18-\{14-(15-2\times2)\}\right]$
$=36-\left[18-\{14-11\}\right]$
$=36-[18-3]$
$=36-15$
$=21$

77. Solve the following :
24 ÷ (19–9 ÷ 3 × 9) = ?

(a) –3 (b) –4
(c) 3 (d) 6

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (a) From given expression,

$24\div(19-9\div3\times9)$
$=24\div(19-3\times9)$
$=24\div(19-27)$
$=24\div(-8)$
$=-3$

78. What is the value of 12 + 3 (–2 × 3) – (18÷ 6)?

(a) 5 (b) –9
(c) –5 (d) 9

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (b) From given expression,

12 + 3 (–2 × 3) – (18 ÷ 6)
= 12 + 3 (–6) – 3
= 12 – 18 – 3
= 12 – 21 = – 9

79. $25-\frac{1}{2}\{5+4-(3+2-1+3)\}=?$

(a) 23 (b) 21
(c) 24 (d) 22

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

Ans : (c) From given expression,

$=25-\frac{1}{2}\{5+4-(3+2-1+3)\}$

$=25-\frac{1}{2}\{5+4-7\}$

$=25-\frac{1}{2}\times 2=24$

80. $23-\left[24-\left\{25-\left(26-\overline{27-28}\right)\right\}\right]=?$

(a) –2 (b) –3
(c) –1 (d) 1

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

Ans : (b) From given expression,

$23-\left[24-\{25-(26-\overline{27-28})\}\right]$

$=23-\left[24-\{25-(26+1)\}\right]$

$=23-\left[24-\{25-27\}\right]$

$=23-\left[24+2\right]$, $=23-26=-3$

81. **(–8) [36 ÷ {7–(–2)}] ÷ (–4) {19–(–3) × (–5)} = ?**

(a) 2 (b) –4
(c) 4 (d) –2

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (a) From given expression,

$=(-8)\left[36\div\{7-(-2)\}\right]\div(-4)\{19-(-3)\times(-5)\}$

$=(-8)\left[36\div\{9\}\right]\div(-4)\{19-15\}$

$=(-8)\left[4\right]\div(-16)$

$=\frac{32}{16}=2$

82. **Solve the following:**

45 – [38 – {60 ÷ 3 – (6 – 9 ÷ 3) ÷ 3}]

(a) 25 (b) 26
(c) 24 (d) 21

RRB ALP & Tec. (13-08-18 Shift-III)

Ans : (b) From given expression,

45 – [38 – {60 ÷ 3 – (6 – 9 ÷ 3) ÷ 3}]
= 45 – [38 – {20 – 3÷ 3}]
= 45 – [38 – 19]
= 45–19 = 26

83. **Solve the following.**

$\{38-(60\div 5\times\overline{16-8}\div 2\div 3)\}=?$

(a) 30 (b) 29
(c) 22 (d) 37

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

Ans : (c) From given expression,

$\{38-(60\div 5\times\overline{16-8}\div 2\div 3)\}=?$

$=\{38-(60\div 5\times 8\div 2\div 3)\}$

$=\{38-(60\div 5\times 4\div 3)\}$

$=\left\{38-\left(12\times\frac{4}{3}\right)\right\}$

$=\{38-16\}=22$

84. **Solve the following:**

22 – (1/4) {–5 – (–48) ÷ (–16)}

(a) 0 (b) 24
(c) 22 (d) 21

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (b) From given expression,

$22-\frac{1}{4}\left\{-5+48\times\left(\frac{-1}{16}\right)\right\}$

= 22 + 2 = 24

85. **What is the value of |3(1) – 6|?**

(a) 3 (b) 0
(c) –3 (d) 4

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (a) = |3(1)–6|
= |3–6|= 3

(Mod always gives the positive value.)

Type - 3

86. **If 2508 ÷ 12.54 + (X × 11) = 200, Then find the value of X.**

(a) 2.5 (b) 0
(c) 4 (d) 3.5

RRB JE - 22/05/2019 (Shift-III)

Ans : (b) Given,

2508 ÷ 12.54 + (X × 11) = 200
200 + (X × 11) = 200
(X × 11) = 200 – 200

$X=\frac{0}{11}$

X = 0

87. **If** $\frac{x}{\sqrt{128}}=\frac{\sqrt{162}}{x}$ **Then find the value of 'X'.**

(a) 14 (b) 12
(c) 144 (d) 13

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

Ans : (b) Given,

$\frac{x}{\sqrt{128}}=\frac{\sqrt{162}}{x}$

$\Rightarrow x^2=\sqrt{162}\times\sqrt{128}$

$\Rightarrow x^2=\sqrt{18\times 9\times 16\times 8}$

$\Rightarrow x^2=144$

$\Rightarrow x=\sqrt{144}$

x = 12

88. If $\frac{x}{x^2-1} = \frac{A}{x-1} + \frac{B}{x+1}$, then find the value of A and B.

(a) 2, –2 (b) 1/2, –1/2
(c) 1/2, 1/2 (d) 2, 2

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

Ans : (c)

$$\frac{x}{x^2-1} = \frac{A}{x-1} + \frac{B}{x+1}$$

$$\frac{x}{x^2-1} = \frac{A(x+1)+B(x-1)}{(x^2-1)}$$

x = Ax + A + Bx – B
x + 0 = x (A + B) + (A – B)
A + B = 1 (On comparing)
A – B = 0
2A = 1
A = 1/2
B = 1/2

89. If 5x/(1 + 1/(1 + x/(1 – x))) =1, find the value of 'x'.

(a) 1 (b) 1/3
(c) 5/3 (d) 2/3

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

Ans : (b) Given,

$$= \frac{5x}{1+\frac{1}{1+\frac{x}{1-x}}} = \frac{5x}{1+\frac{(1-x)}{1-x+x}} = \frac{5x}{1+\frac{(1-x)}{1}} = \frac{5x}{2-x} = 1$$

$\therefore 5x = 2 - x$
$6x = 2$
$x = \frac{1}{3}$

90. If 138.019 + 341.981 – 146.395 = 133.605 + a then find the value of 'a'.

(a) 248 (b) 120.085
(c) 200 (d) 295.5

RRB JE - 30/05/2019 (Shift-II)

Ans : (c) Given,
138.019 + 341.981 – 146.395 = 133.605 + a
= 138.019 + 341.981 = 146.395 + 133.605 + a
= 480 = 280 + a
a = 480 – 280
a = 200

91. If |–4 x + 4| – 6 = – 6, then find the value of 'x'.

(a) – 1 (b) 0
(c) 1 (d) 2

RRB JE - 30/05/2019 (Shift-II)

Ans : (c) From given expression,
|–4x + 4| – 6 = –6
|–(4x – 4)| – 6 = –6
4x – 4 = –6 + 6
4x – 4 = 0
x = 1

92. If 1.5x=0.04y then find the value of (y–x)/(y+x)

(a) 73/77 (b) 0.73/77
(c) 73/770 (d) 730/77

RRB JE - 28/05/2019 (Shift-II)

Ans : (a) From given expression,
1.5x = 0.04y

$$\frac{x}{y} = \frac{.04}{1.5}$$

$$\frac{x}{y} = \frac{4}{150}$$

$$\frac{x}{y} = \frac{2}{75}$$

Let x = 2k , y = 75k

$$\frac{y-x}{x+y} = \frac{75k-2k}{75k+2k} = \frac{73k}{77k} = \frac{73}{77}$$

93. If (0.29 + 0.25 + 0.01)/ 0.005 = a%; then find the value of 'a'.

(a) 5000 (b) 500
(c) 11000 (d) 110

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

Ans : (c) given,

$$\frac{(0.29+0.25+0.01)}{0.005} = a\%$$

$$\frac{0.55}{0.005} = \frac{a}{100}$$

$$\frac{55\times10^{-2}}{5\times10^{-3}} = \frac{a}{100}$$

a = 11000

94. If 49×17 = 833, then what is the value of 0.0833 ÷ 4.9

(a) 1.7 (b) 0.017
(c) 0.0017 (d) 0.17

RRB RPF-SI -12/01/2019 (Shift-III)

Ans : (b) 49 × 17 = 833
0.0833 ÷ 4.9 = ?

$$? = \frac{0.0833}{4.9} = 0.017$$

95. If 185 × 28 = 5180, then what is the value of $\frac{51.8}{18.5}$?

(a) 0.28 (b) 280
(c) 2.8 (d) 28

RRB RPF-SI -16/01/2019 (Shift-III)

Ans : (c) Given,
185× 28 = 5180

$$28 = \frac{5180}{185}$$

Then,

$$28 = \frac{518}{185}\times10$$

$$\frac{28}{10}=\frac{518}{185}$$

$$2.8=\frac{518}{185}$$

अत: $\frac{51.8}{18.5}=2.8$

96. Simplify: $y+[y-(y+x)+\{y-(y-x)\}+(z+x)]$ = ?

(a) y (b) $x+y+z$

(c) $y+z$ (d) $x+z$

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (b) From given expression,

$y+[y-(y+x)+\{y-(y-x)\}+(z+x)]$

$=y+[y-y-x+\{y-y+x\}+z+x]$

$=y-x+x+z+x$

$=x+y+z$

97. 23 × 31 = 713, then 0.00713 ÷ 3.1 = ?

(a) 0.023 (b) 0.0023

(c) 0.23 (d) 2.3

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (b) Given,

$23\times31=713$

$23=\frac{713}{31}$ .....(I)

Then,

$0.00713\div3.1=\frac{713\times10}{31\times100000}$

$=23\times\frac{1}{10000}=0.0023$ .....$\left(From\ eq^n\ (I)\right)$

98. If $\frac{0.5-0.1x}{1.3-0.8x}=0.2$, then x = ?

(a) – 1 (b) – 1

(c) – 3 (d) – 4

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (d) Given,

$\frac{0.5-0.1x}{1.3-0.8x}=0.2,$

$0.5-0.1x=0.26-0.16x$

$0.16x-0.1x=0.26-0.5$

$0.06x=-0.24$

$x=-\frac{0.24}{0.06}$

$x=-4$

99. If 31 × 23 = 713, then 310 × 0.023 = ?

(a) 0.713 (b) 71.3

(c) 7.13 (d) 0.0713

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) Given,

$31\times23=713$

Then, $310\times0.023=?$

$\Rightarrow 31\times10\times\frac{23}{1000}$

$\Rightarrow\frac{31\times23}{100}=\frac{713}{100}=7.13$

100. If 31 × 23 = 713, then what is the value of 3100 × 0.00023 ?

(a) 71.3 (b) 7.13

(c) 0.713 (d) 0.0713

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) Given,

$31\times23=713$

Then,

$3100\times0.00023=31\times100\times23\times\frac{1}{100000}$

$=31\times23\times\frac{1}{1000}=713\times\frac{1}{1000}=0.713$

101. Solve the following equation to find the value of x.

$$\frac{(x-5)}{3}-\frac{(x-2)}{4}=\frac{7}{2}$$

(a) 42 (b) 60

(c) 56 (d) 52

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c) Given,

$\frac{(x-5)}{3}-\frac{(x-2)}{4}=\frac{7}{2}$

$\Rightarrow\frac{4(x-5)-3(x-2)}{12}=\frac{7}{2}$

$\Rightarrow\frac{4x-20-3x+6}{12}=\frac{7}{2}$

$\Rightarrow\frac{x-14}{12}=\frac{7}{2}$

$\Rightarrow x-14=42$

$\Rightarrow x=56$

102. 23 × 33 = 759, then what is 0.00759 ÷ 3.3 ?

(a) 0.023 (b) 0.0023

(c) 2.3 (d) 0.23

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b) Given,

$23\times33=759$

$23=\frac{759}{33}$

Then,

$0.00759\div3.3$

$=\frac{759\times10}{33\times100000}=23\times\frac{1}{10000}=0.0023$

103. If 1120/√x = 80, then x = ?

(a) 225 (b) 196

(c) 125 (d) 336

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (b) Given,

$1120/\sqrt{x} = 80$

$\frac{1120}{\sqrt{x}} = 80$

$\frac{1120}{80} = \sqrt{x}$

$14 = \sqrt{x}$

$x = 14^2 = 196$

104. If p = 36 – 2 (20 + 12 ÷ 4 × 3 – 2 × 2) + 10, then what is twice of p?

(a) –8 (b) –4
(c) –2 (d) –10

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (a) Given,

P = 36– 2 (20 + 12 ÷ 4 × 3 – 2 × 2) + 10
P = 36 – 2 (20 + 3 × 3 – 2 × 2) + 10
P = 36–2 (29 – 4) + 10
P = 36 – 50 + 10
P = –4

Hence, twice of p will be = – 4 × 2 = –8

105. If 1131 ÷ 39 = 29, then 11.31 ÷ 0.0029 = ?

(a) 3.9 (b) 3900
(c) 390 (d) 0.39

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (b) Given,

$1131 \div 39 = 29$

$\frac{1131}{39} = 29$

$\frac{1131}{29} = 39$

Then,

$11.31 \div 0.0029 = \frac{11.31}{0.0029}$

$= \frac{1131 \times 10000}{29 \times 100} = 39 \times 100$

$= 3900$

106. If $\frac{1}{x-a-b} = \frac{1}{x} - \frac{1}{a} - \frac{1}{b}$ then find the value of x.

(a) –a, b (b) a, b
(c) a, –b (d) –a, –b

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (b) Given,

$\frac{1}{x-a-b} = \frac{1}{x} - \frac{1}{a} - \frac{1}{b}$

$\frac{1}{a} + \frac{1}{b} = \frac{1}{x} - \frac{1}{x-a-b}$

$\frac{a+b}{ab} = \frac{x-a-b-x}{x(x-a-b)}$

$\frac{a+b}{ab} = \frac{-(a+b)}{x(x-a-b)}$

$x^2 - (a + b)x + ab = 0$
$x(x - a) - b(x - a) = 0$
$(x - a)(x - b) = 0$
$x = a, x = b$

So, the value of x is a and b.

107. If $\sqrt{75} + \sqrt{363} = \sqrt{N}$, then what is the valeu of N?

(a) 729 (b) 438
(c) 768 (d) 27

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (c) From given expression,

$\sqrt{75} + \sqrt{363} = \sqrt{N}$

On squaring both sides,

$\left(\sqrt{75}\right)^2 + \left(\sqrt{363}\right)^2 + 2\sqrt{75} \times \sqrt{363} = \left(\sqrt{N}\right)^2$

$75 + 363 + 2 \times 5\sqrt{3} \times 11\sqrt{3} = N$

438 + 330 = N

N = 768

108. If 202.4 ÷ x = 5.06, then find the value of x.

(a) 30 (b) 42
(c) 43 (d) 40

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (d) From given expression,

$202.4 \div x = 5.06$

$\Rightarrow \frac{202.4}{x} = 5.06$

$\Rightarrow x = \frac{202.4}{5.06}$

$\Rightarrow x = \frac{20240}{506}$

$x = 40$

109. Evaluate:

$\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$

(a) 142.1414 (b) 140.1414
(c) 143.1414 (d) 141.1414

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (b) : From given expression,

$\sqrt{19600} + \sqrt{0.0196} + \sqrt{0.00000196}$

$= 140 + 0.14 + 0.0014$

$= 140.1414$

110. What is the value of x?

$\frac{144}{1.44} = \frac{14.4}{x}$

(a) 0.144 (b) 1.44
(c) 0.00144 (d) 0.0144

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (a) From given expression,

$\frac{144}{1.44} = \frac{14.4}{x}$

$\frac{144 \times 100}{144} = \frac{144}{x \times 10}$ or $x = \frac{144 \times 144}{144 \times 100 \times 10}$

$x = 0.144$

111. If $123 \times 356 = 43788$, then $1.23 \times 35.6 = ?$

a) 4.3788 (b) 43.788
(c) 0.43788 (d) 437.88

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (b) Given,

$123 \times 356 = 43788$

$1.23 \times 35.6 = \frac{123}{100} \times \frac{356}{10} = \frac{43788}{1000} = 43.788$

112. Find the value of 'a'?

$\frac{7}{a-2} = \frac{5}{a+4}$

(a) –19 (b) 38
(c) 19 (d) –38

RRB NTPC 19.01.2017 Shift : 2

Ans : (a) From given expression,

$\frac{7}{a-2} = \frac{5}{a+4}$

$7a + 28 = 5a - 10$

$2a = -38$

$a = -19$

113. Simplify:

$1 \div [\{p^2 / (p + 6)\} + \{6p/(p + 6)\}]$

(a) $\frac{1}{p}$ (b) $\frac{1}{(p+6)}$
(c) p + 6 (d) p

RRB NTPC 17.01.2017 Shift-2

Ans : (a) From given expression,

$1 \div \left[\{p^2/(p+6)\} + \{6p/(p+6)\}\right]$

$= 1 \div \left[\frac{p^2}{p+6} + \frac{6p}{p+6}\right]$

$= 1 \div \left[\frac{p(p+6)}{(p+6)}\right]$

$= 1 \div p = \frac{1}{p}$

114. If $\frac{x}{5} + \frac{y}{7} = 1$ and x = 2, then y = ?

(a) 3/5 (b) 7/5
(c) 5/3 (d) 21/5

RRB N TPC 31.03.2016 Shift : 1

Ans : (d) Given,

$\frac{x}{5} + \frac{y}{7} = 1$

$\because x = 2$

$\therefore \frac{2}{5} + \frac{y}{7} = 1$

$\frac{y}{7} = 1 - \frac{2}{5}$

$\frac{y}{7} = \frac{3}{5}$

$y = \frac{21}{5}$

115. If $4^3 \times 5^6 = 10^m$, then find the value of m.

(a) 4 (b) 6
(c) 8 (d) 2

RRB NTPC 29.03.2016 Shift : 2

Ans : (b) From given expression,

$4^3 \times 5^6 = 10^m$

$(4 \times 5)^3 \times 5^3 = 10^m$

$20^3 \times 125 = 10^m$

$8000 \times 125 = 10^m \Rightarrow 10^m = 1000000$

$\Rightarrow 10^m = 10^6$

$\Rightarrow \boxed{m = 6}$

116. If 4515 ÷17.5 = 258, then 45.15 ÷ 1.75 = ?

(a) 2.58 (b) 0.258
(c) 25.8 (d) 258

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) Given,

$4515 \div 17.5 = 258$

$\frac{4515}{17.5} = 258$

$\frac{45.15 \times 100}{1.75 \times 10} = 258$

$\frac{45.15}{1.75} = 258 \times \frac{10}{100}$

$45.15 \div 1.75 = 25.8$

117. 19 × 23 = 437. Then 190 × 0.023 = ?

(a) 0.0437 (b) 0.437
(c) 43.7 (d) 4.37

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (d) Given,

$19 \times 23 = 437$

So,

$190 \times 0.023 = 19 \times 23 \times \frac{10}{1000}$

$= 437 \times \frac{10}{1000} = 4.37$

Type - 4

118. Simplify : (-4.6)× (-4.6) ÷ (-4.6 + 0.6)

(a) - 5.29 (b) - 0.529
(c) - 4.06 (d) 5.01

RRB RPF Constable -24/01/2019 (Shift-I)

Ans : (a) From given expression,

(-4.6) × (-4.6) ÷ (-4.6 + 0.6)

= (-4.6) × (-4.6) ÷ (- 4.0)

= (-4.6) × (-4.6) ×1/(-4) = -5.29

119. Which of the following will take place of *?

$1\frac{1}{4} + 1\frac{1}{6} - 1\frac{1}{8} = * + 1\frac{1}{12}$

(a) 5/12 (b) 7/12
(c) 7/24 (d) 5/24

RRB JE - 22/05/2019 (Shift-III)

Ans : (d) From given expression,

$$1\frac{1}{4}+1\frac{1}{6}-1\frac{1}{8}=*+1\frac{1}{12}$$

$$\frac{5}{4}+\frac{7}{6}-\frac{9}{8}-\frac{13}{12}=*$$

$$*=\frac{30+28-27-26}{24}$$

$$*=\frac{58-53}{24}$$

$$*=\frac{5}{24}$$

120. Simplify : $\dfrac{121}{3\frac{2}{3}}+\dfrac{92}{7\frac{1}{3}}$

(a) $41\frac{12}{13}$ (b) $40\frac{13}{11}$

(c) $43\frac{11}{19}$ (d) $45\frac{6}{11}$

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

Ans : (d) From given expression,

$$\frac{121}{3\frac{2}{3}}+\frac{92}{7\frac{1}{3}}=\frac{121\times3}{11}+\frac{92\times3}{22}$$

$$=\frac{6\times121+92\times3}{22}=\frac{726+276}{22}$$

$$=\frac{1002}{22}=\frac{501}{11}=45\frac{6}{11}$$

121. Solve: $\dfrac{3.6\times0.48\times2.50}{0.12\times0.09\times0.5}$

(a) 8000 (b) 8

(c) 800 (d) 80

RRB JE - 24/05/2019 (Shift-I)

Ans : (c) From given expression,

$$\frac{3.6\times0.48\times2.50}{0.12\times0.09\times0.5}=\frac{36\times48\times250}{12\times9\times5}=16\times50=800$$

122. Find the value of

$$\frac{1}{1\times2}+\frac{1}{2\times3}+\frac{1}{3\times4}+\frac{1}{4\times5}+\frac{1}{5\times6}+.....+\frac{1}{9\times10}$$

(a) 1/10 (b) 5/11

(c) 9/10 (d) 2/5

RRB JE - 24/05/2019 (Shift-III)

Ans : (c) From given expression,

$$\frac{1}{1\times2}+\frac{1}{2\times3}+\frac{1}{3\times4}+\frac{1}{4\times5}+\frac{1}{5\times6}+.....+\frac{1}{9\times10}$$

$$\left[\frac{1}{1}-\frac{1}{2}\right]+\left[\frac{1}{2}-\frac{1}{3}\right]+\left[\frac{1}{3}-\frac{1}{4}\right]+\left[\frac{1}{4}-\frac{1}{5}\right]+\left[\frac{1}{5}-\frac{1}{6}\right]+.....+\left[\frac{1}{9}-\frac{1}{10}\right]$$

$$\left[\frac{10-1}{10}\right]=\frac{9}{10}$$

123. Simplify :

$$3+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{4}}}$$

(a) 48/13 (b) 18/49

(c) 1/12 (d) 3/13

RRB JE - 25/05/2019 (Shift-I)

Ans : (a) From given expression,

$$=3+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{4}}} \qquad =3+\cfrac{1}{1+\cfrac{1}{\frac{9}{4}}}$$

$$=3+\cfrac{1}{1+\cfrac{4}{9}} \qquad =3+\frac{9}{13}$$

$$=\frac{48}{13}$$

124. Simplify : 1.2×2.5 × 0.5

(a) 1.5 (b) 150

(c) 0.15 (d) 15

RRB JE - 25/05/2019 (Shift-II)

Ans : (a) From given expression,

$1.2\times2.5\times0.5$

$$=\frac{12\times25\times5}{10\times10\times10}=\frac{1500}{1000}=\boxed{1.5}$$

125. Simplify : $1.\overline{2}-0.1\overline{2}$

(a) 11/10 (b) 11/90

(c) 1 (d) 9/10

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

Ans : (a) From given expression,

$1.\overline{2}-0.1\overline{2}$

$=1+0.\overline{2}-0.1\overline{2}$

$$=1+\frac{2}{9}-\frac{(12-1)}{90}, \qquad =1+\frac{2}{9}-\frac{11}{90}$$

$$=1+\frac{20-11}{90}=1+\frac{9}{90}, \qquad =1+\frac{1}{10}=\frac{11}{10}$$

126. Simplify: $\left[1+\dfrac{1}{10+\frac{1}{10}}\right]+\left[1-\dfrac{1}{10+\frac{1}{10}}\right]$

(a) 2 (b) 101/10

(c) 3/10 (d) 91/101

RRB JE - 28/05/2019 (Shift-I)

Ans : (a) From given expression,

$$\left[1+\frac{1}{10+\frac{1}{10}}\right]+\left[1-\frac{1}{10+\frac{1}{10}}\right]$$

$$\left[1+\frac{10}{101}\right]+\left[1-\frac{10}{101}\right]$$

$$\left[\frac{101+10}{101}\right]+\left[\frac{101-10}{101}\right]$$

$$\frac{111}{101}+\frac{91}{101}=\frac{202}{101}=2$$

127. 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

RRB JE - 30/05/2019 (Shift-II)

Ans : (b) From given expression,

$$\frac{1\frac{1}{4}\div 1\frac{1}{2}}{\frac{1}{15}+1-\frac{9}{10}}$$

$$\Rightarrow \frac{\frac{5}{4}\div\frac{3}{2}}{\frac{2+30-27}{30}}$$

$$\Rightarrow \frac{\frac{5}{4}\times\frac{2}{3}}{\frac{5}{30}}=\frac{\frac{5}{6}}{\frac{5}{30}}$$

$$=\frac{5}{6}\times\frac{30}{5}=5$$

128. Simplify :

$$0.\overline{09}\times 7.\overline{3}$$

(a) 11/3 (b) 61/9
(c) 2/3 (d) 67/99

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

Ans : (c) From given expression,

$$0.\overline{09}\times 7.\overline{3}$$

$$=\frac{9}{99}\times\left(7+\frac{3}{9}\right)=\frac{9}{99}\times\frac{66}{9}=\frac{66}{99}=\frac{2}{3}$$

129. Solve: $\dfrac{1}{1+\dfrac{1}{1+\dfrac{1}{1-\frac{1}{2}}}}$

(a) 3/8 (b) 3/4
(c) 3/2 (d) 4/3

RRB JE - 31/05/2019 (Shift-I)

Ans : (b) From given expression,

$$\frac{1}{1+\dfrac{1}{1+\dfrac{1}{1-\frac{1}{2}}}}=\frac{1}{1+\dfrac{1}{1+\dfrac{1}{\frac{1}{2}}}}=\frac{1}{1+\dfrac{1}{1+\frac{2}{1}}}$$

$$=\frac{1}{1+\frac{1}{3}}=\frac{1}{\frac{3+1}{3}}=\frac{1}{\frac{4}{3}}=\frac{3}{4}$$

130. Simplify :

$$3.\overline{36}-2.\overline{05}+1.\overline{33}$$

(a) $2.\overline{61}$ (b) $2.\overline{64}$
(c) $2.\overline{64}$ (d) 2.64

RRB JE - 02/06/2019 (Shift-I)

Ans : (c) From given expression,

$$3.\overline{36}-2.\overline{05}+1.\overline{33}$$

$$=4.\overline{69}-2.\overline{05}=2.\overline{64}$$

131. 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

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

Ans. (a) : Given equation,

$$(7.5\times 7.5-2.5\times 2.5)\div(1.5^2+2.75)=?$$

$$=\frac{(7.5-2.5)(7.5+2.5)}{(2.25+2.75)}$$

$$=\frac{5.0\times 10.0}{5.00}$$

$$=\frac{5\times 10}{5}=10$$

132. Solve the following equation:

$$11\times 3\div\frac{1}{9}-5\times 6\left(1\div\frac{1}{6}\right)=?$$

(a) -115 (b) 117
(c) -117 (d) 115

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

Ans : (b) From given expression,

$$11\times 3\div\frac{1}{9}-5\times 6\left(1\div\frac{1}{6}\right)$$

$$=11\times 3\times 9-5\times 6(1\times 6)$$

$$=297-180=117$$

133. 131/255 + 2/5 + 5 - 17/3 = ?

(a) $\frac{121}{255}$ (b) $\frac{117}{255}$
(c) $\frac{63}{255}$ (d) $\frac{131}{255}$

RRB RPF Constable -19/01/2019 (Shift-III)

Ans : (c) From given expression,

$$\frac{131}{255}+\frac{2}{5}+5-\frac{17}{3}$$

$$=\frac{131+102+1275-1445}{255}=\frac{63}{255}$$

134. $\frac{0.12\div 0.15}{2}=?$

(a) 4 (b) 0.04
(c) 0.004 (d) 0.4

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (d) From given expression,

$$\frac{0.12\div 0.15}{2}=?$$

$$\frac{0.12\times\frac{1}{0.15}}{2}=?$$

$$\frac{12}{15\times 2}=?$$

$$?=0.4$$

135. Find the value of $\frac{7}{11}+\frac{8}{17}-\frac{1}{13}\times\frac{286}{11}$.

(a) $\frac{-167}{187}$ (b) $\frac{-161}{187}$
(c) $\frac{20}{187}$ (d) $\frac{-35}{187}$

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (a) From given expression,

$$\frac{7}{11}+\frac{8}{17}-\frac{1}{13}\times\frac{286}{11}$$

$$=\frac{7}{11}+\frac{8}{17}-\frac{286}{143}$$

$$=\frac{7}{11}+\frac{8}{17}-2, \qquad =\frac{119+88}{187}-2$$

$$=\frac{207}{187}-2, \qquad =\frac{207-374}{187}$$

$$=\frac{-167}{187}$$

136. $\frac{3-0.2}{0.1\times(3+0.2)}=?$

(a) 8.75 (b) 0.0875
(c) 87.5 (d) 0.875

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (a) From given expression,

$$\frac{3-0.2}{0.1\times(3+0.2)}$$

$$\Rightarrow\frac{2.8}{0.32}=8.75$$

137. Solve the following:

$$\frac{(0.54\times 0.540-0.460\times 0.460)}{(1-0.920)}=?$$

(a) 0.1 (b) 2
(c) 1 (d) 0.01

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c) From given expression,

$$\frac{0.54\times 0.540-0.460\times 0.460}{(1-0.920)}$$

$$(a^2-b^2)=(a+b)(a-b)$$

$$\Rightarrow\frac{(0.54)^2-(0.460)^2}{(1-0.920)}=\frac{(0.54+0.460)(0.54-0.460)}{(1-0.920)}$$

$$\Rightarrow\frac{1\times 0.08}{0.08}=1$$

138. Find the value of the following equation:

$$\frac{1+2}{\left\{1+\frac{2}{1+\frac{1}{3}}\right\}}=?$$

(a) $\frac{21}{4}$ (b) $\frac{21}{5}$
(c) $\frac{6}{5}$ (d) $\frac{9}{4}$

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (c) From given expression,

$$\frac{1+2}{\left\{1+\frac{2}{\left(1+\frac{1}{3}\right)}\right\}}$$

$$=\frac{3}{\left\{1+\frac{2\times 3}{4}\right\}}=\frac{3}{\frac{10}{4}}$$

$$=\frac{12}{10}=\frac{6}{5}$$

139. Solve the following equation:

$$11\div 3+\frac{1}{9}-5\times 6\left(1\times\frac{1}{6}\right)=?$$

(a) $\frac{-1}{9}$ (b) $\frac{-11}{9}$
(c) $\frac{11}{9}$ (d) $\frac{11}{8}$

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) From given expression,

$$11\div 3+\frac{1}{9}-5\times 6\left(1\times\frac{1}{6}\right)$$

$$=11\div 3+\frac{1}{9}-5\times 1$$

$$=\frac{11}{3}+\frac{1}{9}-5 \quad =\frac{33+1-45}{9}=\frac{-11}{9}$$

140. $\left(\frac{55}{11}\right)+(18-6)\times 9=?$

(a) 100 (b) 115
(c) 113 (d) 110

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) From given expression,

$\left(\frac{55}{11}\right)+(18-6)\times 9=?$

$5+12\times 9=?$

$5+108=?$

$?=113$

141. $(2.5)^2+8.7-\left(\frac{1.12}{1.4}\right)\times 0.5=?$

(a) 14.55 (b) 10.95
(c) 14.91 (d) 14.32

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (a) : From given expression,

$(2.5)^2+8.7-\left(\frac{1.12}{1.4}\right)\times 0.5=?$

$6.25+8.7-0.8\times 0.5=?$

$6.25+8.7-0.40=?$

$14.95-.40=?$

$\boxed{?=14.55}$

142. $\frac{0.16\times 1.65}{0.075\times 0.02^2}=?$

(a) 8400 (b) 8000
(c) 7500 (d) 8800

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : From given expression,

$?=\frac{0.16\times 1.65}{0.075\times 0.02^2}$

$=\frac{16\times 165\times 10^{-4}}{75\times 10^{-3}\times 4\times 10^{-4}}$

$=\frac{16\times 165\times 10^{3}}{75\times 4}$

$=\frac{4\times 165\times 10^{3}}{75}$

$=\frac{4\times 33\times 10^{3}}{15}$

$=\frac{4\times 33\times 10\times 100}{15}$

$=\frac{4\times 33\times 2\times 100}{3}$

$=4\times 11\times 2\times 100$

$=8800$

143. $\frac{3}{4}+\left\{\frac{3}{4}+\frac{3}{4}\div\left(\frac{3}{4}+\frac{3}{4}\right)\right\}=?$

(a) 1 (b) 2
(c) $\frac{3}{4}$ (d) $2\frac{3}{4}$

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (b) From given expression,

$\frac{3}{4}+\left\{\frac{3}{4}+\frac{3}{4}\div\left(\frac{3}{4}+\frac{3}{4}\right)\right\}$

$=\frac{3}{4}+\left\{\frac{3}{4}+\frac{3}{4}\div\frac{3}{2}\right\}$

$=\frac{3}{4}+\left\{\frac{3}{4}+\frac{1}{2}\right\}=\frac{3}{4}+\frac{3}{4}+\frac{1}{2}$

$=\frac{3+3+2}{4}=\frac{8}{4}=2$

144. $\frac{\left(\frac{2}{5}+\frac{4}{15}\right)}{\left(\frac{3}{5}-\frac{2}{5}\right)}$ of $\frac{3}{12}=?$

(a) $\frac{5}{7}$ (b) $\frac{2}{6}$
(c) $\frac{5}{6}$ (d) $\frac{6}{5}$

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (c) From given expression,

$\frac{\frac{2}{5}+\frac{4}{15}}{\left(\frac{3}{5}-\frac{2}{5}\right)}$ of $\frac{3}{12}=\frac{\frac{30+20}{75}}{\frac{1}{5}}\times\frac{3}{12}$

$\frac{50}{75}\div\frac{1}{5}\times\frac{3}{12}$

$\frac{50}{75}\times\frac{5}{1}\times\frac{3}{12}$

$\frac{50}{15}\times\frac{3}{12}=\frac{5}{6}$

145. Simplify: $\left(\frac{2}{3}\times\frac{4}{6}\right)+\left(\frac{5}{3}\times\frac{7}{2}\right)-\left(\frac{11}{4}\times\frac{4}{3}\right)$

(a) $\frac{31}{9}$ (b) $\frac{16}{9}$
(c) $\frac{47}{18}$ (d) $\frac{29}{18}$

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (c) From given expression,

$\left(\frac{2}{3}\times\frac{4}{6}\right)+\left(\frac{5}{3}\times\frac{7}{2}\right)-\left(\frac{11}{4}\times\frac{4}{3}\right)$

$=\frac{4}{9}+\frac{35}{6}-\frac{11}{3}$

$=\frac{8+105-66}{18}=\boxed{\frac{47}{18}}$

146. 2.09 ÷ 0.000209 = ?

(a) 100000 (b) 1000000
(c) 1000 (d) 10000

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (d) From given expression,
2.09 ÷ 0.000209

$= \frac{209}{100} \div \frac{209}{1000000}$

$= \frac{209}{100} \times \frac{1000000}{209}$

=100,00

147. 1.08 ÷ 0.000108 =

(a) 100000 (b) 1000
(c) 1000000 (d) 10000

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (d) : From given expression,
1.08 ÷ 0.000108

$= \frac{1.08}{0.000108}$

$= \frac{108}{0.0108}$

$= \frac{108 \times 10000}{108} = 10000$

148. Find the value of $3\frac{5}{8} + \frac{6}{16} - \frac{5}{24} + 3\frac{1}{2} = ?$

(a) $\frac{751}{24}$ (b) $\frac{715}{24}$
(c) $\frac{175}{24}$ (d) $\frac{157}{24}$

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) From given expression,

$3\frac{5}{8} + \frac{6}{16} - \frac{5}{24} + 3\frac{1}{2}$

$= \frac{29}{8} + \frac{6}{16} - \frac{5}{24} + \frac{7}{2}$

$= \frac{6 \times 29 + 3 \times 6 - 2 \times 5 + 24 \times 7}{48}$

$= \frac{174 + 18 - 10 + 168}{48} = \frac{350}{48} = \frac{175}{24}$

149. Simplify the equation:

$\left(\frac{5}{6} \times \frac{1}{3}\right) + \left(\frac{7}{3} \times \frac{1}{2}\right) - \left(\frac{11}{4} \times \frac{1}{3}\right) = ?$

(a) $\frac{19}{36}$ (b) $\frac{17}{9}$
(c) $\frac{14}{33}$ (d) $\frac{23}{9}$

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (a) : From given equation,

$= \left(\frac{5}{6} \times \frac{1}{3}\right) + \left(\frac{7}{3} \times \frac{1}{2}\right) - \left(\frac{11}{4} \times \frac{1}{3}\right)$

$= \frac{5}{18} + \frac{7}{6} - \frac{11}{12}$

$= \frac{20 + 84 - 66}{72}$

$= \frac{104 - 66}{72} = \frac{38}{72}$

$= \frac{19}{36}$

150. $\sqrt{75.24 + ?} = 8.71$

(a) 0.6241 (b) 6.0241
(c) 6.241 (d) 62.41

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (a) : From given expression,

$\sqrt{75.24 + ?} = 8.71$ Let ? = x

$\sqrt{75.24 + x} = 8.71$

On squaring the both side,

$(75.24 + x) = (8.71)^2$

$75.24 + x = 75.8641$

x = 75.8641 – 75.24

$\boxed{x = 0.6241}$

151. Solve the equation given below:

$\frac{(0.125 + 0.255)}{0.5 - 0.03 + 0.005} = ?$

(a) 0.08 (b) 0.8
(c) 0.2 (d) 1

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : From given expression,

$\frac{(0.125 + 0.255)}{0.5 - 0.03 + 0.005}$

$= \frac{.380}{.475} = \frac{76}{95} = .8$

152. Solve:

(9.5 × 9.5 - 2.5 × 2.5) ÷ (1.5^2 - 0.25) = ?

(a) 47 (b) 42
(c) 49 (d) 45

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (b) From given expression,

(9.5 × 9.5 - 2.5 × 2.5) ÷ (1.5^2 - 0.25) = ?

$? = \frac{(9.5)^2 - (2.5)^2}{(1.5)^2 - (0.5)^2} = \frac{(9.5 - 2.5)(9.5 + 2.5)}{(1.5 + 0.5)(1.5 - 0.5)}$

$= \frac{7.0 \times 12.0}{2.0 \times 1.0} = 42.0$

153. 0.00025 ÷ 12.5 = ?

(a) 0.0025 (b) 0.00002
(c) 0.0002 (d) 0.000002

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (b) : 0.00025 ÷ 12.5

$= 0.00025 \times \frac{1}{12.5}$

$= \frac{0.00025}{12.5}, = \frac{25}{1250000} = 0.00002$

154. Simplify:

$$\left(\frac{7}{6}\times\frac{1}{3}\right)+\left(\frac{7}{3}\times\frac{3}{2}\right)-\left(\frac{13}{4}\times\frac{2}{3}\right)=?$$

(a) $\frac{31}{18}$ (b) $\frac{35}{18}$

(c) $\frac{36}{18}$ (d) $\frac{29}{18}$

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (a) From given expression,

$$\left(\frac{7}{6}\times\frac{1}{3}\right)+\left(\frac{7}{3}\times\frac{3}{2}\right)-\left(\frac{13}{4}\times\frac{2}{3}\right)$$

$$=\frac{7}{18}+\frac{7}{2}-\frac{13}{6}$$

$$=\frac{7+63-39}{18}\Rightarrow\frac{70-39}{18}$$

$$=\frac{31}{18}$$

155. Solve the following equation:

$$\frac{16}{3}-\left\{4\frac{1}{3}-\left(3\frac{1}{3}-\left(2\frac{1}{3}-\frac{1}{3}\right)\right)\right\}=?$$

(a) $4\frac{1}{3}$ (b) $5\frac{1}{3}$

(c) $1\frac{1}{3}$ (d) $2\frac{1}{3}$

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) : From given expression,

$$\frac{16}{3}-\left\{4\frac{1}{3}-\left(3\frac{1}{3}-\left(2\frac{1}{3}-\frac{1}{3}\right)\right)\right\}=?$$

$$=\frac{16}{3}-\left\{4\frac{1}{3}-\left(3\frac{1}{3}-\left(\frac{7}{3}-\frac{1}{3}\right)\right)\right\}$$

$$=\frac{16}{3}-\left\{4\frac{1}{3}-\left(\frac{10}{3}-\frac{6}{3}\right)\right\}$$

$$=\frac{16}{3}-\left\{\frac{13}{3}-\frac{4}{3}\right\}$$

$$=\frac{16}{3}-\frac{9}{3},\qquad=\frac{7}{3}\qquad=2\frac{1}{3}$$

156. Find the value of $3.24\div0.002=?$

(a) 16.20 (b) 1620

(c) 162 (d) 1.620

RRB NTPC 26.04.2016 Shift : 3

Ans : (b) From given expression,

$3.24\div0.002$

$$\frac{3.24}{0.002}=\frac{324\times10}{2}=1620$$

157. (1 + 2/3) ÷ [(1+1/3) ÷ (2/3 +1)] = ?

(a) $\frac{4}{3}$ (b) $\frac{3}{4}$

(c) $\frac{12}{25}$ (d) $\frac{25}{12}$

RRB NTPC 17.01.2017 Shift-2

Ans : (d) From given expression,

$$\left(1+\frac{2}{3}\right)\div\left[\left(1+\frac{1}{3}\right)\div\left(\frac{2}{3}+1\right)\right]$$

$$=\frac{5}{3}\div\left[\frac{4}{3}\times\frac{3}{5}\right]$$

$$=\frac{5}{3}\times\frac{5}{4}$$

$$=\frac{25}{12}$$

158. Find the value : $(0.3)^2\div100=?$

(a) 0.09 (b) 0.0009

(c) 0.009 (d) 0.9

RRB NTPC 17.01.2017 Shift-3

Ans : (b) From given expression,

$$(0.3)^2\div100=\frac{0.09}{100}$$

$= 0.0009$

159. Solve : $(0.25\times0.004)+0.374-0.72=?$

(a) -0.345 (b) 0.325

(c) 1.94 (d) -0.945

RRB NTPC 04.04.2016 Shift : 2

Ans : (a) $(0.25\times0.004)+0.374-0.72$

$=0.001-0.346$

$=-0.345$

160. Calculate: 0.00056÷0.07

(a) 0.08 (b) 0.008

(c) 0.0008 (d) 0.8

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) From given expression,

$$0.00056\div0.07=\frac{0.00056}{0.07}\times\frac{100000}{100000}$$

$$=\frac{56}{7\times1000}=\frac{8}{1000}=0.008$$

161. Simplify: (3/2+5/3) ÷(3/2+2/3)

(a) 1 (b) 19/13

(c) 13/19 (d) 13/16

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) From given expression,

$$\left(\frac{3}{2}+\frac{5}{3}\right)\div\left(\frac{3}{2}+\frac{2}{3}\right)=\left(\frac{9+10}{6}\right)\div\left(\frac{9+4}{6}\right)$$

$$=\frac{19}{6}\div\frac{13}{6}$$

$$=\frac{19}{6}\times\frac{6}{13}=\frac{19}{13}$$

162. Simplify : (2/5 + 2/9) ÷ (2/5 + 5/9)

(a) 28/45 (b) 28/43
(c) 27/34 (d) 7/17

RRB NTPC 02.04.2016 Shift : 1

Ans : (b) From given expression,

$$\left(\frac{2}{5}+\frac{2}{9}\right)\div\left(\frac{2}{5}+\frac{5}{9}\right)$$
$$=\left(\frac{18+10}{45}\right)\div\left(\frac{18+25}{45}\right)$$
$$=\frac{28}{45}\div\frac{43}{45}=\frac{28}{43}$$

163. Simplify: (2/9+3/5) ÷ (2/9+2/5).

(a) 37/28 (b) 47/43
(c) 43/47 (d) 41/47

RRB NTPC 02.04.2016 Shift : 3

Ans : (a) From given expression,

$$(2/9+3/5)\div(2/9+2/5)=\left(\frac{10+27}{45}\right)\div\left(\frac{10+18}{45}\right)$$
$$=\frac{37}{45}\div\frac{28}{45}$$
$$=\frac{37}{45}\times\frac{45}{28}=\frac{37}{28}$$

164. $5(10)^4+6(10)^3+4(10)-3(1/100)=?$

(a) 54,60.33 (b) 54,309.97
(c) 56,407.00 (d) 56,039.97

RRB NTPC 31.03.2016 Shift : 3

Ans : (d) From given expression,

$$5(10)^4+6\times(10)^3+4(10)-3(1/100)$$
$$=5\times10000+6\times1000+4\times10-3\times\frac{1}{100}$$
$$=50000+6000+40-.03$$
$$=56040-.03=56039.97$$

165. Find the value of 0.08 × 0.23 ÷ 0.004

(a) 46 (b) 4.6
(c) 0.046 (d) 0.0046

RRB NTPC 31.03.2016 Shift : 3

Ans : (b) From given expression,

$0.08\times0.23\div0.004$

$$=\frac{0.08\times0.23}{0.004}=\frac{8\times23}{4\times10}=\frac{2\times23}{10}=\frac{46}{10}=4.6$$

166. $\frac{0.55\times0.81}{4.5}=?$

(a) 0.99 (b) 0.099
(c) 9.9 (d) 0.0099

RRB NTPC 11.04.2016 Shift : 3

Ans : (b) From given expression,

$$\frac{0.55\times0.81}{4.5}$$
$$=\frac{55\times81\times10}{100\times100\times45}=0.099$$

167. Simplify:
(2/3 + 3/5) ÷ (2/3 + 2/5)

(a) 1 (b) 19/16
(c) 15/16 (d) 13/16

RRB NTPC 10.04.2016 Shift : 3

Ans : (b) From given expression,

$$\left(\frac{2}{3}+\frac{3}{5}\right)\div\left(\frac{2}{3}+\frac{2}{5}\right)$$
$$=\frac{10+9}{15}\div\frac{10+6}{15}=\frac{19}{15}\times\frac{15}{16}=\frac{19}{16}$$

168. Calculate : $\frac{40.7\times40.7\times40.7+1}{40.7\times40.7-40.7+1}$

(a) 417 (b) 4.17
(c) 41.7 (d) 441.7

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) From given expression,

$$\frac{40.7\times40.7\times40.7+1}{40.7\times40.7-40.7+1}$$
$$=\frac{(40.7)^3+(1)^3}{(40.7)^2-40.7\times1+(1)^2}=(40.7+1)=40.7+1=41.7$$

Type - 5

169. Simplify : $\left(3+\sqrt{8}\right)+\frac{1}{(3-\sqrt{8})}-(6+4\sqrt{2})$

(a) 4 (b) 1
(c) 0 (d) 6

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

Ans : (c) From given expression,

$$=3+\sqrt{8}+\frac{1}{3-\sqrt{8}}\times\frac{3+\sqrt{8}}{3+\sqrt{8}}-\left(6+4\sqrt{2}\right)$$
$$=3+\sqrt{8}+3+\sqrt{8}-\left(6+4\sqrt{2}\right)$$
$$=6+2\sqrt{8}-6-4\sqrt{2}$$
$$=6+4\sqrt{2}-6-4\sqrt{2}$$
$$=0$$

170. Simplify : $\sqrt{25+10\sqrt{6}}+\sqrt{25-10\sqrt{6}}$

(a) $2\sqrt{15}$ (b) $2\sqrt{5}$
(c) $\sqrt{55}$ (d) $\sqrt{50}$

RRB JE - 24/05/2019 (Shift-III)

Ans : (a) From given expression,

$$\sqrt{25+10\sqrt{6}}+\sqrt{25-10\sqrt{6}}$$
$$X=\sqrt{25+10\sqrt{6}}+\sqrt{25-10\sqrt{6}}$$

On squaring both sides,

$$X^2=25+10\sqrt{6}+25-10\sqrt{6}+2\left(\sqrt{(25)^2-\left(10\sqrt{6}\right)^2}\right)$$
$$X^2=50+2\left(\sqrt{625-600}\right)$$

$X^2 = 50 + 2 \times 5$
$X^2 = 60$
$X = \sqrt{60}$
$X = 2\sqrt{15}$

171. If $3\sqrt{5} + \sqrt{125} = 17.88$, then find the value of $\sqrt{80} + 6\sqrt{5}$

(a) 22.25 (b) 22.35
(c) 18.75 (d) 20.235

RRB JE - 31/05/2019 (Shift-I)

Ans : (b) Given,

$3\sqrt{5} + \sqrt{125} = 17.88$
$3\sqrt{5} + 5\sqrt{5} = 17.88$
$8\sqrt{5} = 17.88$
$\sqrt{80} + 6\sqrt{5} = ?$
$4\sqrt{5} + 6\sqrt{5} = ?$
$10\sqrt{5} = ?$
$= \dfrac{17.88 \times 10\sqrt{5}}{8\sqrt{5}} = 22.35$

172. Find the value of $\sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{...}}}}}$?

(a) 5 (b) $\sqrt{30}$
(c) 5.4 (d) 6

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a) Let

$\sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{30 - \sqrt{.....}}}}} = x$

Squaring on both sides,

$30 - x = x^2$
$\Rightarrow x^2 + x - 30 = 0$
$\Rightarrow (x+6)(x-5) = 0$
$\Rightarrow x = 5$

173. Solve: $\dfrac{\sqrt{5}}{\sqrt{3} - \sqrt{2}} - \dfrac{3\sqrt{3}}{\sqrt{5} - \sqrt{2}} - \dfrac{\sqrt{8}}{\sqrt{5} + \sqrt{3}} = ?$

(a) 0 (b) 1/2
(c) -1 (d) -1/2

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (a) : From given expression,

$\dfrac{\sqrt{5}}{\sqrt{3} - \sqrt{2}} - \dfrac{3\sqrt{3}}{\sqrt{5} - \sqrt{2}} - \dfrac{\sqrt{8}}{\sqrt{5} + \sqrt{3}} = ?$

$? = \dfrac{\sqrt{5}(\sqrt{3} + \sqrt{2})}{3 - 2} - \dfrac{3\sqrt{3}(\sqrt{5} + \sqrt{2})}{5 - 2} - \dfrac{2\sqrt{2}(\sqrt{5} - \sqrt{3})}{5 - 3}$

$= \sqrt{15} + \sqrt{10} - \sqrt{15} - \sqrt{6} - \sqrt{10} + \sqrt{6}$
$= 0$

174. Solve the following:

$2\sqrt{12} \times 5\sqrt{20} \times 3\sqrt{15} = ?$

(a) 900 (b) 1800
(c) 1200 (d) 1500

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (b) From given expression,

$2\sqrt{12} \times 5\sqrt{20} \times 3\sqrt{15}$
$= 2\sqrt{2 \times 2 \times 3} \times 5\sqrt{2 \times 2 \times 5} \times 3\sqrt{15}$
$= 4\sqrt{3} \times 10\sqrt{5} \times 3\sqrt{15}$
$= 3 \times 40 \times \sqrt{15} \times \sqrt{15}$
$= 120 \times 15$
$= 1800$

Type - 6

175. Simplify: $\sqrt{12} \times \sqrt{27}$

(a) $4\sqrt{3}$ (b) $3\sqrt{4}$
(c) 18 (d) 9

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

Ans : (c) From given expression,

$= \sqrt{12} \times \sqrt{27} = 2\sqrt{3} \times 3\sqrt{3} = 6 \times 3 = 18$

176. Find the value of 73×73+42×42-2×73×42

(a) 961 (b) 676
(c) 981 (d) 861

RRB RPF-SI -16/01/2019 (Shift-III)

Ans : (a) From given expression,

$73 \times 73 + 42 \times 42 - 2 \times 73 \times 42$
$= (73)^2 + (42)^2 - 2 \times 73 \times 42$
$= (73 - 42)^2 = (31)^2 = 961$

177. Find the value of $[(525+252)^2 - (525-252)^2]/(525 \times 252)$

(a) 3 (b) 4
(c) 5 (d) 6

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

Ans : (b) From given expression,

$\dfrac{(525+252)^2 - (525-252)^2}{525 \times 252}$

$= \dfrac{(525)^2 + (252)^2 + 2 \times 525 \times 252 - (525)^2 - (252)^2 + 2 \times 525 \times 252}{525 \times 252}$

$= \dfrac{4 \times 525 \times 252}{525 \times 252} = 4$

178. Simplify: $\dfrac{0.1 \times 0.1 + 0.2 \times 0.2}{0.3 \times 0.3 + 0.6 \times 0.6}$

(a) 2/9 (b) 1/9
(c) 1/3 (d) 2/3

RRB JE - 27/05/2019 (Shift-I)

Ans : (b) From given expression,

$\dfrac{0.1 \times 0.1 + 0.2 \times 0.2}{0.3 \times 0.3 + 0.6 \times 0.6}$

$= \dfrac{\frac{1}{100} + \frac{4}{100}}{\frac{9}{100} + \frac{36}{100}} = \dfrac{5}{100} \times \dfrac{100}{45}$

$= \boxed{\dfrac{1}{9}}$

179. Find the value of : $\frac{(82+28)^2-(82-28)^2}{82\times 28}$

(a) 220 (b) 4
(c) 8 (d) 110

RRB JE - 28/06/2019 (Shift-III)

Ans. (B) Formula:

$\frac{(a+b)^2-(a-b)^2}{ab}=\frac{4ab}{ab}$ {a= 82, b=28}

From given expression,

$\because \frac{(82+28)^2-(82-28)^2}{82\times 28}$

$=\frac{4\times 82\times 28}{82\times 28}=4$

180. $(0.2\times 0.2\times 0.2)\times(0.06\times 0.06\times 0.06)\div(0.12\times 0.12\times 0.12)$=?

(a) 0.008 (b) 0.001
(c) 0.002 (d) 0.006

RRB RPF-SI -10/01/2019 (Shift-III)

Ans : (b) From given expression,

$\frac{(0.2)^3\times(0.06)^3}{(0.12)^3}$

$\frac{(0.2\times 0.06)^3}{(0.12)^3}=\left(\frac{0.012}{0.12}\right)^3$

$=\left(\frac{1}{10}\right)^3$

$=(0.1)^3$

$=0.001$

181. Solve: $\left(\sqrt{3}-\frac{1}{\sqrt{3}}\right)^2$

(a) 3/4 (b) 4/3
(c) $2\sqrt{3}$ (d) $\frac{4}{\sqrt{3}}$

RRB JE - 02/06/2019 (Shift-III)

Ans : (b) From given expression,

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

$=3+\frac{1}{3}-2=\frac{9+1-6}{3}=\frac{10-6}{3}=\frac{4}{3}$

182. Find the value of the following equation:

$\frac{(469+144)^2-(469-144)^2}{2(469\times 144)}=?$

(a) –2 (b) –1
(c) 1 (d) 2

RRB RPF Constable -19/01/2019 (Shift-II)

Ans : (d) Formula:- $\frac{(a+b)^2-(a-b)^2}{2ab}=\frac{4ab}{2ab}$

From given expression,

$\frac{(469+144)^2-(469-144)^2}{2(469\times 144)}=?$

$=\frac{(a+b)^2-(a-b)^2}{2(ab)}=\frac{4ab}{2ab}=2$

a = 469, b = 144

183. Solve the following equation:

$\frac{3^2-8^2}{(3+8)^2}=?$

(a) $\frac{3}{11}$ (b) $\frac{-5}{11}$
(c) $\frac{-3}{11}$ (d) $\frac{5}{11}$

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) From given expression,

$\frac{3^2-8^2}{(3+8)^2}=?$

$=\frac{(3+8)(3-8)}{(3+8)^2}$ $\left\{\begin{matrix}a^2-b^2=(a+b)(a-b)\\(a+b)^2=a^2+b^2+2ab\end{matrix}\right\}$

$=\frac{3-8}{3+8}$

$=\frac{-5}{11}$

184. Solve the equation: 467 × 467 + 166 × 166 –2 × 467 × 166 = ?

(a) 90106 (b) 960600
(c) 90601 (d) 90060

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (c) From given expression,

467 × 467 + 166 × 166 – 2 × 467 × 166

$(A–B)^2 = A^2 + B^2 – 2AB$

A = 467, B = 166

467 × 467 + 166 × 166 – 2 × 467 × 166

$(467)^2 + (166)^2 – (2 × 467 × 166)$

$(467 – 166)^2 = (301)^2 = 90601$

185. Solve: $\sqrt{(0.15+0.12)}\sqrt{(0.15-0.12)}$

(a) 0.09 (b) 0.03
(c) 0.9 (d) 0.3

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a) From given expression,

$\sqrt{(0.15+0.12)}\sqrt{(0.15-0.12)}$

$=\sqrt{(0.15)^2-(0.12)^2}$

$=\sqrt{0.0225-0.0144}$

$=\sqrt{0.0081}=0.09$

186. Solve the following:

$(3.6 + 6.4)(3.6 – 6.4) – (3.6 – 6.4)^2$ = ?

(a) 29.6 (b) –35.84
(c) 32.6 (d) 32.68

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (b) : From given expression,

$(3.6 + 6.4)(3.6 - 6.4) - (3.6 - 6.4)^2 = ?$

$\Rightarrow (3.6-6.4)[(3.6+6.4)-(3.6-6.4)] = ?$

$\Rightarrow (3.6-6.4)[3.6+6.4-3.6+6.4] = ?$

$\Rightarrow (3.6-6.4)(6.4+6.4) = ?$

$\Rightarrow (-2.8)(12.8) = ?$

$? = -35.84$

187. $(425)^2 - (424)^2 = ?$

(a) 859 (b) 869
(c) 839 (d) 849

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (d) From given expression,

$(425)^2 - (424)^2 = ?$

From formula- $a^2 - b^2 = (a + b)(a - b)$

$(425)^2 - (424)^2 = (425 + 424)(425 - 424)$

$= 849 \times 1$

$= 849$

188. The value of

$\{(.98)^3 + (0.02)^3 + 3 \times 0.98 \times 0.02 - 1\}$

(a) 1.09 (b) 1.98
(c) 0 (d) 1.562

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (c) : From given expression,

$\{(.98)^3 + (0.02)^3 + 3 \times 0.98 \times 0.02 - 1\}$

$\{(.98)^3 + (0.02)^3 + 3 \times 0.98 \times 0.02\,(.98 + .02) - 1\}$

$[(0.98)+(0.02)]^3 - 1$

$(1.00)^3 - 1 = 1 - 1 = 0$

189. 97 × 97 = ?

(a) 9391 (b) 9409
(c) 9049 (d) 9309

RRB NTPC 31.03.2016 Shift : 2

Ans : (b) From given expression,

$97 \times 97 = (97)^2$

$(100-3)^2 = (100)^2 + (3)^2 - 2 \times 100 \times 3$

$= 10000 + 9 - 600$

$= 9409$

190. $\left[\dfrac{1.93 \times 19.3 - 2.07 \times 20.7}{19.3 - 20.7}\right]$ equals to:

(a) 0.40 (b) 4.00
(c) 40 (d) 0.04

RRB NTPC 18.04.2016 Shift : 2

Ans : (b) From given expression,

$$\frac{1.93 \times 19.3 - 2.07 \times 20.7}{19.3 - 20.7}$$

$$= \frac{10(1.93 \times 1.93) - 10(2.07 \times 2.07)}{10(1.93 - 2.07)}$$

$$= \frac{(1.93)^2 - (2.07)^2}{(1.93 - 2.07)}$$

$$= \frac{(1.93 + 2.07)(1.93 - 2.07)}{(1.93 - 2.07)}$$

$= 1.93 + 2.07 = 4$

191. Find the value of following:

(250 × 250 × 250 + 150 × 150 × 150)/(250×250 – 250 × 150 + 150 × 150) = ?

(a) 40000 (b) 400
(c) 40 (d) 500

RRB NTPC 22.04.2016 Shift : 3

Ans : (b) From given expression,

$$= \frac{250 \times 250 \times 250 + 150 \times 150 \times 150}{250 \times 250 - 250 \times 150 + 150 \times 150}$$

$$= \frac{(250)^3 + (150)^3}{(250)^2 - 250 \times 150 + (150)^2}$$

$$\because \left[a^3 + b^3 = (a+b)(a^2 + b^2 - ab)\right]$$

$$\therefore = \frac{(250+150)\left[(250)^2 + (150)^2 - 250 \times 150\right]}{(250)^2 + (150)^2 - 250 \times 150}$$

$= 250 + 150 = 400$

192. Simplify : $(2.25)^{\frac{1}{2}}$

(a) 1.5 (b) 15
(c) 1.6 (d) 2/3

RRB NTPC 17.01.2017 Shift-3

Ans : (a) From given expression,

$(2.25)^{1/2}$

$= \sqrt{2.25}$

$= \sqrt{\dfrac{225}{100}}$

$= \sqrt{\dfrac{15 \times 15}{10 \times 10}}$

$= \dfrac{15}{10} = 1.5$

193. Simplify : $(7)^2 \div \left(7^{\frac{1}{2}}\right)^4$

(a) 1 (b) 7
(c) 14 (d) 1/14

RRB NTPC 19.01.2017 Shift : 1

Ans : (a) From given expression,

$7^2 \div 7^{\frac{1}{2} \times 4} = 7^2 \div 7^2 = 1$

05.

Lowest Common Multiple & Highest Common Factor

Type - 1

1. The LCM of 14, 42 and 77 is:

(a) 168 (b) 308
(c) 462 (d) 154

RRB RPF Constable -18/01/2019 (Shift-I)

Ans : (c) Finding the LCM by common division method,

2	14,	42,	77
3	7,	21,	77
7	7,	7,	11
11	1,	1,	11
	1,	1,	1

L.C.M. = 2 ×3 × 7 × 11
= 6 × 77
= 462

2. Find the LCM of ab^2c^2, a^2bc and $a^3b^3c^2$

(a) $a^2b^2c^2$ (b) abc
(c) $a^3b^3c^2$ (d) $a^3b^3c^3$

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

Ans : (c) Finding the LCM by using prime factorization method,

$ab^2c^2 = a\times b\times b\times c\times c$
$a^2bc = a\times a\times b\times c$
$a^3b^3c^2 = a\times a\times a\times b\times b\times b\times c\times c$
LCM $= a^3b^3c^2$

3. Find the LCM of $(2^2 \times 3^2 \times 5 \times 7)$, $(2^2\times3\times5^2\times7)$ and $(2 \times 3 \times 5 \times 7)$.

(a) 6300 (b) 7200
(c) 9000 (d) 8400

RRB JE - 24/05/2019 (Shift-III)

Ans : (a) Finding the LCM by using prime factorization method,

$2^2 \times 3^2 \times 5 \times 7 = 1260$
$2^2 \times 3 \times 5^2 \times 7 = 2100$
$2 \times 3 \times 5 \times 7 = 210$
LCM = $2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7 = 6300$

4. Find the LCM of 60, 120 and 225.

(a) 360 (b) 1800
(c) 600 (d) 900

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

Ans : (b) Finding the LCM by using common division method,

2	60,	120,	225
2	30,	60,	225
2	15,	30,	225
3	15,	15,	225
3	5,	5,	75
5	5,	5,	25
5	1,	1,	5
	1,	1,	1

The required LCM
$= 2 \times 2 \times 2 \times 3 \times3\times 5 \times 5 = 1800$

5. Find the LCM of 6 (xy – y), $8(x^4y–xy)$.

(a) 24 xy $(x^3–1)$ (b) $24(x^3–1)$
(c) 24 xy (d) $(x^3– 1)$ xy

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

Ans : (a) Finding the LCM by prime factorization method,

$6(xy–y) = 6y (x–1) = 2\times3\times y (x–1)$
$8(x^4y – xy) = 8xy (x^3 –1)$
$= 8xy (x–1) (x^2+x+1)$
$\therefore$ LCM $= 2\times2\times2\times3xy (x–1) (x^2 + x+1)$
$= 24xy (x^3–1)$

6. The LCM of 2.05, 1.05, 2 is equals to what among the following?

(a) LCM of 205/100, 105/100 and 200/100
(b) LCM of 205, 105 and 200
(c) LCM of 21/20, 41/20 and 20/20
(d) LCM of 205, 105 and 200/10

RRB JE - 30/05/2019 (Shift-II)

Ans : (a) From the question,

$$2.05 = \frac{205}{100}$$
$$1.05 = \frac{105}{100}$$
$$2 = \frac{200}{100}$$

So, the LCM of 2.05, 1.05, 2

$$= \text{LCM of } \left(\frac{205}{100}, \frac{105}{100}, \frac{200}{100}\right)$$

7. The LCM of 36 and K is 72. Find the possible value of K.

(a) 24 only (b) 8, 24, 72
(c) 24, 72 (d) 8 only

RRB JE - 27/06/2019 (Shift-III)

Ans : (b) Given,
The LCM of 36 and K = 72.
From options,
The possible value of K will be = 8, 24 and 72.

8. The LCM of 112, 72 and 90 is?

(a) 3780 (b) 7560
(c) 2520 (d) 5040

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : By using prime factorization method,
$112 = 2 \times 2 \times 2 \times 2 \times 7$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
$90 = 2 \times 3 \times 3 \times 5$
$\therefore$ LCM $= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7 = 5040$

9. What is the LCM of 72 and 84?

(a) $12 \times 6 \times 7$ (b) $6 \times 2 \times 7$
(c) $12 \times 7 \times 3$ (d) 72×84

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (a) By using prime factorization method,
$72 \Rightarrow 2 \times 2 \times 2 \times 3 \times 3$
$84 \Rightarrow 2 \times 2 \times 3 \times 7$
LCM $= 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 12 \times 6 \times 7$

10. What is the LCM of the two corresponding numbers, x and y?

(a) X Y (b) $\frac{(X.Y)}{2}$
(c) 1 (d) $\frac{X}{Y}$

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (a) The LCM of the numbers x and y = x y
Note:- The LCM of the corresponding numbers is its product.

11. The LCM of 36, 27 and 72 is:

(a) 108 (b) 432
(c) 324 (d) 216

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (d) Finding the LCM by using common division method,

2	36,	27,	72
2	18,	27,	36
2	9,	27,	18
3	9,	27,	9
3	3,	9,	3
3	1,	3,	1
	1,	1,	1

Hence, the required LCM = $2\times2\times2\times3\times3\times3 = 216$

12. The LCM of 16, 24, 36, 52 and 54 is:

(a) 5616 (b) 5216
(c) 432 (d) 5618

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (a) Finding the LCM by using common division method,

2	16,	24,	36,	52,	54
2	8,	12,	18,	26,	27
2	4,	6,	9,	13,	27
2	2,	3,	9,	13,	27
3	1,	3,	9,	13,	27
3	1,	1,	3,	13,	9
3	1,	1,	1,	13,	3
13	1,	1,	1,	13,	1
	1,	1,	1,	1,	1

Hence, the required LCM
$= 2\times2\times2\times2\times3\times3\times3\times13 = 5616$

13. Find the LCM of 20, 40, 25 and 30:

(a) 800 (b) 500
(c) 600 (d) 400

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (c) Finding the LCM by using common division method,

2	20,	40,	25,	30
2	10,	20,	25,	15
2	5,	10,	25,	15
3	5,	5,	25,	15
5	5,	5,	25,	5
5	1,	1,	5,	1
	1,	1,	1,	1

Hence, the required LCM = $2\times2\times2\times3\times5\times5 = 600$

14. The HCF of 290 and 660 is 10. What is their LCM?

(a) 38280 (b) 9570
(c) 19140 (d) 191400

RRB Group-D – 10/11/2018 (Shift-I)

Ans : (c) As we know,
First number $\times$ second number = LCM $\times$ HCF
$290 \times 660 = \text{LCM} \times 10$
$\text{LCM} = 290 \times 66$
LCM = 19140

15. What is the LCM of 21 and 280?

(a) 560 (b) 1120
(c) 840 (d) 1680

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (c) Finding the LCM by using common division method,

2	21, 280
2	21, 140
2	21, 70
3	21, 35
5	7, 35
7	7, 7
	1, 1

Hence, the required LCM = $2\times2\times2\times3\times5\times7 = 840$

16. What is the LCM of 120 and 280?

(a) 840 (b) 1680
(c) 1120 (d) 720

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (a) Finding the LCM by using common division method,

2	120, 280
2	60, 140
2	30, 70
3	15, 35
5	5, 35
7	1, 7
	1, 1

Hence, the required LCM = 2×2×2×3×5×7 = 840

17. What is the LCM of 94, 188 and 235?

(a) 940 (b) 705
(c) 470 (d) 1880

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (a) Finding the LCM by using common division method,

2	94, 188, 235
2	47, 94, 235
5	47, 47, 235
47	47, 47, 47
	1, 1, 1

LCM = 2 × 2 × 5 × 47 = 940

18. The LCM of $15x^3y^4$ and $12x^2y^5$ is:

(a) $60x^3y^5$ (b) $25x^3y^5$
(c) $12x^3y^3$ (d) $15x^3y^5$

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (a) Finding the LCM by using prime factorization method,

$$15x^3y^4 = 3\times5\times x^3\times y^4$$

$$12x^2y^5 = 2\times2\times3\times x^2\times y^5$$

So, the required LCM

$$= 2\times2\times3\times5\times x^3\times y^5 = 60x^3y^5$$

19. Find the LCM of 24, 96 and 36.

(a) 576 (b) 216
(c) 288 (d) 144

RRB NTPC 17.01.2017 Shift-2

Ans : (c) Finding the LCM by using common division method,

2	24,	96,	36
2	12,	48,	18
2	6,	24,	9
2	3,	12,	9
2	3,	6,	9
3	3,	3,	9
3	1,	1,	3
	1,	1,	1

The required LCM = 2 × 2 × 2 × 2 × 2 × 3 × 3 = 288

20. Find the LCM of 15, 25 and 29.

(a) 2335 (b) 3337
(c) 2175 (d) 2375

RRB NTPC 02.04.2016 Shift : 2

Ans : (c) Finding the LCM by using prime factorization method,

15 → 1 × 3 × 5
25 → 1 × 5 × 5
29 → 1 × 29

Hence, the required LCM = 1 × 3 × 5 × 5 × 29 = 2175

21. Find the LCM of 18, 33 and 37?

(a) 2442 (b) 7326
(c) 814 (d) 1221

RRB NTPC 28.04.2016 Shift : 2

Ans : (b) Finding the LCM by using common division method,

3	18,	33,	37
	6,	11,	37

∴ Hence, the LCM = 3 × 6 × 11 × 37 = 7326

22. The LCM of 14, 35 and 56 is:

(a) 280 (b) 140
(c) 210 (d) 560

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (a) Finding the LCM by using prime factorization method,

14 = 2 × 7
35 = 5 × 7
56 = 2 × 2 × 2 × 7

Hence, the required LCM = 7 × 5 × 2 × 2 × 2 = 280

23. Find the LCM of 34, 51 and 68.

(a) 238 (b) 204
(c) 136 (d) 102

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (b) Finding the LCM by using prime factorization method,

34 = 2 × 17
51 = 3 × 17
68 = 2 × 2 × 17

Hence, the required LCM = 2 × 2 × 3 × 17 = 204

24. The LCM of 15, 18 and 24 is:

(a) 540 (b) 3
(c) 6 (d) 360

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

Ans : (d) Finding the LCM by using prime factorization method,

15 = 3 × 5, 18 = 2 × 3 × 3,
24 = 2 × 2 × 2 × 3

So, the required LCM = 2 × 2 × 2 × 3 × 3 × 5 = 360

25. The LCM of the three numbers 16, 28 and 42 is:

(a) 168 (b) 2
(c) 252 (d) 336

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

Ans : (d) Finding the LCM by using common division method,

2	16	28	42
2	8	14	21
2	4	7	21
2	2	7	21
3	1	7	21
7	1	7	7
	1	1	1

So, the required LCM = 2 × 2 × 2 × 2 × 3 × 7 = 336

26. The LCM of 48 and 54 is :

(a) 6 × 8 × 9 (b) 48 × 54
(c) 6 × 2 × 9 (d) 6 × 8 × 3

RRB ALP & Tec. (13-08-18 Shift-I)

Ans. (a) Finding the LCM by using prime factorization method,

48 = 3×2×2×2×2
54 = 3×3×3× 2

So, the required LCM = 3×2×2×2×2×3×3 = 6×8×9

Type - 2

27. Find the least number which divided by 16, 24, 36 and 54, leaves remainder 12, 20, 32 and 50 respectively?

(a) 432 (b) 444
(c) 428 (d) 452

RRB RPF SI -11/01/2019 (Shift-III)

Ans : (c) According to the question,

16 – 12 = 4, 24 – 20 = 4
36 – 32 = 4 , 54 – 50 = 4

2	16,	24,	36,	54
2	8,	12,	18,	27
2	4,	6,	9,	27
2	2,	3,	9,	27
3	1,	3,	9,	27
3	1,	1,	3,	9
3	1,	1,	1,	3
	1,	1,	1,	1

So, the required number = (LCM of 16,24,36 and 54)–4
= 2×2×2×2×3×3 = 432 – 4 = 428

28. The largest five digit number, which divided by 5, 6 and 7, gives remainder 2 in each case. What is the number?

(a) 99958 (b) 99972
(c) 99858 (d) 99962

RRB RPF Constable -19/01/2019 (Shift-II)

Ans. (d) : The largest five digit number = 99999

LCM of 5, 6 and 7 = $5\times6\times7 = 210$

So,

```
          476
210)99999
    840
    1599
    1470
     1299
     1260
       39
```

Remainder = 39

Hence, the required number = 99999 – 39 = 99960

But in each condition remainder is 2, so the required number = 99960 + 2 = 99962

29. Find the smallest number that leaves the remainder 13, 41 and 29 on being divided by 20, 48 and 36 respectively.

(a) 727 (b) 720
(c) 713 (d) 187

RRB JE - 30/05/2019 (Shift-I)

Ans : (c) According to the question,

(20 – 13) = (48 – 41) = (36 – 29) = 7

So, the required number = (LCM of 20, 48 and 36) – 7

2	20	48	36
2	10	24	18
2	5	12	9
2	5	6	9
3	5	3	9
3	5	1	3
5	5	1	1
	1	1	1

L.C.M. = 2 × 2 × 2 × 2 × 3 × 3 × 5 = 720 – 7 = 713

30. Find least number which divided by 12, 15, 20 and 54 leaves a remainder 8 in each case?

(a) 540 (b) 556
(c) 532 (d) 548

RRB JE - 02/06/2019 (Shift-II)

Ans. (d) The required number = (LCM of 12, 15, 20 and 54)+8

2	12	15	20	54
2	6	15	10	27
3	3	15	5	27
3	1	5	5	9
3	1	5	5	3
5	1	5	5	1
	1	1	1	1

(2 × 2 × 3 × 3 × 3 × 5) + 8
= 540 + 8 = 548

31. What is the smallest number which divided by 6, 7, 8, 9, and 12, gives remainder 2 in each case?

(a) 508 (b) 608
(c) 502 (d) 506

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (d) LCM of 6, 7, 8, 9, and 12.

2	6,7,8,9,12
2	3,7,4,9,6
2	3,7,2,9,3
3	3,7,1,9,3
3	1,7,1,3,1
7	1,7,1,1,1
	1,1,1,1,1

LCM = 2 × 2 × 2 × 3 × 3 × 7 = 504
gives remainder 2 in each case
So, the required number = 504 + 2 = 506

32. What is the smallest number which divided by 4, 6, 10 and 15, gives remainder 3 in each case?
(a) 58 (b) 126
(c) 37 (d) 63

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (d) LCM of 4, 6, 10 and 15.

2	4,6,10,15
2	2,3,5,15
3	1,3,5,15
5	1,1,5,5
	1,1,1,1

LCM = 2 × 2 × 3 × 5 = 60
So, the required number = 60 + 3 = 63

33. What is the greatest number smaller than 5000 which divided by 5, 6 and 7 respectively, leaves remainders of 4, 5 and 6?
(a) 4830 (b) 4829
(c) 4845 (d) 4831

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (b) : According to the question,
Remainder = 5 – 4 = 1, 6 – 5 = 1, 7 – 6 = 1
LCM of 5, 6 and 7 = $5\times6\times7 = 210$
So,

$$\begin{array}{r} 23 \\ 210\overline{)5000} \\ 420 \\ \hline 800 \\ 630 \\ \hline 170 \end{array}$$

Hence, the required number = 5000 – 170 – 1 = 4829

34. What is the smallest number greater than 3000 which divided by 4, 7 and 10 respectively, leaves remainders of 3, 6 and 9?
(a) 3079 (b) 3080
(c) 3081 (d) 3101

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (a) : According to the question,
Remainder = 4 – 3 = 1, 7 – 6 = 1, 10 – 9 = 1
LCM of 4, 7 and 10 = 2 × 2 × 5 × 7 = 140
Let the number = 140 k -1
On, putting k = 22,
The required number = 140 × 22 – 1 = 3079

35. There is a group of 8 children and a dozen packets of pencils for distribution. What is the minimum number of packets to be distributed for each child to get the equal number of pencils?
(a) 4 (b) 3
(c) 2 (d) 1

RRB NTPC 31.03.2016 Shift : 1

Ans : (c) According to the question,
LCM of 12 and 8 = $2\times2\times2\times3 = 24$
So, the number of pencils = 24.
Hence, the least number of packets $= \frac{24}{12} = 2$

36. Find 150% of X, if X is the least number which divided by 6, 7, 8, 9 and 12 leaves remainders 2, 3, 4, 5 and 8 respectively.
(a) 750 (b) 500
(c) 1000 (d) 1200

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) ∵ The number when divided by 6, 7, 8, 9 and 12 leaves remainders 2, 3, 4, 5 and 8 respectively.

$$6 - 2 = 4$$
$$7 - 3 = 4$$
$$8 - 4 = 4$$
$$9 - 5 = 4$$
$$12 - 8 = 4$$

The number = (LCM of 6, 7, 8, 9 and 12) – 4

2	6	7	8	9	12
2	3	7	4	9	6
2	3	7	2	9	3
3	3	7	1	9	3
3	1	7	1	3	1
7	1	7	1	1	1
	1	1	1	1	1

$= (2\times2\times2\times3\times3\times7) - 4 = 504 - 4 = 500$

So, 150% of the number $= 500\times\frac{150}{100}$

$= 5\times150 = 750$

37. Find the smallest number which divided by 12, 15, 18 and 27, leaves the remainders 10, 13, 16 and 25 respectively.
(a) 540 (b) 538
(c) 542 (d) 552

RRB NTPC 16.04.2016 Shift : 1

Ans : (b) According to the question,
12 – 10 = 2
15 – 13 = 2
18 – 16 = 2
27 – 25 = 2
Hence, the required number
= (LCM of 12, 15, 18 and 27) – 2

$12 = 2\times2\times3$
$15 = 3\times 5$
$18 = 2\times3\times3$
$27 = 3\times3\times3$
LCM of 12, 15, 18 and 27 = $2\times2\times3\times3\times3\times5 = 540$
$= 540 - 2 = 538$

38. Find the least number which divided by 11, 16, 21, 25 and 28, leaves remainder 3 in each case.
(a) 92400 (b) 92597
(c) 92403 (d) 92000

RRB NTPC 22.04.2016 Shift : 3

Ans : (c) The required number = (LCM of 11, 16, 21, 25 and 28) + 3

2	11	16	21	25	28
2	11	8	21	25	14
7	11	4	21	25	7
	11	4	3	25	1

$= 2 \times 2 \times 7 \times 11 \times 4 \times 3 \times 25 = 92400$
So, the required number = 92400 + 3 = 92403

39. A natural number when divides by 5, 6, 7 or 8, leaves a remainder of 4 in each case. What is the smallest of all such numbers?
(a) 214 (b) 424
(c) 844 (d) 1264

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (c) LCM of 5, 6, 7, and 8 = $5\times7\times2\times3\times4 = 840$
According to the question,
The required least number = 840 + 4=844

40. A natural number, when divides by 4, 5, 6 and 7, leaves a remainder of 3 in each case. What is the smallest of all such numbers?
(a) 63 (b) 423
(c) 843 (d) 213

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

Ans : (b)
The required least number = (LCM of 4, 5, 6 and 7)+3
= 420+3
= 423

41. Find the least number which divided by 20, 25, 35 and 40 leaves remainder 14, 19, 29 and 34 respectively?
(a) 1364 (b) 1394
(c) 1384 (d) 1374

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

Ans : (b) According to the question,
$20 - 14 = 6$
$25 - 19 = 6$
$35 - 29 = 6$
$40 - 34 = 6$
Hence, the required number
= (LCM of 20, 25, 35 and 40) – 6

2	20	25	35	40
2	10	25	35	20
2	5	25	35	10
5	5	25	35	5
5	1	5	7	1
7	1	1	7	1
	1	1	1	1

$= (2\times2\times2\times5\times5\times7) - 6 = 1400 - 6 = 1394$

42. What is the smallest number which, divided by 15 and 20, leaves remainder 9 in each case?
(a) 60 (b) 65
(c) 69 (d) 309

RRB ALP & Tec. (28.08.2015, SHIFT I)

Ans :(c) LCM of 15 and 20
$\because$ $15 = 3\times\boxed{5}$
$20 = 4\times\boxed{5}$
$\text{LCM} = 3\times4\times5 = 60$
So, the required number = 60 + 9 = 69

Type - 3

43. What is the HCF of 45, 240 and 315?
(a) 3 (b) 15
(c) 45 (d) 5

RRB RPF SI -16/01/2019 (Shift-I)

Ans. (b) : Multiples of given numbers,
$\because$ $45 = 3\times3\times5 = 3^2\times5$
$240 = 2\times2\times2\times2\times3\times5 = 2^4\times3\times5$
$315 = 3\times3\times5\times7 = 3^2\times5\times7$
So, HCF = 3 × 5 = 15

44. The product of two co-prime numbers is 117. Find their HCF.
(a) 117 (b) 7
(c) 1 (d) 13

RRB JE - 25/05/2019 (Shift-I)

Ans : (c) Co-prime numbers Pair of such numbers whose HCF is 1 are called co-prime numbers.
$117 = 13\times9$
HCF (13, 9) = 1

45. Find the HCF of $2\times3^2\times5^2$, $5\times3\times2^2$ and $5^2\times3\times2^2$.
(a) 150 (b) 30
(c) 60 (d) 90

RRB JE - 25/05/2019 (Shift-II)

Ans : (b) On finding the HCF,
$2 \times 3^2 \times 5^2$
$5 \times 3 \times 2^2$
$5^2 \times 3 \times 2^2$
HCF = $2\times 3 \times 5 = 30$

46. Find the HCF of $a^3b^3c^3$, $a^2b^2c^2$, abc and a^2bc.
(a) $a^4b^4c^4$ (b) $a^3b^3c^3$
(c) $a^2b^2c^2$ (d) abc

RRB JE - 27/06/2019 (Shift-III)

Ans : (d) On finding the HCF,

$a^3b^3c^3 = a \times a \times a \times b \times b \times b \times c \times c \times c$

$a^2b^2c^2 = a \times a \times b \times b \times c \times c$

$abc = a \times b \times c$

$a^2bc = a \times a \times b \times c$

HCF = $a \times b \times c$

Note- For finding the HCF of any expression, always take the least power of numbers.

47. Find the HCF of 3341 and 3328.

(a) 257 (b) 337
(c) 13 (d) 31

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

Ans : (c) On doing factorization,

3341 = 13 × 257

3328 = 2 × 2 × 2 × 2 × 2 × 2 × 2 × 2 × 13

So, the required HCF = 13

48. What is the HCF of 148 and 370?

(a) 148 (b) 37
(c) 74 (d) 2

RRB RPF Constable -20/01/2019 (Shift-I)

Ans. (c) On finding HCF of 148 and 370,

148 = 74 × 2

370 = 74 × 5

Hence, the required HCF = 74

49. What is the HCF of 343, 217 and 455?

(a) 9 (b) 7
(c) 11 (d) 13

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (b) 343 = 7×7×7

217 = 7×31

455 = 5×7×13

H.C.F. = 7

50. What is the HCF of 140 and 196?

(a) 14 (b) 28
(c) 21 (d) 42

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (b) : Finding the HCF by factorization method,

140 = 2 × 2 × 5 × 7

196 = 2 × 2 × 7 × 7

So, the required HCF = 2 × 2 × 7 = 28

51. The HCF of 64, 28 and 96 is:

(a) 1 (b) 8
(c) 4 (d) 2

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (c) HCF of 64, 28 and 96,

64 = 2×2×2×2×2×2

28 = 2×2×7

96 = 2×2×2×2×2×3

So, the required HCF = 2×2 = 4

52. The value of half of the HCF of 36 and 144 is:

(a) 144 (b) 18
(c) 36 (d) 72

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (b) : On finding the HCF,

36 = 2 × 2 × 3 × 3

144 = 2 × 2 × 2 × 2 × 3 × 3

So, the HCF = 2 × 2 × 3 × 3 = 36

So, the required value $= \frac{36}{2} = 18$

53. Find the HCF of 306, 204 and 136.

(a) 54 (b) 68
(c) 34 (d) 17

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (c) : On finding the HCF of 306, 204 and 136,

306 = 2 × 3 × 3 × 17

204 = 2 × 2 × 3 × 17

136 = 2 × 2 × 2 × 17

So, the required HCF = 2 × 17 = 34

54. What is the HCF of 30, 42 and 96?

(a) 8 (b) 6
(c) 4 (d) 2

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (b) : On finding HCF of 30, 42 and 96 by division method,

```
30)42(1
   30
   12)30(2
      24
       6)12(2
         12
         x x
6)96(16
  6
  36
  36
  x x
```

So, the required HCF = 6

55. What is the HCF of 44, 88 and 154?

(a) 8 (b) 11
(c) 44 (d) 22

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (d) : On finding the HCF of given numbers,

44 = 2 × 2 × 11

88 = 2 × 2 × 2 × 11

154 = 2 × 11 × 7

So, the required HCF = 2×11 = 22

56. Find the HCF of $(5^3 \times 4^3)$, $(3^5 \times 5^2 \times 4^4)$ and $(3^2 \times 5 \times 4^3)$.

(a) 340 (b) 328
(c) 230 (d) 320

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (d) HCF of given expression,

$(5^3 \times 4^3)$, $(3^5 \times 5^2 \times 4^4)$ and $(3^2 \times 5 \times 4^3)$

HCF $= 5 \times 4^3$

$= 5 \times 64 = 320$

57. Find the HCF of 2349, 2835 and 3078.

(a) 81 (b) 9
(c) 27 (d) 3

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a) On finding HCF by division method,

```
2835) 3078 (1
      2835
       243) 2835 (11
            243
             405
             243
             162) 243 (1
                  162
                   81) 162 (2
                       162
                        ××
81) 2349 (29
    162
     729
     729
     ×××
```

So, it is clear that the required HCF is 81.

58. $59 \times 29 = 1711$, then what is the HCF of 6844 and 354?

(a) 236 (b) 118
(c) 177 (d) 59

RRB Group-D – 15/11/2018 (Shift-III)

Ans. (b) : On finding HCF by division method,

```
354 ) 6844 (19
      354
      ----
      3304
      3186
       118 ) 354 (3
             354
             ---
             XXX
```

So, the required HCF = 118

59. Find the HCF of $(3^3 \times 5^3 \times 6^3)$, $(3^2 \times 3^5 \times 5^2 \times 6^4)$, $(3^3 \times 3^2 \times 5 \times 6^3)$

(a) 1560 (b) 1600
(c) 1280 (d) 29160

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (d) : From given expressions,

$3^3 \times 5^3 \times 6^3 \Rightarrow 3^3 \times 5^3 \times 6^3$

$3^2 \times 3^5 \times 5^2 \times 6^4 \Rightarrow 3^7 \times 5^2 \times 6^4$

$3^3 \times 3^2 \times 5 \times 6^3 \Rightarrow 3^5 \times 5 \times 6^3$

So, the required HCF = $3^3 \times 5 \times 6^3 = 27 \times 5 \times 216$
$= 29160$

60. 245 and 343 guests will come on Sohrab's birthday. Chocolate is to be offered to each guest. The seller said that she would pack the chocolate in the carton and take back the unopened carton, but she will add the packing cost for the carton she has to pack. In this situation, how much chocolate should Sohrab hold in each carton?

(a) 77 (b) 7
(c) 21 (d) 49

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (d) :
The number of the chocolates in each carton = HCF of 245 and 343
So, on finding the HCF by division method,

```
245) 343 ( 1
     245
      98) 245 ( 2
          196
           49) 98 ( 2
               98
               ××
```

So, the required HCF is 49.

61. The number of students in a school in 4th, 5th and 6th grade was 188, 282 and 423. If the class is divided into sections and each section had the same number of students, so what was the total minimum number of sections of these three classes?

(a) 20 (b) 18
(c) 19 (d) 17

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) On finding the HCF of 188, 282 and 423 by division method,

```
188 ) 282 (1        94) 423 (4
      188              376
       94) 188 (2       47) 94 (2
           188              94
           ×××              ××
```

So, HCF = 47
So, the number of students in each section of each class = 47

$\frac{188}{47} = 4, \quad \frac{282}{47} = 6, \quad \frac{423}{47} = 9$

Hence, the total minimum number of sections of three classes = 4 + 6 + 9 = 19

62. What is the HCF of 40, 36, 15 and 24?

(a) 1 (b) 5
(c) 3 (d) 2

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (a) : On finding HCF by factorization method,

$40 = 2 \times 2 \times 2 \times 5$
$36 = 2 \times 2 \times 3 \times 3$
$15 = 3 \times 5$
$24 = 2 \times 2 \times 2 \times 3$

So, the required HCF = 1

63. What is the HCF of 156, 312 and 195?

(a) 78 (b) 3
(c) 13 (d) 39

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (d) On finding HCF by factorization method,

$156 = 2 \times 2 \times 3 \times 13$
$312 = 2 \times 2 \times 2 \times 3 \times 13$
$195 = 3 \times 5 \times 13$

So, the required HCF = $3 \times 13 = 39$

64. If HCF of $2x^2 + 5x - 12$ and $x^2 + x - 12$ is (x+a) , then find the value of a.

(a) –3 (b) –2
(c) 4 (d) 5

RRB NTPC 16.04.2016 Shift : 1

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,

$= x^2 + x - 12$
$= x^2 + 4x - 3x - 12$
$= x(x+4) - 3(x+4)$
$= (x+4)(x-3)$

So, from both terms the HCF = (x + 4)

And, on comparison $(x+4)$ with $(x+a)$, $\Rightarrow \boxed{a = 4}$

65. Find the HCF of 1757, 2259.

(a) 231 (b) 241
(c) 251 (d) 261

RRB NTPC 11.04.2016 Shift : 1

Ans : (c) On finding the HCF by division method,

1757) 2259 (1
1757
502) 1757 (3
1506
251) 502 (2
502
×××

So, the required HCF = 251.

66. Sheeba has 24 chocolates, 36 biscuits and 60 ice creams to distribute to her classmates. She wants each of her classmates to get the same number of each thing. What is the maximum number of classmates in which she can distribute completely without saving a single thing?

(a) 6 (b) 18
(c) 12 (d) 15

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) According to the question,

The number of chocolates, biscuits and ice creams is 24, 36 and 60 respectively.

So, the number of students = HCF of 24, 36 and 60

$24 = 2\times2\times2\times3$

$36 = 2\times2\times3\times3$

$60 = 2\times2\times3\times5$

HCF = $2\times2\times3 = 12$

67. What is the HCF of 2189 and 2587?

(a) 3 (b) 197
(c) 199 (d) 198

RRB NTPC 30.04.2016 Shift : 3

Ans : (c) On finding the HCF by division method,

2189) 2587 (1
2189
398) 2189 (5
1990
199) 398 (2
398
×××

So, the required HCF is 199.

68. The HCF of 56, 140 and 168 is:

(a) 28 (b) 7
(c) 14 (d) 4

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a) On finding the HCF by factorization method,

$56 = 2\times2\times2\times7$
$140 = 2\times2\times5\times7$
$168 = 2\times2\times2\times7\times3$

So, the HCF = $2\times2\times7 = 28$

69. The HCF of 162, 54 and 135 is:

(a) 9 (b) 1
(c) 27 (d) 3

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c) On finding the HCF by division method,

54) 135 (2
108
27) 54 (2
54
×

27) 162 (6
162
×

So, the required HCF is 27.

70. The HCF of 24, 60 and 90 is :

(a) 3 (b) 6
(c) 12 (d) 4

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

Ans : (b) On finding the HCF by division method,

24)60(2
48
12)24(2
24
×

12)90(7
84
6)12(2
12
×

So, the required HCF is 6.

71. The HCF of 20, 28 and 48 is:

(a) 8 (b) 2
(c) 1 (d) 4

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

Ans : (d) On finding the HCF by factorization method,

$20 = 2\times2\times5$
$28 = 2\times2\times7$
$48 = 2\times2\times2\times2\times3$

So, the required HCF $= 2\times2 = 4$

72. The HCF of 36, 54 and 108 is:

(a) 6 (b) 9
(c) 18 (d) 12

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

Ans : (c) On finding the HCF by factorization method,

$36 = 2\times2\times3\times3$
$54 = 2\times3\times3\times3$
$108 = 2\times2\times3\times3\times3$

So, the required HCF = $2\times3\times3 = 18$

73. What is the HCF of 36, 72 and 126?

(a) 18 (b) 36
(c) 9 (d) 12

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (a) On finding the HCF by factorization method,

$36 = 2 \times 2 \times 3 \times 3$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
$126 = 2 \times 3 \times 3 \times 7$

So, the required HCF = $2 \times 3 \times 3 = 18$

Type - 4

74. Find the largest possible length that can be used to measure the length of 2m 76cm, 5m 52cm and 11m 96cm.

(a) 92 cm (b) 11.96 cm
(c) 92 m (d) 1196 cm

RRB RPF SI -12/01/2019 (Shift-III)

Ans : (a)

$2m\ 76cm = 2\times100+76 = 276cm$

$5m\ 52cm = 5\times100+52 = 552cm$

$11m\ 96cm = 11\times100+96 = 1196cm$

So, the largest possible length = HCF of 276, 552 and 1196.

552)1196(2
1104
92)552(6
552
×××

92)276(3
276
×××

HCF = 92cm

75. Find the largest four digit number which divided by 8, 12 and 16, gives remainder 2.

(a) 9984 (b) 9985
(c) 9986 (d) 9987

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

Ans : (c) LCM of 8, 12 and 16

2	8,	12,	16
2	4,	6,	8
2	2,	3,	4
2	1,	3,	2
3	1,	3,	1
	1,	1,	1

LCM = $2 \times 2 \times 2 \times 2 \times 3 = 48$

The largest 4-digit number = 9999

48)9999(208
96
399
384
×15

So, the largest 4-digit number divisible by 48
= 9999 – 15 = 9984

According to the question, the remainder is 2.

So, the required number = 9984 + 2 = 9986

76. Find the largest number, which divides 1580 and 3800, so that the remainder is 8 and 1 respectively.

(a) 262 (b) 131
(c) 65.5 (d) 393

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) The required number = HCF of (1580 – 8) and (3800 – 1)

So, the HCF of 1572 and 3799

1572)3799(2
3144
655)1572(2
1310
262)655(2
524
131)262(2
262
×××

So, the required number is 131.

77. Find such greatest number which gives equal remainders in each case when divides 76, 151 and 226.

(a) 69 (b) 60
(c) 75 (d) 70

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (c) If the remainder is same, then

$226 - 151 = 75 \times 1$
$151 - 76 = 75 \times 1$
$226 - 76 = 75 \times 2$

So, the required number = HCF of 75, 75 and 150.
= 75

78. What is the largest number which divides 1657 and 2037, gives remainders 6 and 5 respectively?

(a) 150 (b) 125
(c) 127 (d) 130

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (c) : $1657 - 6 = 1651$
$2037 - 5 = 2032$

So, the HCF of 1651 and 2032,

1651)2032(1
1651
381)1651(4
1524
127)381(3
381
×××

So, the required number is 127.

79. Find the largest number which divides 200 and 432, gives remainders 2 and 3 respectively.

(a) 24 (b) 8
(c) 33 (d) 44

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (c) According to the question,

200 – 2 = 198

432 – 3 = 429

So, the HCF of 198 and 429 is the required number,

$$198\overline{)429}\,(2$$
$$\underline{396}$$
$$33\overline{)198}\,(6$$
$$\underline{198}$$
$$\times\times\times$$

So, the required number is 33.

80. What is the largest number which, divides 63, 77 and 98, gives remainders 3, 5 and 2 respectively?

(a) 10 (b) 9
(c) 6 (d) 8

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (c) According to the question,

63 – 3 = 60

77 – 5 = 72

98 – 2 = 96

So, the required number = HCF of 60, 72 and 96.

$60 = 2\times2\times3\times5$

$72 = 2\times2\times2\times3\times3$

$96 = 2\times2\times2\times2\times2\times3$

HCF = $2\times2\times3 = 12$

While 12 is not in the option but 12 will be divisible by 6.

81. Find the greatest length which can be used to measure exactly three cloth pieces of length 1.26 m, 1.98 m and 1.62 m respectively.

(a) 12 cm (b) 14 cm
(c) 16 cm (d) 18 cm

RRB NTPC 31.03.2016 Shift : 2

Ans : (d) The required length = HCF of 126cm, 198cm and 162 cm.

$$126\overline{)198}\,(1 \qquad 18\overline{)162}\,(9$$
$$\underline{126} \qquad\qquad \underline{162}$$
$$72\overline{)126}\,(1 \qquad\qquad \times\times\times$$
$$\underline{72}$$
$$54\overline{)72}\,(1$$
$$\underline{54}$$
$$18\overline{)54}\,(3$$
$$\underline{54}$$
$$\times\times$$

So, the HCF = 18cm.

Hence, the greatest length = 18cm

82. 50 pens, 80 pencils and 65 scales were distributed among some students and found that five out of each item were not distributed. Find the number of students.

(a) 5 (b) 20
(c) 15 (d) 10

RRB NTPC 31.03.2016 Shift : 3

Ans : (c) According to the question,

50 – 5 = 45

80 – 5 = 75

65 – 5 = 60

So, the required number of students = HCF of 45, 75 and 60.

$45 = 3\times3\times5$

$75 = 3\times5\times5$

$60 = 2\times2\times3\times5$

So, HCF = $3\times5 = 15$

83. You have 20 big and 16 small diaries and want to make gift packs containing both in each pack. What is the maximum number of gift packs you can make without any left over?

(a) 5 (b) 4
(c) 3 (d) 2

RRB NTPC 29.03.2016 Shift : 3

Ans : (b) the maximum number of gift packs = HCF of 20 and 16.

$$16\overline{)20}\,(1$$
$$\underline{16}$$
$$4\overline{)16}\,(4$$
$$\underline{16}$$
$$\times\times$$

So, HCF = 4,

So, 4 maximum gift packets can be made.

84. Find such greatest number which gives equal remainders in each case when divides 270, 675 and 1215.

(a) 45 (b) 135
(c) 270 (d) 75

RRB NTPC 19.04.2016 Shift : 3

Ans : (b) According to the question,

$675-270 = 405 = 3\times3\times3\times3\times5$

$1215-675 = 540 = 2\times2\times3\times3\times3\times5$

$1215-270 = 945 = 3\times3\times3\times5\times7$

$HCF = 3\times3\times3\times5 = 135$

So, the required number is 135.

85. Find such greatest number which gives equal remainders in each case when divides 60, 150 and 285.

(a) 30 (b) 25
(c) 45 (d) 55

RRB NTPC 22.04.2016 Shift : 1

Ans : (c) HCF of 60, 150 and 285,

$60 = 2\times2\times3\times5$

$150 = 2\times3\times5\times5$

$285 = 3\times5\times19$

$HCF = 3\times5 = 15$

So, the number will be 15k where k = 1, 2, 3, ……

Take k = 3, The required number = $15\times3 = 45$

$\Rightarrow \frac{60}{45} = 1\, quotient + 15\ remainder$

$\Rightarrow \frac{150}{45} = 3\ quotient\ +\ 15\ remainder$

$\Rightarrow \frac{285}{45} = 6\ quotient\ +\ 15\ remainder$

$\because$ Remainder is same.

So, the required number is 45.

86. Find the greatest number which on dividing 391 and 318 leaves remainders 7 and 6 respectively.

(a) 20 (b) 23
(c) 24 (d) 32

RRB NTPC 27.04.2016 Shift : 2

Ans : (c) According to the question,

391 – 7 = 384

318 – 6 = 312

The HCF of 384 and 312,

$384 = 2\times2\times2\times2\times2\times2\times2\times3$

$312 = 2\times2\times2\times3\times13$

$\therefore HCF = 2\times2\times2\times3 = 24$

So, the required number is 24.

Type - 5

87. What is the HCF of $\frac{34}{9}, \frac{85}{18}$ and $\frac{68}{45}$.

(a) $\frac{17}{45}$ (b) $\frac{34}{9}$
(c) $\frac{17}{90}$ (d) $\frac{1}{90}$

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

Ans : (c) HCF of $\frac{34}{9}, \frac{85}{18}, \frac{68}{45}$

$\frac{34}{9} = \frac{2\times17}{3\times3}$

$\frac{85}{18} = \frac{5\times17}{3\times3\times2}$

$\frac{68}{45} = \frac{2\times2\times17}{3\times3\times5}$

HCF of fractions = $\frac{\text{The HCF of numerator}}{\text{The LCM of denominator}} = \frac{17}{90}$

88. Find the LCM and HCF of 1.75, 5.6 and 7.

(a) 24, 0.2 (b) 28, 0.25
(c) 28, 0.35 (d) 24, 0.35

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

Ans : (c)

LCM of 1.75, 5.6 and 7 = LCM of $\frac{175}{100}, \frac{560}{100}, \frac{700}{100}$

LCM = $\frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$= \frac{2800}{100} = 28$

HCF of $\frac{175}{100}, \frac{560}{100}, \frac{700}{100}$

$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}} = \frac{35}{100} = 0.35$

Hence, LCM and HCF = 28 and 0.35

89. Find the LCM of 36/225, 48/150 and 72/85.

(a) 144/5 (b) 72/85
(c) 140/1 (d) 150/22

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

Ans : (a) LCM of given numbers

$= \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$= \frac{LCM\ of\ 36,48,72}{HCF\ of\ 225,150,85}$

$= \frac{144}{5}$

90. Find the GCD of 1.08, 0.36 and 0.9.

(a) 0. 03 (b) 18
(c) 0. 18 (d) 1. 8

RRB JE - 24/05/2019 (Shift-I)

Ans : (c) GCD of 1.08, 0.36 and 0.9

$= GCD\, or\, HCF\ of\ \frac{108}{100}, \frac{36}{100}, \frac{90}{100} = \frac{GCD\ of\ 108,36,90}{LCM\ of\ 100,100,100}$

$= \frac{18}{100} = 0.18$

91. Find the LCM of 1.05 and 2.1.

(a) 2.1 (b) 0.6
(c) 1.25 (d) 4

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

Ans : (a) From given numbers,

$1.05 = \frac{105}{100} = \frac{21}{20}$

$2.1 = \frac{21}{10}$

LCM of $\frac{21}{20}, \frac{21}{10} = \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$= \frac{21}{10} = 2.1$

92. Find the LCM of 2/3 and 6/7.

(a) 6 (b) 6/21
(c) 12/21 (d) 2/21

RRB RPF SI -10/01/2019 (Shift-I)

Ans : (a)

The LCM of $\frac{2}{3}, \frac{6}{7} = \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$= \frac{6}{1} = 6$

93. Find the HCF of 36/75, 48/50 and 72/30.

(a) 144/50 (b) 144/45
(c) 12/75 (d) 12/150

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

Ans : (d)

The HCF of $\frac{36}{75},\frac{48}{50},\frac{72}{30} = \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$= \frac{HCF\ of\ 36,48,72}{LCM\ of\ 75,50,30} = \frac{12}{150}$

94. LCM of a set of fractions is:

(a) LCM of numerators/ HCF of denominators
(b) HCF of numerators/ LCM of denominators
(c) LCM of numerators/ LCM of denominators
(d) HCF of numerators/ HCF of denominators

RRB JE - 30/05/2019 (Shift-I)

Ans : (a)

LCM of a fraction = $\frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

95. Find the HCF of 1.43, 1.87 and 20.9.

(a) 0.011 (b) 0.10
(c) 1.1 (d) 0.11

RRB NTPC 12.04.2016 Shift : 2

Ans : (d) From given numbers,

$1.43 = \frac{143}{100}$

$1.87 = \frac{187}{100}$

$20.9 = \frac{2090}{100}$

So, HCF of numbers = $\frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$\text{HCF} = \frac{11}{100} = 0.11$

96. Find the HCF of 0.32, 2.72, 12.8 and 14.4.

(a) 16 (b) 1.6
(c) 0.16 (d) 2.72

RRB NTPC 16.04.2016 Shift : 2

Ans : (c) From given numbers,

$0.32 = \frac{32}{100}$, $12.8 = \frac{128}{10}$

$2.72 = \frac{272}{100}$, $14.4 = \frac{144}{10}$

So, the HCF of given numbers =

$\frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$= \frac{HCF\ of\ 32,272,128,144}{LCM\ of\ 100,100,10,10} = \frac{16}{100} = 0.16$

97. The HCF of $\frac{2}{3},\frac{8}{9},\frac{10}{27}$ and $\frac{32}{81}$ is:

(a) $\frac{160}{3}$ (b) $\frac{160}{81}$
(c) $\frac{2}{3}$ (d) $\frac{2}{81}$

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (d) HCF of given numbers,

$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$= \frac{2}{3},\frac{8}{9},\frac{10}{27},\frac{32}{81}$

$= \frac{2}{81}$

98. What is the HCF of $\frac{3}{5},\frac{9}{10}$ and $\frac{6}{25}$?

(a) $\frac{3}{50}$ (b) $\frac{3}{5}$
(c) 18 (d) $\frac{18}{50}$

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (a) The HCF of given fractions,

$\frac{3}{5},\frac{9}{10}\ and\ \frac{6}{25}$

$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$= \frac{HCF\ of\ 3,9,6}{LCM\ of\ 5,10,25} = \frac{3}{50}$

99. Find the LCM of 0.63, 10.5, 2.1 and 4.20.

(a) 63 (b) 0.63
(c) 6.30 (d) 6300

RRB NTPC 16.04.2016 Shift : 1

Ans : (a) According to the question,

$0.63 = \frac{63}{100}, 10.5 = \frac{105}{10}, 2.1 = \frac{21}{10}, 4.20 = \frac{420}{100} = \frac{42}{10}$

So, the LCM of $\frac{63}{100},\frac{105}{10},\frac{21}{10},\frac{42}{10}$

$= \frac{LCM\ of\ 63,105,21,42}{HCF\ of\ 100,10,10,10}$

$= \frac{21\times3\times5\times2}{10} = \frac{630}{10} = 63$

100. Find the LCM of $\frac{1}{2},\frac{2}{5},\frac{4}{7}$ and $\frac{6}{17}$.

(a) 6 (b) 18
(c) 24 (d) 12

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (d) LCM of fractions

$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$

$= \frac{LCM\ of\ 1,2,4,6}{HCF\ of\ 2,5,7,17} = \frac{12}{1} = 12$

101. Find the HCF of $\frac{7}{9},\frac{14}{15},\frac{7}{10}$.

(a) $\frac{7}{90}$ (b) $\frac{7}{675}$
(c) $\frac{7}{45}$ (d) $\frac{14}{45}$

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (a) HCF of given fractions

$$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$$

$$\frac{\text{HCF of } 7,14,7}{\text{LCM of } 9,15,10} = \frac{7}{90}$$

102. What is the HCF of $\frac{15}{14}, \frac{12}{35}$ and $\frac{40}{49}$.

(a) $\frac{1}{7}$ (b) $\frac{3}{490}$

(c) $\frac{1}{490}$ (d) $\frac{1}{49}$

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (c) The HCF of given fractions,

$$= \frac{\text{HCF of } 15,12,40}{\text{LCM of } 14,35,49}$$

So, HCF of 15, 12 and 40,

$15 = 3\times5$

$12 = 2\times2\times3$

$40 = 2\times2\times2\times5$

$HCF = 1$

And LCM of 14, 35 and 49,

$14 = 2\times7$

$35 = 5\times7$

$49 = 7\times7$

$LCM = 7\times2\times5\times7 = 490$

So, the required HCF = $\frac{1}{490}$

103. What is the LCM of $\frac{9}{8}, \frac{15}{16}$ and $\frac{27}{40}$?

(a) 135 (b) $\frac{135}{80}$

(c) $16\frac{7}{8}$ (d) $33\frac{3}{4}$

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (c) LCM of 9, 15 and 27 = 135

HCF of 8, 16 and 40 = 8

So, the required LCM = $\frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$$= \frac{135}{8} = 16\frac{7}{8}$$

104. Find the LCM of 17/31, 34/62 and 48/93.

(a) 816/31 (b) 802/31

(c) 912/31 (d) 804/31

RRB NTPC 04.04.2016 Shift : 3

Ans : (a) The LCM of given fractions,

LCM of 17, 34 and 48,

$17 = 1\times17$

$34 = 1\times2\times17$

$48 = 1\times2\times2\times2\times2\times3$

$LCM = 1\times2\times2\times2\times2\times3\times17 = 816$

HCF of 31, 62 and 93,

$31 = 1\times31$

$62 = 1\times2\times31$

$93 = 1\times3\times31$

$HCF = 1\times31 = 31$

So, the required LCM = $\frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$$= \frac{816}{31}$$

105. Find the LCM of the following.
2/3, 8/9, 16/27, 32/81

(a) 32/81 (b) 81/32

(c) 32/3 (d) 11/41

RRB NTPC 12.04.2016 Shift : 3

Ans : (c) According to the question,

LCM of $\frac{2}{3}, \frac{8}{9}, \frac{16}{27}, \frac{32}{81} = \frac{\text{LCM of } 2,8,16 \text{ and } 32}{\text{HCF of } 3,9,27 \text{ and } 81}$

$$= \frac{32}{3}$$

106. Find the LCM of $\frac{2}{30}, \frac{20}{40}, \frac{4}{50}, \frac{8}{60}$.

(a) $\frac{40}{300}$ (b) $\frac{2}{10}$

(c) $\frac{1}{4}$ (d) 4

RRB NTPC 11.04.2016 Shift : 3

Ans : (d) LCM of the fractions

$$= \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$$

$$= \frac{\text{LCM of } 2,20,4,8}{\text{HCF of } 30,40,50,60} = \frac{40}{10} = 4$$

107. Find the LCM of 13/31, 23/62 and 48/93.

(a) 14352/31 (b) 14452/31

(c) 15432/31 (d) 12534/31

RRB NTPC 10.04.2016 Shift : 3

Ans : (a) LCM of the fractions

$$= \frac{\text{The HCF of numerator}}{\text{The LCM of denominator}}$$

$$= \frac{LCM\ of\ 13,23,48}{HCF\ of\ 31,62,93} = \frac{14352}{31}$$

108. Find the LCM of $\frac{4}{5}, \frac{2}{3}$ and $\frac{5}{7}$

(a) 25 (b) 20

(c) 40 (d) 30

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (b) LCM of the fractions

$= \frac{\text{The LCM of numerator}}{\text{The HCF of denominator}}$

$= \frac{LCM\ of\ 4,2,5}{HCF\ of\ 5,3,7} = \frac{20}{1} = 20$

Type - 6

109. Find the HCF and the LCM of 570 and 1425.

(a) 285, 2750 (b) 285, 2850
(c) 289, 2650 (d) 185, 2850

RRB RPF Constable -19/01/2019 (Shift-II)

Ans : (b) HCF of given numbers,

$570 = 2\times3\times5\times19$

$1425 = 3\times5\times5\times19$

$HCF = 3\times5\times19 = 285$

LCM of given numbers,

2	570	1425
3	285	1425
5	95	475
5	19	95
19	19	19
	1	1

$LCM = 2\times3\times5\times5\times19 = 2850$

110. The HCF and LCM of two numbers are 12 and 720 respectively. How many possible pairs are of these numbers?

(a) 3 (b) 4
(c) 2 (d) 1

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

Ans. (b) : Product of co-factors $= \frac{\text{LCM}}{\text{HCF}}$

$= \frac{720}{12} = 60$

Possible pairs - (1, 60), (4, 15), (3, 20), (5, 12)
So, the number of possible pairs is 4.

111. Find the LCM and HCF of inverse of 18 and 24.

(a) 1/6., 1/4 (b) 72.6
(c) 1/72. 1/6 (d) 1/6.1/7

RRB JE - 22/05/2019 (Shift-I)

Ans : (c) Inverse of $18 = \frac{1}{18}$

Inverse of $24 = \frac{1}{24}$

LCM of $\frac{1}{18}, \frac{1}{24} = \frac{\text{LCM of } 1,1}{\text{HCF of } 18,24} = \frac{1}{6}$

HCF of $\frac{1}{18}, \frac{1}{24} = \frac{\text{HCF of } 1,1}{\text{LCM of } 18,24} = \frac{1}{72}$

112. Two numbers are in a ratio 3:5. Their LCM is 75. Find their HCF.

(a) 3 (b) 5
(c) 4 (d) 15

RRB JE - 22/05/2019 (Shift-III)

Ans : (b) Let the numbers be 3x and 5x.
So, LCM of 3x and 5x = 15x
According to the question,

$15x = 75$

$x = \frac{75}{15}$

$x = 5$

So, both the numbers will be,

$3x = 3 \times 5 = 15$

$5x = 5 \times 5 = 25$

So, the HCF of 25 and 15 = 5

113. The LCM and the HCF of two numbers are 693 and 11 respectively. If one is 99, find the other number.

(a) 77 (b) 79
(c) 12 (d) 34

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

Ans : (a)
LCM × HCF = First number × Second number

$693 \times 11 = 99 \times$ Second number

So, the second number $= \frac{693\times11}{99} = 77$

114. Three numbers in the ratio 3:4:5 have the LCM 2400. What is the HCF?

(a) 80 (b) 40
(c) 120 (d) 200

RRB JE - 27/05/2019 (Shift-I)

Ans : (b) Let the numbers are 3x, 4x and 5x.
So, the LCM of 3x, 4x and 5x = 60x

$\Rightarrow$ $60x = 2400$

$\Rightarrow$ $x = 40$

So, the numbers = 120, 160, 200
HCF of 120, 160, 200

$120 \Rightarrow \underline{2 \times 2 \times 2} \times 3 \times \underline{5}$

$160 \Rightarrow \underline{2 \times 2 \times 2} \times 2 \times 2 \times \underline{5}$

$200 \Rightarrow \underline{2 \times 2 \times 2} \times 5 \times \underline{5}$

Hence, HCF = $2 \times 2 \times 2 \times 5 = \boxed{40}$

115. The LCM and the HCF of two numbers are 2400 and 16 respectively. If one is 480, find the other number.

(a) 40 (b) 60
(c) 90 (d) 80

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

Ans : (d) According to the question,

LCM = 2400
HCF = 16

First number = 480

$\because$ LCM × HCF = First number × Second number

$2400 \times 16 = 480 \times$ Second number

Second number $= \frac{2400\times16}{480} = 80$

116. The product of two numbers is 2772 and their LCM is 462. Find the HCF of these numbers.

(a) 18 (b) 21
(c) 6 (d) 42

RRB RPF Constable -19/01/2019 (Shift-III)

Ans : (c) Product of two numbers = LCM × HCF

$2772 = 462 \times HCF$

$HCF = \frac{2772}{462}$

$= 6$

117. The HCF of two numbers in the ratio 15:11 is 13. Find their LCM.

(a) 4290 (b) 2145
(c) 27885 (d) 165

RRB JE - 02/06/2019 (Shift-III)

Ans : (b) Let the numbers are 15x and 11x.

HCF = x

x = 13

So, the numbers are $15 \times 13 = 195$, $11 \times 13 = 143$.

So, the LCM of 195 and 143,

$195 = 3 \times 5 \times 13$

$143 = 11 \times 13$

$LCM = 3 \times 5 \times 11 \times 13 = 2145$

118. The sum of the LCM and the HCF of two numbers is 372. If LCM is equal to 92 times of HCF and one number is 368, find the other number.

(a) 360 (b) 4
(c) 92 (d) 96

RRB JE - 01/06/2019 (Shift-III)

Ans. (b) Let HCF = x

Then LCM = 92x

LCM + HCF = 372

92 x + x = 372

$x = \frac{372}{93}$

x = 4

LCM × HCF = First number × Second number

$92x \times x = 368 \times$ Second number

Second number = $\frac{92 \times x \times x}{368} = \frac{92 \times 4 \times 4}{368} = 4$

119. The product of two numbers is 3192 and their LCM is 56, then find their HCF.

(a) 58 (b) 59
(c) 56 (d) 57

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

Ans : (d) Product of the numbers = 3192

LCM = 56

So, HCF = $\frac{Product\ of\ numbers}{LCM}$

$= \frac{3192}{56} = 57$

120. The LCM of two positive integers x and y (x > y) is xy. What is the HCF of both the numbers?

(a) 1
(b) x + y
(c) Cannot be determined
(d) x – y

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (a) : LCM × HCF = First number × Second number

xy × HCF = x × y

\ HCF = 1

121. The LCM of two numbers is 2604 and HCF is 12. If one from them is 84, then find the other number.

(a) 327 (b) 273
(c) 372 (d) 237

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (c) : According to the question,

LCM = 2604 and HCF = 12

First number = 84

Let the other number is x.

Formula−

LCM × HCF = First number × Second number

$2604 \times 12 = 84 \times x$

$x = \frac{2604 \times 12}{84} = \frac{2604}{7} = 372$

Hence, the other required number is 372.

122. The HCF and LCM of two numbers are 29 and 1015 respectively. If one from them is 145, then what is the other number?

(a) 203 (b) 319
(c) 361 (d) 377

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (a) Let the other number is x.

LCM × HCF = First number × Second number

$29 \times 1015 = 145 \times x$

$x = \frac{29 \times 1015}{145} = \frac{29435}{145} = 203$

Hence, Second number = 203

123. The LCM of two numbers is 2268. If their HCF is 12 and one of them is 324 then, what is the other number?

(a) 189 (b) 84
(c) 7 (d) 27

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (b) Let the other number is x.

LCM × HCF = First number × Second number

x × 324 = 2268 × 12

$x = \frac{2268 \times 12}{324}$

$x = \frac{27216}{324}$

x = 84

So, the other required number is 84.

124. The HCF of 560 and one other number is 70 and their LCM is 2800. The other number is:
(a) 840 (b) 350
(c) 700 (d) 280
RRB Group-D – 16/11/2018 (Shift-III)

Ans. (b) :
First number × Second number = HCF × LCM
560 × Second number = 70 × 2800
Second number = $\frac{70 \times 2800}{560}$
$= \frac{2800}{8} = 350$

125. The HCF of 296 and other number is 74 and their LCM is 2072. The other number is:
(a) 1036 (b) 518
(c) 592 (d) 148
RRB Group-D – 15/11/2018 (Shift-I)

Ans : (b) As we know,
First number × Second number = LCM × HCF
$296 \times \text{Second number} = 2072 \times 74$
Second number = $\frac{2072 \times 74}{296}$
$= \frac{2072}{4} = 518$

126. The LCM of two numbers is 42 times their HCF. The sum of LCM and HCF is 602. If one from them is 84, then find the other number.
(a) 98 (b) 78
(c) 87 (d) 89
RRB Group-D – 15/11/2018 (Shift-II)

Ans : (a) LCM = HCF × 42
LCM + HCF = 602
HCF × 42 + HCF = 602
HCF (42 + 1) = 602
HCF = $\frac{602}{43} = 14$
So, First number × Second number = LCM × HCF
$84 \times \text{Second number} = 14 \times 42 \times 14$
Second number = $\frac{14 \times 42 \times 14}{84} = 98$

127. Find the HCF and the LCM of 60 and 72 respectively.
(a) 16 and 360 (b) 12 and 260
(c) 12 and 360 (d) 10 and 360
RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) : On finding HCF by factorization method,
$60 = 2 \times 2 \times 3 \times 5$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
HCF = 2×2×3 = 12
And finding the LCM by factorization method,
$60 = 2 \times 2 \times 3 \times 5$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
LCM = 2 × 2 × 2 × 3 × 3 × 5 = 360
So, the HCF is 12 and the LCM is 360.

128. The HCF of two numbers is 110 and their product is 290400. The LCM of these numbers is:
(a) 1980 (b) 3960
(c) 1320 (d) 2640
RRB Group-D – 05/11/2018 (Shift-III)

Ans. (d) :
LCM × HCF = First number × Second number
LCM × 110 = 290400
LCM = $\frac{290400}{110}$
= 2640

129. The ratio of two numbers is 7:11 and their HCF is 8. What is the LCM of these numbers?
(a) 1540 (b) 924
(c) 616 (d) 308
RRB Group-D – 05/11/2018 (Shift-III)

Ans. (c) : According to the question,
Ratio of the numbers = 7:11
Let the numbers are 7x and 11x
HCF of 7x and 11x = x
HCF = 8
x = 8
So, the numbers = 56, 88.
∵ LCM × HCF = First number × Second number
LCM × 8 = 56 × 88
LCM = $\frac{56 \times 88}{8}$
$= 56 \times 11$
= 616

130. The LCM and HCF of two numbers are 171360 and 14 respectively. If one from them is 2142 then find the other number.
(a) 12240 (b) 4128
(c) 1120 (d) 80
RRB Group-D – 25/10/2018 (Shift-II)

Ans : (c) LCM × HCF = First number × Second number
$171360 \times 14 = 2142 \times \text{Second number}$
Second number = $\frac{171360 \times 14}{2142}$
$= 1120$

131. If the LCM and HCF of two integers are 2184 and 2 respectively, and one from them is 78, then find the other number.
(a) 78 (b) 56
(c) 34 (d) 68
RRB Group-D – 24/10/2018 (Shift-III)

Ans. (b) : Let the other number is x.
Product of the numbers = LCM × HCF
78 × x = 2184 × 2
$x = \frac{2184 \times 2}{78} = 56$

132. If the product of two numbers is 3026 and their LCM is 89 then, their HCF is:

(a) 33 (b) 34
(c) 35 (d) 29

RRB NTPC 17.01.2017 Shift-1

Ans : (b) From formula,
Product of two numbers = LCM × HCF

$3026 = 89 \times HCF$

$HCF = \frac{3026}{89}$

$= 34$

133. If the product of two numbers is 4941 and their LCM is 81 then, what is their HCF?

(a) 60 (b) 59
(c) 35 (d) 61

RRB NTPC 17.01.2017 Shift-3

Ans : (d) From formula,
Product of two numbers = LCM × HCF

$4941 = 81 \times HCF$

$HCF = \frac{4941}{81} = 61$

134. The ratio of two number is 8:9 and their HCF is 6. Their LCM will be:

(a) 432 (b) 54
(c) 48 (d) 423

RRB NTPC 17.01.2017 Shift-3

Ans : (a) According to the question,
HCF of both numbers = 6
And their ratio is 8:9,
So, the First number = 8 × 6 = 48
Second number = 9 × 6 = 54
LCM × HCF = First number × Second number

$48 \times 54 = 6 \times LCM$

$LCM = \frac{48 \times 54}{6}$

$LCM = 432$

135. The LCM and HCF of two numbers are 616 and 2 respectively. If one is 22 then, find the other number.

(a) 87 (b) 56
(c) 116 (d) 36

RRB NTPC 03.04.2016 Shift : 3

Ans : (b) Let the other number is y.
From formula,
LCM × HCF = First number × Second number

$22 \times y = 616 \times 2$

$y = \frac{616 \times 2}{22}$

$y = 56$

136. The HCF and LCM of two numbers are 7 and 252 respectively. If one is 28 then, find the other number.

(a) 252 (b) 63
(c) 126 (d) 56

RRB NTPC 02.04.2016 Shift : 1

Ans : (b) ∵
LCM × HCF = First number × Second number

$7 \times 252 = 28 \times$ Second number

Second number $= \frac{7 \times 252}{28} = 63$

137. The HCF and LCM of two numbers are 3 and 2730 respectively. If one is 78 then, find the other number.

(a) 107 (b) 103
(c) 105 (d) 102

RRB NTPC 02.04.2016 Shift : 2

Ans : (c) According to the question,
HCF = 3
LCM = 2730
$N_1 = 78$
$N_2 = ?$
from formula,

$N_2 = \frac{LCM \times HCF}{N_1}$

$N_2 = \frac{2730 \times 3}{78}$

$N_2 = 105$

138. HCF of two numbers is 19 and their LCM is 665. If one is 95, then find the other number.

(a) 19 (b) 133
(c) 190 (d) 77

RRB NTPC 16.04.2016 Shift : 3

Ans : (b) Let the other number is N.
From formula,
LCM × HCF = First number × Second number

$95 \times N = 19 \times 665$

$N = \frac{19 \times 665}{95}$

$N = \frac{665}{5}$

$N = 133$

139. The LCM and HCF of two numbers are 3 and 2001 respectively. If one is 69, then find the other number.

(a) 58 (b) 87
(c) 29 (d) 23

RRB NTPC 10.04.2016 Shift : 3

Ans : (b) from question,
First number × Second number = LCM × HCF

69 × Second number = 2001×3

Second number $= \frac{6003}{69} = 87$

Hence, Second number = 87

140. The product of two numbers is 3276 and LCM is 63, then find their HCF.

(a) 54 (b) 51
(c) 53 (d) 52

RRB NTPC 07.04.2016 Shift : 2

Ans : (d) As we know,
First number × Second number = LCM × HCF
$3276 = 63 \times HCF$
$HCF = \frac{3276}{63} = 52$

141. Find the HCF and LCM of 16 and 24.
(a) 8, 48 (b) 4, 12
(c) 2, 24 (d) 4, 48

RRB NTPC 06.04.2016 Shift : 1

Ans : (a) On doing factorization,
$16 = 2\times2\times2\times2$
$24 = 2\times2\times2\times3$
So, HCF = 2 × 2 × 2 = 8
And LCM = 2 × 2 × 2 × 2 × 3 = 48

142. The ratio of two numbers is 21:29 and HCF is 8, then their LCM is:
(a) 4872 (b) 168
(c) 232 (d) 4782

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) Let the numbers are 21x and 29x.
HCF = 8
So, first number = $21 \times 8 = 168$
Second number = $29 \times 8 = 232$
On, finding the LCM by factorization method,
$168 = 2\times2\times2\times3\times7$
$232 = 2\times2\times2\times29$
$LCM = 2\times2\times2\times3\times7\times29 = 4872$

143. The LCM of three numbers is 4752 and the HCF is 6. If two numbers are 48 and 66, find the third number.
(a) 54 (b) 56
(c) 58 (d) 52

RRB NTPC 29.04.2016 Shift : 3

Ans. (a) : Let the third number is x.
According to the question,
∵ HCF of all three numbers is 6.
The number in options which is divisible by 6 will be the third number.
So, from options, only 54 is divisible by 6.

144. If the product of two numbers is 3276 and their LCM is 63, then find their HCF.
(a) 32 (b) 76
(c) 52 (d) 53

RRB NTPC 30.04.2016 Shift : 3

Ans : (c) Product of numbers = LCM x HCF
$HCF = \frac{\text{Product of numbers}}{LCM}$
$HCF = \frac{3276}{63}$
HCF = 52

145. The ratio of two numbers is 5:7, and their HCF is 33, what is their LCM?
(a) 1155 (b) 165
(c) 231 (d) 1515

RRB NTPC 30.04.2016 Shift : 3

Ans : (a) According to the question,
HCF = 33
The ratio of numbers = 5:7
So, the first number = $5 \times 33 = 165$
And the second number = $7 \times 33 = 231$
$LCM = \frac{231 \times 165}{33} = 1155$

146. The HCF of two numbers is 12 and their LCM is 72. If one of them is 24, then the other number is:
(a) 48 (b) 60
(c) 36 (d) 72

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c)
LCM × HCF = First number × Second number
$72 \times 12 = 24 \times$ Second number
Second number $= \frac{12 \times 72}{24}$
$= 36$

147. The ratio of two numbers is 14:9 and their HCF is 15. What is the LCM of these numbers?
(a) 1890 (b) 2520
(c) 1260 (d) 630

Ans. (a) : Let the numbers are 14x and 9x
HCF = 15
So, the first number = 14×15=210
The second number = $9 \times 15 = 135$
∵ LCM × HCF = First number × Second number
$LCM \times 15 = 210 \times 135$
$LCM = \frac{210 \times 135}{15}$
$= 1890$

148. The product of two numbers is 30. If one from them is 1.25, then what is the other number?
(a) 18 (b) 24
(c) 20 (d) 21

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (b) Let the other number is x.
According to the question,
$1.25 \times x = 30$
$x = \frac{30}{1.25} = \frac{3000}{125}$
x = 24

Type - 7

149. Find the ratio of the LCM and HCF of the numbers 99 and 15.

(a) 165 : 1 (b) 3 : 55
(c) 165 : 3 (d) 1 : 165

RRB JE - 28/05/2019 (Shift-II)

Ans : (a) LCM of 99, 15

3	99, 15
3	33, 5
5	11, 5
11	11, 1
	1, 1

LCM = 3 × 3 × 5 × 11 = 495
HCF of 99, 15
99 = 3×3×11
15 = 3×5
HCF = 3

So, the required ratio = $\frac{LCM}{HCF} = \frac{495}{3} = 165 : 1$

Type - 8

150. Two numbers are in a ratio 4:5. Their LCM is 180. Find their sum.

(a) 70 (b) 90
(c) 72 (d) 81

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) Let the numbers are 4x and 5x.
The LCM of 4x and 5x = 20x
According to the question,
20 x = 180
x = 9
So, the numbers are 36 and 45.
Hence, the required sum = 36 + 45 = 81

151. Which number is a factor of all numbers?

(a) 2 (b) 1
(c) -1 (d) 0

RRB JE - 25/05/2019 (Shift-II)

Ans : (b) 1 is a factor of all numbers.
Example-
12 = 1 × 2 × 2 × 3
15 = 1 × 3 × 5

152. Two numbers are in a ratio 4:5 and their LCM is 100. Find their difference.

(a) 20 (b) 25
(c) 5 (d) 10

RRB RPF SI -11/01/2019 (Shift-III)

Ans : (c) Let the numbers are 4x and 5x.
According to the question,
The LCM of 4x and 5x = 20x
20x = 100
x = 5
So, the required difference = 5x – 4x = x = 5

153. If two numbers, whose HCF is 9, are in a ratio 5:7, then find their difference.

(a) 12 (b) 18
(c) 8 (d) 24

RRB JE - 28/06/2019 (Shift-III)

Ans. (b) Let the numbers are 5x and 7x.
HCF of 5x and 7x = x
∴ x = 9
So, the required difference = 7x – 5x = 2x
= 2 × 9 = 18

154. The ratio of two numbers is 5:6 and their LCM is 150. Find their sum.

(a) 50 (b) 55
(c) 60 (d) 54

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) Let the numbers are 5x and 6x respectively.
LCM of 5x and 6x = 30x
According to the question,
30x = 150
x = 5
So, the numbers = 25 and 30
So, the required sum = 25 + 30 = 55

155. The LCM of two numbers is 120 and the sum of their squares is 289. The sum of these numbers is:

(a) 23 (b) 28
(c) 32 (d) 26

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a) Let the numbers are a and b.
$a^2 + b^2 = 289$
ab = 120
a = 15
b = 8
a + b = 15 + 8 = 23

156. The division of two numbers gives 6 and their product is 96. Find the product of the sum and the difference of these numbers.

(a) 540 (b) 560
(c) 592 (d) 9180

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (b) Let the numbers are x and y.
According to the question,

$$\frac{x}{y} = 6 \Rightarrow x = 6y - - - - - (i)$$

$$xy = 96 - - - - - (ii)$$

On putting the value of equation (i) in equation(ii),

$$6y.y = 96$$

$$6y^2 = 96$$

$$y^2 = 16$$

$$y = 4$$

$$\therefore x = 6 \times 4 = 24$$

So, the required value,

$$(x+y)(x-y) = (24+4) \times (24-4)$$

$$= 28 \times 20 = 560$$

157. Which is the second greatest factor of 56 and 84?

(a) 23 (b) 18
(c) 14 (d) 24

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (c) On doing factorization,
$56 = 2 \times 2 \times 2 \times 7$
$84 = 2 \times 2 \times 3 \times 7$
The first greatest factor = $7 \times 2 \times 2 = 28$
The second greatest factor = $7 \times 2 = 14$

158. What is the smallest number with 7 factors exactly?

(a) 100 (b) 36
(c) 64 (d) 16

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (c) The number of factors of $a^x \times b^y \times c^z$ $\cdot (x+1)\times(y+1)\times(z+1)$ where a, b, c are prime numbers.
So,
100 = The number of factors of $2^2\times5^2 = (2+1)(2+1) = 9$
36 = The number of factors of $2^2\times3^2 = (2+1)(2+1) = 9$
64 = The number of factors of $2^6 = (6+1) = 7$
16 = The number of factors of $2^4 = (4+1) = 5$
So, it is clear that the required smallest number 7 factors exactly is 64.

159. The LCM of two numbers is 78. And the ratio of these numbers is 2:3. Find the sum of these numbers.

(a) 60 (b) 26
(c) 65 (d) 39

RRB NTPC 30.03.2016 Shift : 2

Ans : (c) Let the numbers are 2x and 3x.
So, the LCM = 78
$2 \times 3 \times x = 78$
$x = 13$
So, the required sum = $(5x) = 5\times13 = 65$

160. What is the highest common factor of 360 and 450?

(a) 90 (b) 45
(c) 10 (d) 9

RRB NTPC 29.03.2016 Shift : 3

Ans : (a) Note- The greatest factor of two numbers is their HCF.
So, on finding the HCF by division method,

```
360)450(1
    360
     90)360(4
        360
        ×××
```

So, the HCF is 90.

161. If P is the largest number which, when divides 60, 150 and 285, gives the same remainder in each case, then find the sum of digits of p.

(a) 7 (b) 5
(c) 4 (d) 9

RRB NTPC 19.04.2016 Shift : 3

Ans : (d) The required number = The HCF of (150 – 60), (285 – 150) and (285 – 60)
$90 = 2 \times \underline{3 \times 3 \times 5}$
$135 = 3 \times \underline{3 \times 3 \times 5}$
$225 = \underline{3 \times 3 \times 5} \times 5$
HCF = $3 \times 3 \times 5 = 45$
So, the required sum = 4 + 5 = 9

162. The ratio of three numbers is 2:3:6 and their HCF is 45. Find the sum of the numbers.

(a) 405 (b) 455
(c) 495 (d) 525

RRB NTPC 18.04.2016 Shift : 2

Ans : (c) The given ratio = 2:3:6
And HCF = 45
$\therefore$ Numbers $\Rightarrow 2 \times 45 = 90$
$\Rightarrow 3 \times 45 = 135$
$\Rightarrow 6 \times 45 = 270$
So, the required sum = 90 + 135 + 270 = 495

163. The LCM of two numbers is 66. The ratio of the numbers is 2:3. The sum of the numbers is:

(a) 60 (b) 55
(c) 50 (d) 65

RRB NTPC 06.04.2016 Shift : 1

Ans : (b) The ratio of the numbers is 2:3.
Let the numbers are 2x and 3x.
The LCM of 2x and 3x = $2\times3\times x = 6x$
According to the question,
$6x = 66 \Rightarrow x = 11$
So, the required sum = $2x + 3x = 5x = 5\times11 = 55$

164. The LCM of two numbers is 48. The ratio of both the numbers is $1:\frac{2}{3}$. Find the sum of the numbers.

(a) 60 (b) 40
(c) 20 (d) 45

RRB NTPC 19.01.2017 Shift : 2

Ans : (b) Let the numbers are 3x and 2x.
According to the question,
LCM = 48
$6x = 48$
$x = 8$
So, the numbers = 24, 16
So, the required sum = 24 + 16 = 40

165. The HCF of two numbers is 16 and their difference is 16. Find the number.

(a) 64, 80 (b) 72, 88
(c) 80, 100 (d) 96, 120

RRB NTPC 29.04.2016 Shift : 2

Ans : (a) Solve this type of questions from options.
From option (a),
The difference of 80 and 64 = 16
And HCF of 64 and 80 is also 16.
From option (b),
The difference of 88 and 72 is 16 but their HCF is not 16.
From option (c),
The difference of 80 and 100 is 20.
From option (d),
The difference of 96 and 120 is 24.

166. The sum of two numbers is 30 and their LCM is 25. Find the larger number.

(a) 55 (b) 25
(c) 1 (d) 15

RRB NTPC 30.04.2016 Shift : 1

Ans.: (b) Let the larger number is x and greater number is y.
According to the question,

$x + y = 30$ ……(I)

And the LCM of x and y = 25,
From given options,
If x = 25, then y = 5 …… from option (b)
Then, the LCM of 25 and 5 = 25
And the sum = 25 + 5 = 30

Type - 9

167. What is the length of the side of the largest square tile, which is used for constructing the floor of tile of 13.92m length and 5.22m breadth.

(a) 58 cm (b) 1 m 16 cm
(c) 1 m 74 cm (d) 87 cm

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (c) : The side of the largest square tile = HCF of 13.92m and 5.22m,
On finding the HCF by division method,

522)1392 (2
1044
348)522 (1
348
174)348 (2
348
×××

So, the HCF is 174.
Hence, the length of the side = 174cm = 1m 74cm,

Type - 10

168. Four alarm clocks ring at intervals of 3, 4, 5 and 8 minutes respectively. If they are rung together at 6:00 am, then what time will they ring together?

(a) 8:00 am (b) 10:00 am
(c) 12:03 pm (d) 09:00 am

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

Ans : (a)
LCM of 3, 4, 5 and 8 = $2 \times 2 \times 3 \times 5 \times 2 = 120$ min

$6 + \frac{120}{60} = 6 + 2 = 8$

So, at 8:00 am they will ring together.

169. Three bells ring at intervals of 10, 15 and 20 minutes. If they are rung together at 5:00 pm, what time will they ring together?

(a) 5:20 pm. (b) 5:30 pm.
(c) 5:40 pm. (d) 6:00 pm.

RRB RPF Constable -24/01/2019 (Shift-III)

Ans : (d) The LCM of 10, 15 and 20 = 60
The required time = 5:00 pm + 60 min
= 5:00 pm + 1 hour = 6:00 pm
So, the required time is 6:00 pm.

170. Alarms from three different clocks ring after 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?

(a) 6 (b) 3
(c) 2 (d) 9

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a) The time taken by all three clocks to ring together again
LCM of 2,4 and 6 = 12 hours
The number of alarms ring in three days (72 hours) = $\frac{72}{12} = 6$ times.

171. Traffic lights at any cross section change at 48 sec, 72 sec and 108 sec. If they change together at 9:15:00 am, when will they change together again next time?

(a) 9:22:12 a.m. (b) 9:21:07 a.m.
(c) 9:24:27 a.m. (d) 9:23:17 a.m.

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (a) : LCM of 48 sec, 72 sec and 108 sec

2	48,	72,	108
2	24,	36,	54
2	12,	18,	27
2	6,	9,	27
3	3,	9,	27
3	1,	3,	9
3	1,	1,	3
	1,	1,	1

so, the LCM = 2×2×2×2×3×3×3 = 432
= 432 sec
= 7 min 12 sec
So, the traffic lights will change together next time =
9:15:00 + 0: 07:12
= 9:22:12 a.m.

172. Three bells ring at intervals of 15, 20 and 30 minutes respectively. If they ring together at 11:00 am, then when will they ring together again?

(a) 11.30 a.m. (b) 12 noon
(c) 12.30 p.m (d) 1.00 p.m

RRB NTPC 28.03.2016 Shift : 1

Ans : (b) LCM of 15, 20 and 30 = 60
So, all the three bells ring together at the interval of 60 minutes = 1 hour.
So, the bells will ring together at 11:00 + 1:00 = 12:00 noon.

173. In a temple, four bells ring together at intervals of 12, 16, 24 and 36 minutes respectively. If they start ringing at regular intervals from 6:00 an when will they ring together again?

(a) 8 : 24 am (b) 5 : 24 am
(c) 7 : 24 am (d) 6 : 24 am

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (a) LCM of 12, 16, 24 and 36,

2	12,	16,	24,	36
2	6,	8,	12,	18
2	3,	4,	6,	9
2	3,	2,	3,	9
3	3,	1,	3,	9
3	1,	1,	1,	3
	1,	1,	1,	1

LCM = $2\times2\times2\times2\times3\times3 = 144$

So, 144 min = 2 hours and 24 minutes

So, the first interval = 6:00 + 2:24=8:24am

So, at 8:24 am the bells will ring together.

174. Four bells ring at intervals of 16, 24, 36 and 42 minutes respectively. If they were last ring together at 6:00 am, then after how many minutes will they ring together again?

(a) 842 minute (b) 964 minute
(c) 886 minute (d) 1008 minute

RRB NTPC 18.01.2017 Shift : 2

Ans : (d) The bells will ring together again = LCM of all numbers

LCM of 16, 24, 36 and 42.

2	16, 24, 36, 42
2	8, 12, 18, 21
2	4, 6, 9, 21
2	2, 3, 9, 21
3	1, 3, 9, 21
3	1, 1, 3, 7
7	1, 1, 1, 7
	1, 1, 1, 1

LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 = 1008$

Hence, after 1008 minutes they will ring together.

175. Three clocks are designed to alarm in every hour, two hours and three hours respectively. If they all alarmed together three hours before, then after how many hours will they next alarm together?

(a) 3 hours (b) 6 hours
(c) 2 hours (d) 1 hours

RRB NTPC 27.04.2016 Shift : 3

Ans : (a) The clocks will ring together = LCM of 1, 2 and 3 = 6

So, they will ring together after 6 hours again.

Hence, after 3 hours later they will alarmed together

176. The traffic lights at four different road crossings change after every 15 sec, 18 sec, 27 sec and 30 sec respectively. If they all change simultaneously at 6:10:00 hours, then at what time will they again change simultaneously?

(a) 6:14:30 hours (b) 6:40:00 hours
(c) 6:14:00 hours (d) 10:40:00 hours

RRB NTPC 16.04.2016 Shift : 3

Ans. : (a)

Traffic lights will again change simultaneously

= LCM of 15, 18, 27 and 30

On finding the LCM by common division method,

2	15,	18,	27,	30
3	15,	9,	27,	15
3	5,	3,	9,	5
3	5,	1,	3,	5
5	5,	1,	1,	5
	1,	1,	1,	1

LCM = $2 \times 3 \times 3 \times 3 \times 5 = 270$

So, after 270 seconds = 4 min 30 sec,

= 6:10:00 + 00:04:30 = 6:14:30

177. Three alarms ring at intervals of 10, 15 and 30 minutes respectively. If they ring together at 9:00 am, then when will they ring together again?

(a) 9:00 am (b) 10:00 am
(c) 10:30 am (d) 11:00 am

RRB NTPC 30.04.2016 Shift : 1

Ans : (a) LCM of 10, 15 and 30

2	10	15	30
3	5	15	15
5	5	5	5
	1	1	1

LCM = $2 \times 3 \times 5 = 30$

So, all the three bells will ring together again after 30 minutes.

Hence, the required time is 9:00 + 30 = 9:30 am

178. Three clocks are designed to ring after every 1 hour, 2 hours and 3 hours respectively. If they ring together then after how many hours will they ring together?

(a) 3 hours (b) 6 hours
(c) 4 hours (d) 12 hours

RRB NTPC 29.04.2016 Shift : 2

Ans : (b) According to the question,

The interval for ringing three clocks' alarm together = LCM of 1 hour, 2 hours and 3 hours = 6

So, they will ring the alarm together after 6 hours.

179. Three bells ring at intervals of 15, 30 and 45 minutes respectively. At what time will they ring together again, if they rang simultaneously at 8.00 AM?

(a) 8.30 AM (b) 9.30 AM
(c) 9.00 AM (d) 8.45 AM

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (b) All the three bells will ring together again = LCM of 15, 30 and 45
On finding the LCM by common division method,

2	15,	30,	45
3	15,	15,	45
3	5,	5,	15
5	5,	5,	5
	1,	1,	1,

LCM = $2 \times 3 \times 3 \times 5 = 90\,\text{min}$
So, the required time = 8:00 + 90 min = 9:30 AM

Type - 11

180. How many factors of 512 are perfect squares?
(a) 6 (b) 4
(c) 3 (d) 5
RRB Group-D – 28/09/2018 (Shift-I)

Ans : (d) On doing the factors of 512
= 1, 2, 4, 8, 16, 32, 64, 128, 256, 512
= 1, 4, 16, 64, 256 are perfect squares
So, the total number of perfect squares factors is 5.

181. Which is the smallest positive integer or natural number, when divides 1920 so that the number of factors of quotient is odd?
(a) 40 (b) 10
(c) 20 (d) 30
RRB Group-D – 12/12/2018 (Shift-I)

Ans. (d) From options,
$\frac{1920}{40} = 48 = \text{Number of factors in } 2^4 \times 3$
$= (4+1)(1+1) = 10\,(\text{Even})$
$\frac{1920}{10} = 192 = \text{Number of factors in } 2^6 \times 3$
$= (6+1)(1+1) = 14\,(\text{Even})$
$\frac{1920}{20} = 96 = \text{Number of factors in } 2^5 \times 3$
$= (5+1)(1+1) = 12\,(\text{Even})$
$\frac{1920}{30} = 64 = \text{Number of factors in } 2^6$
$= (6+1) = 7\,(\text{Odd})$

182. How many factors of the number $2^{10} \times 3^6 \times 5^3 \times 7^5$ are divisible by 2160?
(a) 180 (b) 336
(c) 504 (d) 560
RRB Group-D – 11/12/2018 (Shift-III)

Ans : (c) Factors of 2160 = $2^4 \times 3^3 \times 5^1$
Let the total factors are n.
$$n = \frac{2^{10} \times 3^6 \times 5^3 \times 7^5}{2^4 \times 3^3 \times 5^1}$$
$n = 2^6 \times 3^3 \times 5^2 \times 7^5$
So, the total number of factors = (6+1)(3+1)(2+1)(5+1)
= 7 × 4 × 3 × 6 = 504

Type - 12

183. Find the smallest number that is exactly divisible by each of the numbers 12, 15, 20 and 27.
(a) 540 (b) 510
(c) 530 (d) 520
RRB JE - 26/05/2019 (Shift-II)

Ans : (a) The required number = LCM of 12, 15, 20 and 27
On, finding the LCM by common division method,

3	12,	15,	20,	27
5	4,	5,	20,	9
4	4,	1,	4,	9
9	1,	1,	1,	9
	1,	1,	1,	1

LCM = 3 × 5 × 4 × 9 = 540
So, the required number is 540.

184. Find the smallest three-digit number that is exactly divisible by 12, 15 and 24.
(a) 180 (b) 120
(c) 360 (d) 240
RRB JE - 26/05/2019 (Shift-III)

Ans : (b)
The required number = LCM of 12, 15 and 24
On finding the LCM by factorization method,
$12 = 2 \times 2 \times 3$
$15 = 3 \times 5$
$24 = 2 \times 2 \times 2 \times 3$
$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 5 = 120$

185. Three cans of milk are of 36 liters, 45 liters and 72 liters measurement. Find the greatest measurement, which can measure all of them exactly.
(a) 15 liter (b) 8 liter
(c) 7 liter (d) 9 liter
RRB JE - 28/05/2019 (Shift-I)

Ans : (d) The required measurement = HCF of 36, 45 and 72
On finding the HCF by division method,

$36\overline{)45}\,(1$ $\quad$ $9\overline{)72}\,(8$
36 $\quad$ 72
$9\overline{)36}\,(4$ $\quad$ ××
36
××

So, the HCF is 9.

186. Find the largest number that will divide exactly the product of four consecutive integers.
(a) 12 (b) 8
(c) 6 (d) 24
RRB JE - 02/06/2019 (Shift-II)

Ans. (d) The product of four consecutive integers

$= 2 \times 3 \times 4 \times 5 = 120$

Which is exactly divisible by 12, 6, 8 and 24. But 24 is the largest of all.

187. Find the smallest perfect cube number that is exactly divisible by 2, 3, 4 and 6.

(a) 1728 (b) 360
(c) 216 (d) 512

RRB JE - 01/06/2019 (Shift-I)

Ans : (c) LCM of 2, 3, 4 and 6 = The required number
On, finding the LCM by common division method,

2	2,3,4,6
2	1, 3,2,3
3	1, 3,1, 3
	1, 1,1, 1

LCM = 2 × 2 × 3 = 12
So, the required perfect cube number = 2×2×2×3×3×3
= 216

188. Find the greatest 3-digit number, which is exactly divisible by 12, 15 and 20.

(a) 115 (b) 240
(c) 180 (d) 120

RRB JE - 27/06/2019 (Shift-I)

Ans : (d) On finding the LCM of 12, 15 and 20

2	12	15	20
2	6	15	10
3	3	15	5
5	1	5	5
	1	1	1

LCM = 2 × 2 × 3 × 5 = 60
The smallest three digit number is 100.
So,

60) 100 (1
60
40

So, the required number = 100 + (60 – 40) = 120

189. What is the largest 4-digit number, divisible by 6, 9, 12, 13 and 15?

(a) 9326 (b) 9100
(c) 9360 (d) 9240

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (c) On finding the LCM of 6, 9, 12, 13 and 15

2	6,	9,	12,	13,	15
2	3,	9,	6,	13,	15
3	3,	9,	3,	13,	15
3	1,	3,	1,	13,	5
5	1,	1,	1,	13,	5
13	1,	1,	1,	13,	1
	1,	1,	1,	1,	1

LCM = 2×2×3×3×5×13 = 2340
The largest four digit number = 9999

2340)9999(4
∴ 9360
639

So, the required number = 9999 – 639 = 9360

190. Find the number between 300 and 500 which will be exactly divisible by 6, 8, 10 and 12:

(a) 320 (b) 340
(c) 490 (d) 360

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (d) LCM of 6, 8, 10 and 12,

$6 = 2 \times 3$

$8 = 2 \times 2 \times 2$

$10 = 2 \times 5$

$12 = 2 \times 2 \times 3$

LCM $= 2 \times 2 \times 2 \times 3 \times 5 = 120$

So, the required number
= Multiples of 120 between 300 and 500.
= 360 and 480.

191. Find the least square number among the following, which is exactly divisible by 6, 9, 12, 13 and 15.

(a) 621000 (b) 456000
(c) 173000 (d) 152100

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (d) From options, only 152100 is a perfect square, other numbers are not perfect squares.
LCM of 6, 9, 12, 13 and 15 = 2340
So,

$$\frac{152100}{2340} = 65 \text{ (Total divisible number)}$$

So, the required number is 152100 which is the square of 390.

192. Find the smallest square number which is exactly divisible by 4, 9 and 14.

(a) 1008 (b) 252
(c) 1764 (d) 504

RRB NTPC 17.01.2017 Shift-2

Ans : (c) LCM of 4, 9 and 14

2	4,	9,	14
2	2,	9,	7
7	1,	9,	7
3	1,	9,	1
3	1,	3,	1
	1,	1,	1

LCM = 2 × 2 × 3 × 3 × 7 = 252
252 is not a square number. But its multiple 1764 is a square number.
So, from options 1764 is the required number.

193. What is the smallest 5-digit number which is exactly divisible by 12, 24, 48, 60 and 96?

(a) 10000 (b) 10024
(c) 10160 (d) 10080

RRB NTPC 03.04.2016 Shift : 1

Ans : (d) LCM of given numbers,

2	12,	24,	48,	60,	96
2	6,	12,	24,	30,	48
2	3,	6,	12,	15,	24
2	3,	3,	6,	15,	12
2	3,	3,	3,	15,	6
3	3,	3,	3,	15,	3
5	1,	1,	1,	5,	1
	1,	1,	1,	1,	1

LCM = 2×2×2×2×2×3×5 = 480

The smallest 5-digit number = 10000

480)10000(20
9600
400

So, the required number = 10000 + (480 – 400)
= 10080

194. Which is the largest 3-digit number which is exactly divisible by 15, 25 and 30?

(a) 900 (b) 930
(c) 960 (d) 975

RRB NTPC 28.03.2016 Shift : 2

Ans :(a) LCM of 15, 25 and 30 = 150

The largest three digit number = 999

150) 999 (6
900
×99

So, the required number = 999 – 99 = 900

195. Find the largest four digit number which is totally divisible by 12, 20, 32 and 44.

(a) 5200 (b) 4719
(c) 6800 (d) 5280

RRB NTPC 12.04.2016 Shift : 2

Ans : (d) LCM of 12, 20, 32 and 44

2	12	20	32	44
2	6	10	16	22
	3	5	8	11

$LCM = 2 \times 2 \times 3 \times 5 \times 8 \times 11 = 5280$

The largest 4-digit number = 9999

5280)9999(1
5280
4719

So, the required number = 9999 – 4719 = 5280

196. Find the largest number which is totally divisible by 15, 18, 27 and 30.

(a) 870 (b) 900
(c) 810 (d) 780

RRB NTPC 12.04.2016 Shift : 3

Ans : (c) LCM of 15, 18, 27 and 30

$15 = 3 \times 5$

$18 = 2 \times 3 \times 3$

$27 = 3 \times 3 \times 3$

$30 = 2 \times 3 \times 5$

LCM = $2 \times 3 \times 3 \times 3 \times 5 = 270$

So, the required number should be divisible by 270.

From options, only 810 is divisible by 270.

197. Which is the smallest number, when doubled is exactly divisible by 4, 6, 9, 12 and 14?

(a) 126 (b) 252
(c) 504 (d) 63

RRB NTPC 19.01.2017 Shift : 2

Ans : (a) Let the required number is x.

According to the question,

LCM of 4, 6, 9, 12 and 14

$4 = 2 \times 2$

$6 = 2 \times 3$

$9 = 3 \times 3$

$12 = 2 \times 2 \times 3$

$14 = 2 \times 7$

LCM = $2 \times 2 \times 3 \times 3 \times 7 = 252$

So, 2x = 252

x = 126

198. Find the smallest number which, when doubled is exactly divided by 14, 35, 28 and 91.

(a) 14 (b) 1820
(c) 910 (d) 1260

RRB NTPC 22.04.2016 Shift : 3

Ans : (c) According to the question,

LCM of 14, 35, 28 and 91

2	14,	35,	28,	91
7	7,	35,	14,	91
	1,	5,	2,	13

LCM = 2 × 7 × 5 × 2 × 13 = 1820

So, the required number = $\frac{1820}{2} = 910$

199. Find the smallest number which, when divided by 10, 15, 20 and 25, gives remainder 3 in each case.

(a) 300 (b) 303

(c) 306 (d) 309

RRB NTPC 26.04.2016 Shift : 1

Ans : (b) LCM of 10, 15, 20 and 25,

2	10	15	20	25
2	5	15	10	25
3	5	15	5	25
5	5	5	5	25
5	1	1	1	5
	1	1	1	1

LCM = 2 ×2 × 3 × 5 × 5 = 300

So, the required number = 300 + remainder

= 300 + 3 = 303

200. Find the smallest number which is exactly divisible by 6, 8, 12 and 16.

(a) 48 (b) 24

(c) 64 (d) 80

RRB NTPC 27.04.2016 Shift : 3

Ans : (a) The required number = LCM of 6, 8, 12 and 16

On finding the LCM by common division method,

2	6,	8,	12,	16
2	3,	4,	6,	8
2	3,	2,	3,	4
2	3,	1,	3,	2
3	3,	1,	3,	1
	1,	1,	1,	1

LCM = 2 × 2 × 2 × 2 × 3 = 48

201. Find the largest number which, when divides 1250 and 1615, gives remainder 4 and 5 respectively.

(a) 13 (b) 14

(c) 16 (d) 18

RRB NTPC 28.04.2016 Shift : 1

Ans : (b) According to the question,

1250 – 4 = 1246

1615 – 5 = 1610

HCF of 1246 and 1610,

```
1246)1610(1
     1246
      364)1246(3
          1092
           154)364(2
               308
                56)154(2
                   112
                    42)56(1
                       42
                       14)42(3
                          42
                          ××
```

HCF = 14

202. What is the least consisting of five digits that is exactly divisible by 12, 18, 20 and 25?

(a) 10000 (b) 10800

(c) 11250 (d) 10680

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (b) : On finding the LCM of given numbers,

2	12	18	20	25
2	6	9	10	25
3	3	9	5	25
3	1	3	5	25
5	1	1	5	25
5	1	1	1	5
	1	1	1	1

LCM = 2×2×3×3×5×5 = 900

900 is the required three-digit,

so the product of 900 which is smallest

5-digit number = 900 × 12 = 10800

203. Find the smallest square number from among the given option which is divisible by each of 8, 15 and 20.

(a) 3600 (b) 6400

(c) 14400 (d) 4900

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (a) LCM of 8, 15 and 20.

8 = 2 × 2 × 2

15 = 3 × 5

20 = 2 × 2 × 5

LCM = 2 × 2 × 2 × 3 × 5 = 120

From options, only (a) 3600 is such which is square of 60 and divisible by 120 which is LCM of 8, 15 and 20.

06.

Percentage

Type - 1

1. 5% population of a town died of a epidemic, and 8% panicked and left the town from rest population. If the present population of the town is 88274, then initially find the total population of the town.

(a) 1,21,600 (b) 1,01,000
(c) 99,800 (d) 84,500

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

Ans : (b) Let the population of the town is 100%.
Rest population after epidemic = 95%
The population who left the town with panic = 8%

Rest people $= \frac{95 \times 92}{100} = 87.40\%$

Given,
87.40% = 88274

$100\% = \frac{88274 \times 100}{87.40} = 1,01,000$

Hence, the total population of the town is 1,01,000

2. The population of a village increased from 18000 to 22500. What is the increase percentage?

(a) 25% (b) 15%
(c) 30% (d) 20%

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

Ans : (a) Required increase percentage

$= \frac{(22500-18000)\times 100}{18000} = \frac{4500 \times 100}{18000} = 25\%$

3. The population of a town increased by 10% and 20% in two successive years, but decreased by 25% in the third year. Find the ratio of the population in the third year and the population 3 year back.

(a) 100 : 99 (b) 99 : 100
(c) 2 : 1 (d) 1 : 1

RRB JE - 01/06/2019 (Shift-I)

Ans : (b) Let the population of the town is x.
Population after three years,

$x \times \frac{(100+10)}{100} \times \frac{(100+20)}{100} \times \frac{(100-25)}{100}$

$x \times \frac{110}{100} \times \frac{120}{100} \times \frac{75}{100} = \frac{99x}{100}$

$\frac{\text{Population in third year}}{\text{Population before three years}} = \frac{\frac{99x}{100}}{x}$

$= \frac{99x}{100} \times \frac{1}{x} = \frac{99}{100} = 99:100$

4. 62% population of a town is educated. If the number of uneducated people in the town is 24567, then what is the number of educated people?

(a) 41823 (b) 64650
(c) 35688 (d) 40083

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (d) : Educated population of the town = 62%
Uneducated population = (100 - 62) = 38%
If the total population of the town is x, then number of uneducated people

$24567 = \frac{x \times 38}{100}$

$x = \frac{24567 \times 100}{38} = 64650$

So, the total educated population of the town

$= \frac{64650 \times 62}{100} = 40083$

5. What will be the population of a town after two years, if the present population is 1,20,0000 and population growth rate is 4%?

(a) 1297920 (b) 1207920
(c) 1300000 (d) 1297820

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (a)
The present population of the town = 1,20,0000
% growth rate = 4%

Population after two years $= 1200000\left(1+\frac{4}{100}\right)^2$

$= 1200000 \times \frac{26}{25} \times \frac{26}{25}$

$= \frac{1200000 \times 676}{625} = 1297920$

6. The population of a town is growing at a rate of 5% per year. If the present population of the town is 1,85,220, then what was the population of the town one year ago?

(a) 1,76,000 (b) 1,70,500
(c) 1,76,400 (d) 1,76,200

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (c) : Let the population of the town before a year was 100x.
And it is growing at a rate of 5%,
The present population = 105x
According to the question,
105x=185220
x=1764
The population before a year = 100x
= 100×1764 =176400

7. The population of a town is 8000. If the men are increased by 8% and women by 12%, then the population will be 8680. Find the number of women in the town.

(a) 2500 (b) 1500
(c) 2000 (d) 1000

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (d) Let the number of men in the town is x.
So, the number of women = 8000 – x
According to the question,

$$= x \times \frac{108}{100} + (8000 - x) \times \frac{112}{100} = 8680$$

$$= \frac{108x + 8000 \times 112 - 112x}{100} = 8680$$

= 896000 - 4x = 868000
4x = 896000 - 868000
4x = 28000
x = 7000

So, the number of women = 8000 – 7000 = 1000

8. In 2018, the population of a colony became 54000, which is increasing at a rate of 5% per year. Find the population of the colony two years ago?

(a) 45980 (b) 48980
(c) 49500 (d) 50000

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (b) : Let the population of the colony was P, two years ago.
So, the population two years ago

$$54000 = P\left(1 + \frac{5}{100}\right)^2$$

$$54000 = P \times \frac{21}{20} \times \frac{21}{20}$$

$$P = \frac{54000 \times 20 \times 20}{21 \times 21}$$

$$P = \frac{21600000}{441}$$

P = 48980 (Approximately)

9. The number of people in a town increased by 3% at the beginning of each year. If the present population of the town is 30,00,000, then the population after three years will be:

(a) 3277181 (b) 3217881
(c) 3278181 (d) 3281781

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (c) Population of the town after n years,

$$= \text{present population} \left(1 + \frac{r}{100}\right)^n$$

Where, n = 3 years, and r = 3%

So, the population after 3 years $= 30,00,000\left(1 + \frac{3}{100}\right)^3$

$$= 30,00,000 \times \frac{103 \times 103 \times 103}{100 \times 100 \times 100}$$

= 3 × 103 × 103 × 103 = 3278181

10. 111 out of 200 people in a village are literate. What is the percentage of uneducated people in the village?

(a) 45% (b) 44.5%
(c) 55.5% (d) 54%

RRB NTPC 18.01.2017 Shift : 3

Ans : (b)
The number of uneducated people = 200 – 111 = 89

So, the required $\% = \frac{89}{200} \times 100 = \boxed{44.5\%}$

Type - 2

11. The ratio of boys and girls in a school is 3:2. If 20% boys and 25% girls get the scholarship, then how many percentage of students do not get the scholarship?

(a) 80% (b) 70%
(c) 56% (d) 78%

RRB JE - 02/06/2019 (Shift-III)

Ans : (d) Let the number of students = 3x
The number of girls in the school = 2x
The number of total students = 5x
The number of boys who do not get the scholarship

$$= 3x \times \frac{80}{100} = \frac{12x}{5}$$

The number of girls who do not get the scholarship

$$= 2x \times \frac{75}{100} = \frac{3x}{2}$$

The number of students who do not get the scholarship

$$= \frac{12x}{5} + \frac{3x}{2} = \frac{39x}{10}$$

So, the required percentage $= \frac{\frac{39x}{10}}{5x} \times 100$

$$= \frac{39x}{10} \times \frac{1}{5x} \times 100 = 78\%$$

12. If Anju scored 68 out of 80 in Hindi, 46 out of 60 in Mathematics, 74 out of 90 in Science, and 35 out of 45 in English, in which subject did Anju score the maximum percentage marks ?

(a) Mathematics (b) Hindi
(c) English (d) Science

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

Ans : (b) Hindi $\% = \frac{68}{80} \times 100 = \frac{68}{4} \times 5 = 85\%$

Mathematics $\% = \frac{46}{60} \times 100 = \frac{46}{3} \times 5 = \frac{230}{3} = 76.67\%$

Science $\% = \frac{74}{90} \times 100 = \frac{740}{9} = 82.22\%$

English $\% = \frac{35}{45} \times 100 = \frac{35}{9} \times 20 = \frac{700}{9} = 77.78\%$

So, Anju got maximum percentage in hindi.

13. In an examination, 40 out of 85 students scored less than 50%. The ratio of the number of students, scoring less than 50% to the number of scoring 50% or more marks is:

(a) 8 : 9 (b) 3 : 4
(c) 9 : 8 (d) 5 : 7

RRB RPF Constable -18/01/2019 (Shift-I)

Ans : (c) The required ratio
= (85 – 40) : 40
= 45 : 40
= 9 : 8

14. The percentage of obtained marks should be 42% to pass an exam. If the maximum marks is 450, then how many marks must be obtained to pass the exam?

(a) 201 (b) 168
(c) 210 (d) 189

RRB Group-D – 15/11/2018 (Shift-III)

Ans. (d) : Maximum marks = 450
The percentage of marks obtained to pass the exam = 42%
So, the marks obtained to pass the exam

$$= 450 \times \frac{42}{100} = 189$$

15. In a test Chitra scured 58.5 marks that was also equivalent to obtaining 78% marks. How many marks was the test out of?

(a) 85 (b) 65
(c) 75 (d) 80

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (c) : If the maximum marks were N,

Then, $58.5 = \frac{N \times 78}{100}$

$N = \frac{5850}{78} = 75$

16. 5% students are absent in a class, some day. If the number of present students is 38, then what is the total number of students in the class that day?

(a) 40 (b) 50
(c) 33 (d) 45

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (a) Let the total students in the class = 100%
% of students present in the class = 100 – 5 = 95%
The students present in the class = 38

So, the number of total students $= 38 \times \frac{100}{95} = 40$

17. Ram obtained 40% marks in an exam and failed by 20 marks. Aditya obtained 45% marks and that is 30 marks more than the passing marks. What is the percentage of passing marks?

(a) 38% (b) 42%
(c) 43% (d) 33%

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (b) According to the question,
40% marks + 20 marks less = 45% marks – 30 marks more
20 + 30 = 5%
5% = 50
1% = 10
100% = 1000

So, the total marks to pass $= 1000 \times \frac{40}{100} + 20$
$= 420$

So, the % marks $(\%) = \frac{420}{1000} \times 100 = 42\%$

18. Pranjoy obtained 272 marks in an exam, which was equal to get 64% marks. What was the exam score?

(a) 425 (b) 475
(c) 450 (d) 440

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (a) According to the question,
64% = 272

$1\% = \frac{272}{64}$

$100\% = \frac{272}{64} \times 100 = 425$ marks

So, the maximum marks of the exam were 425.

19. A student needs 40% marks to pass. He obtained 40 marks in an exam and he failed by 40 marks. What are the maximum marks that can be obtained for the exam?

(a) 500 (b) 400
(c) 250 (d) 200

Ans. (d) : Let the total maximum marks be x.
According to the question,

$x \times \frac{40}{100} = 40 + 40$

$\frac{40x}{100} = 80$

x= 200

20. The following table shows the results of the students participated in the exam. What is the percentage of the passed students?

Result	Number of students
Pass	150
Fail	100

(a) 40% (b) 60%
(c) 50% (d) 30%

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (b)

The % of passed students = $\frac{\text{Passed students}}{\text{Total students}} \times 100$

$= \frac{150}{250} \times 100$

= 60%

21. A candidate obtains 20% marks and got fail by 35 marks, while another candidate obtains 50% marks, which is 32 more than the passing marks. What are the maximum marks of the exam?

(a) 250 (b) $\frac{670}{3}$

(c) 450 (d) 500

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (b) Let the maximum marks of the exam be x.

20% x + 35 = 50% x – 32

35 + 32 = 50% x – 20% x

67 = 30%x

30%x = 67

$\frac{30}{100}x = 67$

$\boxed{x = \frac{670}{3}}$

22. Durba got 70% marks in an exam. He obtained 20 out of 25 marks in another exam. If his total score is 78% then what were the maximum marks of the first exam?

(a) 7.6 (b) 6.25

(c) 7.25 (d) 6

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (b) Let the maximum marks of the first exam be x.

And the passing marks = y

According to the first condition,

$\frac{y}{x} = \frac{70}{100}$, $y = \frac{7x}{10}$

According to the second condition,

$\frac{y+20}{x+25} = \frac{78}{100}$

$\frac{7x+200}{x+25} = \frac{78}{10}$

70x + 2000 = 78x + 1950

8x = 50

x = 6.25

Therefore, Maximum marks = 6.25

23. A student had got few marks from maximum marks probably. These marks were 75% as %. If one more question would be added of one mark in the exam then his obtained marks percentage would have 76%. What were the initial maximum marks of the exam?

(a) 24 (b) 25

(c) 20 (d) 19

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (a) Let the maximum marks = x

and the student had got y marks.

According to the first condition,

$\frac{y}{x} = \frac{75}{100}$

$y = \frac{3x}{4}$ -----(I)

According to the second condition,

$\frac{y+1}{x+1} = \frac{76}{100}$

$\frac{\frac{3x}{4}+1}{x+1} = \frac{76}{100}$ {from eq^n. (I)}

$\frac{3x+4}{x+1} = \frac{76}{25}$

75x + 100 = 76x + 76

x = 24

24. The minimum passing marks in an exam are 38%. If maximum marks are 750, then how many marks a student need to pass the exam?

(a) 285 (b) 304

(c) 323 (d) 266

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (a) Minimum required marks to pass the exam

$= 750 \times \frac{38}{100} = 285$

25. A exam was organized for class 10th students, 96% students passed and 50 failed. How many students were present in the exam?

(a) 1600 (b) 1400

(c) 1200 (d) 1250

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) Let the number of students = 100%

Passed students = 96%

Failed students = 4%

$\because$ 4% = 50

$1\% = \frac{50}{4}$

So, the number of students present in the exam

$= 100\% = \frac{50 \times 100}{4} = 1250$

26. Diksha obtained 58% marks in an exam, maximum marks of which were 450. She got how many marks?

(a) 276 (b) 261

(c) 290 (d) 275.5

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (b) Diksha obtained marks = 58%

Maximum marks = 450

So, the marks obtained by Diksha

$= \frac{58}{100} \times 450$

$= \frac{58 \times 9}{2}$

= 261

27. 60% are boys in a class of 60 students. If 25% girls go to school on bicycle, then find the number of girls who do not go to school on bicycle?

(a) 24 (b) 27
(c) 18 (d) 36

RRB NTPC 18.01.2017 Shift : 2

Ans : (c)
Number of boys in 60 students $= \frac{60 \times 60}{100} = 36$
Then, number of girls = 60 – 36 = 24
The girls who ride on bicycle to go to school
$= \frac{24 \times 25}{100} = 6$
So, the required number of girls = 24 – 6 = 18

28. A student scored 22 marks out of 25 in a class examination. The percentage marks of the student is:
(a) 88 (b) 80
(c) 90 (d) 75

RRB NTPC 17.01.2017 Shift-1

Ans : (a) Scored marks = 22
Maximum marks = 25
So, the percentage of gained marks $= \frac{22}{25} \times 100$
= 22 × 4 = 88%

29. If the marks of a student increased by 25% then his test's score became 75. What is his real obtained mark?
(a) 60 (b) 50
(c) 15 (d) 25

RRB NTPC 17.01.2017 Shift-2

Ans : (a) Let the original marks = x.
Then, according to the question,
$\Rightarrow x \times \frac{125}{100} = 75 \quad \Rightarrow x = \frac{75 \times 100}{125} = 60$

30. A student scored 9 marks out of 25 in an exam organized in a class. Express the marks obtained by the student in percentage.
(a) 30 (b) 36
(c) 35 (d) 25

RRB NTPC 17.01.2017 Shift-3

Ans : (b) Obtained marks = 9
Total marks = 25
So, % of obtained marks,
$= \frac{9}{25} \times 100 = 36$

31. A student scored 470 marks in 6 subjects. The maximum marks for each subject was 100. What was his score in percentage terms?
(a) 67.33% (b) 69.45%
(c) 78.33% (d) 78.67%

RRB NTPC 05.04.2016 Shift : 3

Ans : (c) Total marks = 600
Obtained marks = 470
So, the required % = $\frac{470 \times 100}{600}$
= 78.33%

32. In a test, Charan secured 54 marks that was also equivalent to obtaining 72% marks. How many marks was the test out of?
(a) 75 (b) 85
(c) 80 (d) 65

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a) Marks secured by Charan = 54 which is 72% of the total marks.
If the total marks of the exam is x, then
$54 = \frac{x \times 72}{100}$
$x = \frac{100 \times 54}{72}$
x = 75 marks

Type - 3

33. Moris spent 25% of his income on food. He got an increment of ₹ 1000, but he did not expand his expense on food stuffs. Therefore, his expense of food decreased to 20%. What was his initial income?
(a) ₹ 6500 (b) ₹ 6000
(c) ₹ 5000 (d) ₹ 4000

RRB RPF SI -16/01/2019 (Shift-I)

Ans : (d) Let the initial income = ₹y
According to the question,
$y \times \frac{25}{100} = (y + 1000)\frac{20}{100}$
25y - 20 y = 20000
5y = 20000
y = ₹4000

34. Arun's income is 150% of Bala's income. Chandu's income is 120% of Arun's income. If the total income of Arun, Bala and Chandu is ₹ 86000, then find Chandu's income.
(a) ₹ 36000 (b) ₹ 32000
(c) ₹ 30000 (d) ₹ 34000

RRB RPF Constable -19/01/2019 (Shift-III)

Ans : (a) Let Bala's income = ₹x
So, Arun's income = $x \times \frac{150}{100} = \frac{3x}{2}$
And Chandu's income $= \frac{3x}{2} \times \frac{120}{100} = \frac{9x}{5}$
According to the question,
$x + \frac{3x}{2} + \frac{9x}{5} = 86000$
$\frac{10x + 15x + 18x}{10} = 86000$
43x = 10 × 86000
x = 20000
So, Chandu's income $= \frac{9 \times 20000}{5} =$ ₹36000

35. The annual income of Somnath is ₹ 24,00,000. He pays ₹ 40,000 EMI for his vehicle every month. What percentage of his monthly income is spent on EMI?

(a) 20 (b) 18
(c) 10 (d) 24

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (a) Somnath's annual income = 2400000

Monthly income = $\frac{1}{12} \times 2400000 = 200000$

Monthly payment of EMI = 40000

So, the required % = $\frac{40000}{200000} \times 100 = 20\%$

36. Reenu uses averagely 15% on shopping, restaurant and going into malls of her monthly salary. Rest 40% is used in home expenditure, and 45% goes to her savings. If she spends ₹ 40,000 on home in a month, then what is her annual income?

(a) ₹1020000 (b) ₹1400000
(c) ₹1200000 (d) ₹1000000

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (c) : According to the question,

40% = ₹40000

$100\% = \frac{40000}{40} \times 100 = 100000$

So, annual income = 12 × 100000 = ₹1200000

37. Seema's annual income is ₹ 15,00,000. she pays an EMI of ₹ 30,000 per month. What percentage of her monthly income goes to EMI?

(a) 24 (b) 26
(c) 28 (d) 25

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (a) Seema's annual income = ₹ 15,00,000

So, the monthly income $= \frac{15,00,000}{12}$

= ₹ 1,25,000

EMI payment of every month = = ₹ 30,000

So, the required % $= \frac{30,000}{125,000} \times 100$

$= \frac{3000}{125}$

= 24%

38. Sunaina works in a private company and her annual income is ₹ 3,00,000. She has a new and an old vehicle. 5% of her income is spent on keeping of new vehicle and 2% more than the new one is spent on old one. What is the total annual expenditure on both vehicles?

(a) ₹20,000 (b) ₹36,000
(c) ₹12,500 (d) ₹25,000

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (b) Annual income of Sunaina = ₹ 3,00,000

Expenditure on new vehicle = 5% of the income

$= 300000 \times \frac{5}{100}$

= ₹ 15000

Expenditure on old vehicle = 5 + 2 = 7%

$= 300000 \times \frac{7}{100} =$ ₹ 21000

So, the total expenditure on both vehicles

= 15000 + 21000 = ₹ 36000

39. Every month, Kritika spends 30% on house rent of her income and 60% of the rest on home expenditure. If she does a savings of ₹ 6300, then what is her total monthly income?

(a) ₹22,000 (b) ₹20,500
(c) ₹22,500 (d) ₹25,000

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) Let her monthly income is = ₹ 100x

∴ So, the rent expenditure = ₹ 30x

∴ Home expenditure $= \frac{70x \times 60}{100} =$ ₹ 42x

∴ Total expenditure = 30x + 42x = 72x

∴ So, the savings = 100x – 72x = 28x

So, the monthly income of Kritika (100x) $= \frac{6300}{28} \times 100$

= ₹ 22500

40. Minakshi spends averagely 10% of her monthly salary on shopping, restaurant and going to malls. Rest 80% is spent on her home expenditure and 10% are saved. If the monthly home expenditure is ₹ 48,000, then what is the monthly income?

(a) ₹ 60,000 (b) ₹ 80,000
(c) ₹ 1,20,000 (d) ₹ 54,000

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (a) : Let the monthly income = 100%

Home expenditure = 80%

Monthly home expenditure = ₹ 48,000

∴ 80% = 48000

$100\% = \frac{48000}{80} \times 100$

$= 600 \times 100$

So, the monthly income is = ₹60000

41. Pramod uses averagely 10% of his monthly income for filling the petrol in his car. Rest 80% is spent on home expenditure and he saves 10% of his salary. If he monthly spends ₹ 24,000 on home expenditure then what is his annual income?

(a) ₹ 360000 (b) ₹ 160000
(c) ₹ 80000 (d) ₹ 240000

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) Let the monthly income is = ₹x
Monthly home expenditure = 80% = ₹24000

$$x \times \frac{80}{100} = 24000,$$

$$x = 30000$$

So, the annual income = 30000 × 12 = ₹360000

42. Manoj spends 33% of his income on food. He got an increment of ₹ 1000, but he did not expand his expenditure on food. So, his expenditure on food reduced to 27%. What was his initial salary?

(a) ₹4,500 (b) ₹6,500
(c) ₹5,500 (d) ₹5,000

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (a) Let Manoj's income = x रु0

Food expenditure $= x \times \frac{33}{100} = \frac{33x}{100}$

Manoj's new income = x + 1000

Deduction in expenditure $= (x + 1000) \times \frac{27}{100}$

Previous expenditure = new expenditure

$$\frac{33x}{100} = \frac{27x + 27000}{100}$$

33x = 27 x + 27000
6x = 27000
x = 4500

So the initial salary is ₹4500

43. Suman is a hostess of an agricultural land. She had let it on lease to a third party for five year. Instead of this income she also gets an annual salary of ₹ 6,00,000. In five years, total income of agricultural land is 50% of her annual income. How much money she earns each year?

(a) ₹3,00,000 (b) ₹6,60,000
(c) ₹6,00,000 (d) ₹6,30,000

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b) Annual salary of Suman = 6,00,000₹
Income from agriculture in five years = one years' income $\times \frac{50}{100}$

$$= \frac{600,000 \times 50}{100} = ₹300000$$

So, income from agriculture in one year

$$= \frac{30,0000}{5} = 60000$$

So, total annual income = 600,000 + 60000 = ₹660000

44. If Santi spends 50% of his monthly income on food, 20% on rent and saves Rs 1500 then, what is his monthly income?

(a) ₹ 5500 (b) ₹ 5000
(c) ₹ 6000 (d) ₹ 4500

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (b) : Let the monthly salary = ₹x
Total expenditure = 50% + 20% = 70%
And savings = 30%
Savings = ₹1500

So, $x \times \frac{30}{100} = 1500$

$$\frac{x \times 3}{10} = 1500$$

x = 5000

So, the monthly salary is = ₹5000

45. Nathan's annual income is ₹ 15,00,000 and he pays monthly an EMI of ₹ 40,000 for his vehicle. What percentage of his monthly income goes to EMI?

(a) 28% (b) 32%
(c) 24% (d) 20%

Ans. (b) : Nathan's annual income = ₹15,00,000

So, his monthly income $= \frac{1500000}{12} = 125000$

So, the required %,

$$= \frac{40000 \times 100}{125000} = \frac{4000}{125} = 32\%$$

46. Alok saves ₹ 1200 after spending 85% of his salary. What is his monthly salary?

(a) ₹ 8,000 (b) ₹ 8,500
(c) ₹ 10,000 (d) ₹ 12,000

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (a) Let the monthly salary of Alok is ₹ x
According to the question,

$$1200 = x \times \frac{15}{100}$$

x = ₹ 8000

47. A person pays as his debt Rs 8960 monthly, which is 28% of his monthly salary. Calculate his monthly salary.

(a) ₹32,000 (b) ₹34,000
(c) ₹28,000 (d) ₹30,000

RRB NTPC 18.01.2017 Shift : 1

Ans : (a) According to the question,
28% = ₹8960

$$\therefore 100\% = \frac{8960}{28} \times 100 = 32000,$$

So, the monthly salary = ₹32000

48. 30% increment was done to an employee's salary, so that his salary became ₹ 910. What was his salary before increment?

(a) ₹1300 (b) ₹880
(c) ₹700 (d) ₹810

RRB NTPC 19.01.2017 Shift : 2

Ans : (c) Let the old salary = 100x
On 30% increment,
130x = ₹910 x = ₹ 7
So, the salary before increment
= 100x = 100 × 7 = ₹700

49. Tanya got an increment of 15% in her salary. If her enhanced salary is ₹14,030. What was her original salary ?

(a) ₹12, 400 (b) ₹12, 000
(c) ₹12, 300 (d) ₹12, 200

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (d) Let the initial income = ₹x
According to the question,

$$x \times \frac{115}{100} = 14030, \quad x = ₹\ 12,200$$

50. Veer spends 15% of his monthly income on the house rent and 60% of the rest on household expenditure. If he saves ₹2210, what is his monthly income ?

(a) ₹ 6500 (b) ₹ 7500
(c) ₹ 8000 (d) ₹ 7000

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

Ans : (a) Let the monthly income of Veer = ₹x
According to the question,

$$x \text{ of } \frac{(100-15)}{100} \text{ of } \frac{(100-60)}{100} = 2210$$

$$x \times \frac{85}{100} \times \frac{40}{100} = 2210$$

$$x = \frac{2210 \times 100 \times 100}{85 \times 40} = ₹6500$$

Type - 4

51. If 20% of a = b, then b% of 20 is equals to what of the following?

(a) 20% of a (b) 4% of a
(c) 5% of a (d) 30% of a

RRB JE - 24/05/2019 (Shift-I)

Ans : (b) Let b% of 20, is equal to x% of a.

$\because$ $a \times 20\% = b$

$\Rightarrow$ $a \times \frac{20}{100} = b$

$\Rightarrow$ $a = 5b$

$\therefore$ $20 \times \frac{b}{100} = a \times \frac{x}{100}$

$\Rightarrow$ $20b = ax$

$\Rightarrow$ $20 \times \frac{a}{5} = ax$

$x = 4\%$

52. 1 min 12 sec of 1 hour is how much?

(a) 2% (b) 12%
(c) 11% (d) 1.2%

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

Ans : (a) The required percentage,

$$= \frac{(60\text{sec.} + 12\text{ sec.})}{60 \times 60} \times 100 = \frac{72}{60 \times 60} \times 100 = 2\%$$

53. If 40% of 70, is x % more than 30% of 80, then find the value of 'x'.

(a) 40% (b) 16.67%
(c) 14.28% (d) 33.33%

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

Ans : (b) 40% of 70 $= 70 \times \frac{40}{100} = 28$

30% of 80 $= 80 \times \frac{30}{100} = 24$

Difference = 28 – 24 = 4
According to the question,
28, is x % more than 24

$\therefore$ $x = \frac{4}{24} \times 100$

$x = 16.66 \approx 16.67\%$

54. The 8th share of a number, is equal to what percentage of it?

(a) 12.5% (b) 25%
(c) 2.5% (d) 1.25%

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

Ans : (a) Let the number be x and its 8th share is equal to its y%.
According to the question,

$$\frac{x}{8} = x \times \frac{y}{100}$$

$$y = \frac{100}{8}$$

$$\boxed{y = 12.5\%}$$

55. If 75% of 480 + x % of 540 = 603, then find the value of 'x'.

(a) 55 (b) 65
(c) 35 (d) 45

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

Ans : (d) Given,
75% of 480 + x % of 540 = 603

$$480 \times \frac{75}{100} + 540 \times \frac{x}{100} = 603$$

$$540 \times \frac{x}{100} = 603 - 480 \times \frac{3}{4}$$

$$540 \times \frac{x}{100} = 603 - 360$$

$$540 \times \frac{x}{100} = 243$$

$$x = \frac{243 \times 100}{540}, \quad \boxed{x = 45}$$

56. A number, when 35 subtracted from it, reduces to its 80%. What is four-fifths of that number?

(a) 90 (b) 120
(c) 140 (d) 70

RRB JE - 30/05/2019 (Shift-II)

Ans : (c) Let the number be x.
According to the question,

$$x - 35 = x \times \frac{80}{100}$$

$$x - 35 = \frac{4x}{5}$$

$$5x - 175 = 4x$$

$$x = 175$$

So, four-fifths of the number = $175 \times \frac{4}{5} = 140$

57. If 5% of A + 4% of B = 2/3 (6% of A + 8% of B), then find A : B.

(a) 1 : 1 (b) 4 : 3
(c) 1 : 2 (d) 5 : 4

RRB JE - 30/05/2019 (Shift-III)

Ans : (b) Given,
5% of A + 4% of B = 2/3 (6% of A + 8% of B)

$$\frac{A\times5}{100}+\frac{B\times4}{100}=\frac{2}{3}\left(\frac{6\times A}{100}+\frac{8\times B}{100}\right)$$

$$\frac{5A}{100}-\frac{12A}{300}=\frac{16B}{300}-\frac{4B}{100}$$

$$\frac{3A}{300}=\frac{4B}{300}$$

3A = 4B

$\frac{A}{B}=\frac{4}{3}$, A : B = 4 : 3

58. What is the percentage form of the ratio 1 : 8?

(a) 6.25% (b) 12.5%
(c) 8% (d) 80%

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Percentage form of the ratio 1 : 8,

$$=\frac{1}{8}\times100=12.5\%$$

59. 76% of a number is 95. The number is:

(a) 124 (b) 125
(c) 120 (d) 130

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (b) Let the number be x.
According to the question,

$$x\times\frac{76}{100}=95$$

$$x=\frac{95\times100}{76}$$

$$x=\frac{5\times100}{4}$$

x = 125

60. Find the number, which is 30% more than 240.

(a) 312 (b) 340
(c) 331 (d) 320

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (a) The required number,

$$\frac{240\times130}{100}=312$$

61. 108% of a number is 189. What is the number?

(a) 200 (b) 175
(c) 190 (d) 180

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (b) Let the number be x.

$$x\times\frac{108}{100}=189$$

$$x=\frac{189\times100}{108}$$

$$\boxed{x=175}$$

62. What percent is 6 hours of a day?

(a) 30% (b) 40%
(c) 25% (d) 45%

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (c) One day = 24 hours

$$\therefore\ \frac{6}{24}\times100=25\%$$

63. What is the percentage of 15 minutes of $1\frac{1}{2}$ days?

(a) 10% (b) $\frac{5}{6}\%$
(c) $\frac{25}{36}\%$ (d) $41\frac{2}{3}\%$

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) Number of minutes in $1\frac{1}{2}$ days, $=\frac{3}{2}\times24\times60$
= 36×60 min.
So, the required %,

$$=\frac{15}{36\times60}\times100=\frac{25}{36}\%$$

64. 48 out of 60 is _____%.

(a) 72 (b) 75
(c) 78 (d) 80

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (d) The required percentage,

$$\frac{48\times100}{60}=80\%$$

65. What will be 46% of 250?

(a) 92 (b) 115
(c) 126.5 (d) 103.5

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (b) The required percentage,

$$\frac{250\times46}{100}=\frac{25\times46}{10}=\frac{1150}{10}=115$$

66. A number becomes 725 when increased by 45%. Find the number.

(a) 500 (b) 450
(c) 600 (d) 525

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (a) Let the number be x.
According to the question,

$$x+\frac{45}{100}x=725$$

$$\frac{100x+45x}{100}=725$$

145x = 725 × 100

x = 500

67. What is 15% of 34?

(a) 5.1 (b) 5
(c) 5.2 (d) 4.9

RRB NTPC 17.01.2017 Shift-1

Ans : (a) The required percentage,

$$=\frac{34\times15}{100}=\frac{510}{100}=5.1$$

68. What is 40% of three-fifth of 24?

(a) 14.4 (b) 5.76
(c) 7.2 (d) 9.6

RRB NTPC 17.01.2017 Shift-2

Ans : (b) The required percentage,

$$24\times\frac{3}{5}\times40\% = 24\times\frac{3}{5}\times\frac{40}{100} = \frac{144}{25} = 5.76$$

69. Express 95 out of 200 in percentage:

(a) 42.5% (b) 47.5%
(c) 45% (d) 95%

RRB NTPC 18.01.2017 Shift : 2

Ans : (b) The required percentage,

$$\frac{95}{200}\times100 = 47.5\%$$

70. Find the missing value marked by '?' :
'?' % of 40 = 1.20

(a) 3 (b) 9
(c) 4 (d) 5

RRB NTPC 12.04.2016 Shift : 2

Ans : (a) From given expression,
? % of 40 = 1.20

$$\frac{?}{100}\times40 = 1.20 \qquad ? = \frac{1.20\times100}{40}$$

$$? = \frac{120}{40} \Rightarrow ? = 3$$

71. A team wins 45 games, which was 60% of played games. How many games were played by team?

(a) 50 games (b) 75 games
(c) 60 games (d) 65 games

RRB NTPC 28.04.2016 Shift : 3

Ans : (b) Let the number of played games by the team be x.
According to the question,

$$x \times 60\% = 45$$

$$\Rightarrow x = \frac{45}{60}\times100$$

$$\therefore x = \frac{3}{4}\times100 = 75$$

So, the number of played games by the team is 75.

72. 32 % of which number is 25.6?

(a) 8.19 (b) 32
(c) 80 (d) 10.24

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) Let the number = x

$$x\times\frac{32}{100} = 25.6 \Rightarrow x = \frac{25.6\times100}{32}$$

$$x = \frac{2560}{32} \Rightarrow x = 80$$

73. 72% of a number is 90. What is the number?

(a) 120 (b) 125
(c) 130 (d) 124

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (b) Let the number be x, then

$$90 = \frac{x\times72}{100}$$

$$10 = \frac{x\times8}{100}$$

$$x = \frac{1000}{8}$$

$$\boxed{x = 125}$$

74. What is the 58% of 350 ?

(a) 217 (b) 203
(c) 210 (d) 196

Ans : (b) 58% of 350

$$= 350\times\frac{58}{100} = 7\times\frac{58}{2} = 7\times29 = 203$$

75. 84% of a number is 105. The number is:

(a) 120 (b) 112
(c) 125 (d) 115

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c) Let the number be x.
According to the question,

$$x\times\frac{84}{100} = 105, \quad x = \frac{105\times100}{84}$$

$$x = 125$$

Type - 5

76. The price of a book was first increased by 25% and then reduced by 20%. What is the change in its original price?

(a) 5% decrease (b) No change
(c) 10% increase (d) 10% decrease

RRB JE - 25/05/2019 (Shift-III)

Ans : (b) Percentage change = $x - y - \frac{xy}{100}$

$$= 25 - 20 - \frac{25\times20}{100} = 25 - 25 = 0\%$$

77. If the consumption of sugar increases from 12 kg to 15 kg, then find the percentage growth.

(a) 39.2% (b) 20%
(c) 25% (d) 33.3%

RRB JE - 01/06/2019 (Shift-III)

Ans. (c) Initial consumption of sugar = 12 kg.
And now the consumption of sugar = 15 kg.
Growth = 15 – 12 = 3 kg.

So, % growth $= \frac{3}{12}\times100 = 25\%$

78. The price of rice is increased from ₹ 25 per kg to ₹ 30 per kg. The consumption should be decreased to which percentage so that the expenditure remains the same?

(a) $16\frac{2}{3}\%$ (b) $8\frac{1}{3}\%$
(c) 10% (d) 16%

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

Ans : (a) Initial price of rice = ₹25 /kg.
Now the price of rice = ₹30/kg.
Increased price = 30 – 25 = ₹5/kg.

So, % decrease $= \frac{5}{30} \times 100$

$= \frac{50}{3} = 16\frac{2}{3}\%$

79. When the price of a cycle decreased by 20%, then the number of sold bicycles increased by 20%. What was the effect on sale of the shop?
(a) 4% decrease (b) 4% increase
(c) 10% increase (d) 10% decrease
RRB JE - 27/06/2019 (Shift-III)

Ans : (a) % change = $x \pm y \pm \frac{xy}{100}$

$= -20 + 20 - \frac{20 \times 20}{100}$

= –4% (–ve sign denotes decrease)
So, the decrease of 4% is the required change

80. How many % is the single discount equivalent to two consecutive discounts 12% and 5%?
(a) 17% (b) 8.5%
(c) 16.4% (d) 15.2%
RRB RPF SI -11/01/2019 (Shift-II)

Ans : (c) If both consecutive discounts are a% and b%, then equivalent discount

$= a + b - \frac{ab}{100}$

So, equivalent discount to 12% and 5%

$= 12 + 5 - \frac{12 \times 5}{100}$

$= 17 - 0.6 = 16.4\%$

Hence discount = 16.4%

81. Petrol's price has been increased by 10% in the new budget. The passenger of a motor vehicle can reduce the consumption to how many %, so that his total expenditure on petrol remains the same?
(a) 10% (b) $9\frac{1}{11}\%$
(c) 11% (d) $11\frac{1}{9}\%$
RRB RPF SI -10/01/2019 (Shift-II)

Ans : (b) Formula- for such cases,

Decrease % $= \left(\frac{x}{100 + x}\right) \times 100$

Given- Growth = 10%
So, decrease in consumption,

$= \left(\frac{10}{100 + 10}\right) \times 100$

$= \frac{1}{11} \times 100 = 9\frac{1}{11}\%$

82. A labourer's salary has been increased by 25%. The new salary should be decreased by which % so that the initial salary remains the same?
(a) 12% (b) 15%
(c) 20% (d) 10%
RRB RPF Constable -20/01/2019 (Shift-I)

Ans : (c) From formula,

Decrease % $= \frac{x}{100 + x} \times 100$

So, % decrease in the salary $= \frac{25}{100 + 25} \times 100$

$= \frac{25}{125} \times 100$

$= \frac{100}{5} = 20\%$

83. A car was bought of ₹ 16,000. Its price decreases by 10% per year. What will be the price after two years?
(a) ₹ 12,060 (b) ₹ 12,960
(c) ₹ 12,000 (d) ₹ 12,900
RRB Group-D – 05/10/2018 (Shift-II)

Ans : (b) Price after 2 years,

$= 16000\left(1 - \frac{10}{100}\right)^2$

$= 16000 \times \frac{81}{100} =$ ₹ 12960

84. The decision to provide electricity connection to all 1200 families who are living without electricity, has been taken. If the rate of electrification is 75% per year, then find the number of families living without electricity connection after two years.
(a) 45 (b) 75
(c) 55 (d) 65
RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) The number of families who got the connection in the first year

$= 1200 \times \frac{75}{100} = 900$

The number of families who are not benefitted = 1200 – 900 = 300
The number of families who got the connection in the second year

$= 300 \times \frac{75}{100} = 225$

The number of rest families = 300 – 225 = 75
So, the required number of families is 75.

85. In a shopping mall the cost price of an article was increased by 10% and then it was reduced by 10%. What is the percentage increase or decrease?
(a) 1.5% increase (b) 1% increase
(c) 1% decrease (d) 1.5% decrease
RRB Group-D – 17/09/2018 (Shift-III)

Ans. (c) : In such cases there is always loss if same price is increased first and decreased later.

$$\text{Loss \%} = \frac{x^2}{100}\%$$

$$= \frac{10^2}{100}$$

$$= \frac{100}{100}\% = 1\%$$

86. If the cost of tomatoes increases by 25% per Kg and Sudha wants to spend only 15% more on the tomatoes. Calculate the percentage decrease in the quantity of tomatoes that Sudha gets.

(a) 10% (b) 12%
(c) 8% (d) 12.5%

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) : Let the initial price of tomatoes = x ₹/ kg

Price after 25% increase $= x \times \frac{125}{100} = \frac{5x}{4}$ ₹/ kg

Expenditure on tomatoes by Sudha $= x \times \frac{115}{100} = \frac{23x}{20}$

So, the quantity of tomatoes $= \frac{\frac{23x}{20}}{\frac{5x}{4}} = \frac{23x \times 4}{20 \times 5x} = \frac{23}{25}$ kg

So, the decrease in the tomatoes $= 1 - \frac{23}{25} = \frac{2}{25}$ kg

$\therefore$ % decrease $= \frac{\frac{2}{25}}{1} \times 100 = 8\%$

87. If a person's salary increases by 11% on first year and on second year decreased by 11%, then what is the % change in his salary of third year's beginning compared to initial salary?

(a) -1.21 (b) -1.23
(c) +1.21 (d) +1.22

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (a) : % increase in the salary

$$= \left(\frac{100+11}{100} \times \frac{100-11}{100} - 1\right) \times 100$$

$$= \left(\frac{89}{100} \times \frac{111}{100} - 1\right) \times 100$$

$$= \frac{-121}{10000} \times 100 = -1.21\%$$

88. The price of an article is reduced by 25%. The new price will be increased to which level to maintain the initial price?

(a) 108% (b) $\frac{105}{3}\%$
(c) $\frac{50}{7}\%$ (d) $\frac{100}{3}\%$

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (d) Decrease/Increase % $= \frac{100x}{(100 \pm x)}$

Increase % $= \frac{100 \times 25}{100 - 25} = \frac{100 \times 25}{75} = \frac{100}{3}\%$

89. An employee's salary was firstly increased by 10% and then reduced by 10%. What was the change in his salary?

(a) 1% (b) 2.2%
(c) -1% (d) 2.4%

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (c) Decrease/Increase % $= x + y + \frac{x \times y}{100}$

$$= 10 + (-10) + \frac{10 \times (-10)}{100}$$

$$= 10 - 10 - \frac{100}{100} = -1\%$$

90. If a fraction y/x becomes 6/7 when its numerator is increased by 12% and denominator is decreased by 2%. Find the initial fraction.

(a) $\frac{3}{4}$ (b) $\frac{4}{3}$
(c) $\frac{1}{2}$ (d) $\frac{1}{5}$

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a) Fraction = y/x

According to the question,

$\Rightarrow \frac{y \times 112}{x \times 98} = \frac{6}{7}$

$\Rightarrow \frac{y}{x} = \frac{6 \times 98}{7 \times 112} = \frac{6 \times 14}{112}$

$\Rightarrow \frac{y}{x} = \frac{3}{4}$

91. 20% selling of any article, increases when its cost is reduced by 20%, what is the effect on earned revenue?

(a) 4% increases (b) 5% increases
(c) 4% decreases (d) 5% decreases

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (c) : Formula-

Change in percentage $= \pm x \pm y \pm \frac{xy}{100}$

$$= -20 + 20 - \frac{20 \times 20}{100} = -4\%$$

So, it decreases to 4%

92. The price of a residential flat increases by 15% per year. If the present price is ₹ 60,00,000, then what will be the cost after two years?

(a) ₹78,00,000 (b) ₹83,45,000
(c) ₹85,39,500 (d) ₹79,35,000

RRB NTPC 28.03.2016 Shift : 3

Ans : (d) the cost of the flat after two years,

$$= 6000000\left(1+\frac{15}{100}\right)^2$$

$$= 6000000\times\frac{23}{20}\times\frac{23}{20} = 15000\times529 = ₹79,35,000$$

93. Mukesh gets discounts of 30%, 25% and 15% respectively on his shirt. Find the single equivalent discount.

(a) 52.34% (b) 38.35%
(c) 55.38% (d) 57.38%

RRB NTPC 19.04.2016 Shift : 2

Ans : (c) ∵ The discounts on shirt are 30%, 25% and 15% respectively,

∴ single equivalent discount

$$=100-100\times\frac{70}{100}\times\frac{75}{100}\times\frac{85}{100}$$

$$=100-70\times\frac{3}{4}\times\frac{17}{20} = 100 - 44.62 = 55.38\%$$

94. Sumit's salary was decreased by 40% and then increased by 40%. Find the final decrease % in his salary.

(a) 16% (b) 45%
(c) 44% (d) 66%

RRB NTPC 19.04.2016 Shift : 3

Ans : (a) In such cases there is always loss.

Required % loss $=\left(\frac{x}{10}\right)^2=\left(\frac{40}{10}\right)^2=16\%=\left(\frac{40}{10}\right)^2=16\%$

95. Onion's price is increased by 35% in the new government policy. A person should reduce his consumption by which percentage so that his expenditure remains the same?

(a) 25% (b) 29%
(c) 26% (d) 33%

RRB NTPC 16.04.2016 Shift : 3

Ans : (c) % reduction in consumption $=\frac{R}{100+R}\times100$

$$=\frac{35}{100+35}\times100 \quad =\frac{35}{135}\times100$$

$$=\frac{7}{27}\times100=25.92\approx26\%$$

96. The price of the sugar goes up by 30%. By what percent should Sita reduce her consumption so that the expenditure does not increase?

(a) $23\frac{1}{13}\%$ (b) $22\frac{1}{13}\%$
(c) 23% (d) 22%

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (a) % reduction in consumption $=\frac{x}{100+x}\times100$

$$=\frac{30\times100}{100+30}=\frac{3000}{130}=23\frac{1}{13}\%$$

Type - 6

97. Anita operates a fashion boutique. Her expenditure's headlines are as follows:

30% on purchases, 40% on tailor's payment and 30% on rent and electricity. If her total expenditure is ₹ 50,000/ month, then how much has she spent in tailor's payment?

(a) ₹19,000 (b) ₹18,000
(c) ₹20,000 (d) ₹21,000

RRB RPF Constable -24/01/2019 (Shift-I)

Ans. (c) : Total expenditure in % = Purchase + tailor + rent and electricity

30% + 40% + 30% = 100%

% expenditure = expenditure in ₹

100% = 50000

1% = 500

⇒ So, tailor's payment in %

= 40% = 40×500 = ₹20000

98. On a short scale occupation following expenditures occurs: 25% on purchase, 25% on employees' salary and 50% on maintenance. If the occupation pays ₹ 2,00,000, then what is its expenditure on maintenance?

(a) ₹ 3,00,000 (b) ₹ 4,00,000
(c) ₹ 2,00,000 (d) ₹ 2,50,000

RRB RPF SI -12/01/2019 (Shift-III)

Ans : (b) Expenditure on salary = 25% = ₹2,00,000

So, the amount spent on maintenance = 50%

$$\Rightarrow 50\% = \frac{2,00,000\times50}{25} = ₹400000$$

99. Achyutya opens a tea stall by investing ₹ 25,000. He spends 30% on furnishing and 20% on purchasing other necessary things for stall. How much money did he have to purchase the rest things for his shop?

(a) ₹12,500 (b) ₹5,000
(c) ₹20,000 (d) ₹12,000

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (a) Total amount that Achyutya have = 25, 000

Total expenditure = 30% + 20% = 50%

So, the rest amount $=25000\times\frac{50}{100}=₹12,500$

100. Mridula operates a small shop of pets. Her expenditure details are as follows: 90% on procurement and 10% on rent and electricity. If she monthly spends ₹ 15,000 on rent and electricity, then how much she spends monthly on procurement?

(a) 1.35 lacs (b) 5 lacs
(c) 4.5 lacs (d) 2 lacs

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (a)
Expenditure on rent and electricity = 15000 = 10%
Then, 90% (expenditure on procurement)

$$= \frac{15000 \times 90}{10} = 135000 = 1.35 \text{ लाख रु0}$$

101. A grocery store purchases 600 bottles of juice packed by two different sellers. 20% goods is taken by first seller, and 80% by the second. The selling price of one bottle is ₹ 25. After observing the second seller's goods, the shopkeeper comes to know that 25% goods can be used till one day only. He decides to return the goods. How much money will he get from second seller?

(a) ₹ 4,000 (b) ₹ 3,750
(c) ₹ 3,000 (d) ₹ 3,500

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (c) Total bottles = 600
First seller-

$$\Rightarrow 600 \times \frac{20}{100} = 120 \text{ bottles.}$$

Second seller-

$$600 \times \frac{80}{100} = 480 \text{ bottles.}$$

25% (spoiled) = 120 bottles

75% (accurate) = 360 bottles

So, the money received for spoiled bottles by second seller = 120 × 25 = ₹3000

102. 30% of an edible retail chain's selling, is dairy product and rest are fresh products. If the monthly sales of the chain is ₹ 50,000 then what is the selling amount of dairy products?

(a) ₹15,000 (b) ₹25,000
(c) ₹22,000 (d) ₹30,000

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (a) Selling of dairy products = 30%
So, the selling of fresh products = 70%
Monthly selling amount = ₹ 50,000
So, the selling amount of dairy products

$$= 50,000 \times \frac{30}{100} = ₹15,000$$

103. Last year, Manish Korner had invested 1 lacs on shop-1 and 1.5 lacs on shop-2 for changing the furniture. He collected the expenditure in next three quarters: 20% in quarter-1, 55% in quarter-2. What was the amount in ₹ In quarter-3?

(a) ₹60,500 (b) ₹62,500
(c) ₹62,600 (d) ₹70,000

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (b)
Total invested money = 100000+150000= ₹250000
Quarter –1 -------- 20%
Quarter –2 --------- 55%
So, quarter − 3 { 100 – (20 + 55)} = 25%
So, he will collect 25% expenditure in quarter – 3.

Then, $250000 \times \frac{25}{100} = ₹62500$

104. In a firm, the average salary of male worker is ₹ 5,200 and for women ₹ 4200 and the average salary of all workers is ₹ 5000. What is the percentage of male workers in the firm?

(a) 40% (b) 80%
(c) 20% (d) 60%

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (b) Let the number of male workers in the firm is x.
And female workers = y
Total salary of male workers = ₹5200 x
Total salary of female workers = ₹4200 y
Total salary of all workers = ₹5000 (x+y)
5200 x + 4200 y = 5000x + 5000y
200x = 800 y
x = 4y
x : y = 4 : 1

$$x\% = \frac{4}{5} \times 100 = 80\%$$

So, the required % is 80%.

105. Last year in a small industrial enterprise, Mayank's investment was ₹ 20,000. This year he is making a plan to increase his investment by 30% in compare to previous year's investment, for providing services to new customers. This year he is making plan to invest how much.

(a) ₹ 60,000 (b) ₹ 22,500
(c) ₹ 26,000 (d) ₹ 23,000

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (c) Last year investment = ₹20000
Plan to increase = 30%

Increased money = $20000 \times \frac{30}{100} = ₹6000$

So, the required money = 20000 + 6000 = ₹26000

106. In a sport showroom there are different game accessories. There is 50% selling of swimming accessories, 40% of outdoor game accessories and 10% of indoor game accessories. If in a particular month store sells swimming costumes of worth ₹ 10,000, then what is the estimated figure of the selling of outdoor game accessories?

(a) ₹8000 (b) ₹5000
(c) ₹3000 (d) ₹4000

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) Selling of swimming costumes in particular month = ₹10000
∵ 50% selling belongs to swimming accessories.
According to the question,
50% = 10000
∴ So, the total selling of game accessories = ₹20000
∴ So, the selling price of outdoor game accessories

$$= 20000 \times \frac{40}{100} = ₹8000$$

107. Suresh purchases two books of ₹ 1,200, he sells one on 20% profit and second on 16% loss. If the selling price is same then, find the estimated cost price of books.

(a) ₹ 550 and ₹ 650 (b) ₹ 600 and ₹ 600
(c) ₹ 500 and ₹ 700 (d) ₹ 400 and ₹ 800

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (c) Let the cost price of one book be ₹ x
So, the cost price of other book = ₹ (1200 – x)
According to the question,

$$\frac{x \times 120}{100} = (1200 - x) \times \frac{84}{100}$$

$\Rightarrow$ 120 x + 84 x = 1200 × 84

$\Rightarrow$ 204x = 1200 × 84

$\Rightarrow$ $x = \frac{1200 \times 84}{204}$

$\Rightarrow$ x =₹494.11 ≈ ₹ 500

So, the cost price of other book = 1200 – 500 = ₹ 700

108. A resort offers special discount on weekend. They create a log of weekend customers. They see a growth of 15% in their customers, this year. Last year they had 1500 customers. How many customers do they have this year?

(a) 1,825 (b) 1,700
(c) 1,650 (d) 1,725

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (d) : Growth = 15%
Last year customers = 1500

Present customers = $1500 \times \frac{115}{100}$

= 15 × 115

= 1725

109. A bank agrees to lend a loan to Arvind of ₹2,38,75,697 which falls short by 17% for starting his business. How much more loan would he need?

(a) ₹28765900 (b) ₹4375303
(c) ₹5700108 (d) ₹5125533

RRB NTPC 03.04.2016 Shift : 2

Ans : (a) The amount what Arvind needs

$$= 2,38,75,697 \times \frac{100}{100 - 17}$$

$$= 287659 \times 100 = ₹28765900$$

110. The profit of a company increased by 10% from April to May, then it decreased by 20% from May to June and again increased by 50% from June to July. What was the % growth in profit from April to July?

(a) 15% (b) 45%
(c) 32% (d) 13%

RRB NTPC 18.01.2017 Shift : 3

Ans : (c) From April to June

$$= 10 - 20 + \frac{10 \times (-20)}{100} = -10 - 2 = -12\%$$

From April to July $= -12 + 50 + \frac{(-12) \times 50}{100} = \boxed{32\%}$

111. An investor invests 1/2 shares on 5%, 1/4 shares on 10% and the rest on 8%, after 2 years his income is ₹ 2800 then find the stock.

(a) ₹10000 (b) ₹15000
(c) ₹20000 (d) ₹12000

RRB NTPC 19.04.2016 Shift : 1

Ans : (c) Let the stock of the investor is ₹ X,

Rest shares $= x - \left(\frac{x}{2} + \frac{x}{4}\right) = \frac{x}{4}$

$$\therefore \frac{\frac{x}{2} \times 5 \times 2}{100} + \frac{\frac{x}{4} \times 10 \times 2}{100} + \frac{\frac{x}{4} \times 8 \times 2}{100} = 2800$$

$$\frac{x}{20} + \frac{x}{20} + \frac{x}{25} = 2800$$

$$\frac{5x + 5x + 4x}{100} = 2800$$

14x = 280000 $\Rightarrow$ x = ₹20000

112. Production of sugar was 1584 million kg. in 2001 which was 20% more than 1991. Find the production of sugar in 1991 (in million kg.).

(a) 1980 (b) 1280
(c) 1900 (d) 1320

RRB NTPC 12.04.2016 Shift : 1

Ans : (d)

Production of sugar in 1991 $= \frac{1584}{100 + 20} \times 100$

$= \frac{1584}{120} \times 100 = 1320$ million kg.

113. A drug supervisor rejects 0.05% medicines as defective medicines. How many medicines will he examine to reject 4 medicines?

(a) 5000 (b) 8000
(c) 6000 (d) 8500

RRB NTPC 22.04.2016 Shift : 1

Ans : (b) $\because$ He examines 100 medicines to reject 0.05% medicines.

$\therefore$ So, to reject 1 medicine = $\frac{100}{0.05}$

Then, to reject 4 medicines $= \frac{100}{0.05} \times 4$

$= \frac{100 \times 400}{5} = 20 \times 400 = 8000$

114. 15% of an alloy was silver. If in a quantity of alloy there was 51 g of silver, what was the quantity of the other elements in the alloy ?

(a) 204 g (b) 340 g
(c) 300 g (d) 289 g

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (d) Share % of other metal in the alloy
=100–15=85%

So, the quantity of other metal $= \frac{51 \times 85}{15}$

$= \frac{17 \times 85}{5} = 17 \times 17 = 289$ gm.

Type - 7

115. The quantity of common salt in 320 gm water is 33 gm. Calculate the concentration of the solution in context of mass by mass percentage.

(a) 9.35 g (b) 9.35%
(c) 9.09% (d) 13.05%

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (b) Concentration % of the solution

$$= \frac{33}{320+33} \times 100 = \frac{3300}{353} = 9.348 \approx 9.35\%$$

116. The quantity of common salt in 320 gm water is 31 gm. Calculate the concentration of the solution in context of mass by mass percentage.

(a) 9.60% (b) 9.60%
(c) 8.83% (d) 9.09%

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (c)

Concentration % of the solution $= \frac{31}{320+31} \times 100$

$$= \frac{31}{351} \times 100 = 8.83\%$$

117. The quantity of common salt in 320 gm water is 45 gm. Calculate the concentration of the solution in context of mass by mass percentage.

(a) 12.33% (b) 12.36%
(c) 10.36% (d) 12.43%

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (a) Concentration % of the solution

$$= \frac{45}{320+45} \times 100 = \frac{4500}{365}$$

$$= 12.33\%$$

118. A solution is prepared by mixing 45 gm salt in 520 gm water. Calculate the concentration of the solution in context of mass by mass percentage.

(a) 7.96% (b) 8.86%
(c) 8.1% (d) 6.96%

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (a) : The required solution percentage

$$= \frac{45}{565} \times 100 = \frac{4500}{565} = 7.96\%$$

119. A solution has 8% salt. If the volume of the solution is 550 ml, then what is the quantity of salt in it?

(a) 42.5 ml (b) 48 ml
(c) 38.5 ml (d) 44 ml

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (d) Volume of the solution = 550 ml
Salt = 8%

So, quantity of the salt $= 550 \times \frac{8}{100} = 44$ ml

120. The amount of glucose required to prepare 250 g of a 5% solution of glucose by mass is:

(a) 125 g (b) 12.5 g
(c) 50 g (d) 25 g

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (b) Mass of the solution = 250 gm
Total quantity of glucose in the solution = 5%
So, the quantity of glucose in the solution in gram

$$= 250 \times \frac{5}{100} = 12.5\,gm$$

Type - 8

121. If 90% of y is x, then what percentage of x will be y?

(a) 11.1 (b) 111.1
(c) 101.1 (d) 121.11

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

Ans. (b) According to the question,

$y \times 90\% = x$

$\frac{x}{y} = \frac{90}{100}$

$x : y = 9:10$

Let k% of x is y.

$x \times \frac{k}{100} = y$, $9 \times \frac{k}{100} = 10$

$\therefore \quad k = \frac{10}{9} \times 100 = 111.1$

122. Shyam's marks are 25% more than Divya's marks. How many % of Divya's marks are less than Shyam's marks?

(a) 20% (b) 15%
(c) 10% (d) 40%

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (a) Let Divya's marks =100

Then Shyam's marks $= 100 \times \frac{125}{100} = 125$

Shyam's marks - Divya's marks = 125 – 100= 25

So, Divya's marks are 25 less than Shyam's marks.

% lack $= \frac{25}{125} \times 100$

$= \frac{100}{5}$

= 20%

Type - 9

123. If the length and breadth of a rectangle is increased by 8% and 12% respectively, then what will be the % increase in the area of the rectangle?

(a) 20.96% (b) 22%
(c) 20% (d) 24%

RRB RPF Constable -18/01/2019 (Shift-III)

Ans. (a) Percentage growth $= x + y + \frac{xy}{100}$

% growth in the area of the rectangle $= 8 + 12 + \frac{8 \times 12}{100}$

$= 20 + \frac{24}{25} = 20 + 0.96 = 20.96\%$

124. If the side of a square is increased by 10%, then the area of the square increased by……..

(a) 40% (b) 10%

(c) 20% (d) 21%

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (d) % change = $x + y + \frac{xy}{100}$

Change in the area of the square on increasing its side by 10%

$= 10 + 10 + \frac{10 \times 10}{100} = 21\%$

125. If the side of a square is increased by 30%, then find the % in the increase of its square.

(a) 84% (b) 112%

(c) 69% (d) 72%

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (c) Area of the square = $(\text{side})^2$

Formula- % growth $= x + y + \frac{xy}{100}$

% growth = $30 + 30 + \left(\frac{30 \times 30}{100}\right)$

% growth = 69%

126. If the length of a rectangle increased by 15% and the breadth decreased by 20%, then find the % change in area of the rectangle.

(a) 0.8% decrease (b) 0.8% increase

(c) 8% decrease (d) 8% increase

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (c) Increase in length = 15% = x

and decrease in breadth = 20% = y

Change in area $= x - y - \frac{x \times y}{100}$

$= 15 - 20 - \frac{15 \times 20}{100} = -5 - \frac{300}{100}$

$= -5 - 3$

$= -8\%$

Hence, 8% decrease

127. If the length and the breadth of a rectangle is changed by +15 % and -10 % respectively, what will be % change in the area of the rectangle?

(a) 2.5% (b) 3.0%

(c) 3.5% (d) 4.5%

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) Let the length = 100

And breadth = 100

So, area $= 100 \times 100 = 10000$

Length after change = 115, and breadth = 90

So, area = $115 \times 90 = 10350$

Growth = $10350 - 10000 = 350$

% growth = $\frac{350}{10000} \times 100 = 3.5\%$

Type - 10

128. A candidate won with 75% valid votes, in an election. 15% votes were invalid out of 560000 votes. What is the number of valid votes which the candidate got?

(a) 350000 (b) 280000

(c) 275000 (d) 357000

RRB RPF SI -12/01/2019 (Shift-III)

Ans : (d) Let the number of valid votes which the candidate got = x

Total votes = 560000

According to the question,

$x = 560000 \times \frac{75}{100} \times \frac{85}{100}$

$x = 560000 \times \frac{3}{4} \times \frac{17}{20}$

$x = 7000 \times 51$

$\boxed{x = 357000}$

129. In an election, a candidate got 62% of the total votes polled and won the election by 35640 votes. The total number of votes cast, if no vote is declared invalid, is?

(a) 356400 (b) 57484

(c) 93790 (d) 148500

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (d) : Total votes = 100%

Rest votes = 100% – 62% = 38%

% difference = 62% – 38% = 24%

24% = 35640

$100\% = \frac{35640 \times 100}{24} = 5940 \times 25 = 148500$

07.

Profit & Loss

Type - 1

1. Heeru bought an old car for ₹47000 and spent ₹3000 on its repairing. If he sells the car for ₹58,000, then how much will be his profit %?

(a) 18% (b) 16%
(c) 17% (d) 15%

RRB RPF Constable -18/01/2019 (Shift-III)

Ans. (b) : Total cost price of the car = 47000 + 3000
= ₹ 50,000
Selling price of the car = ₹58,000
So, Profit = S.P. – C.P.
Profit = 58,000 – 50,000 = ₹ 8,000
Hence, Profit % = $\frac{8,000\times100}{50,000}$ = 16%

2. The cost price of 25 items is equal to the selling price of 20 items. Find the profit %.

(a) 50% (b) 25%
(c) 40% (d) 30%

RRB JE - 24/05/2019 (Shift-I)

Ans : (b) Profit % = $\left(\frac{25-20}{20}\right)\times100 = 25\%$

3. The profit on the sale of a product is 25%. How much will be the loss percent, if the values of the cost price and selling price are interchanged?

(a) Loss of 12% (b) Loss of 16%
(c) Loss of 20% (d) Loss of 25%

RRB JE - 27/05/2019 (Shift-II)

Ans : (c) Let the cost price = 100
Selling price = 100 + 25 = 125
According to the question,−
On, interchanging the value of cost price and selling price,
Cost price = 125
Selling price = 100
Loss % = $\frac{125-100}{125}\times100 = \frac{25}{125}\times100 = 20\%$

4. Two items whose cost price is ₹ 2500 each, one is sold at a profit of 5%. If the total profit is 20%, then find the profit on second item.

(a) 20% (b) 25%
(c) 30% (d) 35%

RRB JE - 01/06/2019 (Shift-III)

Ans. (d) Let the second item is sold on x% profit.
According to the question,,

$$2500\times\frac{(100+5)}{100}+2500\times\frac{(100+x)}{100}=5000\times\frac{(100+20)}{100}$$

25 × 105 + 25 (100 + x) = 50 × 120
2625 + 2500 + 25x = 6000
25x = 6000 – 5125
25x = 875
x = 35%

5. Kaveri bought a toy for ₹ 280 and sold it for ₹ 315. How much profit did she get?

(a) 17.5% (b) 12.5%
(c) 16% (d) 15.25%

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

Ans. (b) : Cost price of the toy = ₹280
Selling price of the toy = ₹315
Formula– Profit (p) = Selling price – Cost price
P = 315 –280 = ₹35
Formula– P% = $\frac{\text{Profit}}{\text{Cost Price}}\times100$
$= \frac{35}{280}\times100 = \frac{5\times100}{40} = \frac{50}{4} = 12.5\%$

6. Geeta prepares cakes for programs. She prepared a cake for birthday party and sold it for ₹ 700. The cost price for preparing the cake was ₹ 350. What is the profit % she gained?

(a) 200% (b) 50%
(c) 100% (d) 150%

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

Ans. (c) : Cost price (CP) = ₹350
Selling price (SP) = ₹700
Profit % = $\frac{\text{SP - CP}}{\text{CP}}\times100$
$= \frac{700-350}{350}\times100 = \frac{350}{350}\times100 = 100\%$

7. Anurag gets a loss of 1/7 on cost price when sells a pen for ₹ 144. If the pen is sold for ₹ 189, then what is the profit %?

(a) 11% (b) 12.5%
(c) 11.5% (d) 14%

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) Given–
Loss = = $\frac{\text{Cost Price}}{7}$
Selling price (SP) = 144
Hence, Loss = Cost price (CP) − Selling price (SP)
$\frac{CP}{7} = CP - 144$
$CP - \frac{CP}{7} = 144$
$\frac{6CP}{7} = 144$

CP = 24 × 7
CP = 168
New Selling price = 189

$$\text{Profit } \% = \frac{SP - CP}{CP} \times 100 = \frac{189 - 168}{168} \times 100$$

$$= \frac{21}{168} \times 100 = 12.50\%$$

8. If the cost price of 15 oranges is equal to the selling price of 20 oranges then loss % is:

(a) 30% (b) 75%
(c) 25% (d) 40%

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (c) Let the cost price of an orange = ₹ 1.
Then the cost price of 20 oranges = ₹ 20
Cost price of 15 oranges = selling price of 20 oranges

$$\text{Then Loss } \% = \frac{20 - 15}{20} \times 100$$

Loss % = 25%

9. Shefali bought a cup-set for ₹ 575, but later she sold it for ₹ 506 due to being old. How much % loss did she get?

(a) 13% (b) 14%
(c) 16% (d) 12%

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (d) The cost price of the cup-set = ₹ 575
Selling price = ₹ 506
Loss = Cost price – Selling price
= 575 – 506
Loss = ₹ 69

$$\text{Loss\%} = \frac{\text{Loss}}{\text{cost price}} \times 100 = \frac{69}{575} \times 100 = 12\%$$

10. A man buys 5 pens for ₹ 1 and sells 4 pens for ₹ 1. Find his profit %.

(a) 25% (b) 40%
(c) 50% (d) 20%

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (a) The cost price of a pen $= ₹ \frac{1}{5}$

And the selling price of a pen $= ₹ \frac{1}{4}$

$$\text{Profit } = \frac{1}{4} - \frac{1}{5} = \frac{1}{20}$$

$$\text{Profit } \% = \frac{\frac{1}{20}}{\frac{1}{5}} \times 100$$

$$= \frac{5}{20} \times 100 = 5 \times 5 = 25\%$$

11. The selling price of an item with 16.5% profit was ₹ 466. If the item was sold for ₹ 330 then what % of loss would happen?

(a) 17.25 (b) 17.75
(c) 17 (d) 17.5

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (d)

$$\text{Selling price} = \text{Cost price} \times \frac{(100 \pm \text{Profit/Loss})}{100}$$

$$466 = \text{Cost price } \frac{(100 + 16.5)}{100}$$

$$\text{Cost price } = \frac{466 \times 100}{116.5}$$

Cost price = 400
Loss = 400 – 330 = 70

$$\text{Loss\%} = \frac{70 \times 100}{400} = 17.5\%$$

12. The cost prices of two items are ₹ 200 and ₹ 600. A shopkeeper gets a profit of ₹ 300 by selling both. If the shopkeeper sells the first item at a 30% profit, then at which profit does he sell the second item?

(a) 50% (b) 30%
(c) 20% (d) 40%

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (d) Profit on first item $= \frac{200 \times 30}{100} = 60$

$$\text{The profit on second item } = \frac{300 - 60}{600} \times 100$$

$$= \frac{240 \times 100}{600} = 40\%$$

13. A man sold two bicycles at a total profit of 20%. If he had bought them for ₹ 3500 each and sold the first one at a profit of 5%, then for how much profit (%) he must make on the other one?

(a) 20% (b) 35%
(c) 25% (d) 30%

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (b) Total cost price = 3500 + 3500 = ₹ 7000

$$\text{Selling price at a profit of 20\%} = 7000 \times \frac{120}{100} = ₹\ 8400$$

Selling price of first cycle at a profit of 5%

$$= 3500 \times \frac{105}{100}$$

$S.P._I = 3675$
Rest = 8400 – 3675 = 4725
Hence, the selling price of second cycle = ₹ 4725
Profit = 4725 – 3500
= ₹ 1225

$$\text{Profit } \% = \frac{1225}{3500} \times 100$$

Profit % = 35%

14. A carpenter suffers a loss of 10% on selling a footboard for ₹ 72. How much profit (%) or loss will be if he sells the footboard for ₹ 96?

(a) Profit, 10% (b) Profit, 20%
(c) Loss, 16% (d) Loss, 25%

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (b) Cost price $= \frac{\text{Selling Price}}{100 - \text{Loss}\%} \times 100$

$= \frac{72 \times 100}{100 - 10}$

$= \frac{7200}{90} = 80$

Again Selling price = ₹96

Profit% $= \frac{\text{Selling Price - Cost Price}}{\text{Cost Price}} \times 100$

$= \frac{96 - 80}{80} \times 100 = 20\%$

15. By selling an article for ₹ 979, a shopkeeper bears a loss of 11%. If the shopkeeper sells that article for ₹ 1232, then profit % is:

(a) 12% (b) 21%
(c) 11% (d) 14%

RRB NTPC 19.04.2016 Shift : 1

Ans : (a) $\frac{100 - \text{Loss}\%}{100 + \text{Profit}\%} = \frac{\text{First S.P.}}{\text{Second S.P.}}$

$\frac{100 - 11}{100 + x} = \frac{979}{1232}$ or $\frac{89}{100 + x} = \frac{979}{1232}$

100 + x = 112 or x = 12

∴ Profit % = 12%

16. Mr. Rajesh purchases a toy for ₹ 27.50 and sells it for ₹ 28.60 then profit % is:

(a) 5% (b) 4%
(c) 6% (d) 3%

RRB NTPC 17.01.2017 Shift-1

Ans : (b) Profit % $\frac{\text{Profit}}{\text{Cost Price}} \times 100$

$= \frac{28.60 - 27.50}{27.50} \times 100$

$= \frac{1.10 \times 100}{27.50} = \frac{110}{27.5} = 4\%$

17. 15 laptops were bought at a rate of ₹ 15,000 each and all of them were sold for ₹ 2,97,000. Find the profit %.

(a) 28% (b) 40%
(c) 33.335 (d) 32%

RRB NTPC 17.01.2017 Shift-2

Ans : (d) According to the question,,
Price of 15 laptops = 15000 × 15 = 225000

Profit % $= \frac{\text{Profit}}{\text{Cost Price}} \times 100$

Profit % $= \frac{297000 - 225000}{225000} \times 100$

$= \frac{72000}{225000} \times 100 = 32\%$

18. The selling price of an item is ₹ 1458 and its cost price is ₹ 1350. Find the profit %.

(a) 5% (b) 6%
(c) 7% (d) 8%

RRB NTPC 05.04.2016 Shift-1

Ans : (d) Given-
Selling price of the item = ₹1458
Cost price of the item = ₹1350

Profit% $= \frac{\text{Profit}}{\text{Cost Price}} \times 100 = \left(\frac{1458 - 1350}{1350}\right) \times 100$

$= \frac{108}{1350} \times 100 = 8\%$

19. A shopkeeper sells cricket bats in this way that the selling price of 35 bats is equal to the cost price of 50 bats. Find his profit %.

(a) 33.33% (b) 42.83%
(c) 50% (d) 60%

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) If the selling price of a items is equal to the cost price of b items, then

Profit % $= \frac{b - a}{a} \times 100$

Hence, shopkeeper's profit % $= \frac{50 - 35}{35} \times 100$

$= \frac{15}{35} \times 100 = 42.83\%$

20. The selling price of an item inclusive of a 16% profit was ₹ 435. What would be the percentage loss if the item was sold for ₹ 330?

(a) 12.25 (b) 13
(c) 12 (d) 12.5

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (c) : The cost price of the item $= 435 \times \frac{100}{116} =$ ₹375

If the item was sold for ₹ 330 then,

Loss % $= \frac{375 - 330}{375} \times 100$

$= \frac{45}{375} \times 100 = 12\%$

21. By selling a table for ₹ 16,870, a shopkeeper suffers a loss of ₹ 1,080. His loss percentage (rounded off to one decimal place) is :

(a) 6.1% (b) 6.2%
(c) 6.4% (d) 6.0%

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (d): Selling price of the table = ₹16,870
Loss = ₹1080
Then, the cost price of the 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%

22. Kaushik bought a toy for ₹ 160 and sold it for ₹ 180. The rate of profit was _____%

(a) 15.25 (b) 12.5
(c) 17.5 (d) 16

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

Ans : (b) The cost price of the toy = 160
Selling price = 180
Profit % $= \frac{180-160}{160} \times 100 = \frac{1}{8} \times 100$
Profit % = 12.5%

23. The S.P of a washing machine is $1\frac{1}{3}$ of its C.P. Find the gain percent.
(a) 33% (b) 66%
(c) $33\frac{1}{3}\%$ (d) $66\frac{1}{3}\%$
RRB ALP & Tec. (20-08-18 Shift-II)

Ans : (c) Let Cost price = ₹100
Selling price = 100 of $1\frac{1}{3} = 100 \times \frac{4}{3} = \frac{400}{3}$
Profit $= \frac{400}{3} - 100 = \frac{100}{3}$
Profit% $= \frac{\text{Profit}}{\text{Cost Price}} \times 100 = \frac{\frac{100}{3}}{100} \times 100 = \frac{100}{3}\%$
$= 33\frac{1}{3}\%$

Type - 2

24. A person gets a profit equal to the cost price of 3 beds, by selling 18 beds for ₹ 16,800. Find the cost price of one bed.
(a) ₹750 (b) ₹650
(c) ₹800 (d) ₹700
RRB JE - 29/05/2019 (Shift-I)

Ans : (c) Let the cost price of a bed = ₹ x
The selling price of 18 beds = the cost price of 18 beds + the cost price of 3 beds.
So, the selling price of 18 beds
= the cost price of 21 beds
= ₹16800
The cost price of 21 beds = ₹21x
21x = 16800
x = ₹ 800

25. By selling an item, Madan earned a profit equal to the 1/4th of its cost price. If he would sell it for ₹ 375, then what was the cost price?
(a) ₹312.50 (b) ₹350
(c) ₹300 (d) ₹281.75
RRB JE - 29/05/2019 (Shift-I)

Ans : (c) Let Cost price = ₹ x
According to the 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
Hence, Cost price ₹300

26. On selling 17 balls at ₹ 720, there is a loss equal to the cost of 5 balls. What is the cost of a ball?
(a) ₹ 40 (b) ₹ 55
(c) ₹ 60 (d) ₹ 45
RRB JE - 02/06/2019 (Shift-II)

Ans. (c) 17 balls → ₹720
According to the question,
There is a loss equal to the cost of 5 balls.
(17–5) balls → ₹720
12 balls → ₹720
1 ball = $\frac{720}{12}$ = ₹60

27. Jack sells a garment for ₹ 1440 and earns 20% profit. What will be the cost price of the garment?
(a) ₹1152 (b) ₹1240
(c) ₹1200 (d) ₹1180
RRB RPF SI -10/01/2019 (Shift-II)

Ans : (c) Selling price = ₹1440
Profit % = 20%
Cost price $= \frac{\text{Selling Price} \times 100}{(100 + \text{Profit\%})}$
$= \frac{1440 \times 100}{100 + 20} = \frac{1440 \times 100}{120}$ = ₹1200

28. On selling a transistor at ₹ 572, a shopkeeper gets a profit equal to 30% the cost price of the transistor. Find the cost price of the transistor.
(a) ₹400 (b) ₹440
(c) ₹340 (d) ₹420
RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Let the cost price of the transistor = ₹ x.
Profit $= x \times \frac{30}{100}$ = ₹ $\frac{3x}{10}$
∵ Selling price = Cost price + Profit
$\therefore 572 = x + \frac{3x}{10}$
$572 = \frac{10x + 3x}{10}$
13x = 5720
x = ₹ 440

29. A seller sells 12 chairs at a profit of 12% and 4 chairs at a loss of 3%. If his total profit is ₹ 1650, the cost price of each chair is:
(a) ₹ 1490 (b) ₹ 1250
(c) ₹ 1100 (d) ₹ 1380
RRB RPF SI -06/01/2019 (Shift-I)

Ans : (b) Let the cost price of each chair = ₹ x.
According to the question,-

Selling 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 = 16x

Profit = Selling price − Cost price

$1650 = \frac{433x}{25} - 16x$

1650 × 25 = 433x – 400x

$x = \frac{1650 \times 25}{33}$

x = 50 × 25 = 1250

x = ₹1250

30. Rishi sold a pair of shoes at 2,059 including the profit of 16%. What was the cost price of the shoes?

(a) ₹1,800 (b) ₹1,760
(c) ₹1,780 (d) ₹1,775

RRB RPF Constable -19/01/2019 (Shift-II)

Ans : (d) The selling price of shoes = ₹ 2,059
Profit = 16%

$\frac{C.P.}{100} = \frac{S.P.}{Profit + 100}$

The cost price of shoes, $= \frac{2,059 \times 100}{(100+16)}$

$= \frac{2,059 \times 100}{116}$ = ₹1,775

31. 2/3 share of an item sold at a profit of 6% and the rest part was sold at a loss of 3%. If the total profit is ₹ 540, then what was the total cost of the item?

(a) ₹17, 000 (b) ₹18, 000
(c) ₹16, 500 (d) ₹18, 500

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (b) Let the total cost of item = ₹ x.
According to the question,,

$x \times \frac{2}{3}$ selling price $= \frac{2x}{3} \times \frac{106}{100} = \frac{212x}{300}$

Rest part $= x - \frac{2x}{3} = \frac{x}{3}$

∴ The selling price of $\frac{x}{3}$ share $= \frac{x}{3} \times \frac{97}{100} = \frac{97x}{300}$

The selling price of total item $= \left(\frac{212x}{300} + \frac{97x}{300}\right) = \frac{309x}{300}$

Profit $= \frac{309x}{300} - x = 540$

$\frac{9x}{300} = 540$

x = ₹18000

32. Sharad bought two bags for ₹ 900. He sold one of them at a profit of 25% and other at a loss of 25%. If the selling price both bags is equal, then the cost prices of both are respectively:

(a) ₹ 437.5 and ₹ 462.5
(b) ₹ 330 and ₹ 570
(c) ₹ 347.5 and ₹ 552.5
(d) ₹ 337.5 and ₹ 562.5

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (d) : Let the cost price of first bag = ₹ x
And the selling price of the second bag = ₹ (900 – x)
According to the question,,

$x \times \frac{125}{100} = (900 - x)\frac{75}{100}$

5x = 2700 – 3x

8x = 2700

$x = \frac{2700}{8} = 337.5$

So, the cost price of first bag = 337.5
And the cost price of the second bag
= 900–337.5 = 562.5

33. The difference between a loss of 13% and a profit of 15% was ₹ 63. The cost price of the item is:

(a) 225 (b) 207
(c) 198 (d) 243

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (a) Let the cost price of the item = ₹ X.

On selling at 13% loss $= \frac{(100-13) \times X}{100} = \frac{87X}{100}$

On selling at 15% profit $= \frac{(100+15) \times X}{100} = \frac{115X}{100}$

According to the question,,

$\frac{115X}{100} - \frac{87X}{100} = 63$

$\frac{28X}{100} = 63$

$X = \frac{63 \times 100}{28}$ = ₹225

34. On giving a discount on selling price of a chair of 10% and 14%, there is a difference of ₹ 27. Find the cost of the chair.

(a) ₹ 586 (b) ₹ 440
(c) ₹ 675 (d) ₹ 880

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) Let the cost of the chair = ₹ x.
According to the 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

35. A mobile, when sold at a profit of 6% then ₹ 870 are gained in the comparison to sell it at a loss of 6%. What is the cost price of the mobile phone?

(a) ₹ 6000 (b) ₹ 7000
(c) ₹ 6265 (d) ₹ 7250

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (d) According to the first condition,

$$S.P. = \frac{C.P. \times (100 + Profit\%)}{100}$$

$$= \frac{x \times 106}{100}$$

According to the second condition,

$$S.P. = \frac{C.P. \times (100 - Loss\%)}{100}$$

$$= \frac{x \times 94}{100}$$

Hence, $\frac{106x}{100} = \frac{94x}{100} + 870$

$$\frac{106x}{100} - \frac{94x}{100} = 870$$

$$\frac{12x}{100} = 870$$

$$x = \frac{870 \times 100}{12} = ₹7250$$

36. The difference between a loss of 18% and a profit of 17% was ₹ 63. The cost price of the item is:

(a) ₹189 (b) ₹180
(c) ₹175 (d) ₹198

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (b) According to the question,,

$$\frac{117x}{100} - \frac{82x}{100} = 63$$

$$\frac{35x}{100} = 63$$

$$x = ₹180$$

37. If an item is sold at 13% loss and 14% profit, then the difference between both prices is ₹ 162. What is the cost price of the item?

(a) ₹ 625 (b) ₹ 620
(c) ₹ 600 (d) ₹ 640

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (c) Let the cost price of the item = ₹ x,
According to the question,,

$$x \times \frac{114}{100} - x \times \frac{87}{100} = 162$$

$$\Rightarrow \frac{x}{100}[114 - 87] = 162$$

$$\Rightarrow x = \frac{162 \times 100}{27}$$

$$x = 6 \times 100$$

$$x = 600$$

38. An item was sold at a loss of 12%. If it were sold at much ₹ 49, then there would be a profit of 2%. The cost price of the item is ₹……..

(a) 325 (b) 300
(c) 375 (d) 350

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (d) Let Cost price = ₹ x
On selling at a loss of 12%,

$$\text{Selling price} = \frac{88x}{100}$$

On selling at a profit of 2%,

$$\text{Selling price} = \frac{102x}{100}$$

According to the question,,

$$\frac{102x}{100} - \frac{88x}{100} = 49$$

$$14x = 4900$$

$$x = ₹350$$

39. On selling an item, the difference between 33% loss and 7% profit is ₹ 220. What is the cost price of the item?

(a) ₹ 600 (b) ₹ 525
(c) ₹ 575 (d) ₹ 550

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (d) Let the cost price = ₹ x.
∴ According to the 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 = ₹ 550

40. Spoorti had sold a pair of shoes at a profit of 17% for ₹ 2,223. What was the cost price of the shoes?

(a) ₹ 1,905 (b) ₹ 1,870
(c) ₹ 1,880 (d) ₹ 1,900

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (d) : Let the cost price = ₹ x.
Profit % = 17%
Selling price = ₹ 2223

$$\therefore \quad CP = \frac{SP}{(100 + P\%)} \times 100$$

$$= \frac{2223}{117} \times 100$$

$$= ₹1900$$

41. A person buys two watches for ₹ 480. He sells one of them at 15% loss and the other at 19% profit. After that he comes to know, that he has sold both watches at the same price. Find the cost price of both.

(a) ₹280, 200 (b) ₹270, 190
(c) ₹285, 200 (d) ₹280, 205

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (a) : Let the cost price of the first watch = ₹ x.
The cost price of the second watch = ₹ (480 - x)
According to the question,,

$$x \times \frac{85}{100} = (480 - x) \times \frac{119}{100}$$

$\Rightarrow$ $5x = 480 \times 7 - 7x$

$\Rightarrow$ $12x = 480 \times 7$

x = ₹ 280

And the cost price of the second watch

= 480 – 280 = ₹ 200

42. An item was sold at a loss of 20%, for ₹ 15,000. Find the cost price of the item.

(a) ₹17,750 (b) ₹17,250
(c) ₹18,750 (d) ₹18,250

RRB NTPC 05.04.2016 Shift : 2

Ans : (c) Cost price = $\left(\frac{100}{100 - \text{Loss\%}}\right) \times$ selling price

$$= \left(\frac{100}{100-20}\right) \times 15000$$

$$= \frac{100}{80} \times 15000 = ₹18750$$

43. A shopkeeper earns a profit of 33% even if he gives a discount of 12%. What is the cost price of a chair for shopkeeper, whose face value is ₹ 4740?

(a) ₹3136 (b) ₹4050
(c) ₹3674 (d) ₹3497

RRB NTPC 04.04.2016 Shift : 2

Ans : (a) The face value of the chair = ₹ 4740
The selling price of the chair,

$$= 4740 \times \frac{100-12}{100} = 474 \times \frac{88}{10}$$

Cost price $= 474 \times \frac{88}{10} \times \frac{100}{100+33}$

$$= \frac{474 \times 88 \times 10}{133} = 3136.24 \approx 3136$$

44. A shopkeeper fixed the price of a new item ₹ 1280. If he gets a profit of 20% even after giving a discount of 10%, then find the cost price of the item.

(a) ₹1120 (b) ₹960
(c) ₹1000 (d) ₹940

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) Let the cost price of the item = ₹ x.
Face value = ₹ 1280, Discount = 10%

Selling price of the item = $1280 \times \frac{100-10}{100} = 1280 \times \frac{90}{100}$

According to the question,

$$x = 1280 \times \frac{90}{100} \times \frac{100}{100+20}$$

$$x = 1280 \times \frac{90}{120} \quad x = ₹\ 960$$

45. A shopkeeper fixed ₹ 160, the face value of an item. If he gets a profit of 20%, even after giving a discount of 10% on cost price, then find the cost price of the item.

(a) ₹140 (b) ₹120
(c) ₹150 (d) ₹132

RRB NTPC 02.04.2016 Shift : 1

Ans : (b)

The selling price of the item $= 160 \times \frac{90}{100} = 144$

$\therefore$ Cost price $= \left(\frac{100}{100+20}\right) \times 144 = \frac{100}{120} \times 144 = ₹120$

46. A shopkeeper fixed the value of an item ₹ 320. If he gets a profit of 20%, even after giving a discount of 10% on cost price, then find the cost price of the item.

(a) ₹240 (b) ₹280
(c) ₹300 (d) ₹264

RRB NTPC 02.04.2016 Shift : 2

Ans : (a) Cost price = CP, Face value = MP = 320
Profit = 20%, Discount = 10%

$$\frac{CP \times 120}{100} = \frac{M.P. \times 90}{100}$$

$$\frac{CP \times 120}{100} = \frac{320 \times 90}{100}$$

$$CP = \frac{32 \times 9 \times 10}{12}$$

CP = ₹240

47. Three boxes have 25 packets of 10 pencils each, which were sold for ₹ 8,625, if the profit is 15%, find their cost price.

(a) ₹7,400 (b) ₹7,500
(c) ₹7,600 (d) ₹7,700

RRB NTPC 31.03.2016 Shift : 1

Ans : (b) Cost price $= \left(\frac{100}{100+15}\right) \times 8625$

$$= \frac{100}{115} \times 8625 = ₹7500$$

48. A wholesaler sold a water purifier at a loss of 40%. If the selling price has been increased by ₹125, then wholesaler will get the profit of 10%. What was the cost price of the purifier?

(a) ₹ 250 (b) ₹ 225
(c) ₹ 275 (d) ₹ 300

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) Let the cost price of the water purifier is ₹ x.
According to the question,-

$$x \times \frac{(100-40)}{100} + 125 = \frac{x \times 110}{100}$$

$$\Rightarrow \frac{60x}{100} + 125 = \frac{110x}{100}$$

$\Rightarrow \frac{50x}{100} = 125$

$\Rightarrow \frac{x}{2} = 125$

$\Rightarrow x = 125 \times 2 = 250$

49. When Bablu reduces the selling price of shoes from ₹ 360 to ₹ 345, then he gets 4% much loss. Find the cost price of the shoes.

(a) ₹275 (b) ₹375
(c) ₹425 (d) ₹450

RRB NTPC 16.04.2016 Shift : 1

Ans : (b) According to the question,
4% = 360–345 = ₹15

$\therefore 100\% = \frac{15}{4} \times 100$

= ₹375

So, the selling price of the shoes = ₹ 375

50. Sahil sold an item for ₹280 at a loss of 20%. The cost price of the item was :

(a) 336 (b) 340
(c) 350 (d) 1,400

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

Ans : (c) Cost price $= \frac{\text{Selling price} \times 100}{(100 - \text{Loss}\%)}$

$= \frac{280 \times 100}{80} = 350$

Type - 3

51. An item was sold at a loss of 5%, for ₹ 1235. Find the selling price of the item at the profit of 10%.

(a) ₹1,335 (b) ₹1,380
(c) ₹1,430 (d) ₹1,300

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

Ans : (c) $CP = \frac{SP \times 100}{100 - \text{loss}\%}$ (SP = Selling price)

$CP = \frac{SP \times 100}{100 - 5}$ (CP = Cost price)

$CP = \frac{1235 \times 100}{95} = 1300$

$SP = CP \times \frac{100 + \text{Profit}\%}{100}$

$SP = CP \times \frac{100 + 10}{100}$

$SP = 1300 \times \frac{110}{100} =$ ₹ 1430

52. K buys a car in ₹ 4.50 lacs and spends ₹ 1.25 lacs on its accessories. He sells the car at a loss of 20%. Find the selling price of the car.

(a) ₹4.00 lacs (b) ₹4.20 lacs
(c) ₹4.40 lacs (d) ₹4.60 lacs

RRB RPF SI -11/01/2019 (Shift-III)

Ans : (d) Total price of the car = 4.50 = 1.25 = ₹ 5.75 lacs

$\therefore$ Selling price $= \frac{100 - \text{Loss}\%}{100} \times$ Cost price

$= \left(\frac{100 - 20}{100}\right) \times 5.75$

$= \frac{80}{100} \times 5.75 = 4.600$ = ₹4.60 Lacs

53. A cycle bought at ₹ 1400 is sold at a loss of 15%. What is the selling price?

(a) ₹1290 (b) ₹1090
(c) ₹1190 (d) ₹1385

RRB JE - 01/06/2019 (Shift-I)

Ans : (c)
The selling price of the cycle

$= \text{Cost price} \times \frac{(100 - Loss\%)}{100}$

$= 1400 \times \frac{100 - 15}{100}$

$= 1400 \times \frac{85}{100}$

= 14 × 85 = 1190

54. There is loss of 25% on selling an article for ₹2400. What should be the selling price to get the profit of 25%?

(a) ₹2700 (b) ₹4000
(c) ₹3600 (d) ₹4200

RRB JE - 01/06/2019 (Shift-I)

Ans : (b)
The cost price of the article

$= \text{Selling price} \times \frac{100}{(100 - Loss\%)}$

$= 2400 \times \frac{100}{(100 - 25)}$

$= 2400 \times \frac{100}{75}$

= 3200

The selling price of the article

$= \text{Cost price} \times \frac{(100 + Profit)}{100}$

$= 3200 \times \frac{100 + 25}{100}$

$= 3200 \times \frac{125}{100}$

= 32 × 125 = ₹4000

55. A seller gets 22% loss on selling a set of books for ₹ 1,755. What should be the selling price of them for getting 6% profit?

(a) ₹2,375 (b) ₹2,385
(c) ₹2,355 (d) ₹2,365

RRB RPF Constable -20/01/2019 (Shift-II)

Ans. (b)

$$\text{Cost price} = \frac{\text{Selling price}}{(100 \pm \text{Loss/Profit}\%)} \times 100$$

Let Selling price = ₹x

According to the question,,

$$\frac{1755}{100-22} \times 100 = \frac{x}{100+6} \times 100$$

$$\frac{1755}{78} = \frac{x}{106}$$

$$x = \frac{1755 \times 106}{78}$$

$$x = \frac{186030}{78}$$

x = ₹ 2385

56. On selling an old phone at ₹ 6360, Ranjita got 47% less than the cost of buying it a few years ago. At what price should Ranjita sell it to get the benefit of 13%?

(a) ₹13,560 (b) ₹10,550
(c) ₹11,550 (d) ₹ 12,550

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (a) : Let the cost price of the phone is ₹ x.

$$\therefore x \times \frac{(100-47)}{100} = 6360$$

$$\Rightarrow x = \frac{6360 \times 100}{53}$$

= ₹12,000

So, the selling price at 13% profit

$$= \text{Cost price} \times \frac{100+13}{100}$$

$$= 12,000 \times \frac{113}{100} = ₹\ 13,560$$

57. A person bought an item for ₹ 96 and sold it at a profit of 25%, then what was the selling price of the item?

(a) ₹120 (b) ₹125
(c) ₹114 (d) ₹115

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (a) :

$$\text{Profit} = \frac{\text{Selling price}}{\text{Cost price}} \times 100$$

$$125 = \frac{\text{Selling price}}{96} \times 100$$

$$\text{Selling price} = \frac{125 \times 96}{100} = ₹120$$

58. Pavan sold an item at a loss of 12.5%. If he could have sold it for ₹ 56 more, he would have made a profit of 22.5%. What should be the selling price of the item to make a profit of 25%?

(a) ₹ 182 (b) ₹ 190
(c) ₹ 185 (d) ₹ 200

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : Let the cost price of the item is x and the selling price is y. then,

$$12.5 = \frac{(x-y) \times 100}{x}, \text{ and } 22.5 = \frac{(y+56-x) \times 100}{x}$$

$$\text{or, } 22.5 = \frac{(y+56-x) \times 100 \times 12.5}{(x-y) \times 100}$$

$$\Rightarrow \quad 22.5(x-y) = (y-x+56) \times 12.5,$$

$$\Rightarrow \quad 9(x-y) = (y-x+56) \times 5$$

$$\Rightarrow \quad 9x - 9y = 5y - 5x + 280$$

$$\Rightarrow \quad 14x - 14y = 280$$

$$\Rightarrow \quad x - y = 20$$

$$\text{Now, } 12.5 = \frac{20 \times 100}{x} \text{ or } x = \frac{2000}{12.5} = ₹160$$

So, the cost price of the item = ₹ 160

Then, the selling price of the item for 25% profit

$$= \frac{25 \times 160}{100} + 160 = 5 \times 8 + 160 = 40 \times 160 = ₹200$$

59. A person bought an article for ₹ 1975 and sold it at a profit of 12%. What was the selling price of the article?

(a) ₹ 2,212 (b) ₹ 2,192
(c) ₹ 2,222 (d) ₹ 2,202

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (a) The cost price of the article = ₹ 1975

Profit% = 12%

$$\left[\text{S.P.} = \text{C.P.} \times \frac{100 \pm \text{Profit/Loss}}{100}\right] \text{(S.P. = Selling price \& C.P. = Cost price)}$$

$$\text{S.P.} = \frac{1975 \times (100+12)}{100}$$

$$= \frac{1975 \times 112}{100}$$

$$= \frac{221200}{100} = 2212$$

S.P. = ₹2,212

60. On selling a jute bag for ₹48, Ashmit incurs a loss of 20%. In order to make a profit of 20% what should be the selling price of the jute bag?

(a) ₹ 72 (b) ₹ 52
(c) ₹ 56 (d) ₹ 68

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (a) : Let Cost price (C.P.) = x

Selling price (S.P.) = 48, Loss = 20%

$$\because \quad \text{C.P.} \times \frac{80}{100} = 48$$

C.P. = ₹ 60

If the profit is 20%, then

$$\text{C.P.} \times \frac{120}{100} = \text{SP}$$

$$\frac{60 \times 120}{100} = \text{SP}$$

SP = ₹ 72

61. A toy sold at a loss of 16%, was bought at ₹ 925. What was the selling price of the toy?

(a) ₹785 (b) ₹777
(c) ₹775 (d) ₹787

Ans. (b) : Cost price (CP) = 925 Loss = 16%
Selling price (SP) = ?

$$C.P. = \frac{S.P. \times 100}{(100 - Loss\%)}$$

$$925 = \frac{S.P. \times 100}{(100 - 16\%)}$$

$$925 \times 84 = S.P. \times 100$$

$$S.P. = \frac{925 \times 84}{100}$$

Selling Price = ₹ 777

62. An item sold at a profit of 8%, was bought at ₹ 2275. What was the selling price of the item?

(a) ₹2,093 (b) ₹2,443
(c) ₹2,457 (d) ₹2,453

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (c) Cost price (CP) = ₹2275
Profit% = 8%
Selling price (SP) = ?

$$C.P. = \frac{S.P. \times 100}{100 \pm Profit/Loss\%}$$

$$2275 = \frac{S.P. \times 100}{100 + 8}$$

$$S.P. = \frac{2275 \times 108}{100} = \frac{245700}{100}$$

SP = ₹2457

63. A toy was sold at a loss of 16%, and was bought for ₹ 1125. The selling price of the toy was-

(a) ₹ 960 (b) ₹ 945
(c) ₹ 955 (d) ₹ 975

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (b) : Given-
The cost price (CP) of the toy = ₹ 1125
% Loss = 16%
Selling price (SP) = ?

Formula, $C.P. = \frac{S.P.}{(100 - Loss)} \times 100$

$$\Rightarrow \quad 1125 = \frac{SP}{84} \times 100$$

$$\Rightarrow \quad SP = \frac{1125 \times 84}{100}$$

$$SP = \frac{1125 \times 84}{100} = ₹\ 945$$

64. Dev sold a bus at a loss of 15%, for ₹ 2210. to get 15% profit on the same bus, at what price will it have to sell?

(a) ₹2980 (b) ₹3000
(c) ₹ 2970 (d) ₹2990

RRB NTPC 17.01.2017 Shift-3

Ans : (d) The cost price of the bus $= 2210 \times \frac{100}{100 - 15}$

$$= 2210 \times \frac{100}{85} = ₹2600$$

The selling price at the 15% profit

$$= \text{Cost price} \times \frac{100 + 15}{100}$$

$$= 2600 \times \frac{115}{100} = ₹2990$$

65. An article was sold for ₹ 26000 at a discount of 35%. Find the selling price if the discount was 15%.

(a) ₹36,000 (b) ₹40,000
(c) ₹38,000 (d) ₹34,000

RRB NTPC 05.04.2016 Shift : 3

Ans :(d) Let the cost price of the item = ₹ x.

$$\because \text{Selling price} = \text{Cost price} \times \left[1 - \frac{Discount}{100}\right]$$

$$26000 = x \times \left[1 - \frac{35}{100}\right]$$

$$26000 = x \times \frac{65}{100}$$

$$x = \frac{26000 \times 100}{65}$$

x = ₹40000

If the discount is 15%, then selling price

$$= 40000 \times \left[1 - \frac{15}{100}\right] = 40000 \times \frac{85}{100} = ₹34000$$

66. An item is sold at a loss of 20%, for ₹ 2400. What should be the selling price of the item to sell it at a profit of 20%?

(a) ₹3,300 (b) ₹3,600
(c) ₹3,500 (d) ₹3,400

RRB NTPC 31.03.2016 Shift : 1

Ans : (b)

The cost price of the Item $= \left(\frac{100}{100 - 20}\right) \times 2400$

$$= \frac{100}{80} \times 2400 = ₹\ 3000$$

So, for getting 20% profit the selling price of the item

$$= \left(\frac{100 + 20}{100}\right) \times 3000 = 120 \times 30 = ₹3600$$

67. An article was sold at a discount of 20%, for ₹ 2,400. Find the selling price of the article if the discount is 25%.

(a) ₹2,250 (b) ₹2,000
(c) ₹1,800 (d) ₹2,150

RRB NTPC 31.03.2016 Shift : 2

Ans : (a) Let discount = D, The selling price = S.P.

$$\frac{100 - D_1\%}{100 - D_2\%} = \frac{SP_1}{SP_2}$$

$$\frac{100-20}{100-25}=\frac{2400}{SP_2}$$

$$SP_2=\frac{2400\times 75}{80}$$

$SP_2 = ₹2250$

68. A mobile whose selling price is ₹ 7500, is selling at a profit of 50%. A customer take's so me discount from salesman. But the salesman was strictly instructed not to sell the mobile below 35% profit. In this case, how much selling price will the salesman be able to give to the customer?

(a) ₹6000 (b) ₹5000
(c) ₹6750 (d) ₹5500

RRB NTPC 18.04.2016 Shift : 3

Ans : (c) Given−
Selling price = ₹7500
Profit= 50%

$\therefore$ Cost price $=\frac{7500\times 100}{150}=₹5000$

Again, new Profit = 35%

$\therefore$ Selling price $=\frac{5000\times 135}{100}=₹6750$

69. A shopkeeper buys 100 oranges for ` 60. He spends 15% on transportation. What should be the selling price of 100 oranges for getting 20% profit?

(a) ₹72 (b) ₹81.8
(c) ₹82.8 (d) ₹83.8

RRB NTPC 10.04.2016 Shift : 3

Ans : (c) The cost price of 100 oranges including the transportation expenses

$$=60\times\frac{(100+15)}{100}=60\times\frac{115}{100}=₹69$$

So, the selling price of the 100 oranges for 20% profit

$$=69\times\frac{(100+20)}{100}=69\times\frac{120}{100}=₹82.8$$

70. An article was sold at Rs. 920 at a profit of 15%. Find the selling price to get a profit of 20%.

(a) ₹1,000 (b) ₹980
(c) ₹960 (d) ₹940

RRB NTPC 06.04.2016 Shift : 2

Ans : (c) $CP = SP\times\frac{100}{100+\text{Profit\%}}$

$$CP = 920\times\frac{100}{100+15}$$

$$CP = 920\times\frac{100}{115}$$

$CP = 800$

Now the selling price on earning a profit of 20%

$$SP = CP\times\frac{100+\text{Profit\%}}{100}$$

$$=800\times\frac{100+20}{100}=800\times\frac{120}{100}=₹960$$

71. The cost price of 5kg of wheat and 10 kg of lentil were at ₹ 70 and ₹ 80 per kg respectively. On selling, he gained 10% profit on wheat and 20% profit on sugar. What was the total sale price of all items?

(a) ₹1,375 (b) ₹1,345
(c) ₹1,400 (d) ₹1,350

RRB NTPC 27.04.2016 Shift : 2

Ans : (b)
The cost price of 5 kg of wheat = 70 × 5 = 350
The cost price of 10 kg of lentil = 80 × 10 = 800
According to the question,

The selling price of all items $=\frac{350\times 110}{100}+\frac{800\times 120}{100}$

$=385+960=₹1345$

72. If a person bought an item for ₹ 96 and sold it at a profit of 12.5%, the selling price of the item was:

(a) ₹105 (b) ₹110
(c) ₹112 (d) ₹108

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) Selling price $=96\left(1+\frac{12.5}{100}\right)$

$$=96\times\frac{112.5}{100}=96\times 1.125=₹108$$

73. A defective piece of article which costs is ₹1200 is being sold at a loss at 15%. If the price is further reduced by 5%, find the SP?

(a) ₹ 1000 (b) ₹ 969
(c) ₹ 960 (d) ₹ 990

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (b) The selling price of the article at 15% loss

$$=1200\times\frac{(100-15)}{100}=1200\times\frac{85}{100}$$

$=₹1020$

Again, the selling price of the article after a loss of 5%

$$=1020\times\frac{(100-5)}{100}=1020\times\frac{95}{100}=₹969$$

74. A computer company sells computers of two brands the same day on which it gains the profit of ₹ 15,000. If the profit gained on 1st brand is 35%, then what was the selling price of the 2nd brand?

(a) ₹ 8,750 (b) ₹ 8,000
(c) ₹ 9,750 (d) ₹ 9,000

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (c) : The profit of both brand computers
= ₹ 15,000

The profit gained by 1st brand = 35% of the total profit.

$$= 15000\times\frac{35}{100}=₹\ 5250$$

So the selling price of the 2nd brand = 15000 –5250
= ₹9,750

Type - 4

75. The set of 2 pants and 4 shirts or 1 pant and 6 shirts costs ₹ 5,600. A shopkeeper decides to sell them separately. He sold 10 shirts for ₹ 6,000. Find the loss or profit on each shirt.

(a) Profit ₹1000 (b) Loss ₹1000
(c) Profit ₹100 (d) Loss ₹100

RRB RPF SI -12/01/2019 (Shift-II)

Ans : (d) 2P + 4S = 5600 ……(i) Let S = Shirt
1 P + 6S = 5600……..(ii) P = Pant
On multiplying by 2 in equation (ii)
2P + 4 S = 5600
_2P + _12S = _11200 On subtracting equation (i)
8S = 5600
1 S = 700
∴ So, the cost price of 1 shirt ₹700
And the selling price of 10 shirt = 6000
∴ So, the selling price of 1 shirt $= \frac{6000}{10} =$ ₹600
∴Loss = 700 – 600 = ₹100

76. If an article is sold for ₹ 8000 at a profit of 25%, then find the profit?

(a) ₹1200 (b) ₹1600
(c) ₹1800 (d) ₹1000

RRB JE - 30/05/2019 (Shift-II)

Ans : (b)
The cost price of the article = $8000 \times \frac{100}{125} = 6400$
Hence, Profit = Selling price − Cost price
= 8000 – 6400 = ₹ 1600

77. For selling old articles, a person sold a tea set for ₹ 3540, which was 41% less than the cost price. The seller should have sold the set for ₹ …….. much, to gain 11% profit.

(a) ₹2,460 (b) ₹1,812.60
(c) ₹3,120 (d) ₹2,664.42

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (c)
The selling price of tea set = ₹ 3540 and Loss = 41%
So, the cost price of the tea set $= \left(\frac{100}{100-41} \times 3540\right)$
= ₹6000
Required profit = 11%
So, the selling price of the tea set $= \left(\frac{100+11}{100} \times 6000\right)$
= ₹6660
So, the required amount = 6660 – 3540 = ₹ 3120

78. A low scale occupation earned a profit of ₹ 75,000 in the last year. This year the profit increased by 25%. What is the real profit earned this year?

(a) ₹ 87,750 (b) ₹ 80,750
(c) ₹ 90,750 (d) ₹ 93,750

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (d)
The earned profit on an increase of 25%
$= 75000 \times \frac{(100+25)}{100}$
$\Rightarrow 75000 \times \frac{125}{100} =$ ₹ 93750

79. A company did the sale of ₹ 5,00,000 in a year. In the 3rd year the sale increased by 35% than 1st year. What is the real profit of 3rd year?

(a) ₹ 2,50,000 (b) ₹ 6,75,000
(c) ₹ 6,00,000 (d) ₹ 1,75,000

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (d) The real profit in 3rd year,
$= 5,00,000 \times \frac{35}{100}$
= ₹ 1,75,000

80. An item was sold at a profit of 12.5% for ₹ 2250. What was the amount of profit?

(a) ₹275 (b) ₹250
(c) ₹225 (d) ₹300

RRB NTPC 05.04.2016 Shift-1

Ans : (b) Given-
Selling price = ₹2250
Profit = 12.5%
∴ Cost price $= \frac{\text{Selling Price} \times 100}{(100+12.5)}$
$= \frac{2250 \times 100}{112.5} =$ ₹2000
So, the amount of profit = Selling price – Cost price
= 2250 – 2000 = ₹250

81. If Reena sells 12 mobile phones for ₹ 1,88,160, whose cost price is ₹ 14056 per phone, then how much total profit he earned?

(a) ₹19,488 (b) ₹17,621
(c) ₹21,014 (d) ₹18, 958

RRB NTPC 29.03.2016 Shift : 1

Ans : (a) The selling price of 12 mobiles = ₹ 188160
The total cost price of 12 mobile phones
= ₹12 × 14056 = 168672
Total profit gained by Reena = 188,160 − 168,672
= ₹ 19,488

82. The MRP of a clock is ₹ 4750 and a discount of 12% is given on its sale. If the shopkeeper has bought it for ₹ 3850 then what will be its profit?

(a) ₹240 (b) ₹570
(c) ₹900 (d) ₹330

RRB NTPC 28.03.2016 Shift : 2

Ans : (d) The MRP = ₹ 4750, The cost price = ₹ 3850
The discount % = 12%

Selling price (SP) $= \frac{MP \times (100 - \text{discount}\%)}{100}$

$SP = \frac{4750 \times (100 - 12)}{100}$

$SP = \frac{4750 \times 88}{100} = 4180$

Profit = SP – CP = 4180 – 3850 = ₹330

83. Jiva bought an item for ₹ 2500 and sold it at 25% much amount and paid ₹ 125 on it. Find the profit of it in ₹?

(a) ₹500 (b) ₹550
(c) ₹475 (d) ₹625

RRB NTPC 18.01.2017 Shift : 2

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 = 500

84. A shopkeeper cheats up to 25% by using low-weight in buying and selling fruits, then his total profit percentage is:

(a) 55.25 (b) 56.25
(c) 56.75 (d) 56.5

RRB NTPC 11.04.2016 Shift : 3

Ans : (b) From formula, $x \pm y \pm \frac{xy}{100}$

$= 25 + 25 + \frac{25 \times 25}{100} = 50 + \frac{625}{100} = 50 + 6.25 = 56.25$

Type - 5

85. On selling an item at a profit of 2% and 18%, there is difference of ₹ 3 in the selling price, then the ratio of both selling prices is :

(a) 51 : 59 (b) 51 : 53
(c) 51 : 60 (d) 55 : 59

RRB RPF Constable -20/01/2019 (Shift-II)

Ans : (a) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3.
According to the question,

$x \times \frac{118}{100} - x \times \frac{102}{100} = 3$

$\frac{16x}{100} = 3$

$x = \frac{75}{4}$

The required ratio $= \frac{75}{4} \times \frac{102}{100} : \frac{75}{4} \times \frac{118}{100}$

= 51 : 59

86. The difference of selling price is ₹ 3, on selling an item at a profit of 4% and 10%, the ratio of the selling price of both is:

(a) 52:55 (b) 51:55
(c) 34:35 (d) 55:52

RRB RPF SI -11/01/2019 (Shift-II)

Ans :(a) Let the cost price of the item = ₹ x.
According to the question,

$\frac{x \times 110}{100} - \frac{x \times 104}{100} = 3$

110x − 104x = 300
6x = 300

Cost price = 50

The selling price at a profit of 4% $= \frac{50 \times 104}{100} = 52$

The selling price at a profit of 10% $= \frac{50 \times 110}{100} = 55$

The required ratio = 52 : 55

87. The difference of selling price is ₹ 3, on selling an item at a profit of 4% and 6%, the ratio of the selling price of both is:

(a) 51:52 (b) 52:53
(c) 51:53 (d) 52:55

RRB JE - 24/05/2019 (Shift-III)

Ans : (b) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,

$x \times \frac{106}{100} - x \times \frac{104}{100} = 3$

$\frac{2x}{100} = 3$

x = 150

So, the required ratio $= 150 \times \frac{104}{100} : 150 \times \frac{106}{100} = 52 : 53$

88. If the loss is 15%, then find the ratio of the cost price and the selling price.

(a) 17 : 20 (b) 15 : 17
(c) 10 : 9 (d) 20 : 17

RRB JE - 27/06/2019 (Shift-I)

Ans : (d) Let the cost price of the item = ₹ x.

Loss = 15%

Selling price = Cost price $\times \frac{(100 - \text{Loss})}{100}$

$= x \times \frac{100 - 15}{100}$

$= x \times \frac{85}{100} = \frac{17x}{20}$

Cost price : Selling price

$x : \frac{17x}{20}$

20 : 17

89. The difference of cost prices of an item is ₹ 3, at profit of 8% and 12%. The ratio of the selling prices of both is:

(a) 27 : 28 (b) 27 : 29
(c) 29 : 31 (d) 27 : 31

RRB NTPC 17.01.2017 Shift-3

Ans : (a) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,

$$x\times\frac{112}{100}-x\times\frac{108}{100}=3$$

$$\frac{4x}{100}=3,\quad x=\frac{300}{4}=75$$

So, the required ratio $=75\times\frac{108}{100}:75\times\frac{112}{100}$

= 108 : 112 = 27 : 28

90. The difference of selling price is ₹ 3, on selling an item at a profit of 8% and 18%, the ratio of the selling price of both is:

(a) 54:59 (b) 54:61
(c) 59:61 (d) 55:59

RRB NTPC 11.04.2016 Shift : 3

Ans : (a) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,

$$x\times\frac{118}{100}-x\times\frac{108}{100}=3$$

$$\frac{10x}{100}=3$$

x = 30

So, the required ratio = $30\times\frac{108}{100}:30\times\frac{118}{100}$ = 54 : 59

91. Mohan earns a profit of 20% on selling a jeans at 15% discount on printed price. The ratio of the cost price to printed price of the jeans is:

(a) 17:24 (b) 17:34
(c) 16:13 (d) 21:23

RRB NTPC 16.04.2016 Shift : 3

Ans : (a) Let the printed price of the jeans is ₹ 100.

According to the question, Cost price $=\frac{100\times85}{120}$

So, the required ratio,

$\Rightarrow \frac{100\times85}{120}:100$

$\Rightarrow 8500:12000 = 17:24$

92. The difference of selling price is ₹ 3, on selling an item at a profit of 8% and 16%, the ratio of the selling price of both is:

(a) 27 : 29 (b) 27 : 31
(c) 29 : 31 (d) 27 : 32

RRB NTPC 07.04.2016 Shift : 1

Ans : (a) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,

$$\frac{x\times116}{100}-\frac{x\times108}{100}=3$$

116x – 108x = 300

8x = 300

$$x=\frac{300}{8}$$

Ratio of Selling price

$$=\frac{300\times108}{8\times100}:\frac{300\times116}{8\times100}=108:116$$

So, the required ratio = 27 : 29

93. The difference of selling price is ₹ 3, on selling an item at a profit of 4% and 8%, the ratio of the selling price of both is:

(a) 25:27 (b) 26:27
(c) 26.:31 (d) 26:29

RRB NTPC 19.01.2017 Shift : 3

Ans : (b) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,

$$x\times\frac{108}{100}-x\times\frac{104}{100}=3$$

$$\frac{4x}{100}=3$$

x = 75

So, the required ratio = $75\times\frac{104}{100}:75\times\frac{108}{100}$ = 26 : 27

94. The difference of selling price is ₹ 3, on selling an item at a profit of 2% and 16%, the ratio of the selling price of both is:

(a) 51:58 (b) 51:53
(c) 57:58 (d) 55:58

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) Let the cost price of the item = ₹ x.
According to the question,

$$\frac{116x}{100}-\frac{102x}{100}=3,\qquad \frac{14x}{100}=3$$

$$x=\frac{150}{7}$$

Selling price $=\frac{150}{7}\times\frac{102}{100}:\frac{150}{7}\times\frac{116}{100}=\frac{51}{7}:\frac{58}{7}$

The required ratio = 51 : 58

95. The difference of selling price is ₹ 3, on selling an item at a profit of 4% and 12%, the ratio of the selling price of both is:

(a) 13:14 (b) 13:15
(c) 12:15 (d) 13:53

RRB NTPC 26.04.2016 Shift : 3

Ans : (a) Let the cost price of the item = ₹ x.
The difference of selling prices = ₹ 3
According to the question,,

$$=\frac{112x}{100}-\frac{104x}{100}=3$$

$\therefore \quad 8x = 300 \qquad x = \frac{300}{8}$

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 : 14

96. Vishnu spends ₹5000 in buying 12 tables and some chairs. The cost of one table is ₹50 and that of the one chair is ₹40. What is the ratio of the numbers of the chairs to the number of tables purchased ?

(a) 5 : 2 (b) 55 : 6
(c) 5 : 1 (d) 55 : 4

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (b) Total expenditure = ₹ 5000
A table costs = ₹ 50
The price of 12 tables = ₹ 50×12 = 600
Rest amount =5000–600= ₹ 4400
A chair costs = ₹ 40
The number of purchased chairs $= \frac{4400}{40} = 110$
The required ratio = 110 : 12
= 55 : 6

Type - 6

97. A shopkeeper cheats up to 1% by using low-weight in buying and selling fruits, then his total profit percentage is:

(a) 2.25 (b) 2.01
(c) 2.75 (d) 2.5

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

Ans : (b) The shopkeeper cheats up to 1% by using low-weight in buying and selling fruits.

$\therefore$ Total Profit $= 1 + 1 + \frac{1 \times 1}{100}$

= 2 + 0.01 = 2.01%

98. Two identical items are sold for ₹ 200 each, with 10% profit on one but 10 % loss on the other. What is the net percentage loss or profit?

(a) 2% Profit (b) 2% Loss
(c) 1% Profit (d) 1% Loss

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) If two items are sold at the same % loss and profit then,

It will be $\left(\frac{x^2}{100}\right)$.

$\left(\frac{10^2}{100}\right) = \frac{100}{100} = 1\%$ Loss

99. The printed price of an item is 20% more than the cost price and it is sold at a discount of 20%. Find the accurate magnitude of this sale.

(a) No Profit or Loss (b) 10% Profit
(c) 10% Loss (d) 4% Loss

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

Ans : (d) Profit/Loss% $= \left(\pm a \pm b \pm \frac{a.b}{100}\right)$

$= 20 - 20 - \frac{20 \times 20}{100} = -4\%$

$\therefore$ Loss % = 4%

Here – sign denote the loss.

100. Ravi sold two bicycles at the same price, but 20% gained on one and lost 20% on the other. Find his profit or loss in the transaction involved.

(a) 10% Profit (b) 20% Profit
(c) 20% Loss (d) 4% Loss

RRB JE - 01/06/2019 (Shift-III)

Ans. (d) If SP of both items are same.

Net Loss% = $\frac{x^2}{100}\% = \frac{(20)^2}{100}\% = 4\%$

101. An item with the cost price ₹ 1000, is sold at a loss of 5% and another item purchased with the earned money is again sold at a profit of 5%. Find the final loss/profit in the deal.

(a) 2.5% Profit (b) ₹ 2.5 Loss
(c) 2% Loss (d) ₹ 2 Profit

RRB JE - 26/06/2019 (Shift-III)

Ans : (b) Profit/Loss % $= a + b + \frac{ab}{100}$

$= 5 - 5 - \frac{25}{100} = 0.25\%$ Loss

So, the required Loss $= 1000 \times \frac{0.25}{100} =$ ₹ 2.5

102. A trader sells a shirt at 6% less amount than the printed price. He fixed the printed price 15% more than the cost price. What is the profit % earned by the trader?

(a) 8.1% (b) 21%
(c) 13.5% (d) 9%

Ans. (a) : According to the question,,

The profit earned by the trader $= x + y + \frac{xy}{100}$

$= -6 + 15 + \frac{-6 \times 15}{100} = 9 + \frac{-90}{100} = 9 - 0.9 = 8.1\%$

103. A horse and a cow were sold for ₹ 12000 each. The horse was sold at 20% profit and the cow at 10% loss. What is the loss/profit on both deals (up to 2 digits of decimal)?

(a) Profit of ₹1000 Profit
(b) Loss of ₹1000
(c) Profit of ₹666.67
(d) No profit and no loss

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) The cost price of the horse

$$= \text{Selling price} \times \frac{100}{100 + \text{Profit}\%}$$

$$= 12000 \times \frac{100}{(100+20)} = ₹10000$$

$$\text{The Cost price of cow} = 12000 \times \frac{100}{(100-10)}$$

$$= 12000 \times \frac{100}{90} = ₹13333.33$$

Hence, Profit = (12000+12000)–(10000+13333.33)
= 24000 – 23333.33 = ₹666.67

104. Bajaj electronics sold two microwave ovens at ₹4,800 each. On one, it gained 20%, and on the other, it lost 20%. Find the gain or loss percentage for the whole transaction?

(a) 5% Loss (b) 4% Profit
(c) 5% Profit (d) 4% Loss

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (d) $\text{Profit/Loss } \% = \left(\pm a \pm b \pm \frac{a.b}{100}\right)$

$$= \left(+20 - 20 - \frac{20 \times 20}{100}\right)\%$$

$$= (+20 - 20 - 4)\% \quad = -4 \text{ or } 4\% \text{ loss}$$

105. A shopkeeper cheats to the extent of 11% while buying and selling fruit, by using tampered weights. His total gain in percentage is:

(a) 23.25 (b) 23.21
(c) 23.75 (d) 23.5

RRB NTPC 11.04.2016 Shift : 1

Ans : (b) The profit % gained by the shopkeeper

$$= 11 + 11 + \frac{11 \times 11}{100} \quad = 22 + \frac{121}{100}$$

= 22 + 1.21 = 23.21%

106. A shopkeeper cheats up to 7% by using under-weight in buying and selling fruits, then his total profit percentage is:

(a) 14.25 (b) 14.49
(c) 14.75 (d) 14.55

RRB NTPC 07.04.2016 Shift : 2

Ans : (b) $\text{Profit } \% = \left(2x + \frac{x^2}{100}\right)\%$

$$= 2 \times 7 + \frac{(7)^2}{100}$$

$$= 14 + \frac{49}{100} = 14 + 0.49 = 14.49\%$$

Type - 7

107. A shopkeeper sold 6 radios at a loss of 20%. Find the profit on which he should sell the television, so that his loss is zero. The cost price of the television is thrice to the each radio.

(a) 40% (b) 50%
(c) 30% (d) 60%

RRB RPF Constable -19/01/2019 (Shift-II)

Ans : (a) Let the cost price of a radio = ₹ 100
So, the cost price of the 6 radios = ₹ 600
According to the question,,

$$\text{Selling price} = 600 \times \frac{80}{100} = \boxed{₹\ 480}$$

$$\therefore \text{ Loss } = 600 - 480$$

= ₹ 120

The cost price of a television = 3 × (The cost of a radio)
= 3 × 100
= ₹ 300

Let the required profit % = x %, then

$$300 \times \frac{x}{100} = 120$$

$3x = 120$

$x = 40\%$

108. Pens are bought at the rate ₹ 40 for 8 and sold at ₹ 40 for 6. Find the loss or profit %.

(a) Profit of 40% (b) Profit of 33.33%
(c) Loss of 30% (d) Profit of 20%

RRB JE - 24/05/2019 (Shift-I)

Ans : (b) The cost price of a pen $= \frac{40}{8} = 5$

The selling price of a pen $= \frac{40}{6} = \frac{20}{3}$

$$\therefore \text{ Profit } \% = \frac{\left(\frac{20}{3} - 5\right)}{5} \times 100 = \frac{5}{3 \times 5} \times 100 = 33.33\%$$

109. Find the profit % on the sale of 33 meter of cloth, if the profit in the sale is equal to the selling price of 11 meter of cloth.

(a) 25% (b) 45%
(c) 60% (d) 50%

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

Ans : (d) Let the price of 1 meter cloth is ₹ 1,
So, the selling price = ₹ 33
Profit = ₹ 11
So, the cost price = 33 – 11 = ₹ 22

$$\therefore \text{ Profit } \% = \frac{11}{22} \times 100 = 50\%$$

110. A fruit seller bought 100 oranges for ₹ 80. If 20 oranges from them are rotten then, what should be the selling price for each of the remain oranges to gain 25%?

(a) ₹ 1.20 (b) ₹ 1.25
(c) ₹ 1.50 (d) ₹ 1

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

Ans : (b) Cost price = 80
The number of rest oranges = 100 – 20 = 80
The required selling price $= \frac{80 \times 125}{100} = 100$
The selling price of one orange $= \frac{100}{80} =$ ₹ 1.25

111. 10 dozen of chocolates are purchased at the rate of ₹ 10 per dozen and sold at the rate of ₹ 2 per piece. If the merchant spends ₹ 50 on fare, find the percentage profit.

(a) 60% (b) 18%
(c) 50% (d) 40%

RRB JE - 26/06/2019 (Shift-I)

Ans : (a) Let the cost price of 1 dozen chocolates = ₹ 10
So, the cost price of 10 dozen of chocolates = 10 × 10 = ₹ 100
And including the rent = 100 + 50 = ₹ 150
The number of chocolates in a dozen = 12
So, the number of chocolates in 10 dozen = 12 × 10 = 120
The selling price of 1 chocolate = ₹ 2
So, the selling price of 120 chocolates = 120 × 2 = ₹ 240
Profit = Selling price − Cost price
= 240 – 150 = 90
Profit % $= \frac{\text{Profit}}{\text{Cost Price}} \times 100 = \frac{90}{150} \times 100 = 6 \times 10 = 60\%$

112. A person buys apples at the rate of ₹ 34 for 8 and sells them at the rate of ₹ 57 for 12. How much apples will he have to be sold to earn a net profit of ₹45?

(a) 90 (b) 150
(c) 100 (d) 135

RRB JE - 02/06/2019 (Shift-III)

Ans : (a) The cost price of 1 apple = 34/8 = ₹ 4.25
The selling price of 1 apple = 57/12 = ₹ 4.75
Profit = Selling price – Cost price
= 4.75 – 4.25 = ₹0.50 or ₹1/2
So, the profit on 1 apple is ₹ 1/2
₹ 1/2 = 1 apple
₹1 = 2 apple
₹45 = 45 × 2 = 90 Apples
Hence, for ₹45 profit to must be sold 90 apple.

113. The cost price of 20 tables is equal to the selling price of 'x' tables. If there is profit of 25% in this deal then, find the value of 'x'.

(a) 18 (b) 16
(c) 25 (d) 15

RRB RPF SI -12/01/2019 (Shift-II)

Ans : (b) 20CP = x SP
$\frac{CP}{SP} = \frac{x}{20}$
SP = CP× $\frac{125}{100}$
$\frac{CP}{SP} = \frac{4}{5}$
$\frac{x}{20} = \frac{4}{5}$
x = ₹16

114. A seller buys a dozen of pencils for ₹ 25 and sells at the rate of ₹ 12 for 5 pencils. Find the percentage of Profit or loss?

(a) 15% Loss (b) 15.2% Loss
(c) 15.2% Profit (d) 15% Profit

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) ∵ The cost price of 12 pencils = ₹ 25
So, the cost price of 1 pencil = ₹ 25/12
∵ The selling price of 5 pencils = ₹ 12
So, the selling price of 1 pencil = ₹ 12/5
So, the required profit % $= \frac{\frac{12}{5} - \frac{25}{12}}{\frac{25}{12}} \times 100$
$= \frac{\frac{144-125}{60}}{\frac{25}{12}} \times 100 = \frac{19}{60} \times \frac{12}{25} \times 100 = 15.2\%$

115. A person bought 3 oranges for ₹ 1 and two oranges for ₹ 1. On which amount will he have sold each dozen to earn a profit of 20%?

(a) ₹ 8 (b) ₹ 18
(c) ₹ 10 (d) ₹ 6

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (d) ∵ the rate of 3 oranges = ₹ 1
The rate of 1 orange = ₹ 1/3
∵ the rate of 2 oranges = ₹ 1
The rate of 1 orange = ₹ 1/2
So, the rate of the mixture of 2 oranges $= \frac{1}{3} + \frac{1}{2} = \frac{5}{6}$
The rate of the mixture of 1 orange $= \frac{5}{12}$
The rate of 1 orange at the profit of 20% $= \frac{5}{12} \times \frac{120}{100}$
The rate of 1 orange $= \frac{1}{2}$₹
So, the rate of 12 oranges at the profit of 20% = ₹ 6

116. A shopkeeper earns the profit equal to the selling price of 2 clocks by selling 12 clocks. Find his profit in percentage.

(a) 16.67% (b) 22%
(c) 20% (d) 25%

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (c) The selling price of 12 clocks
= the cost price of 12 clocks + the selling price of 2 clocks
The selling price of 10 clocks = the cost price of 12 clocks

$= \frac{SP}{CP} = \frac{12}{10}$

Profit $\% = \frac{2}{10} \times 100 = 20\%$

117. A boy buy eggs at the rate of ₹ 16 for per 18 eggs and sells them at the rate of ₹ 20 for per 22 eggs. What is his profit/loss percentage?

(a) $\frac{23}{11}$% Profit (b) $\frac{23}{11}$% Loss
(c) $\frac{25}{11}$% Profit (d) $\frac{78}{11}$% Loss

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (c) The cost price of an egg = $\frac{16}{18}$

The selling price of an egg $= \frac{20}{22}$

Profit $= \frac{20}{22} - \frac{16}{18}$

$= \frac{360-352}{18 \times 22} = \frac{8}{18 \times 22}$

Profit % $= \frac{\frac{8}{18 \times 22}}{\frac{16}{18}} \times 100 = \frac{8 \times 18}{18 \times 22 \times 16} \times 100$

Profit % $= \frac{25}{11}$%

118. A man bought some oranges at a rate of 3 fruits of 1 rupee and some more oranges at the rate of 2 fruits of 1 rupee. At what price will he has to sell the oranges per dozen to get 20% profit?

(a) ₹ 5 (b) ₹ 4
(c) ₹ 10 (d) ₹ 6

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) : by first order,
Cost price of 3 orange = ₹1

$\therefore$ Cost price of 6 orange $= \frac{1}{3} \times 6 =$ ₹ 2

by Second order,
Cost price of 2 oranges = ₹1

$\therefore$ Cost price of 6 oranges $= \frac{1}{2} \times 6 =$ ₹3

Total cost price of 12 oranges = 2 + 3 = ₹ 5
Cost price of 12 oranges to earn a profit fo 20%

$= 5 \times \frac{120}{100} =$ ₹ 6

119. The cost of 2 pencil, 4 pens and & 8 erasers is Rs. 12 and the cost of 8 pens, 10 pencils and 4 erasers is Rs. 36. How much will be the cost of 3 pencils. 3 pens and 3 erasers?

(a) ₹10 (b) ₹15
(c) ₹12 (d) ₹18

RRB NTPC 02.04.2016 Shift : 3

Ans : (c) If the cost of Pensil, Pen and Erasers are x, y and z
According to question

$2x + 4y + 8z = 12$
$10x + 8y + 4z = 36$
$12x + 12y + 12z = 48$
$x + y + z = 4$
$\therefore 3x + 3y + 3z = 4 \times 3 = 12$

120. When 90 chocolates are sold at ₹160 then a chocolate merchant suffers a loss of 20%. In order to earn a profit of 20% how many chocolate should be sale at ₹96?

(a) 45 (b) 36
(c) 54 (d) 28

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) $\because$ Selling price of 90 chocolates = ₹ 160

$\therefore$ Selling price of 1 chocolate $=$ ₹ $\frac{160}{90} =$ ₹ $\frac{16}{9}$

Cost price of 1 chocolate $= \frac{16}{9} \times \frac{100}{(100-20)}$

$= \frac{16}{9} \times \frac{100}{80} =$ ₹ $\frac{20}{9}$

Selling price of 1 chocolate in order to earn 20% profit.

$= \frac{20}{9} \times \frac{100+20}{100} = \frac{20}{9} \times \frac{120}{100}$

Selling price of 1 chocolate = $\frac{8}{3}$

No. of chocolates in ₹1 = $\frac{3}{8}$

$\therefore$ No. of chocolate ₹96 $= 96 \times \frac{3}{8} = 36$

121. Vikas buy 5 bananas in ₹4 and sells 4 bananas in ₹5. Find his profit%.

(a) 55.56% (b) 53.25%
(c) 45.50% (d) 56.25%

RRB NTPC 16.04.2016 Shift : 3

Ans : (d) $\because$ Cost price of 5 banana = ₹4

$\therefore$ Cost price of 1 banana = $\frac{4}{5}$

Selling price of 4 bananas = 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%

122. A man buy 10 oranges for ₹ 3 and sells 8 for ₹ 3. Calculate his profit.

(a) 20% (b) 25%
(c) 27% (d) 30%

RRB NTPC 27.04.2016 Shift : 3

Ans : (b) Cost price of 1 orange = ₹ $\frac{3}{10}$

selling price of 1 orange = ₹ $\frac{3}{8}$

$$\text{Profit \%} = \left(\frac{\frac{3}{8} - \frac{3}{10}}{\frac{3}{10}} \times 100 \right)\%$$

$$= \left(\frac{\frac{30-24}{80}}{\frac{3}{10}} \times 100 \right)\%$$

$$= \left(\frac{6}{80} \times \frac{10}{3} \times 100 \right)\% = 25\%$$

123. A fruit seller sells mangoes at the rate of ₹ 9 per kg and he gets loses 10%. At what price per kg should he sell in order to earn a profit of 5%.

(a) ₹10 (b) ₹10.5
(c) ₹9.5 (d) ₹11.11

RRB NTPC 28.04.2016 Shift : 2

Ans : (b) Cost price of 1 kg of fruit $= \left(\frac{100}{100-10} \right) \times 9$

= 10

$\therefore$ selling price of fruit to earn 5 % profit

$$= \left(\frac{100 + \text{profit\%}}{100} \right) \times \text{Cost price}$$

$$= \left(\frac{100+5}{100} \right) \times 10 = ₹\ 10.5$$

Type - 8

124. A sells goods to B on 25% profit at ₹300. B sells it at 10% loss to C. In this deal C cost price is equal to what percent of cost price of A?

(a) 97.5% (b) 112.5%
(c) 87.5% (d) 110%

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

Ans : (b) Cost price of A $= \frac{300 \times 100}{125} = 240$

Selling price of B $= \frac{300 \times 90}{100} =$ ₹ 270

According to the question, –

$240 \times \frac{x}{100} = 270$

$x = \frac{225}{2} = 112.5\%$

125. Bela is a farmer. She has some acres of land. Last month there was a very good crop, which gave 90% profit on her initial investment (Which was approx 90000). How much approx money is needed by him to invest in each weather?

(a) ₹ 1,00,000 (b) ₹ 3,00,000
(c) ₹ 6,00,000 (d) ₹ 1,50,000

RRB RPF Constable -24/01/2019 (Shift-I)

Ans. (a) : Let the initial investment = ₹ x

$\therefore$ x × 90% = 90000

$x \times \frac{90}{100} = 90000$

x = ₹ 10000

126. In an unstable market an item was bought on different dates at (i) ₹11, (ii) ₹9 (iii) ₹8 and at ₹10 per unit. It was sold at ₹2 more than its cost price on which item there was highest profit gain in percentage.

(a) (i) (b) (ii)
(c) (iii) (d) (iv)

RRB NTPC 19.01.2017 Shift : 2

Ans : (c) On increasing ₹2 in the cost price then selling 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 $= \frac{2}{10} \times 100 = 20\%$

(iv) % Profit $= \frac{2}{12} \times 100 = 16.66\%$

The highest profit was on item (iii)

127. A weaver sells a saree at ₹150 to a shopkeeper and earns profit of 25%. The shopkeepers sells the same saree to a customer and earns a profit of 30%. If the weaver could sell the saree directly to the customer at ₹180 then what would be his profit % and what would be the customer's profit in ₹?

(a) 50%, ₹ 25 (b) 60%, ₹ 20
(c) 50%, ₹ 15 (d) 40%, ₹ 20

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (c) Cost price of the saree by the weaver (CP)

$$= 150 \times \frac{100}{125} = ₹120$$

Cost price of shopkeeper (CP) = ₹150

Selling price of shopkeeper (SP) and cost price of the customer $= 150 \times \frac{130}{100} = ₹195$

Therefore when the weaver sells directly to the customer

$$\text{Profit of weaver } \% = \frac{180-120}{120} \times 100 = 50\%$$

Profit of customer = 195 - 180 = ₹15

128. John buy four old tractors for ₹2 lacs. He spent total of ₹2 lacs in maintenance and repairing. If among the four tractors, he had sold one tractor at ₹1 lacs at first, then in order to learn total 40% profit, what will be the average selling price of the Rest 3 tractors?

(a) ₹ 1.5 lacs (b) ₹ 1.2 lacs
(c) ₹ 2 lacs (d) ₹ 2.3 lacs

RRB NTPC 19.04.2016 Shift : 3

Ans : (c) Total cost price on 4 tractors = 2 + 3 ₹5 lacs

To earn 40% profit, the selling price of the tractor

$$= \frac{5 \times 140}{100} = 7 \text{ lacs}$$

∵ One tractor is sold for ₹1 lacs

∴ Rest 3 tractors, average selling price

$$= \frac{7-1}{3} = ₹\ 2 \text{ lacs}$$

129. A shopkeeper sold two items, one at 25% profit and second at 15% loss and earned profit of 35%. If the price of the item sold at 25% profit is twice the price of item sold at 15% loss, then find the sum of the cost price of both the items.

(a) 100 (b) 400
(c) 300 (d) 200

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (c)

Let the cost price of the item sold at 25% profit be = 2x

Cost of item sold on 15% loss = x

According to the question,

$$\frac{2x \times 125}{100} + \frac{x \times 85}{100} = 3x + 35$$

$$\frac{250x + 85x}{100} = 3x + 35$$

335 x–300x = 3500

35x = 3500

x = 100

Hence, Cost of second item = 2x = 200

Total sum = 100 + 200 = ₹ 300

130. Reema buy a car at ₹75000. She spends ₹10000 on its repairing. Later she sold this car to cheeru at 15% profit. Cheeru sold it to Ritu at 10% profit. What sum of money was spend by Ritu to purchase the car?

(a) ₹1,02,575 (b) ₹1,05,752
(c) ₹1,02,252 (d) ₹1,07,525

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (d) Price of the car bought by Reema = ₹75000

Repairing expense = ₹10000

Total cost = ₹85000

Selling price of car (to cheeru) $= 85000 \times \frac{115}{100} = ₹97750$

Cost price of cheeru = ₹97750

Selling price of cheeru (to Ritu) $= 97750 \times \frac{110}{100}$

= ₹107525

Hence, the sum of money spent by Ritu to buy the car = ₹107525

131. A man buys a land of ₹3 lacs. He sells its 25% part at 25% loss and 40% part at 25% profit. In order to earn a total of 15% profit for how much money should be sell the remaining part of the land.

(a) ₹1,37,500 (b) ₹1,38,750
(c) ₹1,34,500 (d) ₹1,45,000

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b) Total cost price = ₹3 lacs

To earn total 15% profit, the selling price

$$= 300000 \times \frac{115}{100} = 345000$$

Cost price –I $= 300000 \times \frac{25}{100} = 75000$

Selling price–I $= 75000 \times \frac{75}{100} = 56250$

Cost price–II $= 300000 \times \frac{40}{100} = 120000$

Selling price–II $= 120000 \times \frac{125}{100} = 150000$

Total Selling price = selling price–I + selling price–II

= 56250 + 150000 = 206250

Remainder = 345000 – 206250 = ₹138750

Hence, in order to earn total 15% profit the rest part of the land has to be sold in ₹138750

08.

Discount

1. Even after giving a 22% discount, how much should the marked price of an article face value of an item be greater than the original purchase price to get 17% profit.

(a) 50% (b) 35%
(c) 28% (d) 45%

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

Ans : (a) Let the cost price = 100
Given- Discount = 22%
profit = 17%

$$\frac{\text{Marked price}}{\text{Cost price}} = \frac{100 + \text{Profit \%}}{100 - \text{Discount\%}}$$

$$\frac{\text{Marked price}}{100} = \frac{117}{78}$$

$$\Rightarrow \text{Marked price} = \frac{100 \times 117}{78}$$

Marked price = 150
Profit = Marked price – Cost price
= 150 – 100 = 50

$$\text{Profit \%} = \frac{50 \times 100}{100} = 50\%$$

2. If the selling price is ₹1680, there is a loss of 16%. If there is a profit of 15% even after giving 8% discount then what should be the marked price of the product.

(a) ₹ 2200 (b) ₹ 2000
(c) ₹ 2500 (d) ₹ 2600

RRB JE - 28/06/2019 (Shift-III)

Ans. (c) SP = ₹ 1680

$$\because \quad CP = \frac{SP \times 100}{(100 - \text{loss\%})}$$

$$\therefore \quad CP = 1680 \times \frac{100}{84} = ₹\ 2000$$

{where MP = Marked Price, SP = Selling Price, CP = Cost Price, D = Discount}

$$\frac{CP \times (100 + P)}{100} = \frac{MP(100 - D)}{100}$$

2000 × 115 = MP × 92

$$MP = \frac{2000 \times 115}{92} = ₹\ 2500$$

3. A shopkeeper offers a discount of 10% every 4 months. If a person buys an item under this scheme in December for ₹25515, then what was the initial price of that item in January?

(a) ₹ 45000 (b) ₹ 35000
(c) ₹ 36000 (d) ₹ 40000

RRB JE - 22/05/2019 (Shift-III)

Ans : (b) Let the initial price of object = ₹x
According to question,

$$x \times \frac{90}{100} \times \frac{90}{100} \times \frac{90}{100} = 25515$$

$$\Rightarrow \quad \frac{x \times 729}{1000} = 25515$$

$$\Rightarrow \quad x = \frac{25515 \times 1000}{729}$$

$$\Rightarrow \quad x = 35 \times 1000$$

x = ₹ 35000

4. Which one is better?
(1) A gradual discount of 10% and 20%
(2) A gradual discount of 20% and 10%.

(a) Both are similar
(b) Cannot be determined
(c) A gradual discount of 20% and 10%.
(d) A gradual discount of 10% and 20%

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

Ans : (a)
(1) A gradual total discount of 10% and 20%

$$= 10 + 20 - \frac{20 \times 10}{100} = 30 - 2 = 28\%$$

(2) Gradual total discount of 20% and 10%

$$= 20 + 10 - \frac{20 \times 10}{100} = 30 - 2 = 28\%$$

Hence it is clear that both are equal

5. Find the selling price of an item if the shopkeeper gives two successive discounts of 5% on the marked price ₹80.

(a) ₹ 72 (b) ₹ 70.10
(c) ₹ 72.20 (d) ₹ 73

RRB JE - 25/05/2019 (Shift-I)

Ans : (c) Marked Price = ₹ 80
On giving two successive discount of 5%.

$$\text{selling price} = 80 \times \left(\frac{100-5}{100}\right) \times \left(\frac{100-5}{100}\right)$$

$$= 80 \times \frac{95}{100} \times \frac{95}{100}$$

$$= \frac{722000}{10000} = ₹\ 72.20$$

6. An item listed at ₹65 was purchased at ₹56.16 after two successive discounts, which the first discount is 10%. Find the second discount.

(a) 9% (b) 6%
(c) 2% (d) 4%

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

Ans : (d) Marked Price = 65, Selling Price = 56.16
First Discount $(D_1) = 10\%$, Second Discount $(D_2) = ?$
Formula-

$$\text{Marked Price} \times \frac{(100-D_1)}{100} \times \frac{(100-D_2)}{100} = \text{Selling price}$$

$$65 \times \frac{(100-10)}{100} \times \frac{(100-D_2)}{100} = 56.16$$

$$\frac{65 \times 90}{100} \times \frac{(100-D_2)}{100} = 56.16$$

$$(100-D_2) = \frac{56.16 \times 1000}{65 \times 9}$$

$$(100-D_2) = \frac{56160}{585}$$

$100 - D_2 = 96$
$100 - 96 = D_2$
$4 = D_2$
Hence, Second Discount $(D_2) = 4\%$

7. The listed price of an item in a showroom is ₹2000 and it is being sold at successive discount of 20% and 10%. Find its net selling price.
(a) ₹ 1520 (b) ₹ 1400
(c) ₹ 1440 (d) ₹ 1700

RRB JE - 30/05/2019 (Shift-I)

Ans. (c)
Selling Price = Marked Price ×(100–Discount)/100

$$\text{Selling Price} = 2000 \times \frac{80}{100} \times \frac{90}{100}$$

$$= 2000 \times \frac{4}{5} \times \frac{9}{10}$$

$$= 36 \times 40 = ₹\ 1440$$

8. 25% reduction in market value, Sita can buy 1 kg more sugar for ₹30. Find the actual price of sugar.
(a) ₹7.50 (b) ₹10
(c) ₹16.50 (d) ₹7.30

RRB JE - 30/05/2019 (Shift-II)

Ans : (b) Let the actual price of Sugar = x

$$\text{Price after 25\% reduction} = x \times \frac{75}{100} = \frac{3x}{4}$$

According to question,

$$\frac{30}{\frac{3x}{4}} - \frac{30}{x} = 1$$

$$\frac{120}{3x} - \frac{30}{x} = 1$$

$$\frac{120-90}{3} = x$$

$$\frac{30}{3} = x$$

$x = ₹\ 10$

9. A gradual discount of 10% and 20% is displayed in a sales advertisement. If an additional discount of 5% is given on cash payment, find the total discount available for making purchases by paying cash.
(a) 40% (b) 35%
(c) 31.6% (d) 32%

RRB JE - 26/06/2019 (Shift-I)

Ans : (c) Equivalent discount in lieu of two successive discount of 10%, 20%

$$= -10 - 20 + \frac{-10 \times -20}{100}$$

$-30 + 2 = -28\%$

Again total discount after 5% discount

$$= -28 - 5 + \frac{-28 \times -5}{100}$$

$= -33 + 1.4 = -31.6\%$

Hence there will be a discount of 31.6%.

10. Find the actual profit percentage using the given statements.
1. There would be 20% profit, without any discount.
2. Although 5% discount is offered.
(a) 15% (b) 12%
(c) 14% (d) 20%

RRB JE - 26/06/2019 (Shift-I)

Ans. (c) x = +20%, y = –5%

$$\text{Actual profit \%} = x + y + \frac{xy}{100}$$

$$= 20 - 5 + \frac{20 \times -5}{100}$$

$= 20 - 5 - 1 = 14\%$

11. An item whose marked price is ₹80 is sold for ₹68. Find the rate of discount.
(a) 12% (b) 15%
(c) 16% (d) 18%

RRB JE - 31/05/2019 (Shift-I)

Ans : (b) Marked price = ₹80
Selling Price = ₹68

$$\text{Rate \& discount} = \frac{\text{Marked Price - Selling Price}}{\text{Marked Price}} \times 100$$

$$= \frac{80-68}{80} \times 100$$

$$= \frac{12}{80} \times 100 = 15\%$$

12. Goods worth ₹6500 was purchased with a discount of 5%. The bill then included a sales tax of 4%. Find the bill amount.
(a) ₹6500 (b) ₹6576
(c) ₹6422 (d) ₹6600

RRB JE - 31/05/2019 (Shift-III)

Ans. (c) Amount paid for goods after 5% Discount

$$= 6500 \times \frac{95}{100} = ₹6175$$

Amount of bill for including sales tax of 4%

$$= 6175 \times \frac{104}{100} = ₹6422$$

13. Due to two consecutive discounts at the labeled price of ₹6000, the selling price decrease to ____ if a gradual discount of 10% and 20% is given.

(a) ₹ 4230 (b) ₹ 4000
(c) ₹ 4200 (d) ₹ 4320

RRB JE - 02/06/2019 (Shift-II)

Ans. (d) Selling price

$$= 6000 \times \left(\frac{100 - D_1}{100}\right)\left(\frac{100 - D_2}{100}\right) \{D\text{–Discount}\}$$

$$= 6000 \times \frac{90}{100} \times \frac{80}{100}$$

$$= 6 \times 9 \times 80 = ₹4320$$

14. After deducting 5% commission, a television set is valued at ₹9595. Find its marked price.

(a) ₹10000 (b) ₹10100
(c) ₹10075 (d) ₹10500

RRB JE - 28/06/2019 (Shift-III)

Ans. (b) SP = MP $\frac{(100-5)}{100}$ {where SP-selling price, MP - Marked price}

$$9595 = MP \times \frac{95}{100}$$

$$MP = \frac{9595 \times 20}{19} = ₹\ 10100$$

15. A shop offers 30% discount on MRP of a product. If the MRP of the product is ₹500, what is the selling price?

(a) ₹500 (b) ₹250
(c) ₹300 (d) ₹350

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (d) On giving 30% Discount

$$\text{Selling Price} = 500 \times \frac{100-30}{100}$$

$$= 500 \times \frac{70}{100} = ₹\ 350$$

16. ₹1,600 was written on a shirt. During the Diwali festival offer, 10% discount is given on it. What will be the selling price of the shirt?

(a) ₹1,400 (b) ₹1,540
(c) ₹1,440 (d) ₹1,240

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (c)

The price written on the shirt i.e. marked price = ₹ 1600

Discount = 10%

Selling Price of the shirt

$$= \frac{\text{Marked Priced} \times (100 - \text{discount\%})}{100}$$

$$= \frac{1600 \times (100-10)}{100}$$

$$= \frac{1600 \times 90}{100}$$

$$= ₹\ 1440$$

17. Neha bought a book for ₹1300 at a 30% discount and sold it at a 30% profit. How much did he earn?

(a) ₹ 273 (b) ₹ 390
(c) ₹ 780 (d) ₹ 0

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) According to question-

Cost price = ₹1300

$$\text{Selling price} = \frac{1300 \times 130}{100} = 1690$$

Profit = Selling price − Cost price

Profit = 1690 – 1300 = ₹390

18. Find the discount rate when the marked price is ₹1,880 and the selling price is ₹1,598.

(a) 12% (b) 20%
(c) 15% (d) 13%

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) MP = 1880, SP = 1598

$$\text{Discount rate} = \frac{1880-1598}{1880} \times 100 = 15\%$$

19. The marked price of an article is ₹352 and its selling price is ₹326. What is the discount rate (up to one digit of decimal) given on the item?

(a) 8% (b) 7.8%
(c) 7.4% (d) 8.3%

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (c) Given, MP = 352 and SP = 326

$$\text{Rate of Discount} = \frac{352-326}{352} \times 100$$

$$= \frac{26}{352} \times 100 = 7.4\%$$

20. The current price of a computer is ₹32450, which is 12% less than its previous years price. What was the price of computer last year?

(a) ₹37,424 (b) ₹36,344
(c) ₹28,556 (d) ₹36,875

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (d) Reduction in price of previous year = 12%

$$\text{Price of computer in previous year} = 32450 \times \frac{100}{88}$$

$$= \frac{3245000}{88} = ₹\ 36875$$

Hence Price of computer last year was = ₹36,875

21. If the market price is 30% higher than the cost price and a 10% discount is offered on the market price, indicate the profit in percentage.

(a) 17% (b) 15%
(c) 31/2% (d) 12%

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) mark up % = 30% , Discount = 10%

$$\text{Profit \%} = x - y - \frac{xy}{100}$$

$$= 30 - 10 - \frac{30 \times 10}{100}$$

= 30 – 13 = 17 % Profit

22. In a factory, the sales center decided not only to get rid of old stock but to get variable costs in the process. In this case, he sold each set at a low price of ₹399. If the fixed cost is 24% of the total cost, then what was the low cost price of each set.

(a) ₹ 520 (b) ₹ 540
(c) ₹ 525 (d) ₹ 550

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (c)

$$\text{Selling Price} = \text{Marked Price} \times \frac{(100 - \text{Discount\%})}{100}$$

According to question,

Selling Price = ₹ 399

Discount % = 24%

$$399 = \text{Marked Price} \times \frac{(100-24)}{100}$$

$$\text{Marked Price} = \frac{399 \times 100}{76}$$

$$= 21 \times 25 = ₹\ 525$$

23. A person saved ₹5 by buying a dress in a sale. If he spends ₹45, how much percent will he save?

(a) 15% (b) 30%
(c) 10% (d) 18%

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (c) Person has total money = 5+45 = 50

$$\text{Profit \% or saving \%} = \frac{50-45}{50} \times 100$$

$$= \frac{5}{50} \times 100 = 10\%$$

24. A shop sells clothes at a 60% discount on weekends. On Sunday, an additional discount of 10% is available on the discounted price. If you buy a shirt on Sunday for ₹36, how much more money you have to pay to buy the same shirt on Tuesday of the same month.

(a) ₹ 57 (b) ₹ 50
(c) ₹ 68 (d) ₹ 64

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (d) Let the price of shirt = ₹ x

Selling price of shirt on Sunday,

$$= x \times \left(1 - \frac{D_1}{100}\right)\left(1 - \frac{D_2}{100}\right) = 36$$

$$\Rightarrow \quad x \times \frac{40}{100} \times \frac{90}{100} = 36 \qquad \{D_1 = 60\%,\ D_2 = 10\%\}$$

x = ₹ 100

Hence additional money is giving on Tuesday

=100–36 = ₹64

25. Find the selling price when the marked price is 160 and the discount is 12%?

(a) 140.80 (b) 132.80
(c) 160.80 (d) 100

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (a) Selling price (SP) = ?

Marked Price = ₹ 160

Discount (D) = 12%

$$\because \text{Selling price} = \text{Marked Price} \times \frac{(100 - \text{discount})}{100}$$

$$\therefore \text{SP} = 160 \times \frac{88}{100} = 8 \times \frac{88}{5}$$

SP = ₹ 140.8

26. The price of a Television is ₹14000 inclusive of VAT. If the rate of VAT is 12%, find the basic price of the Television.

(a) ₹ 12,000 (b) ₹ 13,000
(c) ₹ 12,500 (d) ₹ 13,500

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (c) Let The original price of television is ₹x

According to question, $x \times \frac{112}{100} = 14000$

x = ₹12, 500

27. A shopkeeper allows a discount of 20% to his customers and still gains 25%. Find the marked price of an article which costs Rs. 600 to the shopkeeper.

(a) ₹937.50 (b) ₹937
(c) ₹930 (d) ₹1,000

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (a) Let the Marked Price of object = ₹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) = ₹937.50

28. Find the rate of discount on an article whose marked price is ₹ 170 and selling price is ₹ 130 is :

(a) 22.45% (b) 24.26%
(c) 23.53% (d) 23.60%

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (c)

$$\text{Discount\%} = \frac{\text{Marked price} - \text{Selling price}}{\text{Marked price}} \times 100$$

$$= \frac{170-130}{170} \times 100 = \frac{40}{170} \times 100$$

= 23.53% (Approx)

29. Two devices whose cost price is ₹15000 and ₹20000 they are exempted by 8% and 12% respectively. Find the total selling price.

(a) ₹ 30,200 (b) ₹ 28,600
(c) ₹ 31,400 (d) ₹ 31,800

RRB NTPC 26.04.2016 Shift : 1

Ans : (c) Cost price of first device = ₹15, 000

Discount = 8%

$$\left[\text{Selling price} = \frac{\text{Cost price} \times (100 - \text{Distount})}{100}\right]$$

Selling price $= \frac{15000\times(100-8)}{100}$

$= \frac{15000\times 92}{100} = 150\times 92$

Selling price of first device = ₹13, 800

Cost price of second device = ₹20, 000

Discount = 12%

Selling price $= \frac{20000\times(100-12)}{100} = 200\times 88$

Selling price of second device = ₹17600

Total selling price = 13,800+17,600 = ₹31400

30. ___ is a single discount equivalent to 25%, 20% and 10% successive discounts.

(a) 40% (b) 46%

(c) 50% (d) 54%

RRB NTPC 03.04.2016 Shift : 3

Ans : (b)

Discount $= 100\times\frac{75}{100}\times\frac{80}{100}\times\frac{90}{100} = 54\%$

Equivalent discount = 100–54 = 46%

31. A publisher, adding 30% of the production cost of the book, fixed the book's selling price at ₹260. Although, he gives a discount of 12% on the selling price for selling the book. What will be the profit percentage?

(a) 13.7 (b) 12.87

(c) 13.4 (d) 14.4

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (d) According to question,

Cost price × 130% = 260

Cost price × $\frac{130}{100}$ = 260

Cost price = ₹200

On 12% Discount,

Selling Price $= 260\times\frac{88}{100} = \frac{13\times 88}{5} = \frac{1144}{5}$

Profit % $= \frac{\text{Selling Price - Cost Price}}{\text{Cost Price}}$

$= \frac{\left(\frac{1144}{5}-200\right)100}{200}$

$= \frac{(1144-1000)\times 100}{1000} = 14.4$

32. Himanshi bought a T-shirt at a discount of 20% of its marked price. But sold it at marked price. What is the profit or loss percentage in the entire transaction?

(a) 25% profit (b) 15% loss

(c) 15% profit (d) 25% loss

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (a) Let MP = 100, CP = 80, SP = 100

Profit $= \frac{20}{80}\times 100$

= 25% profit

33. After giving 20% discount on marked price, Kishore earns a profit of 12%. How much is the marked price more than the cost price?

(a) 40% (b) 32%

(c) 25% (d) 8%

RRB NTPC 29.03.2016 Shift : 1

Ans : (a) Let Marked Price is ₹100

$\therefore$ Selling price $= 100\times\frac{100-20}{100} = 80$

Cost price of an article $= 80\times\frac{100}{100+12} = 80\times\frac{100}{112}$

$= \frac{5\times 100}{7} = \frac{500}{7}$

Marked Price - Cost price $= 100-\frac{500}{7} = \frac{200}{7}$

Mark up % $= \frac{\frac{200}{7}}{\frac{500}{7}}\times 100 = \frac{200}{500}\times 100 = 40\%$

34. Shopkeeper earns 26% profit even after offering 10% discount on marked price. If the cost price is ₹800, find the marked price.

(a) ₹1120 (b) ₹1100

(c) ₹1000 (d) ₹1008

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) Marked price of object $= \frac{800\times 126}{90}$ = ₹ 1120

35. An article was sold for Rs. 3600 at a discount of 10%. Find the selling price if the discount was 15%.

(a) ₹3,600 (b) ₹4,000

(c) ₹3,800 (d) ₹3,400

RRB NTPC 05.04.2016 Shift : 3

Ans :(d) Let Selling price of object = ₹x

Selling price after the discount 10% $= x\times\frac{90}{100}$

$3600 = x\times\frac{90}{100}$

x = 4000 रु.

Selling price after the discount 15%

$= 4000\times\frac{85}{100}$ = ₹3400

36. A trader sells his goods at a 50% discount, marking 40% more than the purchase price or cost price. Find its profit or loss.

(a) 40% Loss (b) 50% Loss

(c) 30% Loss (d) 10% Loss

RRB NTPC 04.04.2016 Shift : 2

Ans : (c) % Profit / Loss $= 40-50-\frac{40\times 50}{100} = -10-20$

= 30% Loss

37. A trader marks 20% more than the cost price on his goods. If he gives a discount of 5% what will be the percentage of the last profit received?

(a) 12% (b) 14%
(c) 15% (d) 18%

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) Let the cost price is = ₹100 then according to question

Selling price $=100\times\left(\frac{100+20}{100}\right)\times\left(\frac{100-5}{100}\right)$

$=100\times\frac{120}{100}\times\frac{95}{100}=₹114$

Profit = S.P.- C.P

$=₹114-₹100=₹14$

Profit% = $\left(\frac{14}{100}\times100\right)\%=14\%$

Trick: (Profit/Loss)% $=\pm x\pm y\pm\frac{xy}{100}$ + → increase

$=+20-5+\frac{20\times(-5)}{100}$ − → decrease

$=+20-5-1$

Profit = 14%

38. A trader marks 25% more than the cost price on his goods and gives a discount of 8%. What is his profit percentage?

(a) 10% (b) 15%
(c) 12% (d) 25%

RRB NTPC 31.03.2016 Shift : 3

Ans : (b) Profit % $=25-8-\frac{25\times8}{100}$

$=17-2=15\%$

39. A shopkeeper gives two sequential discounts of 20% and 10% and gets ₹108 for his product. Find its actual value.

(a) ₹142 (b) ₹147
(c) ₹150 (d) ₹153

RRB NTPC 28.03.2016 Shift : 3

Ans : (c) Let the actual price of product = ₹x
Price of product after sequential discount = ₹108

$x\times\frac{80}{100}\times\frac{90}{100}=108$

x = ₹150

40. Find the discount (in percentage) if a book of ₹90 marked price is sold in ₹76.

(a) 14.65% (b) 15.56%
(c) 13.45% (d) 14.75%

RRB NTPC 18.01.2017 Shift : 1

Ans : (b) Discount % $=\frac{90-76}{90}\times100$

$=\frac{14}{90}\times100$

$=\frac{140}{9}=15.56\%$

41. Manish bought a mobile phone after 50% discount on the marked price and sold it for ₹8100 at a profit of 35% of his cost price. What was the marked price?

(a) ₹8000 (b) ₹12000
(c) ₹100000 (d) ₹9000

RRB NTPC 19.04.2016 Shift : 1

Ans : (b) Let the Marked price of Mobile phone = ₹x

cost price $=x\times\frac{50}{100}=\frac{x}{2}$

∴ Selling price $=\left(\frac{100+35}{100}\right)\times\frac{x}{2}$

$8100=\frac{135}{100}\times\frac{x}{2}$

$x=\frac{8100\times100\times2}{135}=₹12000$

42. 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 25% more than the cost price?

(a) 25 (b) 20
(c) 30 (d) 40

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Let the cost price = ₹100
∴ Marked Price = ₹125
∵ (neither profit, nor loss) Let discount given on selling price for selling goods is x%.
According to question,

$125\times\frac{(100-x)}{100}=100$

$(100-x)=\frac{100\times100}{125}$

⇒ 100 – x = 80
⇒ x = 100 – 80
⇒ x = 20%

43. Even at 40% discount on the marked price, a jacket was sold for 20% profit at ₹600. If it is sold at marked price, what will be the profit percent.

(a) 50% (b) 75%
(c) 100% (d) 125%

RRB NTPC 18.04.2016 Shift : 2

Ans : (c) $MP\times\left(\frac{100-\text{discount}\%}{100}\right)=SP$

$MP\times\frac{60}{100}=600$

$MP=\frac{600\times100}{60}$

MP = 1000

$CP=SP\times\frac{100}{100+20}$

$CP=600\times\frac{100}{120}$

CP = 500
if it is sold at marked price
Profit% = 1000 – 500 = 500

$$\text{Profit\%} = \frac{500}{500} \times 100 = 100\%$$

44. Ram Naresh buys a bag, whose marked price is ₹400, he buys it for ₹160 after two consecutive discounts. If the second discount is 20%, find the first discount.

(a) 40% (b) 30%
(c) 50% (d) 80%

RRB NTPC 16.04.2016 Shift : 1

Ans : (c) Let the first discount = D_1%
According to 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, the first discount = 50%

45. Mukesh bought a bike at a marked price of ₹20000 after a discount of 10% and 15% respectively. ₹700 spent on insurance and repairs. Then he sold his bike for ₹20000 find the profit percent.

(a) No profit (b) 25%
(c) 30% (d) 35%

RRB NTPC 12.04.2016 Shift : 1

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 × 90 × 85
= 180 × 85
= ₹15,300
Price of Bike including insurance and repair
= 15,300 + 700 = ₹16, 000
and Selling price = ₹20,000

$$\therefore \text{profit \%} = \frac{\text{Profit}}{\text{Cost price}} \times 100$$

$$= \frac{20000 - 16000}{16000} \times 100$$

$$= \frac{4000}{16000} \times 100 = \frac{100}{4} = 25\%$$

46. Aparna changes the marked price of an item to 50% above its C.P. What % of discount is allowed (in approximately) to gain 10%?

(a) 27% (b) 25%
(c) 35% (d) 37%

RRB NTPC 12.04.2016 Shift : 3

Ans : (a) Let the cost price of an item = ₹100
∴ Marked Price = ₹150
and selling price on 10% profit = ₹110
∴ Discount %

$$\Rightarrow 150 \times \frac{(100 - D)}{100} = 110$$

$$\Rightarrow (100 - D) = \frac{110 \times 100}{150}$$

$$\Rightarrow 100 - D = \frac{220}{3}$$

$$\Rightarrow D = 100 - \frac{220}{3}$$

$$\Rightarrow D = \frac{300 - 220}{3}$$

$$\Rightarrow D = \frac{80}{3} = 26.66$$

$$\Rightarrow D \approx 27\%$$

47. A shopkeeper marks the price of an item at ₹640. If even after 10% discount, he earns 20% profit on the cost price, find the cost price of the article.

(a) ₹560 (b) ₹480
(c) ₹600 (d) ₹700

RRB NTPC 10.04.2016 Shift : 3

Ans : (b) Selling price of an item after 10% Discount

$$= 640 \times \frac{(100 - 10)}{100} = \frac{640 \times 90}{100} = ₹576$$

Hence cost price of object for 20% profit.

$$= \frac{576}{(100 + 20)} \times 100 = \frac{576}{120} \times 100$$

$$= \frac{576}{6} \times 5 = 96 \times 5 = ₹480$$

48. A trader marked 50% more value on an item and later gave 20% discount on it. What percentage of profit did the merchant get after giving a discount?

(a) 30% (b) 125%
(c) 25% (d) 20%

RRB NTPC 09.04.2016 Shift : 3

Ans : (d) Let the cost price of object = ₹100
Then marked price on increased by 50%

$$= 100 \times \frac{150}{100} = 150$$

Selling price on giving 20% discount

$$= 150 \times \frac{80}{100} = 120$$

Profit percent = 120-100 = 20%

49. The marked prices of large and small note books are ₹10 and ₹15 respectively. A student bought 5 dozen small and 10 dozen large note books at a total discount of 5%. Find the total discount amount.

(a) ₹100 (b) ₹110
(c) ₹120 (d) ₹130

RRB NTPC 06.04.2016 Shift : 2

Ans : (c)
Total price of small note books = 5 × 12 × 10 = 600
Total price of large note books = 10 × 12 × 15 = 1800

$\therefore$ Amount of Discount = (600 + 1800) $\times \frac{5}{100}$

$= 2400 \times \frac{5}{100} =$ ₹120

50. A box of 20 items was purchased for a discount of 20% at ₹6400. What is the price of each item?
(a) ₹300 (b) ₹350
(c) ₹ 400 (d) ₹450
RRB NTPC 27.04.2016 Shift : 2

Ans : (c)

Cost price one item $= \frac{6400}{20} = 320$

Marked price of one item $= \frac{320 \times 100}{80} =$ ₹400

51. A shopkeeper purchased a pen drive of marked price ₹ 1000 at successive discounts 10% & 15% respectively. He spent ₹ 35 on packaging and sold it on ₹ 1000. Calculate the profit percent.
(a) No profit (b) 25%
(c) 30% (d) 35%
RRB NTPC 27.04.2016 Shift : 3

Ans : (b) Cost Price of Pen drive

$= 1000\left(\frac{100-10}{100}\right)\left(\frac{100-15}{100}\right)$

$= 1000 \times \frac{90}{100} \times \frac{85}{100} =$ ₹ 765

Total cost price = 765 + 35 = ₹ 800
Selling price of Pen drive = ₹ 1000
Profit = 1000–800
= ₹ 200

Profit % $= \left(\frac{200}{800} \times 100\right)\%$

= 25%

52. Party buys a bed after a discount of 22% for ₹16725. He later finds that the same store was selling that bed online for ₹15685 after a 15% discount. What is the difference between marked prices of store bought bed and marked price of online bed? (Rounded off to nearest₹)
(a) ₹2989 (b) ₹2785
(c) ₹2897 (d) ₹2888
RRB NTPC 28.04.2016 Shift : 1

Ans : (a) Marked Price of bed bought from store

$= 16,725 \times \frac{100}{100-22}$

$= 16,725 \times \frac{100}{78}$

= ₹21442.30

Marked Price of bed on bought online

$= 15,685 \times \frac{100}{100-15}$

$= 15,685 \times \frac{100}{85}$

= ₹18452.94

Required difference = 21442.30 – 18452.94
= 2989.36 = ₹2989

53. A saree is sold for ₹5871 after a discount of 5%. Find its marked price.
(a) 5577 (b) 6880
(c) 6180 (d) 5734
RRB NTPC 28.04.2016 Shift : 1

Ans : (c) Marked Price of Saree $= 5871 \times \frac{100}{100-5}$

$= 5871 \times \frac{100}{95} =$ ₹6180

54. A shopkeeper buys a stereo system of ₹2000 marked price after a discount of 10% and 15% respectively. He spends ₹70 to get it packed and sells it for ₹2000. State the percentage profit of the shopkeeper.
(a) Not profit (b) 25%
(c) 30% (d) 35%
RRB NTPC 29.04.2016 Shift : 2

Ans : (b) Cost price of stereo system

$= \frac{2000 \times (100-10)}{100} \times \left(\frac{100-15}{100}\right)$

$= 2000 \times \frac{90}{100} \times \frac{85}{100}$

= 1530

Total expense = 1530 + 70 = 1600
Profit = 2000–1600 = 400

Profit % $= \frac{\text{Profit} \times 100}{\text{Cost Price}} = \frac{400 \times 100}{1600} = 25\%$

55. A shopkeeper gives his customer 10% discount on the marked price of an item, yet he gets 26% profit. If the marked price is ₹560, calculate the cost price.
(a) ₹400 (b) ₹450
(c) ₹396 (d) ₹404
RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans. (a) :

Selling Price = Marked Price $\times \left(\frac{100 - \text{Discount\%}}{100}\right)$

$= 560 \times \left(\frac{100-10}{100}\right)$

$= 560 \times \frac{90}{100} = 504$

$\therefore$ Cost Price $= \left(\frac{100}{100 + \text{Profit \%}}\right) \times$ Selling Price

Cost Price $= \frac{100}{126} \times 504 =$ ₹400

09.

Ratio & Proportion

Type - 1

1. Find the ratio of 3 days with 30 hours.
(a) 7 : 6 (b) 12 : 5
(c) 6 : 7 (d) 5 : 12
RRB RPF Constable -19/01/2019 (Shift-II)

Ans. (b) : $\because$ One day = 24 hours
$\therefore$ 3 days = 24 × 3 = 72 hours
Ratio = 72 : 30 = 12 : 5

2. Which of the following ratio is the largest?
(a) 5 : 7 (b) 2 : 3
(c) 3 : 4 (d) 3 : 5
RRB JE - 02/06/2019 (Shift-II)

Ans. (c) Largest ratio is
(a) 5/7 = 0.714
(b) 2/3 = 0.666
(c) 3/4 = 0.75
(d) 3/5 = 0.6
So option (c) is largest

3. A 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 the ratio between green and pink tokens?
(a) 80 : 27 (b) 192 : 125
(c) 16 : 9 (d) 25 : 28
RRB RPF SI -05/01/2019 (Shift-II)

Ans : (a) Green : Red = 32 : 15
Red : Pink = 25 : 18
Green : Red : Pink = 800 : 375 : 270
So Green : Pink = 800 : 270 = 80 : 27

4. The ratio of the number of marbles that Tulip and Devansh had was 7 : 9 while Sheetal and Devansha had was 7 : 15. Find the ratio of number of marbles available with Tulip and Sheetal.
(a) 5 : 3 (b) 5 : 7
(c) 7 : 5 (d) 2 : 3
RRB RPF Constable -17/01/2019 (Shift-III)

Ans. (a) : $\frac{\text{Tulip}}{\text{Devansh}} = \frac{7}{9}$
and $\frac{\text{Sheetal}}{\text{Devansh}} = \frac{7}{15}$
so $\frac{\text{Tulip}}{\text{Sheetal}} = \frac{7}{9} \times \frac{15}{7} = \frac{5}{3}$

5. If a : b = 32 : 35 and b:c = 21 : 32. Then a : c ?
(a) 1 : 1 (b) 5 : 7
(c) 3 : 5 (d) 5 : 3
RRB Group-D – 03/10/2018 (Shift-I)

Ans : (c)
$\frac{a}{b} = \frac{32}{35}$ ..... (i)
$\frac{b}{c} = \frac{21}{32}$ ..... (ii)
From the equation (i) and (ii)
$\frac{a}{b} \times \frac{b}{c} = \frac{32}{35} \times \frac{21}{32}$
$\frac{a}{c} = \frac{3}{5}$

6. Two numbers are 30% and 60% higher than the third number respectively. What is the ratio of both the numbers ?
(a) 14 : 13 (b) 16 : 13
(c) 22 : 23 (d) 13 : 16
RRB Group-D – 10/10/2018 (Shift-II)

Ans : (d) Suppose third number = 100
$\therefore$ First number and second number = 130, 160
So required ratio $\frac{130}{160} = 13:16$

7. The ratio of sand and Macadam in a mixture is 41 : 30. While the mixture of Macadam and cement is 6 : 7. What is the ratio of sand and cement in the mixture?
(a) 8 : 6 (b) 11 : 7
(c) 77 : 48 (d) 41 : 35
RRB Group-D – 16/10/2018 (Shift-I)

Ans. (d)
$\frac{\text{Sand}}{\text{Macadam}} = \frac{41}{30}$ and $\frac{\text{Cement}}{\text{Macadam}} = \frac{7}{6} = \frac{7 \times 5}{6 \times 5} = \frac{35}{30}$
So $\frac{\text{Sand}}{\text{Cement}} = \frac{\text{Sand}}{\text{Macadam}} \times \frac{\text{Macadam}}{\text{Cement}} = \frac{41}{30} \times \frac{30}{35} = \frac{41}{35}$
$= 41:35$

8. Red, green and pink tokens are kept in a bag, the ratio of red and green is 5 : 11 while the ratio of pink and red tokens is 7 : 15. What will be the ratio of green and pink?
(a) 77 : 75 (b) 11 : 7
(c) 33 : 7 (d) 75 : 77
RRB Group-D – 25/09/2018 (Shift-I)

Ans : (c) Pink : Red = 7 : 15
Red : Green = 5 : 11
Then, Pink : Red : Green = 7 × 5 : 5 × 15 : 15 × 11
= 35 : 75 : 165
Green : Pink = 165 : 35 = 33 : 7

9. If A : B = 5 : 8 and B : C = 18 : 25 then find A : C.

(a) 8 : 5 (b) 9 : 20
(c) 5 : 8 (d) 20 : 9

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (b) : Given

$$\frac{A}{B}=\frac{5}{8} \text{ and } \frac{B}{C}=\frac{18}{25}$$

$$\text{Then } \frac{A}{C}=\left(\frac{A}{B}\times\frac{B}{C}\right)=\left(\frac{5}{8}\times\frac{18}{25}\right)=\frac{90}{200}$$

So A : C = 9 : 20

10. The ratio of soil and gravel in a mixture is 11 : 8 while the ratio of gravel and cement is 6 : 7. What is the ratio of soil and cement in the mixture?

(a) 77 : 48 (b) 33 : 28
(c) 8 : 6 (d) 11 : 7

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (b)

(i) Soil (S) gravel (B)
11 : 8
(ii) gravel (B) Cement (C)
6 : 7
S : B = 11 : 8 = 66 : 48
B : C = 6 : 7 = 48 : 56
S : B : C = 66 : 48 : 56
Soil : Cement = 66 : 56
Soil : Cement = 33 : 28

11. If the ratio of a : b is 45 : 56 and the ratio of b : c is 16 : 35, then what is the ratio of a : c?

(a) 9 : 7 (b) 18 : 49
(c) 7 : 2 (d) 7 : 9

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (b) Given
a : b = 45 : 56
b : c = 16 : 35

$$\therefore a:c=\frac{a}{c}=\frac{a}{b}\times\frac{b}{c}=\frac{45}{56}\times\frac{16}{35}$$

$$=\frac{18}{49}=18:49$$

12. Suraj's amount is 4 times that of Ravi's amount. Ravi's amount is 16 times the amount of Aditya's amount. What is the ratio of Aditya's and Suraj's amount?

(a) 64 : 1 (b) 1 : 64
(c) 1 : 24 (d) 1 : 16

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (b) According to the question
Let aditya's amount = Rs. x
and Ravi's amount = Rs. 16x
Suraj's amount = Rs. 64x
Ratio of amount of Aditya, Ravi and Suraj
= x : 16x : 64x
Ratio of amount of Aditya and Suraj
= x : 64x = 1 : 64

13. If a : b = 2 : 3 and a : c = 10 : 21, then what is b : c?

(a) 5 : 7 (b) 15 : 14
(c) 14 : 15 (d) 7 : 5

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (a) Given

$$\frac{a}{b}=\frac{2}{3},\quad \frac{a}{c}=\frac{10}{21}$$

$$\frac{c}{b}=\frac{a}{b}\times\frac{c}{a}=\frac{2}{3}\times\frac{21}{10}$$

c: b = 7 : 5
b : c = 5 : 7

14. If L:M = 3:5 and M:N = 2:3, then N:L = ?

(a) 2:1 (b) 5:2
(c) 3:2 (d) 1:2

RRB NTPC 29.03.2016 Shift : 3

Ans : (b) L : M = 3 : 5
M : N = 2 : 3
By equating the ratio M
L : M = 6 : 10
M : N = 10 : 15
∴ L : M : N = 6 : 10 : 15
So N : L = 15 : 6 = 5 : 2

15. If A : B = 2 : 5 and B : C = 3 : 4, then A : C = ?

(a) 1:2 (b) 3:10
(c) 2:3 (d) 5:4

RRB NTPC 28.03.2016 Shift : 2

Ans :(b) A : B = 2:5.....(i)
B : C = 3:4.....(ii)
Multiplying to 3 in equation (i) and 5 in (ii)
A : B = 6:15
B : C = 15:20
Required ratio A : B : C = 6:15:20
So A : C = 6:20
A : C = 3:10

16. Two numbers are 40% and 60% more than the third number respectively, what is the ratio of the first number to the second number?

(a) 7 : 9 (b) 8 : 9
(c) 8 : 7 (d) 7 : 8

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) Let the third number = 100

I — 140
II — 160
III — 100

$$\Rightarrow \frac{I_{num}}{II_{num}}=\frac{140}{160}=\boxed{7:8}$$

17. If A : B = 3 : 4 and B : C = 6 : 5, then A : (A + C) = ?

(a) 9:11 (b) 9:10
(c) 9:19 (d) 6:7

RRB NTPC 16.04.2016 Shift : 3

Ans : (c)

A : B : C

3 4

6 5

$\Rightarrow$ 18 : 24 : 20

$\Rightarrow$ 9 : 12 : 10

अत: $\frac{A}{A+C} = \frac{9}{9+10} = \frac{9}{19}$

18. If a/b = 1/4, b/c = 18 and a = 2 then the value of c is-

(a) 8 (b) 16

(c) 32 (d) 64

RRB NTPC 27.04.2016 Shift : 3

Ans : (d) $\frac{a}{b} = \frac{1}{4} \Rightarrow \frac{2}{b} = \frac{1}{4} \quad (\because a = 2)$

$b = 2 \times 4$

$b = 8$

and $\frac{b}{c} = \frac{1}{8} \Rightarrow \frac{8}{c} = \frac{1}{8}$

$c = 8 \times 8 \Rightarrow c = 64$

19. The ratio of the number of marbles that Joyee and Minit had was 5 : 8 while the ratio of the number of marbles that Jacob and Minit had was 7 : 12. What is the ratio of the number of marbles that Joyee and Jacob had ?

(a) 7 : 5 (b) 2 : 3

(c) 15 : 14 (d) 5 : 7

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

Ans : (c) Joyee $\leftarrow$ Minit $\leftarrow$ Jacob

5 8 7

12

60	96	56
30	48	28
15	24	14

Hence ratio of Joe and Jacob's marbles = 15:14

20. The ratio of sand to gravel in a mixture is 7:8 while that between gravel and cement is 6:7. What is the ratio of sand to cement in the mixture?

(a) 49 : 48 (b) 7 : 7

(c) 8 : 6 (d) 3 : 4

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

Ans : (d)

$\therefore \frac{\text{Sand}}{\text{Gravel}} = \frac{7}{8}$ and $\frac{\text{Gravel}}{\text{Cement}} = \frac{6}{7}$

$\therefore \frac{\text{Sand}}{\text{Cement}} = \frac{\text{Sand}}{\text{Gravel}} \times \frac{\text{Gravel}}{\text{Cement}}$

$= \frac{7}{8} \times \frac{6}{7} = \frac{6}{8} = 3:4$

21. The ratio 1 : 5 can be expressed in decimal as:

(a) 0.5 (b) 0.2

(c) 0.02 (d) 0.1

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

Ans : (b) $1:5 = \frac{1}{5} = 0.2$

22. In a bag containing red, green and pink tokens, the ratio of red to green tokens was 5 :12 while the ratio of pink to red tokens was 7 : 15. What was the ratio of green to pink tokens ?

(a) 25 : 28 (b) 36 : 7

(c) 28 : 25 (d) 12 : 7

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (b) Given

Green tokens : Reds tokens =12 : 5

Red tokens : Pink tokens =15 : 7

Then, green tokens : red tokens : pink tokens = 12×15 : 15×5 : 7×5

180 : 75 : 35

green tokens : pink tokens

180 : 35 = 36 : 7

23. The ratio of sand to gravel in a mixture is 17 : 8 while that between gravel and cement is 6 : 17. What is the ratio of sand to cement in the mixture?

(a) 17 : 17 (b) 289 : 48

(c) 8 : 6 (d) 3 : 4

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (d) R : B = 17 : 8, B : S = 6 : 17

R : B : S = 102 : 48 : 136

Then ratio of sand (R) and cement (S) mixture

= 102 : 136 = 3 : 4

24. If a : b = $\frac{3}{2} : \frac{7}{3}$ and b : c = $\frac{1}{5} : \frac{1}{7}$ Then find a : b : c ?

(a) 14:9:10 (b) 4:5:7

(c) 9:14:10 (d) 10:9:14

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (c) $a : b = \frac{3}{2} : \frac{7}{3} = 9:14$

$b : c = \frac{1}{5} : \frac{1}{7} = (7:5) \times 2 = 14:10$

$\therefore$ a : b : c = 9 : 14 : 10

25. a : b = 7 : 9, b : c = 5 : 11. Then find a : b : c ?

(a) none of these (b) 99 : 45 : 35

(c) 45 : 35 : 99 (d) 35 : 45 : 99

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (d)

a : b = 7 : 9

b : c = 5 : 11

Hence a : b : c = 35 : 45 : 99

26. If a : b = 3 : 5 , c : b = 3 : 2 , c : d = 5 : 6 then find a : d = ?

(a) 12 : 36 (b) 12 : 15

(c) 1 : 3 (d) 11 : 36

RRB NTPC 18.04.2016 Shift : 3

Ans : (c) a : b = 3 : 5, c : b = 3 : 2, c : d = 5 : 6

$\Rightarrow$ b : c = 2 : 3

$\therefore a : d = \frac{a}{b} \times \frac{b}{c} \times \frac{c}{d}$

$= \frac{3}{5} \times \frac{2}{3} \times \frac{5}{6} = \frac{1}{3}$

Type - 2

27. On dividing of Rs. 3900 in between L, K and J by the ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$, what amount will k get?

(a) Rs. 1,450 (b) Rs. 30
(c) Rs. 1,200 (d) Rs. 900

RRB RPF Constable -18/01/2019 (Shift-III)

Ans : (c) Ratio between L, K and J $= \frac{1}{2} : \frac{1}{3} : \frac{1}{4}$

$= 6 : 4 : 3$

So received amount of K $= 3900 \times \frac{4}{13}$ = Rs. 1200

29. In an alloy of German Silver the ratio of Copper and Zinc was 21 : 16, while the ratio of Nickel and Zink was 7 : 24. What was the ratio of Copper, Zink and Nickel in the alloy?

(a) 63:48:14 (b) 21:6:7
(c) 17:21:4 (d) 68:28:21

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : Copper : Zinc = 21 : 16

Nickel : Zinc = 7 : 24

Copper : Zinc : Nickel $= 21 \times 24 : 16 \times 24 : 7 \times 16$

$= 3 \times 21 : 3 \times 16 : 2 \times 7$

$= 63 : 48 : 14$

30. In an alloy of German Silver the ratio of Copper and Zinc was 19 : 6 while the ratio of Nickel and Zink was 7:4. Then what was the ratio of Copper, Zink and Nickel?

(a) 19 : 44 : 4 (b) 19 : 24 : 7
(c) 38 : 12 : 21 (d) 133 : 42 : 24

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (c) Copper : Zinc = 19 : 6

Nickel : Zinc = 7 : 4

Copper : Zinc : Nickel = 19 : 6
4 : 7

= 76 : 24 : 42

= 38 : 12 : 21

31. In an alloy of German silver the ratio of copper to zinc was 17 : 7 while that of nickel to zinc was 4 : 3. The ratio of copper to zinc to nickel in the alloy was:

(a) 17 : 21 : 4 (b) 51 : 21 : 28
(c) 68 : 28 : 21 (d) 17 : 28 : 3

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

Ans : (b) C : Z = 17 : 7, C : Z = 4 : 3

or Z : N = 3 : 4

$\boxed{T : Z : C = 51 : 21 : 28}$

32. The 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 the new ratio becomes 2:5:1.

(a) 50 (b) 48
(c) 36 (d) 42

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (d) Copper : Zinc : Nickel = 4 : 3 : 2

Suppose quantity is 4x, 3x and 2x kg respectively

According to the question

4x + 3x + 2x = 54

9x = 54

x = 6

$\therefore$ Copper = 4 × 6 = 24 kg

Zinc = 3 × 6 = 18 kg

Nickel = 2 × 6 = 12 kg

Let the new ratio will be 2:5:1 by adding y kg of Zinc

$\frac{24}{18 + y} = \frac{2}{5}$

120 = 36 +2y

84 = 2y

y = 42 kg

So adding zinc in new metal = 42 kg

33. If a = 2b/3, b = 2c/3, and c = 2d / 30 what is the ratio of b and d ?

(a) 8/9 (b) 4/9
(c) 4/3 (d) 5/27

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Given

$a = \frac{2b}{3}, b = \frac{2c}{3}, c = \frac{2d}{3}$

$\Rightarrow \frac{a}{b} = \frac{2}{3}, \frac{b}{c} = \frac{2}{3}, \frac{c}{d} = \frac{2}{3}$

$\Rightarrow \frac{a}{b} = \frac{8}{12}, \frac{b}{c} = \frac{12}{18}, \frac{c}{d} = \frac{18}{27}$

$\Rightarrow$ a : b : c : d = 8 : 12 : 18 : 27

$\therefore \frac{b}{d} = \frac{12}{27}$ $\Rightarrow \boxed{\frac{b}{d} = \frac{4}{9}}$

34. The ratio of marks obtained by a student in three subject is 1 : 2 : 3 . The school has decided to give 5% grace marks for each subject. Find the new student ratio.

(a) 1:2:3 (b) 2:3:4
(c) 2:3:1 (d) 3:2:1

RRB NTPC 06.04.2016 Shift : 1

Ans : (a) Suppose mark score by students in 3 subject is x, 2x and 3x

According to the question

$x \times \frac{100+5}{100} : 2x \times \frac{100+5}{100} : 3x \times \frac{100+5}{100}$

x : 2x : 3x

1:2:3

35. Divide Rs. 169 in the ratio 2 : 5 : 6 what will be their share in rupees according to the above ratio?

(a) 26, 66, 77 (b) 26, 65, 78
(c) 25, 67, 78 (d) 26, 70, 73

RRB NTPC 19.01.2017 Shift : 3

Ans : (b) $\frac{169\times 2}{13}=26$

$\frac{169\times 5}{13}=65$

$\frac{169\times 6}{13}=78$

Split amount = 26, 65, 78

Type - 3

36. The ratio of two positive integer is 3 : 4. Their sum is 70, how much should be added to each integer so that their ratio become 5 : 6 ?

(a) 10 (b) 20
(c) 30 (d) 40

RRB RPF SI -12/01/2019 (Shift-III)

Ans : (b) First integer $=\frac{3}{7}\times 70=30$

Second integer $=\frac{4}{7}\times 70=40$

Suppose adding x in each integer ratio will be 5:6

Hence

$\frac{30+x}{40+x}=\frac{5}{6}$

$\Rightarrow 180 + 6x = 200 + 5x$

$\Rightarrow 6x - 5x = 200 - 180 \Rightarrow x = 20$

37. The ratio of two number is 3 : 5, If each number is increased by 10, the ratio become 5 : 7 find the smallest number?

(a) 8 (b) 12
(c) 15 (d) 18

RRB RPF SI -11/01/2019 (Shift-I)

Ans : (c) Let numbers are 3x and 5x

$\therefore \frac{3x+10}{5x+10}=\frac{5}{7}$

21x + 70 = 25x + 50

4x = 20 or x = 5

$\therefore$ Small number = 3x= 3 × 5 = 15

38. The salary of Charan and Rajat is in the ratio of 5 : 4 If the salary of each is increased by 3,000 then their new ratio become 6 : 5. What is salary of Charan.

(a) Rs. 15,000 (b) Rs. 12,000
(c) Rs. 8,000 (d) Rs. 20,000

RRB RPF Constable -20/01/2019 (Shift-I)

Ans : (a) Charan : Rajat
5x : 4x

According to the question

$\frac{5x+3000}{4x+3000}=\frac{6}{5}$

25x + 15000 = 24x + 18000

25x – 24x = 18000 – 15000

x = 3000

Salary of Charan = 5x = 5 × 3000

= Rs. 15000

39. The ratio of two number are 5 : 9. If 6 is added in both numbers then their ratio become 2 : 3. The original number are.

(a) 25, 45 (b) 10, 18
(c) 15, 27 (d) 5, 9

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (b) : Suppose both numbers are 5x and 9x respectively.

According to the question

$\frac{5x+6}{9x+6}=\frac{2}{3}$

$15x+18=18x+12$

$6=3x$

$x=2$

Original numbers = 5 × 2 and 9 × 2

= 10 and 18

40. A number is divided into a ratio of 7 : 12 when 6 is added to each number, the ratio is changed to 5 : 7. What was the larger number among the initial number.

(a) 22 (b) 11
(c) 33 (d) 44

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) Suppose numbers are 7x and 11x respectively. Then

$\frac{7x+6}{11x+6}=\frac{5}{7}$

49x + 42 = 55x + 30

42 – 30 = 55x – 49x

$12 = 6x \Rightarrow x = \frac{12}{6}=2$

$\boxed{x = 2}$

So numbers

7x = 7 × 2 = 14

11x = 11 × 2 = 22

Hence large number = 22

41. The ratio between two number are 11 : 18. If 4 is added to both numbers, then the ratio between them becomes 13 : 20 what will be original number.

(a) 21, 36 (b) 26, 21
(c) 22, 36 (d) 32, 23

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (c) Let two number is 11x and 18x

Then $\frac{11x+4}{18x+4}=\frac{13}{20}$

220x + 80 = 234x + 52

28 = 14x

x = 2

Putting x=2 in 11x and 18x, respectively we get the numbers 22 and 36

42. The ratio of two number is 3 : 4. If 3 is added in each of them, then their ratio become 10 : 13. Find the original number.

(a) 9, 12 (b) 12, 16

(c) 20, 25 (d) 27, 36

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (d) Let the number is 3x and 4x

According to the question

$\frac{3x+3}{4x+3}=\frac{10}{13}$

$39x + 39 = 40x + 30$

$x = 9$

Original number $= 3x, 4x$

$= 3 \times 9, 4 \times 9$

$= \boxed{27, 36}$

43. The initial ratio of Sugar and Flour in a dough was 4 : 7 Justin Added more flour in that 22 kg dough change to the ratio of sugar and flour 2:5 how much flour did Justin later add?

(a) 2 kg (b) 4 kg

(c) 8 kg (d) 6 kg

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (d) : Quantity of flour in dough of 22kg

$=22\times\frac{7}{11}=14\text{kg}$

Quantity of sugar = 22 – 14 = 8 kg

Let mixed quantity of flour = x kg

According to the question

$\frac{8}{14+x}=\frac{2}{5}$

40 = 28 + 2x

2x = 12

x = 6

Hence mixed quantity of flour = 6 kg

44. A number is divided in the ratio of 9 : 5 when 8 is added to each number, the ratio becomes 5 : 3 which will be the largest number among the two?

(a) 80 (b) 72

(c) 69 (d) 81

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (b) Let the number is 9x, 5x

According to the question

$\frac{9x+8}{5x+8}=\frac{5}{3}$

27x + 24 = 25x + 40

2x = 40 – 24

2x = 16

x = 8

So large number = 9 × 8 = 72

45. The ratio of red ball and green ball in a bag is 15 : 26. If 12 more green ball are put in the bag then the ratio of red ball and green ball become 1 : 2. How many red ball in the bag?

(a) 60 (b) 30

(c) 45 (d) 15

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (c) : Red : Green = 15:26

Suppose red ball = 15x and green ball = 26x

Putting more 12 green ball

$\frac{15x}{26x+12}=\frac{1}{2}$

30x = 26x + 12

4x = 12

x= 3

Red ball in bag = 15×3 = 45

46. An amount was divided between Ethen and Jen in the ratio of 4 : 7. If Jen gives Ethen 1 rupee, then the ratio changes to 7 : 12. What is the total amount?

(a) Rs. 209 (b) Rs. 190

(c) Rs. 198 (d) Rs. 220

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (a) : Suppose amount of Ethen and Jen = 4x, 7x

Ratio after giving 1 Rs. to Ethen $=4x+1:7x-1=7:12$

$\Rightarrow$ 48x + 12 = 49x – 7

$\Rightarrow$ x = 19

Amount of Ethen = 4x = 4 × 19 = Rs. 76

Amount of Jen = 7x = 7 × 19 = Rs. 133

Total amount = 76 + 133 = Rs. 209

47. The ratio of two number are is 17 : 28, if 6 is added to smaller number, then the ratio changes to 13 : 20. What is the value of larger number?

(a) 112 (b) 140

(c) 98 (d) 126

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (b) Let the first number = 17x

Second number = 28x

According to the question

$\frac{17x+6}{28x}=\frac{13}{20}$

$\frac{17x+6}{7x}=\frac{13}{5}$

85x + 30 = 91x

6x = 30

x = 5

So large number = 28x = 28 × 5 = 140

48. Any amount is divided between Shivani and Parineeta in the ratio of 5 : 7, if Parineeta gives Rs. 5 to Shivani, then the ratio will be changed to 3 : 4 what is divided amount?

(a) Rs. 432 (b) Rs. 420

(c) Rs. 396 (d) Rs. 408

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (b) : Let distributed amount between Shivani and Parinita = 5x and 7x
According to the question,
$\frac{5x+5}{7x-5}=\frac{3}{4}$
$\Rightarrow 20x + 20 = 21x - 15$
x = 35
Splited amount = 5x + 7x = 12x
= 12 × 35 = Rs. 420

49. The ratio of two number are 2 : 3. If 12 is subtracted from both numbers then the ratio becomes 5 : 8. Find the number.
(a) 16 and 24 (b) 35 and 56
(c) 72 and 108 (d) 20 and 48
RRB NTPC 04.04.2016 Shift : 1

Ans : (c) Let number are 2x and 3x
$\frac{2x-12}{3x-12}=\frac{5}{8}$
16x – 96 = 15x – 60
x = 36
∴Numbers will be 72 and 108

50. The ratio of two numbers are 7:12. If 7 is added in both numbers then ratio becomes 7:11. Find the smallest number.
(a) 7 (b) 28
(c) 35 (d) 12
RRB NTPC 29.03.2016 Shift : 2

Ans : (b) Suppose small number and large number is 7x and 12x respectively.
From the question $\frac{7x+7}{12x+7}=\frac{7}{11}$
$\Rightarrow 77x + 77 = 84x + 49$
$7x = 28 \Rightarrow x = 4$
∴ Small number = 7x = 7 × 4 = 28

51. The ratio of boys and girls in the class are 4:5. If 4 new boys are included in class then the number of boys increases by 20%. Find the number of girls in the class.
(a) 30 (b) 35
(c) 20 (d) 25
RRB NTPC 18.01.2017 Shift : 3

Ans : (d) Let the number of boys = 4x
and the number of girls = 5x
According to the question
$\Rightarrow 4x+4=\frac{24x}{5}$
20x + 20 = 24x
20 = 4x $\boxed{x=5}$
Number of girls $= 5x = 5\times5 = 25$

52. In a mixture of 25 litre, the ratio of Milk and Water is 4:1. Howmuch litre Milk should be added more so that the ratio becomes 16:1?
(a) 21 (b) 25
(c) 60 (d) 36
RRB NTPC 19.04.2016 Shift : 2

Ans : (c) Amount of milk in mixture of 25 litre
$=25\times\frac{4}{5}=20\,l$
Amount of water = 25–20 = 5*l*
Let amount of added milk is x*l*, According to the question
$\frac{20+x}{5}=\frac{16}{1}$ $\Rightarrow 20 + x = 16 \times 5$
$\Rightarrow x = 80–20$ $\Rightarrow x = 60$ liters

53. The ratio of two numbers are 5:6. When 6 is added to both numbers the ratio becomes 7:8 then the numbers are.
(a) 10, 12 (b) 20, 24
(c) 15, 18 (d) 5, 6
RRB NTPC 18.04.2016 Shift : 1

Ans : (c) Let numbers are 5x and 6x respectively
According to the question $\frac{5x+6}{6x+6}=\frac{7}{8}$
40x + 48 =42x + 42
2x = 6 x = 3
∴ Both numbers = 5x, 6x
= 5×3 and 6×3 = 15 and 18

54. The ratio of girls and boys in 504 students of a school are 11:13. If given admission to 4 more girls then find the new ratio.
(a) 31:51 (b) 91:81
(c) 81:91 (d) 51:31
RRB NTPC 18.04.2016 Shift : 2

Ans : (c) Total students = 504
ratio = 11:13
girls $=\frac{11}{24}\times504$ = 231
boys = 504 − 231= 273
on adding 12 more girls
231 + 12 = 243
Required ratio = 243 : 273 = 81: 91

55. Before 4 years, the ratio of Vikas and Rahul was 3:5. After 6 years, this ratio will become 4:5. Find the present age of Rahul.
(a) 10 (b) 15
(c) 14 (d) 17
RRB NTPC 12.04.2016 Shift : 3

Ans : (c) Let present age of Vikas and Rahul is x and y respectively.
From the question,
$\frac{x-4}{y-4}=\frac{3}{5}$
$\Rightarrow 5x - 20 = 3y - 12$
$\Rightarrow 5x - 3y = 8$ ……(i)
again
$\frac{x+6}{y+6}=\frac{4}{5}$
$\Rightarrow 5x + 30 = 4y + 24$

$\Rightarrow 5x - 4y = -6$ …….(ii)
now from equation (i) - (ii)
$5x - 3y - (5x - 4y) = 8 - (-6)$
$\Rightarrow 5x - 3y - 5x + 4y = 8 + 6$
$\Rightarrow y = 14$
Hence present age of Rahul = 14 years

56. The ratio of two numbers are 4 : 5. If 5 is subtracted from both, then the new ratio becomes 3 : 4. Find the largest number.
(a) 30 (b) 25
(c) 20 (d) 15
RRB NTPC 26.04.2016 Shift : 1

Ans : (b) Let numbers are 4x and 5x
Subtracting 5 from both numbers
$\frac{4x-5}{5x-5} = \frac{3}{4}$
$\Rightarrow 16x - 20 = 15x - 15$
$\Rightarrow 16x - 15x = -15 + 20$
$x = 5$
Large number = 5x = 5×5 = 25

57. The ratio of two numbers are 3 : 4. When 2 is subtracted from both the numbers, the ratio becomes 2 : 3. Find the sum of the numbers.
(a) 16 (b) 20
(c) 21 (d) 22
RRB NTPC 27.04.2016 Shift : 3

Ans : (c) Let numbers are 3x and 4x
According to the question,
$\frac{3x-3}{4x-3} = \frac{2}{3}$
$\Rightarrow$ 9x – 9 = 8x – 6
$\Rightarrow$ 9x – 8x = 9–6
x = 3
∴Sum of the numbers = 3x + 4x = 7x = 7 × 3 = 21

58. A number is divided in the ratio 3 : 2. When 8 is added to each of the numbers then the ratio changes to 7 : 5. So which of the two numbers will be larger?
(a) 42 (b) 48
(c) 27 (d) 69
RRB ALP & Tec. (20-08-18 Shift-I)

Ans : (b) Let numbers be 3x, 2x
According to the question $\frac{3x+8}{2x+8} = \frac{7}{5}$
$15x + 40 = 14x + 56$
x = 16
now numbers = 3 × 16 , 2 × 16
= 48, 32 or large number = 48

59. The ratio of red balls and green balls in a bag is 4 : 9. If 7 more red balls are added to the bag, the new ratio of red and green balls will becomes 5 : 6. How many green balls are there in the bag ?
(a) 9 (b) 18
(c) 12 (d) 27
RRB ALP & Tec. (14-08-18 Shift-III)

Ans : (b) Let number of red balls in the bag = 4x
and number of green balls = 9x
Ratio on adding 7 more red balls in the bag 5:6
$\therefore \frac{4x+7}{9x} = \frac{5}{6}$
$24x + 42 = 45x$
$21x = 42$
$x = 2$
∴ number of green balls in the bag will be
$= 9x = 9 \times 2 = 18$

60. In 9 kg of the dough the initial ratio of sugar and flour is 2 : 7. If John added more sugar in that then the ratio becomes 2 : 5. How much sugar did John added later?
(a) 750 g (b) 1.2 kg
(c) 1kg (d) 800 g
RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (d) Ratio of sugar and flour in dough of 9 kg = 2:7
Then sum of the proportional parts = 2 + 7 = 9
So the quantity sugar $= \frac{2 \times 9}{9} =$ 2 kg
The quantity of flour $= \frac{7 \times 9}{9} = 7$ kg
Suppose that quantity of sugar added later by John is x kg then-
$\frac{2+x}{7} = \frac{2}{5}$
or 10 + 5x = 14
5x = 4
$x = \frac{4}{5} = 0.8$ or 0.8 × 1000 = 800 gram

Type - 4

61. The ratio of length and breath of a rectangular board is 7 : 5. If the breath of board is 20.5 cm then, find the length of board.
(a) 19.9 (b) 24.3
(c) 28.7 (d) 14.6
RRB RPF SI -16/01/2019 (Shift-II)

Ans : (c) Let length and breadth of board is 7x and 5x
According to the question
5x = 20.5
x = 4.1
length = 7x = 7 × 4.1 = 28.7 cm.

62. The ratio of the efficiencies of two workers are 3 : 2 . What amount should be given to P out of the daily wages of Rs 400.
(a) Rs. 240 (b) Rs. 260
(c) Rs. 250 (d) Rs. 160
RRB JE - 28/05/2019 (Shift-II)

Ans : (a)

	P		Q
Efficiency	3	:	2

Ratio of efficiency is equal to ratio of wages
Let wages of P = Rs. 3x

Wages of Q= Rs. 2x
Wages of (P + Q) = Rs. 400
3x + 2x = Rs. 400
5x = Rs. 400
x = Rs. 80
Received amount of P = 3x = 3 × 80 = Rs. 240

63. A science book contains two sections of physics and biological science in the ratio of 5 : 4 . How many pieces of biological science will be needed to make a book of 540 pages.
(a) 210 (b) 240
(c) 270 (d) 300

RRB RPF Constable -24/01/2019 (Shift-I)

Ans : (b) Physics : Biological Science = 5 : 4
Number of total pages = 540
Number of pages of biological science $= 540 \times \frac{4}{9}$
= 60 × 4 = 240

64. What is the length of large piece when the 54.6 m long wire is divided in the ratio of 12 : 29.
(a) 15.2 m (b) 7.7 m
(c) 17.4 m (d) 18.4 m

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (c) Length of wire = 24.6 m
Ratio = 12 : 29
Length of large piece $= \frac{24.6 \times 29}{41}$
($\because$ 41 = Proportional sum)
= 0.6 × 29 = 17.4 m

65. A person divides Rs. 10,390 into his son and daughter in the ratio of 11: 10. What is the amount received by the son ?
(a) Rs. 5800.32 (b) Rs. 5442.38
(c) Rs. 5390.50 (d) Rs. 6000.68

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (b) : According to the question
Received amount of son $= \frac{11}{11+10} \times 10390$
$= \frac{11}{21} \times 10390 = \frac{114290}{21}$ = Rs. 5442.38

66. An amount is divided between Moksha and Aryan in the ratio of 13 : 29. If Aryan received Rs. 551 then what amount did Moksha get ?
(a) Rs. 234 (b) Rs. 273
(c) Rs. 221 (d) Rs. 247

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d) Let the received amount of Moksha and Aryan is Rs. 13x and Rs. 29x
According to the question,
29x = 551
x = 19
$\therefore$ Received amount of Moksha = 13 ×19 = Rs. 247

67. Rs. 5,100 is distributed between A and B in the ratio of 8 : 9. Share of B is how much more than the share of A.
(a) Rs. 300 (b) Rs. 200
(c) Rs. 250 (d) Rs. 350

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) : According to the 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 – 2400
B–A=Rs.300

68. If 350 marbles are divided between Sita and Savita in the ratio of 5 : 9, then how many marbles will Savita get.
(a) 225 (b) 200
(c) 125 (d) 250

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (a) Let the marbles Sita got = 5x
Marbles Savita got = 9x
9x + 5x = 350
$x = \frac{350}{14} = 25$
Number of marbles Savita got = 9 × 25 = 225

69. The ratio of division of 88 points in Jayati and Pratik is 5 : 6. How much money did Jayati get?
(a) Rs. 40 (b) Rs. 48
(c) Rs. 56 (d) Rs. 52

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) Let Jayati got amount = $5x$
Prateek got amount = $6x$
According to the question, $6x + 5x = 88$
$x = 8$
Hence Jayati got amount = $5x = 5 \times 8$ = Rs. 40

70. 77 people are present at a party. The ratio of men and women is 4 : 7. How many women are there in the party ?
(a) 36 (b) 54
(c) 73 (d) 49

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (d) Let the number of men present in the party is 4x and the women is 7x.
Sum of women and men in the party
4x + 7x = 77
11x = 77
x = 7
Of women number = 7x = 7 × 7 = 49

71. The ratio of the number of boys and girls appearing in an examination was 5 : 6. If 3531 students took the exam then how many of them are girls ?

(a) 1936 (b) 1906
(c) 1926 (d) 1916

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (c) According to the question,
Let number of boys = 5x and number of girls = 6x
5x + 6x = 3531
11 x = 3531
$x = \frac{3531}{11} = 321$
Total girls = 6x = 6 × 321 = 1926

72. Rs. 1190 distributed between two persons in the ratio of 11:23. What is the share of the person who is getting the greatest share?
(a) Rs. 828 (b) Rs. 759
(c) Rs. 805 (d) Rs. 782

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (c) : Ratio of rupee distributed between the two persons = 11 : 23
The person receiving the beg part
$= \frac{23}{11+23} \times 1190 \quad = \frac{23}{34} \times 1190 = 23 \times 35 =$ Rs. 805

73. An amount is divided b/w Ram and Shyam in the ratio of 8 : 19. If Shyam received Rs. 247, then how much amount did Ram get ?
(a) Rs. 104 (b) Rs. 112
(c) Rs. 120 (d) Rs. 96

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (a) Let amount of Ram and Shyam is 8x, 19x respectively
From the question
19x = Rs. 247
x = 13
Amount of Ram = 8x = 8 × 13 = Rs. 104

74. The ratio of Salt and acids in a mixture is 5 : 7. If the weight of the mixture is 360g what will be the weight of the acid present in it ?
(a) 260 gm (b) 130 gm
(c) 150 gm (d) 210 gm

RRB Group-D – 12/11/2018 (Shift-III)

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 × 30 = 210 gm.

75. The ratio of the boys and girls in a school is 4 : 5. If there were 33 students in the school. How many of them were girls
(a) 180 (b) 175
(c) 185 (d) 190

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (c) : Let number of boys = 4x
and number of girls = 5x
number of students = 333
5x + 4x = 333
9 x = 333
x = 37
number of girls = 5x = 37 × 5 = 185

76. In an alloy, the ratio of gold and silver is 17 : 3. If the weight of Silvers in the alloy is 2.7g, find the weight of gold in the alloy.
(a) 12.6 g (b) 15.3 g
(c) 18 g (d) 21.2 g

RRB NTPC 29.03.2016 Shift : 1

Ans :(b) Ratio of gold and Silver in the alloy = 17 : 3
Weight of Silver = 2.7 gram
Weight of gold the alloy $= \frac{17}{3} \times 2.7 = 15.3$ gram

77. One of the 27 nurses in a nursing home has resigned. If the staff ratio is 1 : 6 in proportion to the patient, then how many maximum patients can be admitted.
(a) 156 (b) 162
(c) 150 (d) 168

RRB NTPC 05.04.2016 Shift-1

Ans : (a)
Number of nurses = 27
after resigning number of nurses = 27-1 = 26
∵ nurse : patient = 1:6
so it is clear that 1 nurse = 6 patient
∴ 26 nurse = 26×6 = 156 patient

78. The ratio of science and arts students is 5 : 3. If their total number is 1528 then find the number of students of arts?
(a) 830 (b) 664
(c) 498 (d) 573

RRB NTPC 05.04.2016 Shift-1

Ans : (d) Total number of students = 1528
ratio of student of science and art = 5:3
Hence number of student of art $= \frac{3}{8} \times 1528 = 3 \times 191 = 573$

79. A certain number of men and their dogs are travelling by train. The ratio of men and dogs is 5:2. The train has total 54 legs. Find the total number of dogs.
(a) 30 (b) 12
(c) 15 (d) 6

RRB NTPC 04.04.2016 Shift : 2

Ans : (d) Suppose number of men and dogs are 5x and 2x respectively
from the question-
$5x \times 2 + 2x \times 4 = 54$
$10x + 8x = 54$
$18x = 54$
$x = 3$
So number of dogs = 2x = 2 × 3 = 6

80. The difference b/w two positive numbers is 60, and the ratio of both numbers is 5 : 3. Find the products of both numbers.
(a) 96000 (b) 48000
(c) 144000 (d) 72000

RRB NTPC 04.04.2016 Shift : 3

Ans : (a) Let both positive number is 5x and 3x respectively

$\therefore 5x - 3x = 160$

$2x = 160 \Rightarrow x = 80$

first number = 5x = 5 × 80 = 400

second number = 3x = 3 × 80 = 240

first number × second number = 400 × 240 = 96000

81. If the ratio of two complementary angles is 4 : 5, then find the ratio of the sum of the two angles from their differences.

(a) 1 : 9 (b) 2 : 7
(c) 4 : 9 (d) 7 : 11

RRB NTPC 18.04.2016 Shift : 3

Ans : (a) Let complementary angles is 4x and 5x respectively.

sum of both = 4x + 5x = 9x

difference of both = 5x–4x = x

$\therefore$ Ratio = x : 9x = $\boxed{1:9}$

82. If a 84 m long rope is divided in the ratio 7 : 5, then the length of the longer piece (in m) is:

(a) 42 (b) 50
(c) 45 (d) 49

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (d) Let the length of piece is = 7x and 5x

$\therefore$ 7x + 5x = 84

12x = 84

x = 7

length of long piece = 7 × 7 = 49 m

83. The ratio of boys and girls in a club is 3 : 2. Which of the following could be the actual number of members?

(a) 18 (b) 25
(c) 16 (d) 24

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (b) Ratio of boys and girls in club = 3:2

so total probable number = 3+2 = 5

so according to the options total number will be 25

84. If Rs. 87 is divided between James and Radha in the ratio of 1 : 2, how much money did Radha get?

(a) Rs. 29 (b) Rs. 57
(c) Rs. 59 (d) Rs. 58

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (d) Received amount by Radha

$= \frac{2}{1+2} \times 87 = \frac{2}{3} \times 87 =$ Rs. 58

85. Rs. 69 is divided between Jason and Ruhana in the ratio of 1 : 2. How much money did Ruhana get ?

(a) Rs. 23 (b) Rs. 46
(c) Rs. 40 (d) Rs. 45

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

Ans :(b) Suppose Jason got (x) Rs. and Ruhana (2x) Rs. As per question,

x + 2x = 69

3x = 69

x = 23

Amount of Ruhana = 2x = 2 × 23 = Rs. 46

86. The ratio of the heights of Nani and Leelu is 4 : 3. If Leelu is 1.2 m tall, then what is the height of Nani?

(a) 1.8 m (b) 0.9 m
(c) 2 m (d) 1.6 m

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

Ans : (d) Let length of Nani and Lilu is 4x and 3x

According to the question,

3x = 1.2

$\Rightarrow \quad x = \frac{1.2}{3}$

Since length of Nani $4x = 4 \times \frac{1.2}{3}$

$\therefore$ length of Nani $= \frac{4.8}{3} = 1.6$ meter

Type - 5

87. If the ratio of the length of all sides of triangle are in ratio 2 : 3 : 4 and its perimeter is 63 cm, then find the length of longest side.

(a) 30 cm (b) 28 cm
(c) 21 cm (d) 14 cm

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

Ans : (b) Let sides of triangle is 2x, 3x and 4x

$\therefore$ from the question-

$2x + 3x + 4x = 63$

$9x = 63$, $x = 7$

$\therefore$ longest side of $\Delta = 4x = 4 \times 7 = 28$ cm.

88. The ratio of the working efficiencies of P, Q, R and S in doing a work is 2 : 3 : 5 : 4. The wages given for task is Rs. 4200, who got the highest amount and how much?

(a) P, Rs. 2000 (b) Q, Rs. 2000
(c) S, Rs. 1600 (d) R, Rs. 1500

RRB JE - 25/05/2019 (Shift-I)

Ans : (d) Total = Rs. 4200

Share of P = $\frac{4200 \times 2}{2+3+5+4} = \frac{4200 \times 2}{14} =$ Rs. 600

Share of Q = $\frac{4200 \times 3}{14} =$ Rs. 900

Share of R = $\frac{4200 \times 5}{14} =$ Rs. 1500

Share of S = $\frac{4200 \times 4}{14} =$ Rs. 1200

So R got the highest amount of Rs. 1500.

89. If Rs. 750 divided in three part x, y and z such a way that (x – 5) : (y – 10) : (z – 15) = 5 : 4 : 3. Then find the share of x, y and z respectively.

(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

RRB JE - 30/05/2019 (Shift-III)

Ans : (b)
(x–5) : (y – 10) : (z–15) = 5 : 4 : 3 = K
x – 5 = 5 K ⇒ x = 5 K + 5 ..... (i)
y – 10 = 4k ⇒ y = 4K + 10 ..... (ii)
z – 15 = 3k ⇒ z = 3K + 15 ..... (iii)
by adding all three equations
(x+y+z) = 12K + 30
750 –30 = 12K
$K = \frac{720}{12}$
K = 60
part of x = 5 K + 5 = 60 × 5 + 5 = 305
part of y = 4 K + 10 = 4 × 60 + 10 = 250
part of z = 3 K + 15 = 3 × 60 + 15 = 195

90. The amount of Rs. 117 is divided between P, Q, R and S by a ratio of 1/2:1/3:1/4 instead of accidentally it divided in another ratio 2:3:4. Who got highest amount in this division and how much does he get?

(a) P, Rs. 28 (b) R, Rs. 27
(c) R, Rs. 25 (d) Q, Rs. 35

RRB JE - 31/05/2019 (Shift-III)

Ans. (c) Actual ratio P : Q : R = $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$ = 6 : 4 : 3
wrong ratio P : Q : R = 2 : 3 : 4
wrong division-

part of P = $\frac{2}{9}\times 117 = \text{Rs. } 26$

part of Q = $\frac{3}{9}\times 117 = \text{Rs. } 39$

part of R = $\frac{4}{9}\times 117 = \text{Rs. } 52$

correct division-

part of P = $\frac{6}{13}\times 117 = \text{Rs. } 54$

part of Q = $\frac{4}{13}\times 117 = \text{Rs. } 36$

part of R = $\frac{3}{13}\times 117 = \text{Rs. } 27$

It is clear that maximum profit gain by R 52 – 27 = Rs. 25 in wrong division.

91. X, Y and Z together complete a work and earn Rs. 210. If the ratio of work of X, Y and Z is 4:6:5 then what is the amount received by Z?

(a) Rs. 40 (b) Rs. 70
(c) Rs. 44 (d) Rs. 45

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

Ans : (b) Received amount by Z for work

$= \frac{5}{4+6+5}\times 210$

$= \frac{5}{15}\times 210 = \text{Rs. } 70$

92. Rs. 900 has been distributed between X, Y and Z in the ratio of 4:5:6. What will be the difference between the amount of X and Z?

(a) 500 (b) 150
(c) 120 (d) 350

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (c)
X : Y : Z = 4 : 5 : 6
distributed amount = Rs. 900
difference between X and Z = $\frac{6-4}{15}\times 900$

$= \frac{2}{15}\times 900 = 60 \times 2 = \text{Rs. } 120$

93. 315 marbles are distributed between Aman, Ashok and Alok in the ratio of 7:3:5.

(a) 84 (b) 147
(c) 63 (d) 42

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (a) Number of marbles Aman have

$= \frac{7}{15}\times 315 = 147$

number of marbles Ashok have

$= \frac{3}{15}\times 315 = 21\times 3 = 63$

number of marbles Alok have = $\frac{5}{15}\times 315 = 105$

So Aman got marble in compare of Ashok = 147–63 = 84

94. If the angle of triangle are in ratio 5:6:7, then the triangle is called

(a) equilateral triangle
(b) Acute angle triangle
(c) Right triangle
(d) Obtuse angle triangle

Ans : (b) Let the angle of triangle is 5x, 6x, 7x
from the law of triangle
sum of three angles of Δ = 180^0
5x + 6x + 7x = 180^0
18x = 180^0
x = $\frac{180^0}{18} = 10^0$
then angle of Δ, 5x = 50°
6x = 60°
7x = 70°
So it is clear from the three angles of triangle that these all angle is less from 90º so this is the tendency of acute angle.

95. If Rs. 686 is divided into four parts, in ratio of $\frac{1}{2}:\frac{2}{3}:3:4$, then the first part is?

(a) Rs. 48 (b) Rs. 56
(c) Rs. 52 (d) Rs. 42

RRB Group-D – 18/09/2018 (Shift-I)

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

96. An amount of Rs. 1000 is distributed between Tara, Tamanna and Teena are in ratio of 4:5:6. What is difference between amount of Tara and Teena?

(a) Rs. 250 (b) Rs. 133.33
(c) Rs. 150 (d) Rs. 234

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (b) : Suppose recieved amount by Tara, Tamanna and Tina is Rs. 4x, Rs. 5x and Rs. 6x respectively.

$\therefore$ 4 x + 5 x + 6 x = 1000

15 x = 1000

$x=\frac{200}{3}$

So difference of amount of Tara and Tina

= x × (6 – 4)= 2x

$=\frac{2\times200}{3}=$ Rs. 133.33

97. Rs. 156 are divided in the ratio of 1:2:4:5. Which of the following order will give the ratio of rupees?

(a) 13,26,53, 64 (b) 13,26,51, 66
(c) 13,26,52, 65 (d) 13,25,53, 65

RRB NTPC 22.04.2016 Shift : 2

Ans : (c) Ratio of rupees-

$\Rightarrow\frac{1}{1+2+4+5}\times156=\frac{1}{12}\times156=13$

$\Rightarrow\frac{2}{12}\times156=26$

$\Rightarrow\frac{4}{12}\times156=52$

$\Rightarrow\frac{5}{12}\times156=65$

Intended answer $\Rightarrow$ 13, 26, 52, 65

98. If Rs. 130 are divided in ratio 3:6:8:9 what amount will be given to each other.

(a) 15, 30, 41, 44 (b) 15, 30, 40, 45
(c) 15, 30, 39, 46 (d) 15, 31, 39, 45

RRB NTPC 17.01.2017 Shift-3

Ans : (b) Sum of proportion = 3+6+8+9 = 26

first part $=\frac{3}{26}\times130=15$

second part $=\frac{6}{26}\times130=30$

third part $=\frac{8}{26}\times130=40$

fourth part $=\frac{9}{26}\times130=45$

99. A certain prize money is given to P, Q, R and S in ratio 3:5:7. If R gets Rs. 1000 more than P, what is share of Q?

(a) Rs. 750 (b) Rs. 1250
(c) Rs. 1750 (d) Rs. 1500

RRB NTPC 05.04.2016 Shift-1

Ans : (b) Let given reward amount of P, Q and R is 3x, 5x and 7x respectively.

According to the question 7x – 3x = 1000

$\Rightarrow$ 4x = 1000

$\Rightarrow$ x = 1000/4 = 250

$\therefore$ share of Q = 5x = 5×250 = Rs.1250

100. If there are three numbers in the ratio of 2:5:7 and their sum is half of the 280, then what is the square of the smallest number among the three?

(a) 400 (b) 900
(c) 2500 (d) 6400

RRB NTPC 03.04.2016 Shift : 3

Ans : (a) Let three numbers are 2x, 5x and 7x respectively

According to the question,

$2x+5x+7x=\frac{280}{2}$

14x = 140 , $\boxed{x=10}$

The square of smallest number = $(2x)^2 = (2\times10)^2 = (20)^2 = 400$

101. If the three numbers are in the ratio of 4:5:7 and their sum is 320. Find the sum of the smallest and the largest number among them.

(a) 140 (b) 220
(c) 240 (d) 180

Ans (b) Let numbers are 4x, 5x and 7x.

$\therefore$ 4x + 5x + 7x = 320

16x = 320

x = 20

$\therefore$required sum = 4x + 7x = 11x = 11 × 20 = 220

102. If three number are in the ratio of 1:3:5 and their sum is 10800 then find the largest number in three numbers.

(a) 1200 (b) 3600
(c) 6000 (d) 5400

RRB NTPC 02.04.2016 Shift : 3

Ans : (c)

First number $=\frac{1}{1+3+5}\times10,800=\frac{1}{9}\times10,800=1200$

second number $=\frac{3}{9}\times10,800=3600$

third number $=\frac{5}{9}\times10800=5\times1200=6000$

so largest number = 6000

103. If the ratio of angles of a quadrilateral is 3:5:9:13 then find the largest angle?

(a) 165° (b) 180°
(c) 156° (d) 190°

RRB NTPC 29.03.2016 Shift : 1

Ans : (c) Ratio of angles of quadrilateral $= 3:5:9:13$
Let angles of quadrilateral are 3x, 5x, 9x and 13x
$\because$ sum of four angles of quadrilateral $= 360°$
$\therefore \quad 3x + 5x + 9x + 13x = 360°$
$30x = 360°$ or $x = 12°$
largest angle of quadrilateral $= 13x = 13 \times 12 = 156°$

104. If the ratio of the angles of a triangle is 2:3:7, find the ratio of the largest angle to the smallest angle.

(a) 7:2 (b) 2:3
(c) 7:1 (d) 3:5

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) Let the angles of triangle are 2x, 3x and 7x respectively.
$\therefore$ 2x + 3x + 7x = 180°
12x = 180°
$\Rightarrow x = \frac{180°}{12} \quad x = 15°$
so largest angle = 7x
$= 7 \times 15° = 105°$
Smallest angle = 2x
$= 2 \times 15° = 30°$
Ratio = 105: 30 = 7:2

105. If the ratio of the angles of a triangle is 1:2:3, then find the smallest angles.

(a) 30° (b) 60°
(c) 70° (d) 45°

RRB NTPC 18.04.2016 Shift : 3

Ans : (a) Let the angles of triangle are x, 2x and 3x respectively.
According to the question,
x + 2x + 3x = 180° {sum of three angles of triangle is 180°}
$\Rightarrow$ 6x = 180°
$\Rightarrow$ x = 30°
So smallest angle = x = 30°

106. If the ratio of the angles of a triangle is 1:4:7 then find the ratio of the smallest angle to the largest angle.

(a) 7 : 2 (b) 2 : 3
(c) 7 : 1 (d) 3 : 5

RRB NTPC 12.04.2016 Shift : 3

Ans : (c) sum of three angles of triangle is 180°
$\therefore$ smallest angle $= \frac{1}{1+4+7} \times 180 = \frac{1}{12} \times 180 = 15°$
largest angle $= \frac{7}{1+4+7} \times 180° = \frac{7}{12} \times 180° = 105°$
required ratio = 105 : 15 = 7 : 1

107. If Rs. 176 is divided in the ratio of 2:5:6:9 the rupees will be.

(a) 16, 40, 49 and 71 (b) 16, 40, 47 and 73
(c) 16, 40, 48 and 72 (d) 16, 41, 47 and 72

RRB NTPC 07.04.2016 Shift : 1

Ans : (c) Let the ratio = 2x : 5x : 6x : 9x
$\Rightarrow$ 2x + 5x + 6x + 9x = 176
22x = 176
$x = \frac{176}{22}$
x = 8
first part = 2 × 8 = 16
second part = 5 × 8 = 40
third part = 6 × 8 = 48
fourth part = 9 × 8 = 72

108. Ritesh, Gaurav and Jugnu invest in the ratio of 2:5:7. The ratio of income after return of their investment is 5:3:2. If Gaurav earns more than Rs. 150 from Ritesh, find the total income.

(a) Rs. 1170 (b) Rs. 1050
(c) Rs. 1240 (d) Rs. 1370

RRB NTPC 22.04.2016 Shift : 1

Ans : (a) Let investment of Ritesh, Gaurav and Jugnu are 2x, 5x and 7x respectively.
Ratio of income after returning of investment
$= \frac{2x \times 5}{100} : \frac{5x \times 3}{100} : \frac{7x \times 2}{100}$
$= \frac{10x}{100} : \frac{15x}{100} : \frac{14x}{100}$
According to the question-
$\frac{15x}{100} - \frac{10x}{100} = 150$
$\Rightarrow \frac{5x}{100} = 150$
$\Rightarrow x = 3000$
total income $= \frac{10 \times 3000}{100} + \frac{15 \times 3000}{100} + \frac{14 \times 3000}{100}$
= 300 + 450 + 420 = Rs. 1170

109. Mother distributed some amount in her Children, Arvind, Benu and Chitra in the ratio of 2:3:4. If Beenu receive Rs. 51, then what will be the amount received by Chitra and Arvind respectively?

(a) 34, 102 (b) 85, 34
(c) 68, 34 (d) 68, 136

RRB NTPC 28.04.2016 Shift : 3

Ans : (c) Let the amount of Arvind, Beenu and Chitra are 2x, 3x and 4x respectively.
$\therefore$ 3x (amount of Beenu) = 51
x = Rs. 17
$\therefore$ received amount by Chitra and Arvind = 4x and 2x
= 4 × 17 and 2 × 17
= 68 and 34

Type - 6

110. If 12, x, 48 are in consecutive ratio, then find the value of x.

(a) 24 (b) 21
(c) 36 (d) 16

RRB RPF Constable -19/01/2019 (Shift-III)

Ans : (a)
$\because$ 12, x and 48 are in consecutive ratio
$\therefore$ 12 : x : : x : 48
$\Rightarrow \frac{12}{x} = \frac{x}{48}$
$x^2 = 12 \times 48$
$x^2 = \overline{2\times2} \times 3 \times \overline{2\times2} \times \overline{2\times2} \times 3$
$x = 2 \times 2 \times 2 \times 3 = 24$

111. In x : 1/18 : : 3/5 : 5/9 find the value of x.

(a) 4/25 (b) 3/50
(c) 3/25 (d) 7/9

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

Ans : (b) $x : \frac{1}{18} : : \frac{3}{5} : \frac{5}{9}$
$x \times \frac{5}{9} = \frac{1}{18} \times \frac{3}{5}$
$x = \frac{1}{18} \times \frac{3}{5} \times \frac{9}{5}$
So, $x = \frac{3}{50}$

112. The first three terms of any ratio are 3, 5 and 21 respectively. Find its fourth term.

(a) 25 (b) 35
(c) 30 (d) 20

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

Ans. (b) : Let fourth term is x
3 : 5 :: 21: x
$\frac{3}{5} = \frac{21}{x}$
$3x = 21 \times 5$
$x = \frac{21\times5}{3} = 7 \times 5 = 35$

113. Which of the following should be added in each to make the numbers 4, 8, 12, 22 proportional?

(a) $\frac{4}{3}$ (b) $\frac{3}{4}$
(c) $\frac{8}{3}$ (d) $\frac{5}{6}$

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (a) Let that number is k
then,
4 + k : 8 + k : : 12 + k : 22 + k
$\frac{4+k}{8+k} = \frac{12+k}{22+k}$
$88 + 4k + 22k + k^2 = 96 + 12k + 8k + k^2$
$88 + 26k = 96 + 20k$
$6k = 8$
$k = \frac{8}{6} = \frac{4}{3}$
So $k = \frac{4}{3}$ should be added in each number.

114. If 25, 35 and P are consecutive ratio, find the value of p.

(a) 60 (b) 50
(c) 75 (d) 49

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (d) $\because$ 25, 35 and P are in consecutive ratio
So, $\frac{25}{35} = \frac{35}{P}$
$P = \frac{35\times35}{25}$
$P = 7 \times 7 = 49$

115. Find the fourth proportional of 3, 4 and 9 ____

(a) 11 (b) 12
(c) 16 (d) 10

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (b) Let fourth proportion at is x
then, 3 : 4 :: 9 : x
$\frac{3}{4} = \frac{9}{x}$
$3x = 9 \times 4$
$x = \frac{9\times4}{3}$
x = 12

116. If 5 : 9 : : x : 27 then what is value of x ?

(a) 6 (b) 3
(c) 18 (d) 15

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (d) 5 : 9 : : x : 27
$\frac{5}{9} = \frac{x}{27}$
$\boxed{x = 15}$

117. If p : 18 : : 5 : 3, then find the value of p

(a) 60 (b) 30
(c) 25 (d) 50

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (b) : Proportion-
p : 18 : : 5 : 3
$\therefore$ $p \times 3 = 18 \times 5$
$p = \frac{18\times5}{3}$
$p = 6 \times 5$
$p = 30$

118. If 7 : 9 : : x : 36 then find the value of x.

(a) 21 (b) 35
(c) 7 (d) 28

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (d)
7 : 9 : : x : 36
$9x = 36 \times 7$
$9x = 252$
$x = 28$

119. Find the fourth proportional number of 2, 4 and 8.

(a) 15 (b) 14
(c) 16 (d) 18

RRB NTPC 17.01.2017 Shift-3

Ans : (c) Let fourth proportional number = x

$\therefore$ 2 : 4 : : 8 : x

2 × x = 4 × 8 (by proportional law)

$x = \frac{4\times 8}{2} \Rightarrow \boxed{x = 16}$

120. In $\frac{26}{21} : \frac{24}{9} :: k : \frac{14}{13}$ find the value of k.

(a) $\frac{1}{3}$ (b) 2
(c) $\frac{1}{2}$ (d) 3

RRB NTPC 18.01.2017 Shift : 1

Ans : (c) $\frac{26}{21} : \frac{24}{9} :: k : \frac{14}{13}$

$\Rightarrow \frac{26}{21} \times \frac{14}{13} = \frac{24}{9} \times K$

$\Rightarrow K = \frac{26\times 14\times 9}{21\times 13\times 24}$ $\Rightarrow K = \frac{1}{2}$

121. Find the value of x only if the three numbers are 2.6, 1.3 and x are in certain ratio.

(a) 1.95 (b) 1.83
(c) 3.9 (d) 0.65

RRB NTPC 18.01.2017 Shift : 2

Ans : (d) 2.6 : 1.3 : : 1.3 : x

$\frac{2.6}{1.3} = \frac{1.3}{x}$

$x = \frac{1.3\times 1.3}{2.6}$ $\boxed{x = 0.65}$

122. 4 terms are in consecutive ratio first, second and fourth terms are 4, 22 and 33. Then find the third term.

(a) 8 (b) 6
(c) 11 (d) 3

RRB NTPC 18.01.2017 Shift : 2

Ans : (b) Let third term = P

$\Rightarrow$ 4 : 22 : : P : 33

$\Rightarrow$ 4 × 33 = 22 × P

$P = \frac{4\times 33}{22} = 6$

123. Find the fourth proportional of 9, 17 and 27?

(a) 57 (b) 48
(c) 51 (d) 53

RRB NTPC 06.04.2016 Shift : 1

Ans : (c) Let fourth proportional of 9, 17 and 27 is x

$\therefore$ 9 : 17 :: 27 : x

$9\times x = 17\times 27 \Rightarrow x = \frac{17\times 27}{9}$

$\Rightarrow x = 17\times 3 = 51$

124. What is the fourth proportional number of 14, 28 and 21?

(a) 41 (b) 42
(c) 14 (d) 40

RRB NTPC 19.01.2017 Shift : 1

Ans : (b) 14 : 28 : : 21 : x

fourth proportional number $(x) = \frac{28\times 21}{14} = 42$

125. What is the fourth proportional 15, 12, 20 ?

(a) 14 (b) 12
(c) 18 (d) 16

RRB NTPC 19.01.2017 Shift : 2

Ans : (d) Let fourth proportion = P

$\Rightarrow$ 15 : 12 : : 20 : P

$\Rightarrow \frac{15}{12} = \frac{20}{P}$

$\Rightarrow$15 × P = 12 × 20

Hence $\boxed{P = 16}$

126. If 14, x and 56 are in consecutive ratio, find the value of x.

(a) 28 (b) 21
(c) 8 (d) 42

RRB NTPC 30.04.2016 Shift : 1

Ans : (a)

$\because$ 14, x and 56 is in are in consecutive ratio

$\therefore$ 14 : x :: x : 56

$x^2 = \sqrt{14\times 56}$

$x^2 = \sqrt{7\times 2\times 2\times 2\times 2\times 7}$

$x = 7\times 2\times 2 = 28$

127. The mean proportional between 0.16 and 0.64 is:

(a) 0.27 (b) 0.48
(c) 0.40 (d) 0.32

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (d) Let mean proportional between 0.16 and 0.64 is x.

$\therefore$ 0.16 : x : : x : 0.64

According to the question, $\frac{0.16}{x} = \frac{x}{0.64}$

$x^2 = 0.16\times 0.64$

x = 0.4×0.8

x = 0.32

128. Find the mean proportional between 2 and 98?

(a) 13 (b) 14.5
(c) 16 (d) 14

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

Ans : (d) Then proportion between 2 and 98

$= \sqrt{2\times 98} = \sqrt{2\times 7\times 14} = \sqrt{14\times 14} = 14$

Type - 7

129. There are a total of 221 rupees in the form of 50 paise, Rs. 1 and Rs. 2 in Manu's Piggy bank whose ratio is 4:3:6 what is number of 50 paise coins in Piggy bank?

(a) 52 (b) 13
(c) 104 (d) 26

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

Ans : (a) Let number of coins of 50 paise 1 rupees and 2 rupees are 4x, 3x and 6x
According to the question,

$$\frac{4x}{2}+3x+2\times 6x=221$$

17x = 221 x = 13
Number of coins of 50 paise = 4x = 4 × 13 = 52

130. In a bag 25 paise, 10 paise and 5 paise coins are in the ratio 1:2:3. If the bag has Rs. 30 in total then how many coins of 5 paise are there?

(a) 100 (b) 200
(c) 150 (d) 50

RRB JE - 22/05/2019 (Shift-I)

Ans : (c) Let 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
So number of coins of 5 paise = 3x = 3 × 50 = 150

131. A boy has total amount Rs. 60 in which the coin of 50 paise and 25 paise are included in the ratio of 5:6:8. Find the no. of coins of 25 paise?

(a) 30 (b) 48
(c) 32 (d) 42

RRB RPF SI -12/01/2019 (Shift-II)

Ans : (b) Let the number of coins of Rs. 1, 50 paise and 25 paise is 5x, 6x and 8x respectively

value of coins $\Rightarrow$ Rs. $\left(\frac{5x}{1}+\frac{6x}{2}+\frac{8x}{4}\right)$

$\Rightarrow$ Rs. (5x + 3x + 2x)
= 10x
but total cost = Rs. 60 (given)
$\therefore$ 10x = 60
x = 6
so number of coins of 25 paise = 8 × 6 = 48

132. In a bag, the coin of 50 paise, 25 paise and 10 paise are in the ratio of 5:4:3. If the value of coin is Rs. 171. Find the number of all types of coins.

(a) 200, 250, 150 (b) 225, 180, 135
(c) 140, 150, 280 (d) 200, 360, 160

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (b) Let number of coins of 50 paise, 25 paise and 10 paise in the bag is 5x, 4x, 3x respectively

value of coins = $\frac{5x}{2}:\frac{4x}{4}:\frac{3x}{10}$

According to the question,

$\Rightarrow$ $\frac{5x}{2}+\frac{4x}{4}+\frac{3x}{10}=171$

$\Rightarrow$ 50x + 20x + 6x = 3420
$\Rightarrow$ 76x = 3420,
$\Rightarrow$ x = 45

Hence no of coins = 5x = 5 × 45 = 225
= 4x = 4 × 45 = 180
= 3x = 3 × 45 = 135

i.e. coins of 50 paise, 25 paise and 10 paise is 225, 180, 135 respectively.

133. The ratio of the numbers of blue and red balls in the bag is constant. When there were 44 red balls, the number of blue balls was 36. If the number of blue balls is 54, then what will be the number of red balls?

(a) 66 (b) 62
(c) 64 (d) 68

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (a) Let number of red balls = x
According to the question,

$$\frac{44}{36}=\frac{x}{54}$$

$$x=\frac{44\times 54}{36}$$

x = 66
Hence number of red balls will be 66 in the bag.

134. Suraj have the coin of 50 paise, Rs. 1 and Rs. 5 in the ratio of 8:5:9. Suraj have total amount of Rs. 648. How many coins of 50 paise does he has?

(a) 96 (b) 84
(c) 60 (d) 108

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (a) :
Suppose number of coins of 50 paise, Rupees 1, Rupees 5 is 8x, 5x and 9x respectively

then total value of these = Rs. $\left(\frac{8x}{2}+5x\times 1+9x\times 5\right)$

= Rs. $(4x+5x+45x)$ = Rs. 54x

$\therefore$ 54x = 648
x = 12
number of coins of 50 paise = 8x = 8×12 = 96

135. Ramesh have the coins of 50 paise, Rs. 1 and Rs. 5 in the ratio of 2:3:5 respectively. He has a total amount of Rs. 116. How many coins of 50 paise he has?

(a) 12 (b) 6
(c) 4 (d) 8

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (d) :
Suppose number of coins of 50 paise Rs, 1, Rs 5 is 2x, 3x, 5x respectively

then total value of these $= \frac{1}{2}\times 2x + 1\times 3x + 5\times 5x$

According to the question,

x + 3x + 25x = 116

29x = 116

x = 4

Hence number of coins of 50 paise = 2x = 2 × 4 = 8 coins

136. Raju has Rs. 210 as coins 20% of the coins are Rs. 5, 25% Rs. 10 and 15% is Rs. 2 and remaining Rs. 1 are in the denominations. Find the no. of coins of Rs. 1.

(a) 24 (b) 22
(c) 25 (d) 20

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (d) Raju has a total of Rs. 210 as coins
Let the total ratio of the number of coins of Raju is 100%

Rs. 5	Rs.10	Rs. 2	Rs. 1
20%	25%	15%	40%

Ratio of number of coins $= \frac{1}{5}:\frac{1}{4}:\frac{3}{20}:\frac{2}{5}$

$= 4 : 5 : 3 : 8$

Let the number of coins = 4x , 5x, 3x, 8x

Cost of total number of coins =

4x × 5 + 5x × 10 + 3x × 2 + 8x × 1 = 210

20x + 50x + 6x + 8x = 210

84x = 210

$x = \frac{210}{84} = \frac{10}{4}$

Hence number of coins of Rs. 1 $= 8x = 8\times\frac{10}{4} = 20$

137. An amount of Rs. 110 is in the form of coins of Rs. 2, Rs. 1 and 50 paise, which is the ratio of 1:2:3 respectively. How many coins of 50 paise are in it.

(a) 20 (b) 40
(c) 60 (d) 80

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (c) Let number of coins of Rs. 2, Rs. 1 and 50 Paise is x, 2x and 3x respectively.
Total amount = Rs. 110
According to the question,

(x×2) + (2x ×1) + (3x × 0.50) = 110

⇒ 2x + 2x + 1.5x = 110

⇒ 5.5 x = 110

$\Rightarrow x = \frac{110}{5.5} = 20$

⇒ x = 20

Number of coins of 50 paise = 3x = 3 × 20 = 60

138. In a bag of Rs. 10, Rs. 20 and Rs. 50 notes are kept in the ratio of 1:3:5 if the total of notes amount kept in the bag is Rs. 1920. What is the total number of Rs. 20?

(a) 6 (b) 30
(c) 18 (d) 12

RRB NTPC 18.01.2017 Shift : 2

Ans : (c)
Let number of notes of Rs. 10, Rs, 20, Rs. 50 = x, 3x, 5x
According to the question,
Total cost = 10 × x + 20 × 3x + 50 × 5x = 1920

⇒ 320x = 1920

⇒ x = 6

Total number of notes of 20 Rs. = 3x

= 3 × 6 = 18

139. In a bag coins of 25 paise, 10 paise and 5 paise are in ratio 1:2:3. If their total value is Rs. 180, then how many coins of 10 paise are found in it?

(a) 300 (b) 400
(c) 600 (d) 900

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) Let ratio of coins of 25 paise, 10 paise and 5 paise is x, 2x and 3x.

25 paise = Rs. $\frac{1}{4}$

10 paise = Rs. $\frac{1}{10}$

5 paise = Rs. $\frac{1}{20}$

$\frac{1}{4}x + \frac{2}{10}x + \frac{3}{20}x = 180$

$\frac{5x + 4x + 3x}{20} = 180$

$12x = 180\times 20$

$x = \frac{180\times 20}{12}$

$x = 15\times 20$ or $x = 300$

Number of coins of 10 paise $2x = 300\times 2 = 600$

140. The value of coins of Rs. 1, 50 paise and 25 paise is Rs. 93.75 and the ratio of their number is 3:4:5. Find the no. of coins of each type.

(a) 42, 56, 70 (b) 45, 60, 75
(c) 40, 70, 75 (d) 46, 58, 75

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (b) Let number of Rs. coins of 1, 50 paise and 25 paise is 3x, 4x and 5x respectively
According to the 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 =3×15=45

number of coins of 50 paise =4×15=60

number of coins of 25 paise =5×15=75

141. A bag contains coins of Rs. 1, Rs. 5 and Rs. 10. Assuming that there are equal number of coins of Rs. 1, Rs. 5 and Rs. 10 what will the total number of coins in the bag if the total money is Rs. 368 ?

(a) 69 (b) 96
(c) 56 (d) 65

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

Ans : (a) Let the coins of all three types are in equal number (x) then
there are coins of 1 Rs.
there are coins of 5 Rs.
there are coins of 10 Rs.
According to the question,

$$x + 5x + 10x = 368$$
$$16x = 368$$
$$x = 23$$

number of total coins $= 3x = 3 \times 23 = 69$

Type - 8

142. Divide Rs. 305 into three parts in this way the 3/7 first of the, 2/3 of the second, 4/4 of the third are in equal find the third part.

(a) Rs. 62 (b) Rs. 72
(c) Rs. 75 (d) Rs. 40

RRB RPF SI -16/01/2019 (Shift-II)

Ans : (c) Let the three parts be x, y and z Rs. respectively

$$\therefore \frac{3}{7}x = \frac{2}{3}y = \frac{4}{5}z = k \quad \text{(Suppose)}$$

$$\therefore x = \frac{7k}{3}, y = \frac{3k}{2}, z = \frac{5k}{4}$$

$$x : y : z = \frac{7k}{3} : \frac{3k}{2} : \frac{5k}{4} = 28 : 18 : 15$$

$$\text{part of third}(z) = 305 \times \frac{15}{(28+18+15)}$$

$$= 305 \times \frac{15}{61} = \text{Rs. } 75$$

143. Divide 1870 in three part. So that half of the first part 1/3 of the second part and 1/6 of the third part are in equal. What will be the all three parts ?

(a) 360, 510, 1000
(b) 340, 510, 1020
(c) 340, 490, 1040
(d) 360, 490, 1020

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (b) According to the question,
Half of first part = 1/3 of second part = 1/6 of part third

$$\frac{I}{2} = \frac{II}{3} = \frac{III}{6}$$

I : II : III = 2 : 3 : 6

$$\text{I part} = 1870 \times \frac{2}{11} = 340$$

$$\text{II part} = 1870 \times \frac{3}{11} = 510$$

$$\text{III part} = 1870 \times \frac{6}{11} = 1020$$

Hence all three parts are 340, 510 and 1020

144. 1380 divided between A, B and C in which A gets 5 times of C and 3 times of B-

(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

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (d) According to the question,

$$A = 5C, \ A = 3B$$
$$\Rightarrow \quad A = 3B = 5C$$
$$\Rightarrow \quad \frac{A}{15} = \frac{B}{5} = \frac{C}{3}$$

A : B : C = 15 : 5 : 3
proportional sum = 23

$$A = \frac{1380 \times 15}{23} = \text{Rs. } 900$$

$$B = \frac{1380 \times 5}{23} = \text{Rs. } 300$$

$$C = \frac{1380 \times 3}{23} = \text{Rs. } 180$$

145. Rs. 13,680 is divide into three part like that first part is 3/5 of third part, second and third part are in ratio 4:7, How much will be the first part?

(a) 3780 (b) 6300
(c) 1600 (d) 4800

RRB NTPC 29.03.2016 Shift : 1

Ans : (a) Let first, second and third part is x, y and z respectively.

$$\therefore x = \frac{3}{5}z \Rightarrow x : z = 3 : 5$$

$$y : z = 4 : 7 \Rightarrow z : y = 7 : 4$$

x	z	y
3	5	
	7	4
21 :	35 :	20

$$\text{first part} = \frac{21}{76} \times 13680 = 3780$$

10.

Partnership

Type - 1

1. P invests Rs. 3500 in the business. After 5 month Q join with some investment. If the profit of Q is 50% more than the profit of P, then find the investment of Q?

(a) Rs.7000 (b) Rs.5000
(c) Rs.9000 (d) Rs.6500

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

Ans : (c) Let investment of Q = x Rs.
Profit ratio of P and Q = (3500 ×12) : (x×7) = 6000 : x
∴ from the question, $x = 6000 \times \frac{150}{100} = \text{Rs.}9000$

2. In an occupation P invests half of Q and Q invests half of R. If the Rs.7000 monthly profit is shared between them, then what is the share of R?

(a) Rs.2000 (b) Rs.3000
(c) Rs.1000 (d) Rs.4000

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

Ans : (d) Invested amount by R = x Rs.

Invested amount by Q $= \frac{x}{2}$ Rs.

Invested amount by P $= \frac{x}{4}$ Rs.

(Profit's ratio)

$R : Q : P = x : \frac{x}{2} : \frac{x}{4}$
$= 4x : 2x : x$

Share of R $= 7000 \times \frac{4x}{7x} = \text{Rs. } 4000$

3. X and Y started a business. X invested Rs.8000 and Y invested Rs.10,000. After 6 months Z also joined that business with an investment of Rs. 6000. If there is a profit of Rs.9,660 in 3 year. What is the share of Z.

(a) Rs.1,500 (b) Rs.2,100
(c) Rs.1,900 (d) Rs.1,200

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) : Investment ratio of X, Y and Z =
8000 × 3 : 10000 × 3 : 6000 × 2.5
24000 : 30000 : 15000
8 : 10: 5
Profit = Rs. 9660

Share of Z = $\frac{5}{8+10+5} \times 9660 = \frac{5}{23} \times 9660 = \text{Rs. } 2100$

4. X, Y and Z takes a field at an annual rent of Rs. 415. If X graze 25 cows in that fie for 6 month. Y graze 40 cows for 8 month and Z graze 30 cows for the whole year, then what is the share of Y in the rent.

(a) Rs. 120 (b) Rs. 154
(c) Rs. 150 (d) Rs. 160

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (d) Partnership ratio of X, Y and Z =

X	:	Y	:	Z
25 × 6	:	40 × 8	:	30 × 12
15	:	32	:	36

∵ Total rent Rs. 415

∴ Rent of Y $= \frac{32}{15+32+36} \times 415 = 32 \times 5$
= Rs. 160

5. A and B start a business in partnership by investing Rs. 12,000 and Rs. 6000 respectively. After 8 month C with a capital of Rs. 15,000 also joins that business. After 2 years how much C's share will be in the profit of Rs. 33600.

(a) Rs. 15,000
(b) Rs. 12,000
(c) Rs. 10,000
(d) Rs. 22,000

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (b) : Profit ratio of A, B and C
= 12,000 × 24 : 6,000 × 24 : 15,000 × (24-8)
= 12 × 24 : 6 × 24 : 15 × 16
= 6 : 3 : 5

Hence C's share in profit = $\frac{5}{6+3+5} \times 33,600$

$= \frac{5}{14} \times 33,600$

= Rs. 12,000

6. P, Q and R enters a partnership investing, Rs. 35000, Rs. 45000 and Rs. 55000 : Find their corresponding share in the annual profit of 40500.

(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

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (d) Profit ratio between P, Q and R
= 35000 × 1 : 45000 × 1 : 55000 × 1
= 7 : 9 : 11
Total profit = Rs. 40500

so P's share $= \frac{40500 \times 7}{7+9+11} = \frac{40500 \times 7}{27}$ = Rs. 10500

Q's share $= \frac{40500 \times 9}{27}$ = Rs. 13500

R's share $= \frac{40500 \times 11}{27}$ = Rs. 16500

So relevant benefits of P, Q and R is Rs. 10500, Rs. 13500 and Rs. 16500

7. What will be the ratio of the both in the profit of investment by Surabhi Rs. 6000 for 5 months and Urba Rs. 5000 for 6 months?

(a) 36 : 25 (b) 6 : 5
(c) 5 : 6 (d) 1 : 1

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (d)
Total capital put in the industry by Surabhi
$= 5 \times 6000 = 30000$
Total capital put in the industry by Urba
$= 6 \times 5000 = 30000$
∵ Capital put in the industry is equal by Surabhi and Urba
∴ Profit ratio of both = 30000 : 30000 = 1 : 1

Type - 2

8. P and Q invest in a business in the ratio of 5 : 13. Q took out his amount after 6 months. If he shared his profit in the ratio of 25:26, then how long the amount of P was kept for the industry?

(a) 8 months
(b) 15 months
(c) 18 months
(d) 12 months

RRB JE - 24/05/2019 (Shift-III)

Ans : (b) Suppose P invested in x months
Q invested in 6 months
According to the question,

$$\frac{5 \times x}{13 \times 6} = \frac{25}{26}$$

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

x = 15 months

9. A and B by invest the Rs. 50000 and Rs. 60000 enter into a partnership. After x month C invests amount Rs. 7000 and join them. At the end of the year before x month B comes out of the partnership. If they share the profit the ratio of 20:18:21 then what is the value of X?

(a) 4 (b) 6
(c) 5 (d) 3

RRB JE - 28/05/2019 (Shift-II)

Ans : (d) A in any business invests C_A capital for T_A time, B invests C_B capital for T_B time, C invests C_C capital for T_C time then profit's ratio =
$P_A : P_B : P_C = C_A t_A : C_B t_B : C_C t_C$
20 : 18 : 21 = 50000 × 12 : 60000 × (12–x) : 70000 × (12 – x)
20 : 18 : 21 = 60 : 6 (12 – x) : 7 (12 – x)

$$\frac{20}{18} = \frac{60}{6(12-x)}$$

x = 3

10. P and Q enter into a partnership with an investment of Rs. 1400 and Rs. 1800. They keep half of the profit for operating the business and distribute the remaining portion in proportion to their investment. If the difference at their part in profit is 47. Find the total profit?

(a) Rs.752 (b) Rs.804
(c) Rs.954 (d) Rs.504

RRB JE - 22/05/2019 (Shift-III)

Ans : (a) Profit = capital × time
Capital's ratio of P and Q = 1400 : 1800 = 7 : 9
suppose total profit is x
∴ Half of the profits are divided according to their capital
∴ Profit ratio of P and Q $= \frac{7x}{2} : \frac{9x}{2}$
According to the question,

$$\frac{9x}{2} - \frac{7x}{2} = 47$$

2x = 47 × 2
x = 47
∴ Total profit of P and Q = (7x + 9x) = 16x
= 16 × 47 = Rs. 752

11. A, B and C invested capital in the ratio of 2:3:5. The ratio of their investment time is 4:5:6. The ratio of profit will be between them?

(a) 08: 15: 20 (b) 05: 15: 30
(c) 08: 15:30 (d) 07: 15: 30

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (c)
Capital investment ratio = A : B : C
= 2 : 3 : 5
Ratio of investment time = 4 : 5 : 6
So profit ratio
= 2 × 4 : 3 × 5 : 5 × 6
= 8 : 15 : 30

12. Urmi and Lokesh started a partnership with an investment of Rs. 11,250 and Rs. 13125. But due to financial crisis one of these had to withdraw his investment after 8 months of his investment. In what ratio should the profit of the first 12 months be divided into both?
(a) 7 : 9 (b) 9 : 7
(c) 7 : 6 (d) 6 : 7
RRB Group-D – 02/11/2018 (Shift-II)

Ans. (b) Profit ratio of both
Urmi : Lokesh = 11250 × 12 : 13125 × 8
= 2250 × 12 : 2625 × 8
= 450 × 12 : 525 × 8
= 18 × 12 : 21 × 8
= 6 × 3 : 7 × 2
= 9 : 7

13. Tarun and Tapan started a partnership with investments of Rs. 13000 and Rs. 19500 but due to some financial emergency Tapan had to with draw his investment after 8 months. In what proportion of the both should be shared the profit of the first 12 months?
(a) 1 : 2 (b) 3 : 2
(c) 1 : 1 (d) 2 : 3
RRB Group-D – 28/09/2018 (Shift-I)

Ans : (c) Profit's ratio of first 12th month = (13,000 × 12) : (19, 500 × 8)
= 1,56, 000 : 1,56, 000
= 1 : 1

14. Ramdas invested Rs. 90000 in the imitation jewelry business. After few months later, Shyamdas became a partner in the business with an investment of Rs. 30000. At the end of the year total profit was divided into both on the ratio of 4:1. After how many months would Shyamdas join in business?
(a) 4 (b) 3
(c) 1 (d) 6
RRB NTPC 19.04.2016 Shift : 1

Ans : (b) Shyamdas joined in business after x months
Share's ratio of both in the business
= 90000 × 12 : 30000 × (12–x)
= 36 : (12–x)
$\therefore \frac{36}{12-x} = \frac{4}{1}$ or 12 – x= 9 or x = 3

15. Umar and Avinash started a partnership with investments of Rs. 10,000 and Rs. 15,000, respectively but due to a financial emergency Avinash has to withdraw his investment after 8 months. In what ratio should the profit of the first twelve months be divided in to both?
(a) 3 : 2 (b) 2 : 3
(c) 1 : 1 (d) 1 : 2
RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (c) ∵ Ratio of invested capital = ratio of profit
∴ Profit's ratio of Umar and Avinash
= 10000 × 12 : 15000 × 8
⇒ Umar's profit : Avinash's profit = 120:120 = 1 : 1

Type - 3

16. Mr. A starts a business by investment of Rs. 28000. Mr. B joins the same business after 5 months. The next two months after that Mr. C also joint. If after 1 year the ratio of their profit is 4:2:3 then what was the amount investment by Mr. B and Mr. C?
(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
RRB Group-D – 03/10/2018 (Shift-II)

Ans : (a) By partnership rule-
A × 12 : B × 7 : C × 5 = 4 : 2 : 3
28000 × 12 : B × 7 : C × 5 = 4x : 2x : 3x (suppose)
To compare
28000 × 12 = 4x
x = 84000
7B = 2x and 5C = 3 × 84000
7B = 2 × 84000 C = Rs.50400
B = 24000
So amount of Mr. B = Rs. 24000
and amount of Mr. C = Rs. 50400

17. 5 year ago a company lost 60% of its capital investment. In the next year they received the amount in 2 phase. In phase I they recover Rs. 1,00,000 and in phase 2, they recover Rs. 80,000 what is the initial investment.
(a) Rs. 3,60,000
(b) Rs. 3,00,000
(c) Rs. 2,40,000
(d) Rs. 1,60,000
RRB Group-D – 30/10/2018 (Shift-I)

Ans : (b) Suppose initial total capital = x Rs.
Recovery of loss amount, first and second stage
= 100000 + 80000 = Rs.180000
According to the question,
$x \times 60\% = 180000$
$x = \frac{180000 \times 100}{60}$
x = Rs. 300000
So initial capital = Rs. 300000

Type - 4

18. A sports accessories shop organized a race competition with an investment of Rs. 200 for instant registration. He was expecting entries of Rs. 300 and the experiment took only 200 on the day of the competition. How less money did they got in admission compared to their 300 entry debut expectations.

(a) Rs.5,000 (b) Rs.15,000
(c) Rs.12,000 (d) Rs.20,000

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (d) Admission fee for registration = Rs. 200
Total fee of 300 entrances = 300 × 200
= Rs. 60,000
Total fee of 200 entrances = 200 × 200
= Rs.40,000
Difference = 60,000 – 40,000 = Rs.20,000
So in comparison of starting expectation of entrance they got Rs. 20000 less in the entry.

19. Raveena and Suniti have a total of Rs. 127. Suniti and Avinash have Rs. 153, while Avinash and Raveena has Rs. 160. How much money does Raveena have.

(a) Rs.93 (b) Rs.60
(c) Rs.67 (d) Rs.70

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (c)
Raveena + Suniti = 127 ..... (i)
Suniti + Avinash = 153 ..... (ii)
Avinash + Raveena = 160 ..... (iii)
From the equation (i) and equation (ii)
Avinash – Raveena = 153 – 127 = 26 ..... (iv)
equation (iii) + equation (iv)
2 × Avinash = 160 + 26 = 186
Avinash = 93
Raveena = 160 – 93 = Rs. 67

20. N have p more amount than K. Total amount of N and K is q. How much amount does K have?

(a) $\frac{q}{2}+p$ (b) 2(p + q)
(c) $\frac{(p+q)}{2}$ (d) $\frac{(q-p)}{2}$

RRB NTPC 17.01.2017 Shift-2

Ans :(d) N = K + p …… (i)
N + K = q
Putting the value of N from the equation (i)
K + p + K = q
2K = q – p,
So $K = \frac{q-p}{2}$

21. Suman, Sakshi and Mayank form a partnership. Suman invests 5 times of Sakshi and Sakshi invests $\frac{3}{5}$ of mayank's investment. At the end of the year the total profit earned is Rs. 23000. Find the share of Sakshi

(a) Rs.5000 (b) Rs.3000
(c) Rs.4000 (d) Rs.4500

RRB NTPC 18.04.2016 Shift : 2

Ans : (b) Sakshi's investment = Rs. x
Then Suman's investment = Rs. 5x
Mayank $\times \frac{3}{5} = x \Rightarrow$ Mayank $= \frac{5x}{3}$
Profit ratio of Sakshi, Suman and Mayank
$= x : 5x : \frac{5x}{3}$
= 3 : 15 : 5
∴ Profit's share of Shakshi= $\frac{3}{23} \times 23000$ = Rs. 3000

22. Mohan invested Rs. 10,00,00 in the textile business. After a few month, Sohan invest Rs. 40000 to become his partner. At the end of the year, both of them are given a profit in the ratio of 3:1. After how many month Sohan was started business in partnership.

(a) 3 (b) 2
(c) 4 (d) 5

RRB NTPC 16.04.2016 Shift : 1

Ans : (b) : Let Sohan's partnershiping in the business is after x months
According to the question,
$\frac{100000 \times 12}{40000 \times (12-x)} = \frac{3}{1}$
$\Rightarrow$ 1200000 = 120000 × (12–x)
$\Rightarrow$ 10 = 12 – x
$\Rightarrow$ x = 12–10 = 2 months.
Hence after 2 month Sohan was started business in partnership.

23. XYZ company make its profit or loss in the ratio of its partners X, Y and Z in the ratio of 1/3, 1/2, 1/6 respectively. If Z gets Rs. 1,76,802 in his share, then what amount Y will get.

(a) Rs.5,30,406
(b) Rs.88,401
(c) Rs.3,53,604
(d) Rs.2,65,203

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) Share's ratio of X, Y and Z $= \frac{1}{3} : \frac{1}{2} : \frac{1}{6}$

$= 2 : 3 : 1$

$\because$ Z's share = Rs. 1,76,802

$\therefore$ Received amount by Y $= \frac{3}{1} \times 176802$

= Rs. 5,30,406

Type - 5

24. Divide 1600 into three parts in such a way that the 7th part of Ist, 5th part of 2nd and 4th part of 3rd are equal.

(a) 900, 500, 300
(b) 700, 500, 400
(c) 700, 600, 300
(d) 800, 500, 400

RRB NTPC 03.04.2016 Shift : 3

Ans : (b) Suppose first part, second part, and third part is x, y, and z

According to the question,

$\frac{x}{7} = \frac{y}{5} = \frac{z}{4} = k$ (Suppose)

x = 7k

y = 5k, z = 4k

First part $x = 1600 \times \frac{7k}{16k}$

$= 1600 \times \frac{7}{16} = 700$

Second part $y = 1600 \times \frac{5k}{16k}$

$= 1600 \times \frac{5}{16} = 500$

Third part $z = 1600 \times \frac{4k}{16k}$

$= 1600 \times \frac{4}{16} = 400$

25. Divide 3740 into three parts is such a way that half of the first is equal to one third of the second and sixth part of the third is equal.

(a) 700, 1000, 2040
(b) 340, 1360, 2040
(c) 680, 1020, 2040
(d) 500, 1200, 2040

RRB NTPC 02.04.2016 Shift : 2

Ans : (c) Let number is x, y and z.

then,

$\frac{x}{2} = \frac{y}{3} = \frac{z}{6} \Rightarrow x : y : z = 2 : 3 : 6$

so 2a + 3a + 6a = 3740

11a = 3740

a = 340

First number = 2a = 2 × 340 = 680

Second number = 3a = 3 × 340 = 1020

Third number = 6a = 6 × 340 = 2040

26. Tejal hold 40% stake and Ashank hold 60% stake in a partnership firm. On an average, if Tejal earns a profit of Rs. 10,00,000 annually how much profit will Ashank make.

(a) Rs. 24 Lakh (b) Rs. 25 Lakh
(c) Rs. 30 Lakh (d) Rs. 15 Lakh

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (d) : Profit's ratio of Tejal and Ashank = ratio of their partnership = 40:60 = 2:3 = 2x:3x (suppose)

According to the question,

Tejal's profit = 2x = 10,00,000

x = 500000

$\therefore$ Ashank's profit = 3x = 3×500000 = 1500000

= Rs.15 Lakh

27. Purva invested Rs. 8000 for 7 month in a business and Durba invested Rs. 7000 for 8 months. The ratio of profit earned by them will be

(a) 64 : 49 (b) 8 : 7
(c) 1 : 1 (d) 7 : 8

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (c) : Profit = capital × time

	Purva	:	Durba
	Profit = capital × time	:	Profit = capital × time
⇒	8000 × 7	:	7000 × 8
⇒	56000	:	56000
	1	:	1

Hence the ratio of profit earned by them will be 1:1.

11.

Work & Time

Type - 1

1. 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?

(a) 3/4 (b) 1/2
(c) 1/3 (d) 1/4

RRB RPF SI – 05/01/2019 (Shift-III)

Ans : (a) One day work of A $= \frac{1}{10}$ part

One day work of B $= \frac{1}{20}$ part

Five days work of both $= \frac{5}{10} + \frac{5}{20}$

$= \frac{10+5}{20} = \frac{15}{20} = \frac{3}{4}$ part

2. P and Q can do a work in 12 days and 16 days respectively. P started working alone. After how many days should Q work with P. So that the work is finished in 9 days?

(a) 4 (b) 3
(c) 2 (d) 5

RRB JE - 27/05/2019 (Shift-I)

Ans : (d) One day work of P $= \frac{1}{12}$ part

one day work of Q $= \frac{1}{16}$ part

Let after x day Q with P

As per the question,

$$\frac{9}{12} + \frac{(9-x)}{16} = 1$$

$$\frac{36+27-3x}{48} = 1$$

$63 - 3x = 48$

$15 = 3x$

$\boxed{x = 5}$

Hence after 5 days Q should be with P

3. P can complete any work in 10 days. After working 4 days P quit the work and remaining work complete by Q in 9 days. If they both would have worked together from beginning then how many days to complete the work?

(a) 9 days (b) 7 days
(c) 6 days (d) 8 days

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

Ans : (c) One day work by P $= \frac{1}{10}$ part

4 days work by P $= \frac{4}{10} = \frac{2}{5}$ part

Remaining work $= 1 - \frac{2}{5} = \frac{3}{5}$ part

work done by Q in 9 day $= \frac{3}{5}$ part

work done by Q in 1 day $= \frac{3}{5 \times 9} = \frac{1}{15}$ part

work done by (P + Q)

$= \frac{1}{10} + \frac{1}{15} = \frac{3+2}{30} = \frac{5}{30} = \frac{1}{6}$ part

Hence taken time in together work by P and Q = 6 day

4. D can complete a work in 18 days and E can do the same work in half time of D. If they both work together, how long will they take to finish the work?

(a) 5 (b) 4 (c) 7 (d) 6

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

Ans : (d)

Time taken by D = 18 day

Time taken by E $= \frac{1}{2} \times 18 = 9$ day

Time taken by both $= \frac{18 \times 9}{18+9} = \frac{18 \times 9}{27} = 6$ day

5. Janaki and Mansi, working separately can paint the wall in 45 and 72 days respectively. They started working together but Janaki left work 33 days before the work was completed. How many days did it take to complete the work in total?

(a) 49 (b) 48
(c) 46 (d) 47

RRB RPF SI – 16/01/2019 (Shift-III)

Ans : (b) One day work of Janki $= \frac{1}{45}$ part

one day work of Mansi $= \frac{1}{72}$ part

Let work continued till x day

According to the question,

$$\frac{x}{72} + \frac{x-33}{45} = 1$$

$$\frac{45x + 72x - 2376}{3240} = 1$$

$117x = 3240 + 2376$

$x = \frac{5616}{117} = 48 = 48$ day

6. 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 work alone. How many hours will sunny and Jane take to complete the same work?

(a) 15 (b) 16
(c) 18 (d) 20

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

Ans. (d) : Suppose sunny will take time of x hours for completing the work

According to the 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 hour

work done by sunny and Jane together-

$$\frac{1}{36}+\frac{1}{45}=\frac{5+4}{180}=\frac{9}{180}$$

Taken time in doing work by sunny and Jane $=\frac{180}{9}=20$ day

7. A works four times faster than B. so he can complete a work 60 days earlier than B. In how many days can they complete the work if they work together?

(a) 21 days (b) 22.5 days
(c) 16 days (d) 25 days

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (c) : Let B does a work in x day and A does that work in (x – 60) days. Then on the basis of work efficiency.

x = (x – 60)4
x = 4x – 240
3x = 240
x = 80 days

or If B does any work in 80 days then one the basis of work efficiency A will do that work in 20 days.

one day work of (A + B) $=\frac{1}{80}+\frac{1}{20}$

$$=\frac{1+4}{80}=\frac{5}{80}=\frac{1}{16}\text{ part}$$

So A and B do work together then they can complete work in the 16 days

8. Brij alone can paint a wall in 7.2 days while Madhu takes 10.8 days to do the same work. How many days will they take to paint 5/6 part of the wall when working together?

(a) 4.2 (b) 3.6
(c) 3.9 (d) 4.8

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) Let they take t days to paint the 5/6 part of the wall.

According to the question,

$$\Rightarrow \frac{t}{7.2}+\frac{t}{10.8}=\frac{5}{6}$$

$$\Rightarrow \frac{10t}{72}+\frac{10t}{108}=\frac{5}{6}$$

$$\Rightarrow \frac{30t+20t}{216}=\frac{5}{6}$$

$$\Rightarrow \frac{50t}{216}=\frac{5}{6}$$

$$\Rightarrow t=\frac{5\times 216}{6\times 50}$$

$$\Rightarrow t=\frac{36}{10}$$

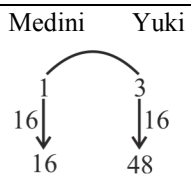
$$\boxed{t=3.6\,\text{day}}$$

9. 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 of the wall if they work together?

(a) 12 (b) 3
(c) 6 (d) 9

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (c)



One day work of both $=\frac{1}{16}+\frac{1}{48}$

$$=\frac{3+1}{48}=\frac{4}{48}=\frac{1}{12}\text{ part}$$

Time taken in completing the work = 12 days

So time taken for completing half work $=\frac{12}{2}=6$ days

10. 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?

(a) 1 (b) 1.5
(c) 2 (d) 2.5

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (c)

One day work of A $=\frac{1}{5}$ part

One day work of B $=\frac{1}{10}$ part

Let B work for x days

∴ Work done by A = (x – 4) day

According to the question

$$\frac{(x-4)}{5}+\frac{x}{10}=1$$

$$\frac{2(x-4)+x}{10}=1$$
$$2x-8+x=10$$
$$3x-8=10$$
$$3x=18$$
$$\boxed{x=6}$$
Time taken by A to complete the work = (x – 4)
= 2 day

11. 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.
(a) Rs. 4,160 (b) Rs. 3,600
(c) Rs. 5,070 (d) Rs. 4,056
RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (a) One day work of A $=\frac{1}{5}$ part
one day work of B $=\frac{1}{8}$ part
work ability ratio of A and B $=\frac{1}{5}:\frac{1}{8}$
$\boxed{A:B=8:5}$
So share of A $=\frac{6,760}{13}\times 8$ = 520 × 8 = Rs. 4,160

12. A and B take 25 and 45 days respectively to complete a task. A started working alone and after a few days B started working together. The work took a total of 20 days to complete the After how many days did B start working?
(a) 10 (b) 11
(c) 12 (d) 9
RRB Group-D – 30/10/2018 (Shift-III)

Ans. (b) : Let B started work after x day.
According to the question,
$$\frac{20}{25}+\frac{20-x}{45}=1$$
$$\frac{4}{5}+\frac{20-x}{45}=1$$
$$\frac{20-x}{45}=1-\frac{4}{5}$$
$$\frac{20-x}{45}=\frac{1}{5}$$
$$20-x=9$$
x = 20 – 9
x = 11 days

13. 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 completed. How many days did they work together?
(a) 6 (b) 5
(c) 8 (d) 9
RRB Group-D – 07/12/2018 (Shift-III)

Ans : (b) one day work of A $=\frac{1}{15}$ part
one day work of B $=\frac{1}{25}$ part
one day work of (A+B) $=\left(\frac{1}{15}+\frac{1}{25}\right)=\frac{8}{75}$ part
∵ B left work at 7 day before
Then 7 day work of A $=7\times\frac{1}{15}=\frac{7}{15}$, remain work
$=\left(1-\frac{7}{15}\right)=\frac{8}{15}$ part
Time taken by (A + B) to complete $\frac{8}{15}$ part of work
$=\frac{8}{15}\times\frac{75}{8}=5$ day

14. 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 many work will they do in one day?
(a) 1/3 (b) 1/2
(c) 1/4 (d) 1/5
RRB NTPC 05.04.2016 Shift : 2

Ans : (c) Time taken work by N
$=12\times\frac{1}{2}=6$ day
Work done by both in one day $=\frac{1}{12}+\frac{1}{6}$
$=\frac{1+2}{12}=\frac{3}{12}=\frac{1}{4}$ part

15. 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?
(a) 10/3 days (b) 36/5 days
(c) 5/36 days (d) 90/11 days
RRB NTPC 02.04.2016 Shift : 3

Ans : (d) Time taken by both to complete the work
$=\frac{15\times 18}{15+18}$
$=\frac{15\times 18}{33}=\frac{15\times 6}{11}=\frac{90}{11}$ days

16. 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?
(a) 60 (b) 45
(c) 70 (d) $22\frac{1}{2}$
RRB NTPC 31.03.2016 Shift : 1

Ans :(d) Time taken to completing the work by L and M together
$=\frac{30\times 90}{30+90}=\frac{30\times 90}{120}=\frac{45}{2}=22\frac{1}{2}$ days

17. 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 of the work will they complete?

(a) 1/2 (b) 2/3
(c) 1/3 (d) 5/6

RRB NTPC 30.03.2016 Shift : 1

Ans : (d) Work done by both P and Q in one day.

$$=\frac{1}{10}+\frac{1}{15}=\frac{3+2}{30}=\frac{5}{30}=\frac{1}{6}\text{ part}$$

So work done by both in 5 days $=\frac{5}{6}$

18. 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 2 days, then what part of the work will be finished?

(a) 3/10 (b) 3/8
(c) 1/3 (d) 1/4

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) Work done by A in 1 day $A=\frac{1}{10}$ part

Work done by B in 2 days $=\frac{1}{20}$ part

Work done by both in 2 days $=2\left(\frac{1}{10}+\frac{1}{20}\right)$

$$=2\left(\frac{2+1}{20}\right)=2\left(\frac{3}{20}\right)=\frac{3}{10}\text{ part}$$

Type - 2

19. 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?

(a) 15 (b) 12
(c) 18 (d) 21

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (c) one day work of X and Y $=\frac{1}{6}$ part

one day work of X $=\frac{1}{9}$ part

$\therefore$ one day work of Y $=\frac{1}{6}-\frac{1}{9}=\frac{3-2}{18}=\frac{1}{18}$ part

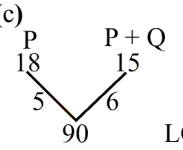
So time taken to complete work by Y = 18 days

20. P alone can complete a task in 18 days. P & Q working together can complete it in 15 days. They started working together. Q left the task after 10 days and P alone had to complete that task. How many days will P take to complete the remaining task.

(a) 5 days (b) 7 days
(c) 6 days (d) 8 days

RRB JE - 22/05/2019 (Shift-III)

Ans : (c)



LCM of 15 and 18 = 90

$\because$ P does 5 unit work in a day and P + Q does 6 unit work in a day

P + Q = 6

5 + Q = 6

Q = 1

So Q will do 1 unit work in a day

10 days work of (P + Q) = 10 × 6 = 60 unit

Remain work = 90 – 60 = 30 unit

P will do the remaining task $=\frac{30}{5}=6$ days

21. 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 then how much time will he take to complete this work?

(a) 12 hours (b) 8 hours
(c) 10 hours (d) 15 hours

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

Ans : (a) 1 hour's work of P $=\frac{1}{4}$ part .....(i)

1 hour's work of (Q + R) $\frac{1}{3}$ part .....(ii)

1 hour's works of (P + R) $\frac{1}{2}$ part .....(iii)

from the equation (i) and (iii)

$$P+R=\frac{1}{2}\Rightarrow\frac{1}{4}+R=\frac{1}{2}\Rightarrow R=\frac{1}{2}-\frac{1}{4}=\frac{2-1}{4}=\frac{1}{4}$$

$\therefore$ from the equation (ii)

$$Q+R=\frac{1}{3}\Rightarrow Q=\frac{1}{3}-\frac{1}{4}=\frac{1}{12}$$

So taken time to complete the work by Q = 12 hours

22. P is 30% more efficient than Q. If P alone can do a work in 20 days, then Q alone will do this work in how many days?

(a) 18 days (b) 30 days
(c) 26 days (d) 28 days

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

Ans : (c) From $E_1D_1 = E_2D_2$ [E = energy, D = Day]

$130 \times 20 = D_2 \times 100$

$D_2 = 26$

So alone Q will do this work in 26 days

23. 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 can Ravi do the same work alone?

(a) $6\frac{3}{7}$ days (b) 10 days

(c) $6\frac{2}{5}$ days (d) $6\frac{1}{5}$ days

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

Ans : (a) Let Ravi will complete the work in x day
According to the question,

$$\frac{1}{x}=\frac{1}{3}-\frac{1}{15}-\frac{1}{9}$$

$$\frac{1}{x}=\frac{15-3-5}{45}=\frac{15-8}{45}$$

$$\frac{1}{x}=\frac{7}{45}$$

$$x=\frac{45}{7}=6\frac{3}{7}\text{ days}$$

So Ravi will complete the work in $6\frac{3}{7}$ days

24. After completing a task together in 2 days, P and Q got Rs. 1200 and Rs. 400 respectively. In how many days alone Q will complete the work?

(a) 6 days (b) 3 days
(c) 1/3 days (d) 8 days

RRB RPF SI – 11/01/2019 (Shift-I)

Ans : (d) P : Q
1200 : 400
3 : 1
Q works = (3 + 1) × 2
work of Q = 4 × 2 = 8 days

25. 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?

(a) 21 days (b) 15 days
(c) 10.5 days (d) 12 days

RRB JE - 31/05/2019 (Shift-I)

Ans : (c) Let P does work in x day and Q does in 2x day
According to the question,

$$\frac{1}{x}+\frac{1}{2x}=\frac{1}{7}$$

$$\frac{3}{2x}=\frac{1}{7}$$

$$x=\frac{21}{2}$$

x = 10.5 day
So P will do that work alone in 10.5 days

26. P takes 50% more time than Q. If they work together, the work will be done in 18 days. In how many days will Q alone complete the work?

(a) 30 days (b) 22 days
(c) 24 days (d) 25 days

RRB JE - 31/05/2019 (Shift-II)

Ans : (a) Let time taken by Q = x days
then time taken by P = 1.5x days
one day work of (P + Q)

$$\frac{1}{x}+\frac{1}{1.5x}=\frac{1}{18}$$

$$\frac{1.5+1}{1.5x}=\frac{1}{18}$$

$$\frac{2.5}{1.5x}=\frac{1}{18}$$

$$x=\frac{18\times 2.5}{1.5}=30$$

So alone Q will complete that work in 30 days.

27. Mahesh takes 18 days to complete a task alone while Kishore takes 36 days to complete the same task alone. If they work together for 6 days then what percentage of the work will remain?

(a) 50% (b) 30%
(c) 40% (d) 60%

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans. (a) : One day work of Mahesh = $\frac{1}{18}$ part

one day work of Kishore = $\frac{1}{36}$ part

one day work of both (Mahesh + Kishore) = $\frac{1}{18}+\frac{1}{36}$

$=\frac{3}{36}=\frac{1}{12}$ part

six day work of both = $\frac{6}{12}=\frac{1}{2}$ part

Remain work = $1-\frac{1}{2}=\frac{1}{2}$ part

Remain work in % = $\frac{1/2}{1}\times 100 = \frac{1}{2}\times 100 = 50\%$

28. Lohit, as an airman, is twice as capable as Ayush and together they finish a work in 17 days. In how many days does Ayush alone finish the same work?

(a) 34 days (b) 51 days
(c) 68 days (d) 40 days

RRB RPF SI – 13/01/2019 (Shift-II)

Ans :(b) Efficiency ratio of Lohit and Ayush = 2:1
∴ Time's ratio = 1:2
from the question,

$$\frac{1}{2x}+\frac{1}{x}=\frac{1}{17}$$

$$\frac{1+2}{2x}=\frac{1}{17}$$

$$\frac{3}{2x}=\frac{1}{17}$$

$$2x=51$$

Taken time by Ayush to complete the work = 2x = 51 days

29. 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 do the same work alone?

(a) 24 days (b) 30 days
(c) 40 days (d) 35 days

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

Ans : (c) y completes $\frac{1}{2}$ of work in $\frac{1}{6}$ time of x

$\therefore$ y will completes the work in $\frac{1}{3}$ time of x

According to the question,

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{10}, \quad \frac{1}{\frac{y}{3}}+\frac{1}{y}=\frac{1}{10}$$

$$\frac{4}{y}=\frac{1}{10}$$

y = 40 days

30. A and B together can complete a work in 35 days. If A works alone and completes $\frac{4}{7}$ part of the work and leaves the remaining work for B. Thus if the work takes 114 days to complete. So how many days will A who is more efficient in both, complete the work alone?

(a) 45 (b) 42
(c) 48 (d) 40

RRB RPF SI – 10/01/2019 (Shift-III)

Ans. (b) : Suppose A does any work in A days and B does the same work in B days

Time taken by A to do $\frac{4}{7}$ part work $=\frac{4}{7}$A

and time taken by B to do remain $\left(1-\frac{4}{7}=\frac{3}{7}\right)$ part of work

$$=\frac{3}{7}\text{B}$$

According to the question,

$$\frac{1}{A}+\frac{1}{B}=\frac{1}{35} \quad \text{----- (i)}$$

$$\frac{4}{7}A+\frac{3}{7}B=114 \quad \text{----- (ii)}$$

on solving the equation (i) and (ii)

A = 42 days

B = 210 days

So time taken to completing work by A = 42 days

31. A and B together can complete a work in 1.2 days. Although if A leaves after complete half of 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 finish, then how many days will he take?

(a) 1.5 (b) 2.2
(c) 2.0 (d) 1.8

RRB RPF Constable – 19/01/2019 (Shift-III)

Ans. (c) : Let A completes any work in x day.

$\therefore$ work capacity of A $=\frac{1}{x}$

$\therefore$ work capacity of B $=\frac{1}{x}\times\frac{150}{100}=\frac{3}{2x}$

$\therefore$ According to the question,

$$\frac{1}{x}+\frac{3}{2x}=\frac{1}{1.2}$$

$$\frac{2+3}{2x}=\frac{1}{1.2}$$

$$2x=6$$

$$x=3$$

So alone B will complete that work in 2 days.

32. Kirti and Malti together can complete a task in 12 days, while Malti can finish it in 30 days. In how many days can Kirti alone complete the task?

(a) 40 days (b) 10 days
(c) 20 days (d) 30 days

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) : One day work of (Kirti + Malti) $=\frac{1}{12}$ part

one day work of Malti $=\frac{1}{30}$ part

one day work of Kirti $=\frac{1}{12}-\frac{1}{30}=\frac{5-2}{60}=\frac{3}{60}=\frac{1}{20}$ part

$\therefore$ Time taken to complete the task by kirti = 20 days

33. Reeta and Meena together can complete a work in 10 days, while Reeta alone can complete the same work in 15 days. In how many days will Meena complete this work alone.

(a) 38 days (b) 32 days
(c) 28 days (d) 30 days

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (d) Work done together in 1 day by Reeta and Meena $=\frac{1}{10}$ part

work done by Reeta in 1 day $=\frac{1}{15}$ part

work done by Meena in 1 day

$$=\frac{1}{10}-\frac{1}{15}=\frac{3-2}{30}=\frac{1}{30} \text{ part}$$

So Meena will complete that work in 30 day

34. 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 do the same work?

(a) 32 days (b) 30 days
(c) 25 days (d) 35 days

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) Work done in 1 day by Rohan and Rohit $= \frac{1}{10}$ part

Work done by Rohan in one day $= \frac{1}{15}$ part

Work done by Rohit in one day $= \frac{1}{10} - \frac{1}{15}$

$= \frac{3-2}{30}$

$= \frac{1}{30}$ part

So Rohit will complete that work in 30 days

35. 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 do the same work?

(a) 15 days (b) 11 days
(c) 14 days (d) 12 days

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (a) Suppose P completes this work by self in n day

1 day work of (P + Q) $= \frac{1}{6}$ part

1 day work of Q $= \frac{1}{10}$ part

1 day work of P $= \frac{1}{n}$ part

According to the question

so $\frac{1}{10} + \frac{1}{n} = \frac{1}{6}$

$\frac{1}{n} = \frac{1}{6} - \frac{1}{10}$

$\frac{1}{n} = \frac{1}{15}$

1 day work of P $= \frac{1}{15}$

So time taken to finish the work by P = 15 days

36. Working together, Sandra and Mayuri can complete a work 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 herself. As a result, both are able to complete the work in 104 days. If Mayuri work faster than her. So in how many days Sandra will be able to complete the work alone?

(a) 72 (b) 60
(c) 240 (d) 120

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (d) Let sandra will complete that work in x days by self and Mayuri do that work in y days by self

one day work of both $= \frac{1}{x} + \frac{1}{y} = \frac{1}{45}$

$\therefore \quad \frac{1}{y} = \frac{1}{45} - \frac{1}{x} \Rightarrow \frac{x-45}{45x}$

$\therefore$ 1 day work of Sandra $= \frac{1}{x}$ part

$\therefore$ 1 day work of Mayuri $= \frac{x-45}{45x}$

According to the question,

$\frac{15x}{x-45} + \frac{2x}{3} = 104$

$45x + 2x^2 - 90x = 312(x-45)$

$2x^2 - 357x + 14040 = 0$

$(2x-117)(x-120) = 0$

$x = \frac{117}{2}$ or 120

$\because$ Sandra work slow so $x = 120$

37. Arjun alone can do a work in 12 days and Bheem alone can do the same work in 15 days with the help of Chetan, they together complete that work in 5 days. How many days will Chetan alone take to do that work ?

(a) 20 days (b) 24 days
(c) 15 days (d) 16 days

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) One day work of Arjun $= \frac{1}{12}$ part

One day work of Bheem $= \frac{1}{15}$ part

Let, one day work of Chetan $= \frac{1}{x}$ part

One day work of all three $= \frac{1}{12} + \frac{1}{15} + \frac{1}{x}$

$\frac{1}{5} = \frac{5+4}{60} + \frac{1}{x}$

$\frac{1}{x} = \frac{1}{5} - \frac{9}{60}$

$\frac{12-9}{60} = \frac{1}{x}$

$\frac{1}{x} = \frac{3}{60} = \frac{1}{20}$

So time taken by Chetan to finish the work alone = 20 days

38. 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.

(a) 13 days (b) 12 days
(c) 16 days (d) 10 days

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (b) : Let time taken to complete the work by Jerry = x days

According to the question,

$$\frac{1}{6}+\frac{1}{x}=\frac{1}{4}$$

$$\Rightarrow \frac{x+6}{6x}=\frac{1}{4}$$

$\Rightarrow 4x + 24 = 6x$

$\Rightarrow 2x = 24 \Rightarrow x = 12$ day

So Jerry will complete the work in 12 days alone.

39. Ishan is twice as good a worker as Kamal and both together finish a work in 29 days. In how many days will Kamal alone can do this work.

(a) 58 (b) 70

(c) 87 (d) 116

RRB NTPC 17.01.2017 Shift-1

Ans : (c) Let Kamal do any work in x days

Ishan do that work in $\frac{x}{2}$ day

According to the question,

work done by both in a day =

$$\frac{1}{x}+\frac{2}{x}=\frac{1}{29}$$

$$\frac{3}{x}=\frac{1}{29}$$

$x = 29 \times 3$

$\boxed{x=87}$ days

40. 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.

(a) 75 (b) 70

(c) 60 (d) 65

RRB NTPC 17.01.2017 Shift-2

Ans : (a) Let G will complete that work alone in x days

According to the question,

$$\therefore \frac{1}{50}+\frac{1}{x}=\frac{1}{30}$$

$$\Rightarrow \frac{1}{x}=\frac{1}{30}-\frac{1}{50}=\frac{5-3}{150}$$

$$x=\frac{150}{2}=75 \text{ days}$$

So G will do that work alone 75 days

41. Amrit has twice capacity of painting than Kushal. Together they complete a work in 6 days. In how many days Kushal will complete that work alone?

(a) 10 (b) 12

(c) 24 (d) 18

RRB NTPC 17.01.2017 Shift-3

Ans : (d) Ability's ratio of Amrit and Kushal = 2 : 1

$\therefore$ Time's ratio = 1 : 2

Let time taken by Amrit and Kushal to finish the work is x and 2x days.

from the question-

$$\frac{x\times 2x}{x+2x}=6$$

$$\frac{2x^2}{3x}=6 \Rightarrow x=\frac{6\times 3}{2}$$

$\boxed{x = 9 \text{ day}}$

So time taken to complete the work by Kaushal= 9 × 2 = 18 days

42. 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?

(a) 4 days (b) 3 days

(c) 2 days (d) 1 days

RRB NTPC 05.04.2016 Shift-1

Ans : (a) Time taken to complete work together by M and R

$$=\frac{5\times 20}{5+20}$$

$$=\frac{100}{25}$$

= 4 days

43. E and F can do a work in 10 days. If E alone can do it in 30 days, F alone can do it in ___ days.

(a) 15 (b) 20

(c) 25 (d) 18

RRB NTPC 05.04.2016 Shift : 3

Ans :(a) Work done by F in 1 day $=\frac{1}{10}-\frac{1}{30}$

$$=\frac{3-1}{30}=\frac{2}{30}=\frac{1}{15} \text{ part}$$

So F can do that work alone in 15 days

44. P and Q together can complete a work in 12 days. P alone does the same work in 30 days. In how much time will Q alone complete the same work?

(a) 20 days (b) 30 days

(c) 25 days (d) 35 days

RRB NTPC 04.04.2016 Shift : 3

Ans : (a) Time taken By Q to completing that work alone.

$$=\frac{12\times 30}{30-12}=\frac{12\times 30}{18}$$

= 20 days

45. Sanju takes 16 days to complete a work. If she works with her friend Jenny to complete it in 12 days. How many days will it take for jenny to complete the work alone?

(a) 48 (b) 32

(c) 36 (d) 24

RRB NTPC 03.04.2016 Shift : 2

Ans : (a) one day work of Jenny $= \frac{1}{12} - \frac{1}{16}$

$= \frac{4-3}{48} = \frac{1}{48}$ part

So Jenny will complete the work alone in 48 days

46. P is twice as capable of doing work as Q. Together they complete a work in 22 days. In how much time Q will it take to complete this work?

(a) 33 days (b) 22 days
(c) 66 days (d) 99 days

RRB NTPC 02.04.2016 Shift : 1

Ans : (c) Let P takes x days to do work and Q takes 2x days to do work.

According to the question,

$\therefore \frac{1}{x} + \frac{1}{2x} = \frac{1}{22}$

$\frac{2+1}{2x} = \frac{1}{22}$

x = 33

$\therefore$ Q will take 66 days to complete work.

47. Manoj is twice capable fisherman than Anurag and together they finish a work in 22 days. In how many days will Anurag alone can do the same work.

(a) 44 (b) 66
(c) 88 (d) 60

RRB NTPC 11.04.2016 Shift : 2

Ans : (b) Let Manoj will complete the work in x days. Then Anurag will complete that work in 2x days.

so $\frac{1}{x} + \frac{1}{2x} = \frac{1}{22}$

$\frac{2+1}{2x} = \frac{1}{22}$

$\frac{3}{2x} = \frac{1}{22}$

2x = 66

x = 33

So Anurag will complete that work = 2x = 66 days

48. Ullas has a double the working capacity of Tejas if they can finish a work together in 18 days, them in how many days will Tejas complete the same work alone?

(a) 36 (b) 54
(c) 29 (d) 72

RRB NTPC 11.04.2016 Shift : 3

Ans : (b) Let Ullas does work in x days and Tejas in 2x days.

According to the question,

$\frac{1}{x} + \frac{1}{2x} = \frac{1}{18}$

$\frac{2+1}{2x} = \frac{1}{18}$

2x = 54 days

49. Yash is twice as capable draftsman as Vivek and they finish a work together in 23 days. In how many days will Vivek alone complete the same work?

(a) 46 (b) 69
(c) 92 (d) 60

RRB NTPC 07.04.2016 Shift : 2

Ans : (b)

	Yash	Vivek
Ability	2x	x
Taken time	x	2x

from the question,

$\frac{1}{x} + \frac{1}{2x} = \frac{1}{23}$

$\Rightarrow \frac{3}{2x} = \frac{1}{23}$

$\Rightarrow x = \frac{69}{2}$ day

So time taken to completing the work by vivek (2x)

$= \frac{69}{2} \times 2 = 69$ days

50. Himanshu is twice as capable as Ankit as a wood cutter and together they finish a work in 16 days. In how many days will Ankit alone complete the same work?

(a) 32 (b) 48
(c) 64 (d) 40

RRB NTPC 26.04.2016 Shift : 3

Ans : (b) Let Ankit complete the work in 2x day and Himanshu in x day.

According to the question,

$\frac{1}{x} + \frac{1}{2x} = \frac{1}{16}$

$\frac{2+1}{2x} = \frac{1}{16}$

2x = 48

x = 24

So Ankit will do that work in (2x) = 24 × 2 = 48 days

51. 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?

(a) 30 days (b) $25\frac{1}{2}$ days
(c) $26\frac{2}{3}$ days (d) $26\frac{1}{3}$ days

RRB NTPC 27.04.2016 Shift : 2

Ans : (c) X complete 25% of a work $= \frac{1}{4}$ part = in 20 days

$\therefore$ X will complete whole work = 80 days

Remain work $= 1 - \frac{1}{4} = \frac{3}{4}$ part

Both completes $\frac{3}{4}$ part of work together in 15 days

$\therefore$ Both will complete whole work together $= 15 \times \frac{4}{3} = 20$ days

$\therefore$ one day work of Y $= \frac{1}{20} - \frac{1}{80} = \frac{4-1}{80} = \frac{3}{80}$

Y will complete the work $= \frac{80}{3} = 26\frac{2}{3}$ days

52. As a sailar, 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.

(a) 28 (b) 42
(c) 56 (d) 35

RRB NTPC 30.04.2016 Shift : 3

Ans : (b) Let Anirudh and Ashwin finishes the work in x days and 2x days

then one day work of Anirudh $= \frac{1}{x}$ part

and one day work of Ashwin $= \frac{1}{2x}$ part

According to the question,

then $\frac{1}{x} + \frac{1}{2x} = \frac{1}{14}$ part

$\frac{2+1}{2x} = \frac{1}{14}$

$\frac{3}{2x} = \frac{1}{14}$

$x = 21$

So time taken by Ashwin to complete the work alone

$= 2x = 2 \times 21 = 42$ days

Type - 3

53. 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?

(a) 3/4 (b) 7/12
(c) 5/12 (d) 6/7

RRB JE - 27/05/2019 (Shift-I)

Ans : (c) One day work of P $= \frac{1}{12}$ part

one day work of Q $= \frac{1}{16}$ part

four 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

remain work $= 1 - \frac{7}{12}$

$= \boxed{\frac{5}{12} \text{ part}}$

54. 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 the work ?

(a) After 7 days (b) After 14 days
(c) After 10 days (d) After 8 days

RRB JE - 26/06/2019 (Shift-III)

Ans : (a) Let Ajay does work till x days.

According to the question,

$\frac{x}{70} + \frac{x+47}{60} = 1$

$60x + 70(x+47) = 4200$

$60x + 70x + 3290 = 4200$

$130x = 4200 - 3290$

$130x = 910$

$x = \frac{910}{130} = 7$

So Ajay left work in after 7 days

55. 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 B will complete the remaining work?

(a) 15 days (b) 16 days
(c) 10 days (d) 18 days

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (c) LCM of A and B = 60

So total work = 60 unit

work done by A in one day $= \frac{60}{30} = 2$ unit

work done by B in one day $= \frac{60}{20} = 3$ unit

one day work of both (A + B) = 2 + 3 = 5 unit

6 day both of work = 5 × 6 = 30 unit

Remain work = 60–30 = 30 unit

Time taken to do remain work by B $= \frac{30}{3} = 10$ days

56. 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 be left?

(a) $\frac{1}{7}$ (b) $\frac{4}{21}$
(c) $\frac{2}{21}$ (d) $\frac{1}{21}$

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (d)

one day work of A $= \frac{1}{3}$ Part

one day work of B $= \frac{1}{7}$ part

one day work of both (A + B) $=\left(\frac{1}{3}+\frac{1}{7}\right)$

$=\frac{7+3}{21}=\frac{10}{21}$ part

Two days work of (A + B) $=\frac{10\times 2}{21}=\frac{20}{21}$ part

so remain part of the work $=1-\frac{20}{21}$

$=\frac{1}{21}$ part remaining.

57. Working alone, Rakesh and Ranjit can complete a task in 4 and 6 days respectively. Ranjit started work alone and Rakesh joined it after 2 days. How many days will they need to complete the remaining work?

(a) 1.6 (b) 2
(c) 0.8 (d) 1.2

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (a) Let remain work complete in x days.
∴ Rakesh will complete the work in = x days
and Ranjit will complete the work in $= x + 2$ days

∴ one day work of both $=\frac{x+2}{6}+\frac{x}{4}=1$

$\frac{4x+8+6x}{24}=1$

$10x = 24 - 8$

$10x = 16$

$x = 1.6$

58. 18 people can complete a work in 12 days. After 4 days of work, 2 workers left the work. In how many days will the remaining work be completed after the workers left the work?

(a) 8 (b) 6
(c) 9 (d) 10

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) Total work= 18 × 12
work done = 18 × 4
remain work = 18 × 8
18 × 8 = (18 – 2) × D
18 × 8= 16 × D
D = 9 days

59. 800 men complete a work in 30 days, 80 men leave the work after working 12 days. In how many days can the remaining work be completed by the remaining people.

(a) 22 (b) 20
(c) 28 (d) 24

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) Total work = 800 × 30
done work = 800 × 12
remain work = 800 × 18

According to the question,
800 × 18 = (800 - 80) × D
800 × 18 = 720 × D

$D=\frac{800\times 18}{720}=20$

60. 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?

(a) 10 days (b) 9 days
(c) 11 days (d) 15 days

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) According to the question,

One day work of Ranjit $=\frac{1}{25}$ part

One days work of Anji $=\frac{1}{20}$ part

∴ One days work of both (Ranjit + Anji) $=\frac{1}{25}+\frac{1}{20}$

$=\frac{4+5}{100}=\frac{9}{100}$ part

∴ 5 days work of (Ranjit + Anji) $=5\times\frac{9}{100}=\frac{9}{20}$ part

so Anji will complete remain work

$=\left(1-\frac{9}{20}\right)\times 20=\frac{11}{20}\times 20=11$ days

61. Sandra and Mayuri can work together and complete a task in 60 days. Although 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 worked faster than Sandra in how many days Sandra could do that work alone?

(a) 240 (b) 180
(c) 165 (d) 225

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (b)

Let time taken by sandra to completing work = x day

Let time taken by Mayuri to completing work = y day

∴ one day work of both $=\frac{1}{x}+\frac{1}{y}=\frac{1}{60}$.....(i)

Time taken by Mayuri in completing $\frac{1}{3}$ of work = $\frac{y}{3}$ days

Remain work $=1-\frac{1}{3}=\frac{2}{3}$

Time taken by Sandra in completing $\frac{2}{3}$ part of work = $x\times\frac{2}{3}=\frac{2x}{3}$ day

Time taken by both to complete the work

$= \frac{2x}{3} + \frac{y}{3} = 150$

$2x + y = 450$ .....(ii)

From equation (ii)

$y = 450 - 2x$ .....(iii)

on putting value of y in (i)

$60 (x + y) = xy$

$60 (x + 450 - 2x) = x (450 - 2x)$

$60 (450 - x) = 450x - 2x^2$

$60 \times 450 - 60x = 450x - 2x^2$

$2x^2 - 510x + 60 \times 450 = 0$

$x^2 - 255x + 13500 = 0$

$x^2 - (180 + 75) x + 13500 = 0$

$x^2 - 180x - 75x + 13500 = 0$

$x (x-180) - 75 (x-180) = 0$

$(x-180) (x-75) = 0$

$x = 180, 75$

So Sandra (Sandra works slower than Mayuri) alone will take time to complete the work = 180 days

62. 280 men complete a work in 30 days. After 4 days of work, 80 men left the work. How many days will it take to complete the remaining work?

(a) $27\frac{2}{5}$ (b) $34\frac{2}{5}$

(c) $33\frac{2}{5}$ (d) $36\frac{2}{5}$

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) : Remain days = 30 – 4 = 26 days

remain male = 280 – 80 = 200 men

If 280 men do work till 26 days then work will finish

from $M_1D_1 = M_2 \times D_2$

$280 \times 26 = 200 \times D_2$

$D_2 = \frac{280 \times 26}{200} = \frac{182}{5}$

$= 36\frac{2}{5}$ days

63. S and T can finish a work in 50 days. They worked together for 20 days and then left. How much of the work is left?

(a) 3/5 (b) 1/3

(c) 1/2 (d) 2/5

RRB NTPC 30.03.2016 Shift : 1

Ans : (a) one day's work of S and T $= \frac{1}{50}$ part

20 days work of S and T $= \frac{20}{50} = \frac{2}{5}$ part

$\therefore$ remain work $= 1 - \frac{2}{5} = \frac{3}{5}$ part

64. X can copy 60 pages in 4 minutes, X and Y together can copy 750 pages in 30 minutes. In how many minutes can 'Y' copy 100 pages?

(a) 8 (b) 16

(c) 10 (d) 5

RRB NTPC 19.04.2016 Shift : 3

Ans : (c) 1 minute work of X $= \frac{60}{4} = 15$ page

1 minute work of X and Y $= \frac{750}{30} = 25$ page

$\therefore$ one minute work of Y = 25 – 15 = 10 page

$\therefore$ Time taken in copying to 100 pages by Y

$= \frac{100}{10} = 10$ minute

65. A completes 2/5 part of a work in X days. After then calls B and they together finish the remaining work in 6 days. If B alone takes 100/6 days. Then find the value of X.

(a) 10 days (b) 50/3 days

(c) 20 days (d) 40 days

RRB NTPC 18.04.2016 Shift : 2

Ans : (a)

X days work of A $= \frac{2}{5} \Rightarrow$ complete work $= \frac{5}{2}x$

remain work $= 1 - \frac{2}{5} = \frac{3}{5}$

time taken by A and B together to finish $\frac{3}{5}$ work = 6

time taken by A and B to finish the whole work together

$= 6 \times \frac{5}{3} = 10$ days

According to the question,

$\frac{1}{\frac{5}{2}x} + \frac{1}{\frac{100}{6}} = \frac{1}{10}$

$\frac{2}{5x} + \frac{6}{100} = \frac{1}{10} \Rightarrow \frac{40 + 6x}{100x} = \frac{1}{10}$

$40 + 6x = 10x$

$4x = 40$

$x = 10$ days

66. 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 can they finish the work together?

(a) 10 (b) 12

(c) 5 (d) 14

RRB NTPC 22.04.2016 Shift : 1

Ans : (a) work done by (P + Q) in 1 day $= \frac{1}{12}$ part

work done by (Q + R) in 1 day $= \frac{1}{15}$ part

work done by (R+ P) in 1 day $= = \frac{1}{20}$ part

to adding-

work done by 2(P + Q + R) in 1 days $= \frac{1}{12} + \frac{1}{15} + \frac{1}{20}$

$= \frac{5+4+3}{60}$

$= \frac{12}{60}$

$= \frac{1}{5}$ part

$\therefore$ work done by (P + Q + R) in 1 days $= \frac{1}{5 \times 2}$

$= \frac{1}{10}$ part

So time taken by (P + Q + R) to finish the work together = 10 days

Type - 4

67. Arun and Amit can do a piece of work in 9 days and 12 days respectively. If they work for alternate days and Amit starts the work first, then in how many days 35/36 parts of whole work will be completed?

(a) 10 days (b) 12 days
(c) 5 days (d) 8 days

RRB RPF Constable – 20/01/2019 (Shift-III)

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 × 5 = 10 days work $= \frac{7 \times 5}{36}$

$= \frac{35}{36}$ part

$\therefore$ Required time = 10 days

68. 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 work was completed. In how many days will the work be completed?

(a) 6 (b) 7
(c) 5 (d) 8

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

Ans : (b) Let total work completed in x days

According to the 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 = 48

9x = 63

x = 7 days

So work will complete in 7 days

69. A and B can complete a piece 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 they work together?

(a) 13.75 (b) 11.25
(c) 13.5 (d) 12.5

RRB RPF SI – 06/01/2019 (Shift-III)

Ans : (c) According to the first statement.

work done by A and B in a day $= \frac{1}{15}$ part

work done by B in a day $= \frac{1}{18.75}$ part

work done by A in a day

$\frac{1}{A} = \frac{1}{15} - \frac{1}{18.75}$

$\frac{1}{A} = \frac{1}{15} - \frac{4}{75}$

$\frac{1}{A} = \frac{5-4}{75}$

$\frac{1}{A} = \frac{1}{75}$

So time taken by A to finish the work is 75 days.

Let work completes in x days

According to the second statement

$\frac{x}{75} + \frac{(x-7.5)}{18.75} = 1$

$\frac{x}{75} + \frac{x}{18.75} - \frac{7.5}{18.75} = 1$

$\frac{18.75x + 75x}{75 \times 18.75} = 1 + \frac{7.5}{18.75}$

$\frac{93.75x}{75 \times 18.75} = \frac{18.75 + 7.5}{18.75}$

$\frac{93.75x}{75} = 26.25$

$x = \frac{26.25 \times 75}{93.75} = 21$

So both worked together for = 21 – 7.5 = 13.5 days

70. 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

(a) 10 (b) 13.75
(c) 11.25 (d) 12.5

RRB RPF SI – 12/01/2019 (Shift-III)

Ans. (d) : one day work of A + B $= \frac{1}{15}$ part

one day work of B $=$

$$\frac{1}{15}-\frac{1}{18.75}=\frac{18.75-15}{15\times18.75}=\frac{3.75}{15\times18.75}=\frac{0.2}{15}=\frac{2}{150}=\frac{1}{75}$$

one day work of B $= \frac{1}{75}$ part

12.5 days work of B $= \frac{12.5}{75}=\frac{125}{750}=\frac{1}{6}$ part

remaining work $= 1-\frac{1}{6}=\frac{5}{6}$ part

time taken by (A+B) in completing $\frac{5}{6}$ work $= 15\times\frac{5}{6}$

$=12.5$ days

So A and B worked together for 12.5 days.

71. Amod and Pramod can work separately and 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?

(a) 16 (b) 17
(c) 15 (d) 18

RRB Group-D – 05/10/2018 (Shift-II)

Ans. : (a) Let work will be complete in x days.
According to the question,

$$\frac{x-11}{15}+\frac{x}{24}=1$$

$24x - 264 + 15x = 360$

$39x = 624$

$x = \frac{624}{39} = 16$

So total work (x) will be complete in 16 days.

72. 15 person took up the task of digging a pond in 20 days. After 10 days, 5 people left the work in the next 5 days 5 workers also left the work. How long will it take to complete the work?

(a) 45 (b) 25
(c) 55 (d) 35

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (d) $M.D = M_1D_1 + M_2D_2 + M_3D_3$

$15 \times 20 = 15 \times 10 + 5 \times 10 + 5 \times D_3$

$300 - 150 - 50 = 5D_3$

$5D_3 = 100$

$D_3 = 20$

Total time taken $= 20 + 10 + 5 = 35$ days

73. 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 after two days and the remaining work was done by Dinu and Naba. How long did it take to complete the whole work.

(a) 67/11 days (b) 45/11 days
(c) 23/11 days (d) 50/11 days

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (b) Let work will be complete in x days
According to the question,

$$\frac{2}{8}+\frac{x}{10}+\frac{x}{12}=1$$

$$\frac{1}{4}+\frac{x}{10}+\frac{x}{12}=1$$

$$\frac{x}{10}+\frac{x}{12}=1-\frac{1}{4}$$

$$\frac{6x+5x}{60}=\frac{3}{4}$$

$$\frac{11x}{60}=\frac{3}{4}$$

$$x=\frac{45}{11}\text{ days}$$

74. 48 people can do a work in 17 days. After 6 days 4 workers left the work. After that how many days will it take to complete the work?

(a) 16 (b) 15
(c) 12 (d) 13

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) Let remaining work completes in x days
from $M_1D_1 = M_2D_2$

$48 \times (17 - 6) = 44 \times x$

$48 \times 11 = 44 \times x$

$$x=\frac{48\times11}{44}=12$$

75. A and B can do a work in 45 hours. If A works alone and completes the 3/8 part of the work, then leaves the remaining work to be done by 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 them to complete the work alone?

(a) 170 (b) 96
(c) 72 (d) 120

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (c) Let A completes total work in x days

time taken by A in complete $\frac{3}{8}$ part $= \frac{3x}{8}$ days

time taken by B in complete $\frac{5}{8}$ part $= \left(102-\frac{3x}{8}\right)$ day

time taken by B to completing whole work $=\left(102-\frac{3x}{8}\right)\frac{8}{5}$ day

According to the question,

$$\frac{1}{x}+\frac{1}{\left(102-\frac{3x}{8}\right)\frac{8}{5}}=\frac{1}{45}$$

$$\frac{1}{x}+\frac{5}{816-3x}=\frac{1}{45}$$

$$\frac{816-3x+5x}{(816-3x)x}=\frac{1}{45}$$

$15(816 + 2x) = x(272 - x)$
$12240 + 30x = 272x - x^2$
$x^2 - 272x + 30x + 12240 = 0$
$x^2 - 242x + 12240 = 0$
$x^2 - 72x - 170x + 12240 = 0$
$(x - 72)(x - 170) = 0$
$x = 72, 170$
So, A will complete the whole work in 72 days.

76. 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?
(a) 18 (b) 16
(c) 12 (d) 20
RRB Group-D – 05/12/2018 (Shift-II)

Ans. (a) After 8 days-
remaining men = 32
remaining days = 16
Later, the remaining 16 days of work for 36 men is left, which will be complete by 32 men together.
$\because M_1D_1 = M_2D_2$
$\therefore 36 \times 16 = 32 \times D_2$
$D_2 = 18$ days

77. A and B complete a work in 12 and 16 days respectively. Both of them work together for 3 days then A leaves. In how many days only B will complete the remaining work?
(a) 12 (b) 18
(c) 9 (d) 10
RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) :
Time taken by A to completing the work = 12 days
Time taken by B to completing same work = 16 days
1 day work of A and B $= \frac{1}{12} + \frac{1}{16} = \frac{4+3}{48} = \frac{7}{48}$ part
$\therefore$ 3 day work $= 3 \times \frac{7}{48} = \frac{7}{16}$ part
remaining work $= 1 - \frac{7}{16} = \frac{9}{16}$ part
$\because$ Time taken by B to completing $\frac{1}{16}$ part of work · 1 day
$\therefore$ Time taken by B to completing $\frac{9}{16}$ part of work
$= 16 \times \frac{9}{16} = 9$ days
So time taken by B to completing remaining work = 9 days

78. A and B can complete a work in 12 days. Although alone A completed 1/5 of the work and left the work. Then B started working alone and completed the remaining work. The work take a total of 22 days to complete. If B is more efficient than A, how many days did B take to complete the work alone?
(a) 16.5 (b) 16.5 or 20
(c) 30 or 44 (d) 20
RRB Group-D – 12/11/2018 (Shift-II)

Ans : (b) $\frac{1}{A} + \frac{1}{B} = \frac{1}{12}$ ----(i)
Suppose A takes x days to doing $\frac{1}{5}$ part of work.
time taken in completing whole work = 5x days
time taken by B to doing $\frac{4}{5}$ part of work = (22 – x) day
time taken in completing whole work = $(22 - x)\frac{5}{4}$ day
from the equation (i)
$\Rightarrow \frac{1}{5x} + \frac{4}{5(22-x)} = \frac{1}{12}$
$\Rightarrow \frac{110 - 5x + 20x}{25x(22-x)} = \frac{1}{12}$
$\Rightarrow \frac{110 + 15x}{25x(22-x)} = \frac{1}{12}$
$\Rightarrow \frac{(22+3x)}{5x(22-x)} = \frac{1}{12}$
$\Rightarrow 264 + 36x = 110x - 5x^2$
$\Rightarrow 5x^2 - 74x + 264 = 0$
$\Rightarrow 5x^2 - 30x - 44x + 264 = 0$
$\Rightarrow 5x(x-6) - 44(x-6) = 0$
$\Rightarrow (x-6)(5x-44) = 0$
$x = 6, x = \frac{44}{5} = 8.8$
time taken by B to doing whole work $= (22 - x) \times \frac{5}{4}$ day
$= (22 - 6) \times \frac{5}{4}$
$= 16 \times \frac{5}{4} = 20$ day
or
$= (22 - 8.8) \times \frac{5}{4}$
$13.2 \times \frac{5}{4} = 16.5$ days

79. 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 completed. Then how many days did A is work?
(a) 3.5 (b) 4
(c) 2 (d) 3
RRB Group-D – 23/10/2018 (Shift-II)

Ans. (b) : Work done by A in 1 days = $\frac{1}{8}$ part
work done by B in 1 day = $\frac{1}{10}$ part

work done by (A + B) in 1 day $= \frac{1}{8}+\frac{1}{10}=\frac{9}{40}$ part

Let both A and B does work together in x days.

According to the questions,

$\frac{9x}{40}+\frac{1}{10}=1$

$\Rightarrow \frac{9x}{40}=1-\frac{1}{10}$

$\Rightarrow x=\frac{9}{10}\times\frac{40}{9}$

$x = 4$ days

so A worked for 4 days.

80. 28 days of food items are available for 1200 soldiers posted in a fort. After 4 days some soldiers left the fort, due to which the available food item use for 32 days. How many soldiers left the fort?

(a) 300 (b) 280

(c) 320 (d) 290

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (a) Number of posted soldiers = 1200

Let x soldiers have lefted after 4 days

we know that $M_1 \times D_1 = M_2 \times D_2$

$1200 \times 28 = 1200 \times 4 + (1200 - x) \times 32$

$1200 \times 24 = (1200 - x) \times 32$

$28800 = 38400 - 32x$

$32x = 38400 - 28800$

$32x = 9600$

$x = 300$

81. Sunita embroiders a saree in 15 days while her sister Neha can complete the same work in 10 days. They started working together, but Neha leaves work after two days. After that how many days will Sunita take to complete the embroidery alone?

(a) 10 days (b) 20 days

(c) 16 days (d) 12 days

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (a)

Let time taken to complete whole work in x days.

According to the questions,

$\frac{x}{15}+\frac{2}{10}=1$

$\frac{x}{15}=1-\frac{2}{10}$

$\Rightarrow \frac{x}{15}=\frac{8}{10}$

$\Rightarrow x=15\times\frac{4}{5}$

$x=12$

$\therefore$ Whole work will finish in 12 days.

So Sunita will take 10 days to complete the remaining work

82. In a camp 180 students have food for 20 days. If the food is to lasts for 25 days, then how many students should leave the camp?

(a) 36 (b) 24

(c) 28 (d) 40

RRB NTPC 29.03.2016 Shift : 1

Ans : (a) Let the number of students leaving of the camp = x

from the questions,

$180\times 20=(180-x)\times 25$

$180-x=\frac{180\times 20}{25}$

$180-x=\frac{3600}{25}$

$180-x=144$

$x=180-144=36$

So 36 students will have to leave the camp.

83. Smita can finish a work in 12 days and Sam can finish the same work in 9 days. Both leave the work after working together for 4 days. How much work is left?

(a) 1/2 (b) 7/9

(c) 2/9 (d) 1/4

RRB NTPC 29.03.2016 Shift : 1

Ans : (c) one day work of Smita $=\frac{1}{12}$ part

one day work of sam $=\frac{1}{9}$ part

$\therefore$ 4 days work of both $=4\left(\frac{1}{12}+\frac{1}{9}\right)$

$=4\left(\frac{3+4}{36}\right)=\frac{7}{9}$ part

remaining work $=1-\frac{7}{9}=\frac{2}{9}$ part

84. Vikram and Vivek can finish a work in 50 days. They worked together for 20 days and after that both are left the work. How much work has been done by them?

(a) 3/5 (b) 1/3

(c) 1/2 (d) 2/5

RRB NTPC 29.03.2016 Shift : 3

Ans : (d) Work done by both in 20 days $=\frac{20}{50}=\frac{2}{5}$ part

85. 30 men 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?

(a) 9 (b) 12

(c) 8 (d) 7

RRB NTPC 19.04.2016 Shift : 1

Ans : (a) Let the number of lefted peoples is x

According to the questions,

$30 \times 20 = 6 \times 30 + (26-6) \times (30-x)$

$600 = 180 + 20 (30-x)$

$600 - 180 = 20(30-x)$

$(30-x) = \frac{420}{20}$

$(30 - x) = 21$

$x = 9$

then the number of people left the work = 9

86. Anil can do a work in 14 days and Rohit can do the same work in 21 days. Both together work for some days and then Anil quits the work. If Rohit has worked alone for three days then the number of days taken to complete the work is.

(a) 31/5 (b) 51/5
(c) 2/15 (d) 13/5

RRB NTPC 16.04.2016 Shift : 3

Ans : (b) Let Anil worked for N days

work done by Anil in 1 day $= \frac{1}{14}$ part

work done by Rohit in 1 day $= \frac{1}{21}$ part

According to the questions,

$\frac{N}{14} + \frac{N+3}{21} = 1$

$\frac{3N + 2N + 6}{42} = 1 \Rightarrow 5N + 6 = 42$

$5N = 42 - 6 = 36$

$N = \frac{36}{5}$

So number of days to finish work

$= \frac{36}{5} + 3 = \frac{51}{5}$

87. 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 finished in 10 days then how many more cleaning workers need to be hired?

(a) 30 (b) 32
(c) 33 (d) 21

RRB NTPC 28.04.2016 Shift : 1

Ans : (c) Suppose the number of extra employees = x

According to the questions,

$M_1 \times D_1 = M_2 \times D_2$

$(25 - 10) \times 42 = (30 + x) \times 10$

$15 \times 42 = 10 \times (30 + x)$

$30 + x = \frac{630}{10} \Rightarrow 63$

$x = 63 - 30$

$\boxed{x = 33}$

88. A and B can complete a work together in 35 days. If A works alone and completes $\frac{5}{7}$ of the work and then leaves the remaining for B, it will take a total of 90 days to complete the work. How many days would take A, who is more efficient among them to complete the entire work?

(a) 40 (b) 45
(c) 48 (d) 42

Ans : (d) Let A completes the entire work in x days

person	work	time
A	1	x day
A	$\frac{5}{7}$	$\frac{5}{7}x$ day
B	$\frac{2}{7}$	$\left(90 - \frac{5}{7}x\right) = \frac{(630-5x)}{7}$
B	1	$\left(\frac{630-5x}{7}\right) \times \frac{7}{2} = \left(\frac{630-5x}{2}\right)$

According to the questions,

$\because \quad \frac{1}{A} + \frac{1}{B} = \frac{1}{35}$

$\frac{1}{x} + \frac{2}{(630-5x)} = \frac{1}{35}$

$35(630 - 5x + 2x) = x(630 - 5x)$

$7(630 - 3x) = (126x - x^2)$

$4410 - 21x = 126x - x^2$

$x^2 - 147x + 4410 = 0$

$x^2 - 105x - 42x + 4410 = 0$

$(x - 105)(x - 42) = 0$

$x = 42, \ x \neq 105$ (from options)

So A will take 42 days to complete the work.

89. A and B can complete a work together in 12 days while A alone can do it in 15 days. They start working together but A leaves 10 days before the completion of the work. For how many days did A and B work together?

(a) 9 (b) 11
(c) 8 (d) 10

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (d) 1 day work of A + B $= \frac{1}{12}$ part

1 day work of A $= \frac{1}{15}$ part

1 day work of B $= \frac{1}{12} - \frac{1}{15}$

$= \frac{5-4}{60} = \frac{1}{60}$ part

According to the questions, Let A and B did work together for x days.

x.A+x.B+10B = 1

x (A+B) + 10B = 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 days

90. 10 people could complete a work in 8 days. After 4 days, 2 of the workers left. How many days to take compete the task?

(a) 7 (b) 8
(c) 6 (d) 5

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

Ans : (d) 10 men will do total work = 10 × 8 = 80 unit
remaining work after 4 days = 80 – 40 = 40 unit
8 men will do remaining work $= \frac{40}{8} = 5$ days

91. A and B together can complete a work in 12 days. However, if A works alone, completes half work and leaves then B works alone and completes the remaining work, it takes 25 days to complete the work. If B is more efficient than A, how many days would it have taken B to do the work alone?

(a) 18 (b) 22
(c) 20 (d) 15

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (c) Let A and B does the work in x and y days.

then, $\frac{1}{x}+\frac{1}{y}=\frac{1}{12}$

$\frac{y+x}{xy}=\frac{1}{12}$

$xy=12(x+y)$ ..... (i)

According to the question-

$\frac{x}{2}+\frac{y}{2}=25$

$x+y=50$ ..... (ii)

from the equation (i) and (ii)

$xy=12\times 50$

$xy=600$ ..... (iii)

on taking x = 30 and y = 20 third eqaution will be satisfied.
so taken time by B = 20 days

Type - 5

92. P and Q can do a diffrent work in 6 and 8 days respectively with the help of R they complete the work in 3 days. If total wages is Rs. 3200 then what is the amount given to R?

(a) Rs. 320 (b) Rs. 1200
(c) Rs. 400 (d) Rs. 375

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

Ans : (c) one day work of P $= \frac{1}{6}$ part

one day work of Q $= \frac{1}{8}$ part

According to the equation,

$\frac{1}{P}+\frac{1}{Q}+\frac{1}{R}=\frac{1}{3}$

$\Rightarrow \frac{1}{6}+\frac{1}{8}+\frac{1}{R}=\frac{1}{3}$

$\Rightarrow \frac{1}{R}=\frac{1}{3}-\left(\frac{7}{24}\right)$

$\frac{1}{R}=\frac{1}{24}$

work ability ratio of P, Q and R $= \frac{1}{6}:\frac{1}{8}:\frac{1}{24}=\frac{4:3:1}{24}$

P : Q : R = 4 : 3 : 1

wages of R $= 3200\times\frac{1}{8}=$ Rs. 400

93. 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?

(a) 50, 150 and 75 (b) 40, 60 and 120
(c) 60, 120 and 40 (d) 75, 150 and 50

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : one day work of (A + B)= $\frac{1}{50}$ part

one day work of (B + C) = $\frac{1}{37.5}$ part

one day work of (C + A) = $\frac{1}{30}$ part

one day work of 2(A + B + C) = $\left(\frac{1}{50}+\frac{10}{375}+\frac{1}{30}\right)$ part

2(A+B+C) = $\left(\frac{1}{50}+\frac{2}{75}+\frac{1}{30}\right)$ part

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

So C could completed the work in 50 days

$A+\frac{2}{75}=\frac{1}{25}$

$A=\frac{1}{25}-\frac{2}{75}=\frac{3-2}{75}=\frac{1}{75}$ part

So it will take 75 days to complete the work by A

$\frac{1}{30}+B=\frac{1}{25}$

$B=\frac{1}{25}-\frac{1}{30}=\frac{6-5}{150}=\frac{1}{150}$ part

So work could completed by A in 75 days, B in 150 days and C in 50 days

94. A and B can complete a work in 20 days, B and C can complete it in 30 days while C and A can do the same work together in 24 days. How many days will each of B and C take to complete the work individually?

(a) 48 and 80 (b) 56 and 65
(c) 54 and 72 (d) 50 and 54

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

Ans : (a) 1 day work of (A + B) $= \frac{1}{20}$ part

1 day of (B + C) $= \frac{1}{30}$ part

1 day of (C + A) $= \frac{1}{24}$ part

1 day work of the A, B, C $= \left(\frac{1}{20}+\frac{1}{30}+\frac{1}{24}\right)\times\frac{1}{2}$

$= \frac{6+4+5}{120\times 2} = \frac{1}{8\times 2} = \frac{1}{16}$

time taken to completing work by B $= \frac{1}{16}-\frac{1}{24}$

$= \frac{3-2}{48} = \frac{1}{48}$

B will complete work by self in 48 days.

taken time by C to do work by self $= \frac{1}{16}-\frac{1}{20}$

$= \frac{5-4}{80} = \frac{1}{80}$

so C will complete work alone in 80 days.
so B and C will complete their work in 48 and 80 days.

Type - 6

95. 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 how many days can the three together complete the same work.

(a) 10 days (b) 14 days
(c) 4 days (d) 6 days

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

Ans : (a)

one day work of (P + Q) $= \frac{1}{15}$ part

one day work of (Q + R) $= \frac{1}{12}$ part

one day work of (P + R) $= \frac{1}{20}$ part

work done by 2 (P + Q + R) in 1 day

$= \frac{1}{15}+\frac{1}{12}+\frac{1}{20}$

$= \frac{4+5+3}{60\times 2} = \frac{12}{60\times 2} = \frac{1}{5\times 2} = \frac{1}{10}$

so time taken to finishing the work by (P + Q + R) all three = 10 days

96. P and Q 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 the same work in 6 days. In how many days can P and R together can do that work?

(a) 6 days (b) 8 days
(c) 5 days (d) 4 days

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

Ans : (b)

work done by (P + Q) in 1 days $= \frac{1}{8}$ part

work done by (Q + R) in 1 days $= \frac{1}{12}$ part

work done by (P + Q + R) is 1 days $= \frac{1}{6}$ part

work done by R in a day $= \frac{1}{6}-\frac{1}{8}$

$= \frac{4-3}{24} = \frac{1}{24}$

work done by P in a one day $= \frac{1}{6}-\frac{1}{12}$

$= \frac{4-2}{24} = \frac{2}{24} = \frac{1}{12}$

total work done by (P + R) $= \frac{1}{24}+\frac{1}{12}$

$= \frac{1+2}{24} = \frac{3}{24} = \frac{1}{8}$ day

97. 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 all of them together to complete the same work?

(a) 25 (b) 8
(c) 16 (d) 15

RRB JE - 24/05/2019 (Shift-III)

Ans : (c) Work done by (P + Q) in one day $= \frac{1}{30}$ part

work done by (Q + R) in one day = $\frac{1}{24}$ part

work done by (R + P) in one day = $\frac{1}{20}$ part

$2(P+Q+R) = \frac{1}{30}+\frac{1}{24}+\frac{1}{20}$

$2(P+Q+R) = \frac{4+5+6}{120} = \frac{15}{120}$

work done by (P + Q + R) in one day = $\frac{1}{16}$ part

time taken by (P + Q + R) to complete the work = 16 days

98. 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 will A take to complete this work alone?

(a) 34 days (b) 24 days
(c) 20 days (d) 30 days

RRB RPF Constable – 18/01/2019 (Shift-I)

Ans : (b) one day work of (A + B) = $\frac{1}{10}$ part

one day work of (B + C) = $\frac{1}{12}$ part

one day work of (C + A) = $\frac{1}{15}$ part

one day work of 2(A + B + C) = $\frac{1}{10}+\frac{1}{12}+\frac{1}{15}$

$=\frac{6+5+4}{60}=\frac{15}{60}$

one day work of (A + B + C) = $\frac{1}{4\times 2}=\frac{1}{8}$

So one day work of A = $\frac{1}{8}-\frac{1}{12}=\frac{3-2}{24}=\frac{1}{24}$

A will finish all work alone in 24 days

99. A and B can complete a task in 40 days, B and C can complete in 30 days while C and A can complete the same task together in 24 days. How many days will each of A, B and C take to complete the task individually?

(a) 48, 96 and 32 (b) 32, 48 and 96
(c) 60, 120 and 40 (d) 40, 120 and 60

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (c) one day work of $(A+B)=\frac{1}{40}$ part

one day work of $(B+C)=\frac{1}{30}$ part

one day work of $(C+A)=\frac{1}{24}$ part

one day work of all three $2(A+B+C)=\frac{1}{40}+\frac{1}{30}+\frac{1}{24}$

$=\left(\frac{3+4+5}{120}\right)\frac{1}{2}=\frac{1}{10}\times\frac{1}{2}=\frac{1}{20}$ part

one day work of A in alone $=\frac{1}{20}-\frac{1}{30}=\frac{3-2}{60}=\frac{1}{60}$ part

So A will complete work in 60 days

one day work of B in alone $=\frac{1}{20}-\frac{1}{24}=\frac{6-5}{120}=\frac{1}{120}$ part

So B will complete work in 120 days

one day work of C in alone $=\frac{1}{20}-\frac{1}{40}=\frac{2-1}{40}=\frac{1}{40}$ part

So C will complete work in 40 days

100. Ravi, Rohan and Rajesh alone can complete a work in 10, 12 and 15 days respectively. In how many days can the work be completed, if all three work together?

(a) 4 days (b) 5 days
(c) 3 days (d) 8 days

RRB NTPC 27.04.2016 Shift : 3

Ans : (a) one day work of Ravi, Rohan and Rejesh of the three

$=\frac{1}{10}+\frac{1}{12}+\frac{1}{15}$

$=\frac{6+5+4}{60}=\frac{15}{60}$

$=\frac{1}{4}$ part

So it takes 4 days to complete the work by three people.

101. 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 can B complete that work alone?

(a) 243 (b) 234
(c) 261 (d) 225

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a) one day work of A, B and C $=\frac{1}{81}$ part

one day work of A and B $=\frac{1}{97.2}$ part

one day work of B and C $=\frac{1}{162}$ part

According to the question,

$\frac{1}{A}+\frac{1}{B}+\frac{1}{C}=\frac{1}{81}$ .....(i)

$\frac{1}{A}+\frac{1}{B}=\frac{10}{972}$ .....(ii)

$\frac{1}{B}+\frac{1}{C}=\frac{1}{162}$ .....(iii)

from the 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)

$\frac{1}{B}+\frac{1}{486}=\frac{1}{162}$

$\frac{1}{B}=\frac{1}{162}-\frac{1}{486}=\frac{3-1}{486}$

$\frac{1}{B}=\frac{2}{486}=\frac{1}{243}$

B = 243

So B will complete work by alone in 243 days.

102. 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' work together then they can complete it in 22 days. Then in how many days can D alone finish the work?

(a) 44 (b) 55
(c) 77 (d) 66

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (d) : one day work of A $= \frac{1}{11}$ part

one day work of B $= \frac{1}{16.5}$ part

one day work of (A+B+C) $= \frac{1}{11}+\frac{1}{16.5}+\frac{1}{C}=\frac{1}{5.5}$ part

one day work of C $= \frac{1}{5.5}-\left(\frac{1}{11}+\frac{1}{16.5}\right)$

$=\frac{1}{5.5}-\left(\frac{2.5}{16.5}\right)$

$=\frac{3-2.5}{16.5} = \frac{0.5}{16.5}=\frac{1}{33}$ part

$\because$ one day work of (C + D) $= \frac{1}{22}$ part

$\therefore$ one day work of D $= \frac{1}{22}-\frac{1}{33} = \frac{3-2}{66}=\frac{1}{66}$ part

So D will complete work in 66 days

103. 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 together can do the same work in 70 days. How many days will C take to complete the work alone?

(a) 210 (b) 175
(c) 245 (d) 280

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (d)

one day work of A and B $= \frac{1}{40}$ part ..... (1)

one day work of B and C $= \frac{1}{56}$ part …….(2)

one day work of C and A $= \frac{1}{70}$ part .....(3)

to 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 work of C $= \frac{1}{35}-\frac{1}{40}=\frac{8-7}{280}=\frac{1}{280}$ part

So time taken by C to completing work = 280 days

104. A takes twice as long as B and C together to do a work, 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?

(a) 20 days (b) 18 days
(c) 24 days (d) 15 days

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (b) According to the question,

work done by B and C = work done by 2 × A

B + C = 2A ...(i)

work done by A and B = work done by 3 × C

A + B = 3C ...(ii)

$\because$ one day work done by A, B and C

$A + B + C = \frac{1}{6}$

putting the value of B + C from equation (i)

$A + 2A = \frac{1}{6}$

$3A = \frac{1}{6} \Rightarrow \boxed{A = \frac{1}{18}}$

So A will complete this work alone in 18 days

105. Rajan can complete a certain work in 6 days. Bhavesh takes 8 days to complete the same work. Charan takes the same times as Rajan and Bhavesh to work together. How long will it take for Bhavesh and Charan to complete the work together?

(a) $2\frac{2}{5}$ days (b) $2\frac{3}{5}$ days
(c) $2\frac{7}{5}$ days (d) $2\frac{4}{5}$ days

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (a) According to the question,

Rajan's work = 6 day

Bhavesh's work = 8 day

one day work of both (Rajan + Bhavesh) $=\frac{1}{6}+\frac{1}{8}$

$=\frac{4+3}{24}=\frac{7}{24}$

According to the question,

Charan works alone in the same time as Rajan and Bhavesh take to work together

one day work of Bhavesh and Charan $=\frac{1}{8}+\frac{7}{24}$

$=\frac{3+7}{24}=\frac{10}{24}$

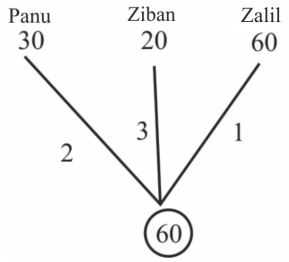
So time taken by Bhavesh and Charan to completing work $=\frac{24}{10}=2\frac{2}{5}$ day

106. Panu, Ziban and Zalil separately can finish a work in 30, 20 and 60 days respectively. Ziban started working and Panu and Zalil agreed to assist Panu on every third day. How long will it take to complete that work?

(a) 14 (b) 13
(c) 15 (d) 12

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (c)



Total work = 60 unit

∵ Ziban does 3 unit work in a one day

Ziban will do in 2 day = 3 × 2 = 6 unit

∴ Panu and Zalil assist Ziban on the third day

∵ work of third day = (Ziban's work in 2 day) + (Panu + Zalil + Ziban)

= 2 × 3 + 2 + 1 + 3 = 12 unit

∵Time taken in doing 1 unit $= \frac{3}{12}$

∴ time taken in doing 60 unit $= \frac{3}{12} \times 60 =$ 15 days

107. If X and Y can complete a piece of work in 20 days, Y and Z can complete the same work in 12 days, while Z and X could do the same work in 15 days. How many days would be needed to complete the work by X, Y and Z together?

(a) 5 (b) 10
(c) 8 (d) 12

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (b)

one day work of (x + y) = $\frac{1}{20}$ part

one day work of (y + z) = $\frac{1}{12}$ part

one day work of (z + x) = $\frac{1}{15}$ part

one day work of 2(x + y + z) = $\frac{1}{20} + \frac{1}{12} + \frac{1}{15}$

one day work of (x + y + z) $= \frac{3+5+4}{2 \times 60}$

one day work of (x + y + z) $= \frac{12}{2 \times 60} = \frac{1}{10}$ part

So the three of x, y and z will complete that work in 10 days

108. A can do a work in 6 days. B takes 8 days to complete the work. C takes equal time to the time taken by A and B to work together to complete the work. If B and C work together how much time to take them to complete the work?

(a) $\frac{14}{5}$ days (b) $\frac{13}{5}$ days
(c) $\frac{11}{5}$ days (d) $\frac{12}{5}$ days

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (d) : work done by A in a day = $\frac{1}{6}$ part

work done by B in a day = $\frac{1}{8}$ part

work done by C in a day = $\frac{1}{6} + \frac{1}{8}$ part

$= \frac{4+3}{24} = \frac{7}{24}$ part

one day work with B and C together

= $\frac{1}{8} + \frac{7}{24} = \frac{10}{24} = \frac{5}{12}$ part

So, time taken by B and C to completing work with together

= $\frac{12}{5}$ day

Type - 7

109. 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 can complete that work alone?

(a) 65 (b) 60
(c) 90 (d) 75

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) 1 day work of $P + Q + R + S = \frac{1}{20}$ part

1 day work of $(P + Q) = \frac{1}{50}$ part

1 day work of $R = \frac{1}{60}$ part

1 day work of $S = \frac{1}{20} - \frac{1}{50} - \frac{1}{60}$

$= \frac{15-6-5}{300} = \frac{4}{300}$

So S will do this work alone in 75 days.

110. P, Q and R together complete a task. P and Q finish 70% of the work while Q and R finish 50% of the work. If they work alone, who will do the work first?

(a) R
(b) P
(c) can not determine
(d) Q

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

Ans : (b) If P, Q and R complete some work in 1 day

If 1 day work of P and Q $= 70\% = \frac{7}{10}$

1 day work of Q and R $= 50\% = \frac{1}{2}$

$\therefore$ one day work of R $= 1 - \frac{7}{10} = \frac{3}{10}$

So, R will complete work alone in $= \frac{10}{3} = 3\frac{1}{3}$ days

again, one day work's of P $= 1 - \frac{1}{2} = \frac{1}{2}$

So P will complete work alone in 2 days.

again 1 day work of Q $= \frac{1}{2} - \frac{3}{10} = \frac{2}{10} = \frac{1}{5}$

So Q will complete work alone in 5 days

At first time P will complete work.

111. 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 can B complete the work alone?

(a) 225 (b) 234
(c) 243 (d) 261

RRB RPF SI – 10/01/2019 (Shift-III)

Ans : (c) According to the question,

Work done by A, B and C in 1 day $= \frac{1}{81}$

$$A + B + C = \frac{1}{81} \quad \text{..... (i)}$$

then, 1 day work of A + B $= \frac{1}{97.2}$

$$A + B = \frac{10}{972}$$

$$A + B = \frac{5}{486} \quad \text{..... (ii)}$$

on putting the value of equation (ii) into equation (i)

$$C = \frac{1}{81} - \frac{5}{486}$$

$$C = \frac{6-5}{486} = \frac{1}{486}$$

then one day work of (B + C) $= \frac{1}{162}$

$$B + \frac{1}{486} = \frac{1}{162}$$

$$B = \frac{1}{162} - \frac{1}{486}$$

$$B = \frac{3-1}{486} = \frac{1}{243}$$

Hence, B will complete that work alone in 243 days.

112. A can do a work in 10 day, 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?

(a) 16 days (b) 48/7 days
(c) 42/7 days (d) 18/7 days

RRB NTPC 16.04.2016 Shift : 2

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

remain 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

$\because$ time taken to complete work of $\frac{7}{60}$ part = 1 day

$\therefore$ time taken in complete $\frac{1}{3}$ part of work

$$= 1 \times \frac{60}{7} \times \frac{1}{3} = \frac{20}{7}$$

total time $= \frac{20}{7} + 4 = \frac{48}{7}$ days

113. 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 can R do the same work alone?

(a) 18 days (b) 20 days
(c) 22 days (d) 24 days

RRB NTPC 05.04.2016 Shift : 2

Ans : (d) work done by P, Q and R in 1 day $= \frac{1}{4}$

work 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 will complete that work in 24 days in alone.

114. 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 do this alone?

(a) 26 hours (b) 15 hours
(c) 24 hours (d) 30 hours

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (c) work done by Ashok and Kiran in 1 hour

$$= \frac{1}{10} \quad \text{.....(i)}$$

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)

on adding the equation (i), (ii) and (iii)

work done by 2(Ashok, Kiran, and Rohan) in 1 hour

$$= \frac{1}{10}+\frac{1}{15}+\frac{1}{12}$$

work done by Ashok, Kiran and Rohan in 1 hour

$$= \frac{12+8+10}{120\times 2}=\frac{30}{240}=\frac{1}{8}$$

so 1 hour work of Kiran

$$= \frac{1}{8}-\frac{1}{12}=\frac{3-2}{24}=\frac{1}{24}$$

So Kiran will take 24 hours to, complete the work.

115. 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 three days after the work begins. In how many days the entire work will be finished?

(a) $3\frac{7}{29}$ (b) $3\frac{23}{29}$

(c) $4\frac{15}{23}$ (d) $1\frac{6}{23}$

Ans. (c) : According to the question,

Suppose C started work from x day by self.

$$\frac{x-3}{8}+\frac{x-1}{9}+\frac{x}{12}=1$$

$$\frac{9x-27+8x-8+6x}{72}=1$$

$23x - 35 = 72$

$23x = 72 + 35$

$23x = 107$

$$x=\frac{107}{23}$$

$$x=4\frac{15}{23}$$

Hence all work will be finish in $4\frac{15}{23}$ days

116. A, B and C together can complete a work in 10 days. A alone can complete the work in 20 days and B alone can complete the work in 30 days. How many days will C take to complete that work alone?

(a) 30 days (b) 20 days

(c) 10 days (d) 60 days

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (d) 1 day work of A, B and C $= \frac{1}{10}$ part

1 day work of A and B $= \left(\frac{1}{20}+\frac{1}{30}\right)$ part

Hence 1 day work of C $= \frac{1}{10}-\left(\frac{1}{20}+\frac{1}{30}\right)$

$$=\frac{1}{10}-\left(\frac{3+2}{60}\right)=\frac{6-5}{60}=\frac{1}{60}\text{ part}$$

Hence time taken by C to finishing work alone

$$= \frac{1}{1/60}=60\text{ days}$$

117. 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?

(a) 125 (b) 120

(c) 124 (d) 122

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (b) : one day work of (A + B) $= \frac{1}{28}$ part .....(i)

one day work of (B + C) $= \frac{1}{35}$ part ..... (ii)

one day work of (C + A) $= \frac{1}{42}$ part .....(iii)

on the equation (i) + equation (ii) + equation (iii)

one day work of (A+B+B+C+C+A) $= \frac{1}{28}+\frac{1}{35}+\frac{1}{42}$

one day work of 2(A+B+C) $= \frac{15+12+10}{420}$

one day work of (A+B+C) $= \frac{37}{840}$ part ..... (iv)

on subtraction of equation (iv) to equation (i)

one day work of C $= \frac{37}{840}-\frac{1}{28}=\frac{37-30}{840}$

one day work of C $= \frac{7}{840}=\frac{1}{120}$ part

Hence C will finish all work alone in 120 days.

118. A, B and C together can complete a work in 5 days. If only A and B worked, then they use 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?

(a) 145 (b) 125

(c) 135 (d) 130

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (c) : one day work of (A+B+C) $= \frac{1}{45}$ part .....(i)

one day work of (A+B) $= \frac{1}{54}$ part .....(ii)

one day work of (B+C) $= \frac{1}{90}$ part .....(iii)

from the equation (ii) + equation (iii)

$$A+B+B+C=\frac{1}{54}+\frac{1}{90}$$

$$B+(A+B+C)=\frac{1}{54}+\frac{1}{90}$$

from the equation (i)

$$B=\left(\frac{1}{54}+\frac{1}{90}\right)-\frac{1}{45}$$

$$B=\frac{5+3-6}{270}=\frac{2}{270}=\frac{1}{135}\text{ part}$$

Hence B will take time of 135 days to completing work alone.

119. Rathin and Bratin 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 Bratin works alone, how many days will it take to finish this work?

(a) 30 (b) 28
(c) 20 (d) 24

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (a) Suppose Rathin finish the work in R days and Batin in B days.

According to the question,

$$\frac{1}{R}+\frac{1}{B}=\frac{1}{12}\text{.....(i)}$$

and

$$\frac{10}{R}+\frac{15}{B}=1\text{ .....(ii)}$$

on doing equation (i) × 10 – equation (ii)

$$\frac{10}{B}-\frac{15}{B}=\frac{10}{12}-1$$

$$\Rightarrow \frac{-5}{B}=\frac{-2}{12}$$

B = 30 day

120. 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 will C do the same work alone?

(a) 30 days (b) 20 days
(c) 25 days (d) 18 days

RRB NTPC 03.04.2016 Shift : 3

Ans :(b) Suppose C will do that work in x days alone

work done by A in 1 day $=\frac{1}{10}$

work done by B in 1 day $=\frac{1}{20}$

work done by C in 1 day $=\frac{1}{x}$

According to the 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

121. A and B can finish a work in 10 days, B and C can finish the same work in 15 days and A and C can finish the same work in 20 days. In how many days can B finish this work alone?

(a) $\frac{20}{7}$ (b) $\frac{24}{7}$
(c) $\frac{120}{7}$ (d) $\frac{60}{7}$

RRB NTPC 12.04.2016 Shift : 1

Ans : (c) work done by (A+B+C) in one day.

$$=\frac{1}{2}\left(\frac{1}{10}+\frac{1}{15}+\frac{1}{20}\right)=\frac{1}{2}\times\left(\frac{6+4+3}{60}\right)=\frac{13}{120}$$

∴ one day work of B

= one day work of (A+B+C) – one day work of (A+C)

$$=\frac{13}{120}-\frac{1}{20}$$

$$=\frac{13-6}{120}$$

$$=\frac{7}{120}$$

Hence B will finish work in $\frac{120}{7}$ days alone.

122. A, B and C can complete a work together in 10 days. A and B would need 12 days if only the two of them worked, while B and C would take 20 days if only the two of them worked. If B worked alone, how many days would she take to complete the work?

(a) 30 (b) 22
(c) 45 (d) 20

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

Ans : (a) one day work of (A+B+C) $=\frac{1}{10}$ ..... (i)

one day work of (A + B) $=\frac{1}{12}$ ..... (ii)

one day work of (B + C) $=\frac{1}{20}$ ..... (iii)

from equation (ii) + equation (iii)

$$B+(A+B+C)=\frac{1}{12}+\frac{1}{20}$$

$$\Rightarrow \quad B+\frac{1}{10}=\frac{1}{12}+\frac{1}{20} \quad \{\text{from equation (i)}\}$$

$$\Rightarrow \quad B=\frac{1}{12}+\frac{1}{20}-\frac{1}{10}$$

$$\Rightarrow \quad B=\left(\frac{5+3-6}{60}\right)$$

$$\Rightarrow \quad B=\frac{2}{60}$$

$$\Rightarrow \quad B=\frac{1}{30}$$

Hence B will complete work in 30 days.

Type - 8

123. Charlie and Lola can do a piece of work in 20 days. They worked for 15 days, then Lola left the work. Charlie finished the remaining work in 12 days. Find out how many days Charlie can complete the work alone?

(a) 32 (b) 5
(c) 48 (d) 17

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (c) Work done by Charlie and Lola in 15 days.

$= \frac{15}{20} = \frac{3}{4}$

remain work $= 1 - \frac{3}{4} = \frac{1}{4}$

Time taken by Charlie in complete $\frac{1}{4}$ of work $= 12$

Time taken by Charlie in complete work alone $= 4 \times 12$
$= 48$days

Type - 9

124. 6 boys and 10 girls can do a job in 25 days. How many days will 12 boys and 30 girls take to do the same work?

(a) 10 (b) 5
(c) 15 (d) 20

RRB RPF SI – 11/01/2019 (Shift-II)

Ans : (b) $\because$ 6B = 10 G
$\therefore$ 12B = 20G

we know that;
Formula– $M_1D_1 = M_2D_2$

$\Rightarrow 10G \times 25 = (12B + 30G) \times D_2$
$\Rightarrow 10G \times 25 = (20\ G + 30G) \times D_2$
$\Rightarrow 10 \times 25 = 50 \times D_2$

$\Rightarrow D_2 = \frac{10 \times 25}{50} = 5$ days

125. 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?

(a) 650 (b) 1200
(c) 800 (d) 1400

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

Ans : (c) M = male
formula-$M_1D_1 = M_2D_2$ D = days
$200 \times 1024 = 256 \times M_2$
$M_2 = 800$

126. 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 after working 6 hours per day?

(a) 7 days (b) $4\frac{2}{3}$ days
(c) $5\frac{1}{3}$ days (d) 6 days

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

Ans : (c) given that,
$M_1 = 200, H_1 = 8, D_1 = 6$
$M_2 = 300, H_2 = 6, D_2 = ?$
we know that;
formula
$M_1D_1H_1 = M_2D_2H_2$
$200 \times 8 \times 6 = 300 \times 6 \times D_2$
$D_2 = \frac{16}{3}$, $D_2 = 5\frac{1}{3}$ days

127. Adequate food supplies were arranged for 250 soldiers for 30 days. If 50 soldiers did not participate in the camp, how many more days would the food supply last?

(a) 10 days (b) 9 days
(c) 12 days (d) 7.5 days

RRB JE - 24/05/2019 (Shift-I)

Ans : (d) From the rule of proportion,
$M_1D_1 = M_2D_2$
$250 \times 30 = 200 \times D_2$
$\therefore D_2 = 37.5$ day
Hence food items will last more than $= 37.5 - 30 = 7.5$ days

128. 16 women working 7 hours per day to complete a work in 48 days. How many women will be required to complete the same work in 32 days, working 12 hours per day?

(a) 12 (b) 17
(c) 14 (d) 10

RRB JE - 25/05/2019 (Shift-II)

Ans : (c) $M_1H_1D_1 = M_2H_2D_2$
$16 \times 7 \times 48 = M_2 \times 12 \times 32$
$M_2 = 14$
Hence 14 women will be required to finish work in 32 days.

129. If 36 men can do a work in 25 days, then in how many days 15 men will do the same work?

(a) 60 days (b) 50 days
(c) 56 days (d) 54 days

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

Ans : (a) M $\rightarrow$ male
D $\rightarrow$ day
we know that
$M_1\ D_1 = M_2 \times D_2$
$36 \times 25 = 15 \times x$
$x = \frac{36 \times 25}{15} = 60$ days

130. 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?

(a) 6 days (b) 7 days
(c) 4 days (d) 5 days

RRB JE - 27/05/2019 (Shift-II)

Ans : (c) M = male
B = boys
(9M + 12B) × 4 = (4M + 16B) × 6
(9M + 12B) × 2 = (4M + 16B) × 3
18M + 24 B = 12M + 48B
18M – 12M = 48B – 24B
6M = 24 B

$$\boxed{\frac{M}{B}=\frac{4}{1}}$$

Total work = (9M + 12B) × 4
= (36 + 12) × 4
= 48 × 4 = 192
(6M + 24B) × days = 192
(24 + 24) × days = 192

$$\text{days}=\frac{192}{24+24}=\frac{192}{48}=4$$

131. 30 people can complete a work in 12 days. How long will it take for 40 people to complete the same work?
(a) 10 (b) 9
(c) 6 (d) 8

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (b) $M_1D_1 = M_2D_2$
$30 \times 12 = 40 \times D_2$

$$D_2=\frac{30\times 12}{40},\quad D_2 = 9 \text{ days}$$

9 days will be taken by 40 peoples to complete that work.

132. 45 people can make 40,000 bulbs in 12 days. How many additional people will be required to hire 100000 bulbs in 9 days?
(a) 100 (b) 105
(c) 110 (d) 120

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (b) : Let x additional people will be required to making 100000 bulbs in 9 days.

formula $\frac{M_1D_1}{W_1}=\frac{M_2D_2}{W_2}$

$M_1 = 45$ $M_2 = (45+x)$
$D_1 = 12$ $D_2 = 9$
$W_1 = 40,000$ $W_2 = 100,000$

$$\frac{45\times 12}{40,000}=\frac{(45+x)\times 9}{100,000}$$

$150 = 45 + x$
$\boxed{x = 105}$
Hence 105 additional peoples will be required.

133. 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?
(a) 18 persons (b) 12 persons
(c) 16 persons (d) 10 persons

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (c) Formula

$$\frac{M_1}{W_1}=\frac{M_2}{W_2}$$

$$\frac{12}{111}=\frac{M_2}{148}$$

$$M_2=\frac{12\times 148}{111}=16 \text{ Persons}$$

134. 34 men can do a work in 12 days. How many days will 51 men take to do this?
(a) 10 (b) 5
(c) 8 (d) 6

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (c) Suppose work will be completed in x days
34 × 12 = 51 × x
x = 8 day

135. 69 people can complete a work in 6 days. How long will it take 23 people to complete the same work?
(a) 15 (b) 10
(c) 16 (d) 18

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (d) : Suppose it will take x days to complete work. then,
$m_1d_1 = m_2d_2$
$69\times 6 = 23\times x$

$$\Rightarrow x=\frac{69\times 6}{23}$$

$=3\times 6 = 18$
Hence it will take 18 days to complete work of 23 people.

136. 63 people can dig a pond in 126 days. In how many days can 98 people dig it?
(a) 77 (b) 80
(c) 81 (d) 90

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (c) $M_1D_1 = M_2D_2$
$63 \times 126 = 98 \times D_2$

$$\frac{63\times 126}{98}=D_2$$

$$D_2=\frac{63\times 63}{49}=81 \text{ days}$$

137. If 20 people can complete a work in 25 days then how many people will finish that work in 10 days?
(a) 45 (b) 6
(c) 100 (d) 50

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (d) : Given-
$m_1 = 20$ person, $d_1 = 25$ days
$d_2 = 10$ days, $m_2 = ?$
$m_1d_1 = m_2d_2$
$20 \times 25 = 10 \times m_2$
$m_2 = 50$ persons
Hence 50 persons will complete of work in 10 days.

138. If 8 typists typing 6 hours a day, take 15 days to type a manuscript of a book, how many days will 9 typists typing 8 hours per day take to complete the same work?

(a) 10 (b) 9
(c) 11 (d) 7

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (a) : Suppose number of intended days = x day
So, $M_1D_1H_1 = M_2D_2H_2$
$8 \times 15 \times 6 = 9 \times x \times 8$
$x = \frac{15 \times 6}{9} = \frac{90}{9}$
x = 10 days

139. A hostel has a stock of 6,190.80 Kg of wheat for 105 students for 22 days. After 5 days, 14 more students come to the hostel. It all the students eat the same food, how much remaining wheat will be enough for the students?

(a) 15 days (b) 11 days
(c) 1 days (d) 17 days

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (a) Suppose remain wheat will be enough for x days.

$$\frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$$
$$\frac{105 \times 22}{6190.80} = \frac{105 \times 5}{6190.80} + \frac{(105+14)x}{6190.80}$$
$105 \times 22 = 105 \times 5 + (105 + 14)\,x$
$105 \times 22 = 105 \times 5 + 119x$
$2310 = 525 + 119x$
$2310 - 525 = 119x$
$\frac{1785}{119} = x$
$\boxed{x = 15}$ days

140. If 15 boys earn Rs. 750 in 5 days, then how much money 25 boys will earn in 6 days?

(a) Rs. 1,500 (b) Rs. 960
(c) Rs. 1,200 (d) Rs. 900

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (a) M = Male, D = day, W = work

$$\frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$$
$$\Rightarrow \frac{15 \times 5}{750} = \frac{25 \times 6}{W_2}$$
$$W_2 = \frac{25 \times 6 \times 750}{75} = \text{Rs. } 1500$$

141. 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?

(a) 4 days (b) 6 days
(c) 5 days (d) 9 days

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (d) : According to the question,
(M = Male W = Woman)
$2M \times 30 = 3W \times 30$
$2M = 3W$
$1M = \frac{3}{2}W$
Total women $6M + 1W = 6 \times \frac{3}{2}W + 1W = 10W$
$M_1D_1 = M_2D_2$
$3 \times 30 = 10 \times D_2$
$\therefore D_2 = \frac{3 \times 30}{10} = 9$ days

142. 16 men make a model in 35 days. How long will it take 25 men to make this model?

(a) 22.2 (b) 22.1
(c) 22 (d) 22.4

RRB NTPC 17.01.2017 Shift-3

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 mens to model.

143. If 5 men can do a work in 9 days, then in how many days will 3 men finish the same work?

(a) 12 (b) 15
(c) 13 (d) 18

RRB NTPC 05.04.2016 Shift-1

Ans : (b) $\because M_1 D_1 = M_2 D_2$
$\therefore 5 \times 9 = 3 \times D_2$
$\Rightarrow D_2 = \frac{5 \times 9}{3}$
= 15 days

144. 30 men can do a work in 16 days by working 5 hours per day. In how many days will 40 men complete the same work by working 6 hours per day?

(a) in 12 days (b) in 10 days
(c) in 15 days (d) in 18 days

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) $M_1 = 30$ male $M_2 = 40$ male
$H_1 = 5$ hours, $H_2 = 6$ hours
$D_1 = 16$ days, $D_2 = ?$
$D_2 = \frac{M_1D_1H_1}{M_2H_2}$
$D_2 = \frac{30 \times 16 \times 5}{40 \times 6}$
$D_2 = 10$ days

145. 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?

(a) 25 (b) 36
(c) 27 (d) 50

RRB NTPC 18.01.2017 Shift : 1

Ans : (a) $\because \frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$

According to the question,

$$\frac{(10M+5W)60}{1} = \frac{(5M+20W)\times D_2}{\frac{1}{2}} \text{.....(i)}$$

$\because$ 1M = 2W (given)

on putting 1M = 2W in equation (1)

$$\frac{(10\times 2W+5W)\times 60}{1} = \frac{(5\times 2W+20W)2\times D_2}{1}$$

$25W\times 60 = 30W \times 2 \times D_2$

$D_2 = 25$ days

146. Girish can paint a picture in 4 days if he works for 8 hours per day. So 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?

(a) 28 (b) $37\frac{1}{3}$
(c) $39\frac{2}{5}$ (d) 32

RRB NTPC 18.01.2017 Shift : 2

Ans :(b) given-

$M_1 = 1, M_2 = 1$
$D_1 = 4, D_2 = ?$
$H_1 = 8, H_2 = 6$
$W_1 = 1\ W_2 = 7$

According to the question,

$$\frac{M_1D_1H_1}{W_1} = \frac{M_2D_2H_2}{W_2}$$

$$\frac{1\times 4\times 8}{1} = \frac{1\times D_2\times 6}{7}$$

$$D_2 = \frac{32\times 7}{6}$$

$$\boxed{D_2 = \frac{112}{3} = 37\frac{1}{3}\text{days}}$$

147. 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?

(a) 100 m (b) 90 m
(c) 85 m (d) 110 m

RRB NTPC 19.04.2016 Shift : 2

Ans : (a) Given that,

$M_1 = 60$ manual worker, $D_1 = 7$ days, $W_1 = 120$ meter
$M_2 = 70$ manual worker, $D_2 = 5$ days, $W_2 = ?$

$$\because \frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}$$

$$\therefore \frac{60\times 7}{120} = \frac{70\times 5}{W_2} \Rightarrow \frac{7}{2} = \frac{350}{W_2}$$

$W_2 = 100$ meter

148. 12 people can complete a work in X days, now 8 extra people are employed. The entire work was completed in 60 days. Find the value of X.

(a) 80 (b) 100
(c) 55 (d) 45

RRB NTPC 18.04.2016 Shift : 3

Ans : (b) Given-

$M_1 = 12$ males, $D_1 = x$ day
$M_2 = 12 + 8 = 20$ males, $D_2 = 60$ day
$M_1D_1 = M_2D_2$
$12 \times x = 20 \times 60$

$$x = \frac{20\times 60}{12}$$

x = 100 days

149. 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?

(a) 90 (b) 120
(c) 105 (d) 110

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) $M_1 = 54$ members
$H_1 = 35$ hours
$M_2 = 18$ members
$H_2 = ?$
we know that;

$$H_2 = \frac{M_1\times H_1}{M_2}$$

$$= \frac{54\times 35}{18}$$

$= 105$ hours

150. If 18 men construct a model of a ship in 7 days, then how much time will it take to prepare this model by 15 men?

(a) 8.7 (b) 8.5
(c) 8.4 (d) 43/5

RRB NTPC 19.01.2017 Shift : 3

Ans : (c) $M_1D_1 = M_2D_2$

$\Rightarrow 18 \times 7 = 15 \times D_2$

$$D_2 = \frac{126}{15} = 8.4$$

151. A piece of work can be done by 16 men in 8 days working 12 hours a day. How many men are needed to complete another work, which is three times the first one, in 24 days working 8 hours a day ?

(a) 22 male (b) 23 male
(c) 25 male (d) 24 male

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (d) Suppose to finish the work x men are required

$$\frac{m_1h_1d_1}{w_1} = \frac{m_2h_2d_2}{w_2}$$

According to the question,

$$\frac{16\times 8\times 12}{1} = \frac{x\times 8\times 24}{3}$$

x = 24

So number of intended persons = 24 males

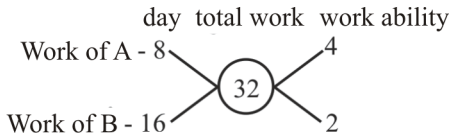
Type - 10

152. 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 P and Q

(a) 2 : 5 (b) 3 : 2
(c) 2 : 1 (d) 2 : 3

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

Ans : (c)



$\therefore$ A : B = 4 : 2 = 2 : 1

153. 20 women can do in 16 days same work completed by 16 men in 15 days. Find the ratio of capacity of a man to a woman.

(a) 5:6 (b) 3:4
(c) 6:7 (d) 4:3

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

Ans : (d) $\because$ $M_1 D_1 = M_2 D_2$

$20W \times 16 = 16M \times 15$

$\frac{1M}{1W} = \frac{20\times16}{16\times15} = \frac{4}{3}$

M : W = 4 : 3

154. 6 men and 2 boys can do five times more work than a man. Find the ratio of work capacity of a man to that of a boy.

(a) 3 : 1 (b) 4 : 1
(c) 1 : 3 (d) 3 : 2

RRB JE - 27/05/2019 (Shift-I)

Ans : (a) According to the question,

(6M + 2B) = (1M + 1B) 5 {where M→ male B→ boy}

6M + 2B = 5M + 5B

1M = 3B

M : B = 3 : 1

155. If 4 boys and 6 girls can do a work in 8 days and 3 boys and 7 girls can do it in 10 days. Find the ratio of work capacity of a boy to a girl.

(a) 5:12 (b) 11:1
(c) 12:5 (d) 1:11

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

Ans : (b) According to the question,

(4 boys + 6 girls) 8 = (3 boys + 7 girls) 10

32 boys + 48 girls = 30 boys + 70 girls

2 boys = 22 girls

$\frac{1 \text{ boys}}{1 \text{ girls}} = \frac{22}{2} = \frac{11}{1} = 11:1$

156. 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.

(a) 4 : 3 (b) 2 : 1
(c) 6 : 5 (d) 3 ; 2

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Formula- $M_1D_1 = M_2D_2$

(6 males + 8 boys)10 = (26 males + 48 boys)2

60 males + 80 boys = 52 males + 96 boys

60 males − 52 males = 96 boys − 80 boys

8 males = 16 boys

$\frac{\text{males}}{\text{boys}} = \frac{16}{8} = \frac{2}{1}$

male : boys = 2 : 1

157. 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.

(a) 2:11 (b) 11:2
(c) 3:7 (d) 2:5

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans. (b) According to question, (M = male B = boys)

(12 M + 6 B) × 4 = (4 M + 14 B) × 8

12 M + 6 B = 8 M + 28 B

4 M = 22 B

2 M = 11 B

M : B = 11 : 2

158. P can do 2/5 part of a work in 10 days. If P and Q can do 1/3 part of the same work in 5 days, find the ratio of their work capacity.

(a) 3 : 4 (b) 4 : 3
(c) 3 : 2 (d) 2 : 3

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) P, 2/5 work = 10 day

then P will complete work = $10\times\frac{5}{2}$ = 25 day

from the question-

$\frac{(P+Q)5}{\frac{1}{3}} = \frac{P\times25}{1}$ $\left[\because \frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2}\right]$

15P + 15Q = 25 P

15 Q = 10P

$\frac{P}{Q} = \frac{15}{10}$

$\frac{P}{Q} = \frac{3}{2}$

ratio of work ability = 3 : 2

159. In a village Under Mission Kakatiya, 38 men working 6 hours a day can do a piece of work in 12 days. Find the number of days in which 57 men working in 8 hours a day can do twice the work. Assume that 2 men of the first group do as much work in 1 hours as 3 men of the second group do in $11\frac{1}{2}$.

(a) 27 days (b) 28 days
(c) 24 days (d) 32 days

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (a) Work ability ratio of both group of males

$$= 3\times1\frac{1}{2} : 2\times1 \quad = \frac{9}{2} : 2 \quad = 9:4$$

formula

$$\frac{M_1D_1H_1P_1}{W_1} = \frac{M_2D_2H_2P_2}{W_2}$$

$$\frac{38\times12\times6\times9}{1} = \frac{57\times D_2\times8\times4}{2}$$

$D_2 = 27$ days

Therefore, In 27 days 57 males can do work doubled to 8 hours work

160. The working efficiency ratio of P and Q is 5:7 find the ratio of days taken by them to finish a work.

(a) 7:5 (b) 3:4
(c) 4:3 (d) 5:7

RRB NTPC 06.04.2016 Shift : 2

Ans : (a) Working ratio of P and Q = 5:7

ratio of days $= \frac{1}{5} : \frac{1}{7}$ $\left(\because \text{time} \propto \frac{1}{\text{efficiency}}\right)$

$= 7 : 5$

161. Adil and Viren together can complete a task in 20 days. Biren and Chirag together can complete the same task in 50 days. Adil and Chirag together can complete the same task in 40 days. If the same task was to be done by them alone, what would be the ratio of time taken by Adil alone to taken by Viren?

(a) 11 : 9 (b) 11 : 3
(c) 7 : 9 (d) 9 : 11

RRB NTPC 28.04.2016 Shift : 2

Ans : (d)

one day work of (Adil + Viren) $= \frac{1}{20}$ part .....(i)

one day work of (Viren + Chirag) $= \frac{1}{50}$ part .....(ii)

one day work of (Adil + Chirag) $= \frac{1}{40}$ part .....(iii)

on adding of equation (i), (ii) and (iii)
one day work of 2(Adil + Viren + Chirag)

$$= \frac{1}{20} + \frac{1}{50} + \frac{1}{40}$$

$$= \frac{10+4+5}{200} = \frac{19}{200} \text{ part}$$

$\therefore$ one day work of Adil $= \frac{19}{400} - \frac{1}{50}$

$$= \frac{19-8}{400} = \frac{11}{400}$$

$\therefore$ Adil time taken alone to complete work $= \frac{400}{11}$ days

now 1 day work of Viren $= \frac{19}{400} - \frac{1}{40}$

$$= \frac{19-10}{400} = \frac{9}{400}$$

$\therefore$ Time taken by Viren to complete work

$= \frac{400}{9}$ days

$\therefore$ initended ratio $= \frac{400}{11} : \frac{400}{9} = 9 : 11$

162. 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.

(a) 65 days (b) 40 days
(c) 72 days (d) 104 days

RRB NTPC 02.04.2016 Shift : 1
RRB NTPC 29.04.2016 Shift : 3

Ans : (a) Let A and B complete work separately in 5x and 8x days

$\therefore$ work done by both in 1 day $= \frac{1}{40}$ part

According to the question,

$$\frac{1}{5x} + \frac{1}{8x} = \frac{1}{40}$$

$$\frac{13}{40x} = \frac{1}{40}$$

$$x = 13$$

$\therefore$ A will complete that work alone in 65 days.

163. P can finish a work in 60 days and Q can finish the same work in 50 days. Find the ratio of the working capacities of P and Q.

(a) 1/3 (b) 6/5
(c) 5/6 (d) 4/5

RRB NTPC 19.04.2016 Shift : 2

Ans : (c) work ability $\propto \frac{1}{\text{time}}$

work ability of P $= \frac{1}{60}$

work ability of Q $= \frac{1}{50}$

So work's ability ratio of P and Q $= \frac{\frac{1}{60}}{\frac{1}{50}}$

$$= \frac{50}{60}, \quad = \frac{5}{6}$$

164. Five women can do a work in thirty six days. If the ratio between the capacity of a man and a woman is 3:1, then find how many days it will take 5 men to complete the same work?

(a) 12 days (b) 15 days
(c) 18 days (d) 108 days

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) Given-

	man		women
working ability	3	:	1

$\left\{\because \text{work ability} \propto \frac{1}{\text{time}}\right\}$

$\therefore$ time = 1 : 3

$\because$ 5 women does works in 36 days.

$\therefore$ time taken by 5 man in doing work $= 36 \times \frac{1}{3}$

$= 12$ days

165. Carpenters A and B work together then 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?

(a) 30 (b) 15
(c) 20 (d) 10

RRB NTPC 29.04.2016 Shift : 1

Ans : (a) Ability ratio of carpenter A and carpenter B= 2:1

$\therefore$ time ratio = 1: 2

According to the question,

$$\frac{1}{x}+\frac{1}{2x}=\frac{1}{10} \qquad \left[\text{time}=\frac{1}{\text{ability}}\right]$$

$$\Rightarrow \quad \frac{2+1}{2x}=\frac{1}{10}$$

$$\frac{3}{2x}=\frac{1}{10}$$

$2x = 30$

$x = 15$

taken day by A = x = 15 day

taken day by B = 2x = 15 × 2 = 30 day

166. Together Rahul and Raghav can pluck 260 flowers in 1 hour. Their flower breaking abilities are in the ration of 8:5 Find the number of flowers to be plucked by Raghav.

(a) 100 (b) 130
(c) 78 (d) 80

RRB NTPC 30.04.2016 Shift : 1

Ans : (a) Ability ratio of Rahul and Raghav = 8:5

Number of plucking flowers by Raghav

$$= 260 \times \frac{5}{13} = 100$$

Type - 11

167. 2/5 of a set of notebooks are sold on the first day. 3/4 of the remaining were sold on the second day. If there are still 75 notebooks left, how many notebook were kept for sale.

(a) 1000 (b) 500
(c) 250 (d) 750

RRB RPF SI – 16/01/2019 (Shift-II)

Ans. (b) Let total notebook were kept 100 for sell

According to the question,

sold notebook in first day $= 100 \times \frac{2}{5} = 40$

left notebook = 100 – 40 = 60

sold notebook in second day $= 60 \times \frac{3}{4} = 45$

left notebook = 100 – (40 + 45)

75 = 100 – 85 = 15

15 = 75

$$100 = \frac{75}{15} \times 100 = 500$$

Hence number of total notebooks = 500

168. Amit packs 20 chocolates in 40 minutes. Guneet packs 30 chocolates in 45 minutes. How much chocolate can both pack together in 1 hours?

(a) 60 (b) 80
(c) 90 (d) 70

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (d) Packed chocolates number by Amit in 1 minute $= \frac{20}{40} = \frac{1}{2}$

packed chocolates number by guneet in 1 minute

$$= \frac{30}{45} = \frac{2}{3}$$

packed chocolate by Amit and Guneet in 1 minute

$$= \frac{1}{2} + \frac{2}{3} = \frac{7}{6}$$

packed chocolate's number in 1 hours or 60 minutes

$$= \frac{7}{6} \times 60 = 70$$

169. If 2 minutes 30 second of internet download bill is 18 rupees, then what will be the bill of 3 minutes 20 seconds? (up to one decimal place)

(a) 24 (b) 24.1
(c) 24.2 (d) 23.9

RRB NTPC 11.04.2016 Shift : 3

Ans : (a)

2 minute 30 sec = 150 seconds bill = 18

$\therefore$ 3 minute 20 sec = 200 seconds bill $= \frac{18 \times 200}{150}$

= Rs. 24

170. The bill for a satellite airtime for 2 minute 30 seconds is Rs. 25, then what will be the price of 3 minutes 20 seconds in rupess? (up to one decimal place)

(a) 33.3 (b) 33.2
(c) 33.4 (d) 33.1

RRB NTPC 07.04.2016 Shift : 1

Ans : (a) 2 minute 30 second or (120 + 30) second's bill = Rs. 25

1 second's bill $= \frac{25}{150} = \frac{1}{6}$

then

3 minute 20 second = 180 + 20 = 200 second

200 second's bill $= \frac{1}{6} \times 200 = \frac{100}{3} = 33.33$

171. The fax bill for 3 minutes 40 seconds is Rs. 15 what will be the bill for 2 minutes 10 seconds? (up to one decimal place)

(a) 8.9 (b) 8.7
(c) 8.6 (d) 8.8

RRB NTPC 07.04.2016 Shift : 2

Ans : (d) 3 minutes 40 seconds = 3 × 60 + 40
= 220 seconds

2 minutes 10 seconds = 2 × 60 + 10
= 130 seconds

∵ 220 second's fax bill = Rs. 15

∴ 130 second's fax bill $= \frac{15}{220} \times 130$

$= \frac{195}{22}$ = Rs. 8.8

172. The bill for 3 minutes 20 seconds telephonic conversation is Rs. 35.50. What is the bill for a call of 5 minutes and 30 seconds? (rounded to one decimal place)

(a) 58.6 (b) 58.7
(c) 58.5 (d) 58.8

RRB NTPC 19.01.2017 Shift : 3

Ans : (a) Telephone converstation's bill in 3 minute 20 second

$= \frac{10}{3}$ minute = Rs. 35.50

telephone conversation's bill in 1 minute $= \frac{35.50 \times 3}{10}$

telephone conversation's bill in 5 minute 30 second

$= \frac{35.50 \times 3}{10} \times \frac{11}{2}$

= 58.575 = Rs. 58.6

173. The bill is 13 rupees for 5 minutes 40 seconds of satellite airtime. How much is the bill for 2 minutes 40 seconds? (to one decimal place)

(a) 6.1 (b) 6
(c) 6.2 (d) 6.3

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) 5 minutes 40 seconds

$= 5 \times 60 + 40 = 340$ seconds

340 second's bill = 13 Rs.

1 second's bill $= \frac{13}{340}$

2 minutes 40 seconds (120 + 40 = 160 second's) bill

$= \frac{13 \times 160}{340}$ = Rs. 6.1

174. A school canteen buys 3200 kg of pulses which will be enough to provide 20 days nutrition to 1200 children. 6 days later 180 children went on a month long journey. How many more days of pulses will be enough for the remaining children?

(a) 14 (b) 16.5
(c) 12.6 (d) 17.2

RRB NTPC 28.04.2016 Shift : 1

Ans :(b) Let pulses for the nutrition of the remaining children is sufficient for x days.

According to the question,

$1200 \times 14 = (1200 - 180) \times x$

$\Rightarrow 1200 \times 14 = 1020 \times x$

$\Rightarrow x = \frac{16800}{1020}$ or

$x = 16.47 \approx 16.5$ day

175. Rekha reads 15 pages in 25 minutes. How many pages will she read in 45 minutes?

(a) 30 (b) 27
(c) 25 (d) 35

RRB NTPC 19.01.2017 Shift : 2

Ans : (b)

number of pages read by Rekha in 25 minute =15

∴ number of pages read by Rekha in 45 minute

$= \frac{15 \times 45}{25} = 27$

176. Type 1 workers are 2.5 times as efficient as Type 2 workers. Twelve Type 1 workers can complete a task in 10 days. How many days would it have taken 4 Type 1 and 15 Type 2 workers to do the same work?

(a) 13 (b) 10
(c) 12 (d) 11

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (c) Let it will take x days to complete work

According to the question,

$10 \times 12 = \left(4 + \frac{15}{2.5}\right) \times x$

$10 \times 12 = \left(\frac{10+15}{2.5}\right) \times x$

$2.5 \times 10 \times 12 = 25 \times x$

$25 \times 12 = 25 \times x$

$x = 12$

Hence it will take 12 days to complete work.

12.

Alligation

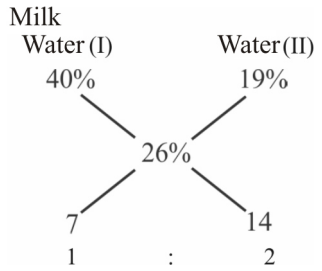
Type - 1

1. A jar of milk has 40% water, one part of it is replaced by another milk which has 19% water. The percentage of water in water is 26%. What is the amount of milk changed?

(a) 2/3 (b) 2/5
(c) 1/5 (d) 1/3

RRB JE - 25/05/2019 (Shift-II)

Ans : (a)



quantity of milk $= \frac{2}{3}$

2. Four vessels of the same size are filled with a mixture of milk and water. The milk content in all four pots is 80% and 75% to 60% and 50% respectively. If four mixtures are mixed what will be the ratio of water and milk in the mixture obtained?

(a) 13 : 27 (b) 27 : 53
(c) 3 :5 (d) 29 : 51

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

Ans : (b)

	I	II	III	IV
(M) milk →	80	75	60	50
(W) water →	20	25	40	50

M : W M : W M : W

I = 80 : 20 II = 75 : 25 III = 60 : 40

= 4 : 1 = 3 : 1 = 3 : 2

M : W

IV = 50 : 50

= 1 : 1

According to the 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 : 27

or W : M = 27 : 53

3. 10 litres of milk is removed from a container containing 50 litres of pure milk and 10 litres of water in poured. If this process is repeated three times, then what is the ratio between water and milk.

(a) 7: 16 (b) 9: 16
(c) 61 : 64 (d) 1 : 4

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

Ans : (c) quantity of pure milk in container

$$= 50\left(1-\frac{10}{50}\right)^3 = 50\left(1-\frac{1}{5}\right)^3$$

$$= 50\times\frac{4}{5}\times\frac{4}{5}\times\frac{4}{5} = \frac{128}{5} \text{ liter}$$

quantity of water $= 50 - \frac{128}{5}$

$$= \frac{250-128}{5} = \frac{122}{5}$$

water : milk $= \frac{122}{5} : \frac{128}{5} = 61 : 64$

4. To dilute 16 litres of milk in 10% water how much water should be added to it, that the amount of water in the shelter should be 20%.

(a) 2 litre (b) 4 litre
(c) 1 litre (d) 3 litre

RRB JE - 01/06/2019 (Shift-I)

Ans : (a) Let mixture mixes in x litre water, at the beginning quantity of milk = quantity of milk at last

16 × 90 = (16 + x) × 80

144 = 128 + 8x

144 – 128 = 8x

16 = 8x

x = 2 liter

5. If 4 litres of milk mixture is divided into 4/5 and two 20 litres, if 5 litres of water is added in this mixture, then the percentage of milk in the new mixture will be

(a) 64 (b) 75
(c) 36 (d) 44

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (a) : According to the question,

milk quantity in mixture = $20\times\frac{4}{5} = 16\ l$

water quantity in mixture = 20 –16 = 4 l

the ratio of milk and water in the mixture after adding 5 l water in mixture = 16 : (4 + 5) = 16 : 9

Milk percentage in new mixture

$$\frac{16}{25}\times 100 = 16 \times 4 = 64\%$$

6. There is 6% sugar in the mixture of 5 litres sugar, out of which 1 litre of water becomes steam, find the percentage of sugar in this mixture.

(a) 5% (b) 7.5%
(c) 6% (d) 4%

RRB NTPC 28.03.2016 Shift : 3

Ans : (b) Quantity of sugar $= \frac{5\times6}{100} = 0.3$ gram

remaining mixture = 4 litre

percentage of sugar in remaining mixture

$= \frac{0.3}{4}\times100 = 7.5\%$

7. The ratio of milk and water in a mixture of 35 litres is 4:1. Find the ratio of milk to 7 litres of water in this mixture.

(a) 2 : 7 (b) 2 : 1
(c) 2 : 3 (d) 1 : 3

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (b) : According to the question-

quantity of milk in mixture $= \frac{4}{5}\times35 = 28\ l$

water quantity in mixture $= \frac{1}{5}\times35 = 7\ l$

on adding 7*l* water

milk : water

28 : (7 + 7)

or 28: 14

or 2 : 1

8. A bucket has two liquid A and B mixed in the ratio of 7:5. If 9 litres of B is substituted in the same way as 10 litres of milk. The ratio of the two liquids becomes 7:9. How many litres of liquid A was in the bucket.

(a) 25 (b) 22.75
(c) 31 (d) 21

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (b) According to the first condition-

liquid A and B is 7x *l*, 5x *l*

total mixture remaining after removal 9 *l* (12x–9) *l*

quantity of A in this mixture

$$=(12x-9)\times\frac{7}{12}=\left(\frac{28x-21}{4}\right)l$$

and quantity of $B=(12x-9)\times\frac{5}{12}$

on filling again 10 *l* . B liquid

$$=(12x-9)\times\frac{5}{12}+10=\frac{(60x-45)}{12}+10=\frac{60x-45+120}{12}$$

$$=\frac{60x+75}{12}=\left(\frac{20x+25}{4}\right)$$

According to the second condition-

$$\because\left(\frac{28x-21}{4}\right)\times\frac{4}{20x+25}=\frac{7}{9}$$

$$\Rightarrow 7(20x+25)=9(28x-21)$$

140x + 175 = 252x – 189

175 + 189 = 252x – 140x

364 = 112x

$\boxed{x=3.25}$

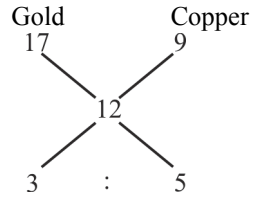
$\boxed{\text{quantity of A} = 7x = 7\times3.25 = 22.75}\ l$

9. Gold is 17 times heavier than water and Copper 9 times heavier. In what ratio show 12 times heavier than water.

(a) 4 : 3 (b) 7 : 1
(c) 3 : 5 (d) 3 : 2

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (c) According to the question-



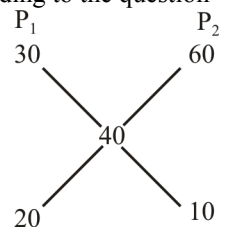
It will be mix in ratio of 3 : 5

10. In what ratio should 30% potassium nitrate should be mixed with 60% potassium nitrate mixture so that the resulting solution becomes 40% potassium nitrate.

(a) 2:1 (b) 3:1
(c) 1:3 (d) 4.5

RRB NTPC 18.04.2016 Shift : 2

Ans : (a) According to the question-



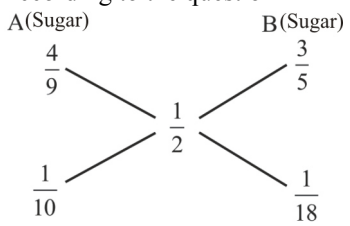
Intended ratio = 20 : 10 = 2 : 1

11. The ratio of mixture of sugar and water in two pots A and B is 4:5 and 3:2. In what ratio can these two mixture be mixed to obtain a new mixture of half sugar and half water.

(a) 2 : 3 (b) 9 : 5
(c) 7 : 5 (d) 2 : 7

RRB NTPC 22.04.2016 Shift : 3

Ans : (b) According to the question-



required ratio $=\frac{1}{10}:\frac{1}{18}=9:5$

12. 30 litres of salt solution contains 5% salt. How many litre should be mixed in this round so that the result will be 3% salt content in the solution.

(a) 20 l (b) 25 l
(c) 30 l (d) 35 l

RRB NTPC 16.04.2016 Shift : 3

Ans : (a)

Salt quantity in 30l solution $= 30\times\frac{5}{100}=\frac{3}{2}=1.5\ l$

Suppose quantity of mixed water $= x\ l$

from the question-

$$(30+x)\times\frac{3}{100}=1.5$$

$30 + x = 50 \Rightarrow x = 20\ l$

13. Two water-squash mixtures, the first having a water to squash ratio of 4 : 1 and the other having a ratio of 3 : 1, are blended in the ratio 1 : 2. What is the water : squash ratio in the blend ?

(a) 19 : 11 (b) 23 : 7
(c) 17 : 13 (d) 4 : 3

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

Ans : (b) Suppose ratio of water and squash is x : y in last mixture.

$$\frac{4}{5} \qquad \frac{3}{4}$$
$$\frac{x}{x+y}$$

$$\left(\frac{3}{4}-\frac{x}{x+y}\right):\left(\frac{x}{x+y}-\frac{4}{5}\right)=1:2$$

$$=\frac{\frac{3}{4}-\frac{x}{x+y}}{\frac{x}{x+y}-\frac{4}{5}}=\frac{1}{2}$$

$$=\frac{3}{2}-\frac{2x}{x+y}=\frac{x}{x+y}-\frac{4}{5}$$

$$=\frac{3x}{x+y}=\frac{3}{2}+\frac{4}{5}$$

$$=\frac{3x}{x+y}=\frac{23}{10}$$

$$=\frac{x}{x+y}=\frac{23}{30}$$

$x = 23$ and $x + y = 30$

$23 + y = 30$

$\boxed{y = 7}$

So ratio $= x : y = 23 : 7$

14. Two water squash mixtures, the first with a water-to-squash ratio of 5 : 1 and the latter with a ratio of 3 : 1 are blended in the ratio 3 : 2. What is the final water and squash ratio in the blend ?

(a) 5 : 3 (b) 10 : 9
(c) 6 : 1 (d) 4 : 1

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (d) According to the question-

intended ratio $=\left(\frac{5}{6}\times3+\frac{3}{4}\times2\right):\left(\frac{1}{6}\times3+\frac{1}{4}\times2\right)$

$$=\left(\frac{5}{2}+\frac{3}{2}\right):\left(\frac{1}{2}+\frac{1}{2}\right)=\frac{8}{2}:\frac{2}{2}=4:1$$

15. $\frac{2}{3}$ of a milk-water mixture was milk. There was 21 litres of the mixture. If 4 litres of water is added to it, the percentage of milk in the new mixture will be:

(a) 44 (b) 56
(c) 14 (d) 11

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (b) Milk quantity in mixture $=\frac{2}{3}\times21=14\ l$

and quantity of water $= 7\ l$

According to the question-

Percentage of milk $=\frac{\text{quantity of milk}}{\text{quantity of total mixture}}\times100$

[$\because$ total mixture after adding 4 l of water $= 21 + 4 = 25\ l$]

$$=\frac{14}{25}\times100$$

percentage of milk $= 56\%$

16. The ratio of honey and water in 2 container is 4:3 and 6:7 respectively. How much of the mixture from the other container is completed with 3.5 litre of mixture from the first container to get the same ratio of honey and water in the second container.

(a) 6 l (b) 6.5 l
(c) 7 l (d) 7.5 l

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (b) : Suppose total mixture is x litre taken from the second container.

According to the question-

$$\frac{3.5\times\frac{4}{7}+\frac{6x}{13}}{3.5\times\frac{3}{7}+\frac{7x}{13}}=1$$

$$\frac{2+\frac{6x}{13}}{\frac{3}{2}+\frac{7x}{13}}=1$$

$$\frac{26+6x}{39+14x}=\frac{1}{2}$$

$52+12x=39+14x$

$2x=13$

$x=6.5\ l$

17. 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 by mixing the mixture in both pots.

(a) 2:1 (b) 11:9
(c) 3:2 (d) 2:3

RRB NTPC 19.04.2016 Shift : 1

Ans : (b) Intended ratio $=\left(\frac{2}{5}+\frac{7}{10}\right):\left(\frac{3}{5}+\frac{3}{10}\right)$

$=\frac{11}{10}:\frac{9}{10}=11:9$

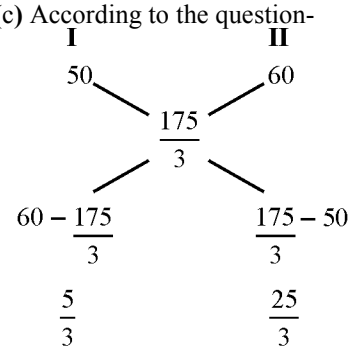
Type - 2

18. The two varieties of rice are priced of Rs. 50 per kg and Rs. 60 per kg which mixed in some ratio and the mixed rice is sold at Rs. 70 per kg to get 20% profit. What is the ratio in which both rice varieties are mixed?

(a) 3 : 5 (b) 2 : 5
(c) 1 : 5 (d) 2 : 7

RRB JE - 31/05/2019 (Shift-I)

Ans : (c) According to the question-



I : II = 1 : 5

19. There are two types of rice which are priced at 38 per kg and 42 per kg at same quantity and sold at the rate of 45 per kg. Find the percentage profit.

(a) 10% (b) 12.5%
(c) 18% (d) 15%

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Price of first type of rice = Rs. 38/kg

price of second type of rice = Rs. 42/kg

cost price of both type of rice $\frac{38+42}{2}$ = Rs. 40/kg

selling price of both type of rice = Rs. 45/kg

profit = selling price − cost price

= 45 – 40 = Rs. 5

profit % = $\frac{\text{profit}}{\text{cost price}}\times 100=\frac{5}{40}\times 100=12.5\%$

20. The initial ratio of sugar and flour in recipe was 17:28. With 27 kg of the recipe, Elizabeth added more flour to make the sugar to flour ratio 2:5. How much flour did Elizabeth added later?

(a) 8.5 kg (b) 8.7 kg
(c) 8.3 kg (d) 8.1 kg

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (b) : Total quantity of food items = 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 x kg flour is added to it

$\frac{\frac{51}{5}}{\frac{84}{5}+x}=\frac{2}{5}$ $=\frac{51}{84+5x}=\frac{2}{5}$

$\Rightarrow 168+10x=255$

$\Rightarrow 10x=255-168=87$

or $\boxed{x=8.7 \text{ kg.}}$

21. A bakery sells bread cakes, puffs and all cereal biscuits he uses 9 kg flour for all purposes to make useful items every day. If 20 percent of all purposes of flour is used to make more cakes, so what is the actual quantity of all purpose flour used to make cakes?

(a) 1800 (b) 2000
(c) 1500 (d) 1000

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (a) actual quantity of flour for making a cake = x kg

$x=\frac{9\times 20}{100}=\frac{9}{5}=1.8\text{kg}$

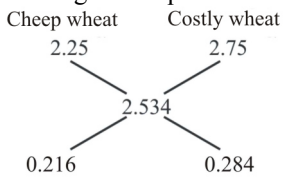
= 1800 gm

22. In what ratio will a grocer mix wheat at Rs. 2.25 per kg and Rs. 2.75 per kg so that the obtained mixture becomes (approximately) Rs. 2.534 per kg.

(a) 2:3 (b) 3:2
(c) 5:3 (d) 3:4

RRB NTPC 18.04.2016 Shift : 3

Ans : (d) According to the question



required ratio = 0.216 : 0.284

$=\frac{216}{284}=\frac{54}{71}$

$\approx\frac{54}{72}=\frac{3}{4}$ = 3 : 4

23. In what ratio should Darjeeling tea worth Rs. 400 per kg be mixed with Assam tea worth Rs. 300 per kg so that there is a profit of 20% on selling at the rate of Rs. 408 per kg.

(a) 1 : 2 (b) 2 : 3
(c) 2 : 5 (d) 1 : 6

RRB NTPC 16.04.2016 Shift : 1

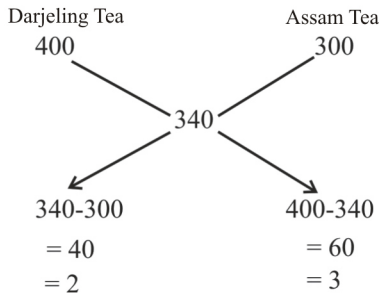
Ans : (b) Selling price of tea = 408 Rs. per kg and profit = 20%

so cost price of tea per kg $= \frac{\text{selling price}}{100 + \text{profit}\%} \times 100$

$= \frac{408}{100+20} \times 100 = \frac{408}{120} \times 100$

= 340 Rs. per kg

from the rule of mixture



required ratio = 2 : 3

Type - 3

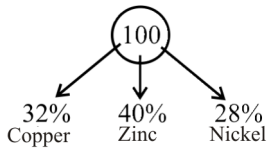
24. What is the quantity of copper in 1 kg of alloy if the alloy contains 32% copper, 40% zinc and the rest is nickel?

(a) 400 g (b) 280 g
(c) 240 g (d) 320 g

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (d) : Alloy = 1 kg = 1000 g

Let alloy = 100%



quantity of copper $= 1000 \times \frac{32}{100} = 320\,\text{g}$

25. If the price of 1.25 kg potato and 2.015 kg tomato is 35.26, what will be the average price of potato and tomato together.

(a) Rs. 12.32 (b) Rs. 14.04
(c) Rs. 10.80 (d) Rs. 11.95

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (c)

Cost of 1.25 kg potato and 2.015 kg = Rs. 35.26

average cost $= \frac{35.26}{1.25 + 2.015}$

$= \frac{35.26}{3.265}$ = Rs. 10.792 = Rs. 10.80

26. Rice of quality A and B, which are worth Rs. 35 per kg and Rs. 65 per kg respectively are mixed. The new average value of the mixture is Rs. 50 per kg. the ratio of the amount of A and B in the mixture will be:

(a) 1:2 (b) 1:3
(c) 1:1 (d) 1:5

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) According to the question-

$\frac{\text{quantity of A}}{\text{quantity of B}} = \frac{15}{15}$

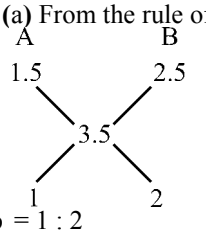
So ratio = 1:1

27. The amount of alcohol in two different medicines was 1.5% and 2.5%. In what ratio should these two be mixed so that the amount of alcohol in the new mixture obtained is 3.5%

(a) 1 : 2 (b) 2 : 1
(c) 3 : 2 (d) 2 : 3

RRB NTPC 12.04.2016 Shift : 3

Ans : (a) From the rule of mixture



So ratio = 1 : 2

28. In 2 containers the ratio of acid and water is 3:1 and 5:3 respectively. To get a new mixture in which the ratio of acid and water is 2:1, what should be the ratio of both types of mixture?

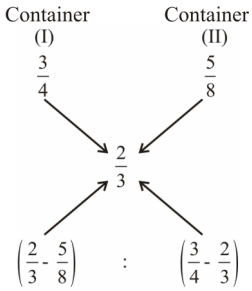
(a) 1:2 (b) 2:1
(c) 2:3 (d) 3:2

RRB NTPC 22.04.2016 Shift : 1

Ans : (a) Acid in first container $= \frac{3}{1+3} = \frac{3}{4}$

Acid in second container $= \frac{5}{3+5} = \frac{5}{8}$

Acid in new mixture $= \frac{2}{1+2} = \frac{2}{3}$



$= \frac{1}{24} : \frac{1}{12} = \boxed{1:2}$

29. Silver and Aluminium are mixes in the ratio of 5:3 and 7:9 respectively to form alloy P and Q. If the equal amount of both alloy are melt to form a new alloy R then what will be the ratio of silver and aluminium in R?

(a) 17 : 15 (b) 15 : 17
(c) 13 : 17 (d) 17 : 13

RRB NTPC 22.04.2016 Shift : 3

Ans : (a) Ratio of Silver and Aluminium in R

$$=\left[\frac{5}{8}+\frac{7}{16}\right]:\left[\frac{3}{8}+\frac{9}{16}\right]=\frac{17}{16}:\frac{15}{16}=17:15$$

30. A tea trader has 3 varieties of tea to sell. Brand A was sold at the rate of 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 now 274 kg of brand A, 197 kg of brand B and 54 kg of brand C. 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?

(a) Rs. 7565.50 profit (b) Rs. 7565.50 loss
(c) Rs. 8232.40 profit (d) Rs. 8125.30 loss

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) Total cost of brand A, B and C
= 252×274 +280×197 + 316×54
= 69048 + 55160 +17064 ⇒ 141272 Rs.
Total price of mixture of brand A, B and C
= (274 + 197 + 54) × 283.50
= 525 × 283.50
= Rs. 148837.5
So total profit on sale = 148837.5 – 141272 = Rs. 7565.50

31. A person makes a 20% loss on selling type A tea at the rate of Rs. 160 per kg. That person makes a 20% profit on selling type B tea at the rate of Rs. 400 per kg. To make 25% profit on tea at the rate of Rs. 300 per kg, in what proportion will these two types of tea A and B will be mixes to sold?

(a) 4 : 5 (b) 3 : 2
(c) 2 : 1 (d) 1 : 2

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (c) Suppose there are x part of A and y part of B
According to the question-

$$\frac{160x+400y}{x+y}\times\frac{125}{100}=300$$

$$\frac{160x+400y}{x+y}\times\frac{5}{4}=300$$

160x + 400y = 240 (x + y)
(240 – 160)x = (400 – 240)y
80x = 160y

$$x=2y\ ,\ \frac{x}{y}=\frac{2}{1}$$

x : y = 2 : 1

32. There are two mixtures of juice, the ratio of water and juice in the first mixture is 4:3 and in the second mixture ratio is 3:2, both are mixed in the ratio of 1:2 respectively. What will be the ratio of water and juice in the prepared mixture.

(a) 2 : 1 (b) 62 : 43
(c) 58 : 47 (d) 9 : 8

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (b) : Quantity of water in first mixture $=\frac{4}{7}$

and quantity of juice $=\frac{3}{7}$

quantity of water in second mixture $=\frac{3}{5}$

and quantity of juice $=\frac{2}{5}$

According to the question-
on adding both mixture in ratio of 1 : 2
required ratio = 62 : 43

33. The cost price of two varieties of salt T and S is Rs. 25 and 35 per kg respectively are mixed in the ratio of 4:6. The mixed variety is sold at Rs. 37 per kg. What is the profit percentage?

(a) 20% (b) 33%
(c) 25% (d) 38%

RRB NTPC 19.01.2017 Shift : 2

Ans : (a) Total cost of salt T = 25 × 4 = 100
Total cost of salt S = 35 × 6 = 210
Total cost price = Rs. 310
Total selling price = 37 × 10 = Rs. 370
According to the question-

$$\text{selling price}=\frac{\text{cost price}(100+P/L)}{100}$$

$$\Rightarrow 370=\frac{310\times(100+P\%)}{100}$$

$$\frac{3700-3100}{31}=P\%$$

$$\frac{600}{31}=P\%$$

P% = 19.35%
P% = 20% (Almost)

34. A tea trader has 3 varieties of tea to sell brand A was sold at the rate of 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 now he has 274 kg of brand A, 197 kg of brand B and 54 kg of brand C. 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?

(a) Rs. 7565.50 profit (b) Rs. 7565.50 loss
(c) Rs. 8232.40 profit (d) Rs. 8125.30 loss

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) Total cost of brand A, B and C
= 252×274 +280×197 + 316×54
= 69048 + 55160 +17064 = 141272
Total price of mixture of brand A, B and C
= (274 + 197 + 54) × 283.50
= 525 × 283.50 = 148837.5
So total profit on the sale = 148837.5 – 141272
= Rs. 7565.50

13.

Pipe & Cistern

Type - 1

1. A jug has two holes. First hole empties the jug in 15 minutes. Second hole empties the jug in 20 minutes. If the leakage is taking place at a constant rate, then in how much time the jug will be emptied by the both holes ?

(a) $\frac{4}{7}$ (b) $7\frac{4}{7}$

(c) $8\frac{5}{7}$ (d) $8\frac{4}{7}$

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

Ans : (d) Time taken to empty the jug by both holes.

$= \frac{1}{15} + \frac{1}{20} = \frac{4+3}{60} = \frac{7}{60}$

Required time $= \frac{60}{7} = 8\frac{4}{7}$ minute

2. Two pipes can fill a tank in 20 hrs and 30 hrs respectively. If both the pipes are opened, then in how much time the tank will be fill ?

(a) 10 Hours (b) 12 Hours

(c) 18 Hours (d) 15 Hours

RRB JE - 26/06/2019 (Shift-I)

Ans : (b)

filled part in 1 hour by first pipe $= \frac{1}{20}$

and filled part in 1 hour by second pipe $= \frac{1}{30}$

filled part in 1 hour of both pipes

$= \left(\frac{1}{20} + \frac{1}{30}\right) = \left(\frac{3+2}{60}\right) = \left(\frac{5}{60}\right) = \frac{1}{12}$ part

So cistern will fill in 12 hours.

3. A tank can be filled by two pipes together in 45/4 minutes. Big pipe can fill the tank in 12 minute less as compared to small pipe. How much time will be taken by the big pipe alone to fill the tank ?

(a) 30 minute (b) 12 minute

(c) 18 minute (d) 24 minute

RRB RPF SI – 05/01/2019 (Shift-II)

Ans. (c) : Let time taken to fill the tank by big pipe = t

Time taken to fill the tank by small pipe = t + 12

As per the question,

$$\frac{1}{t} + \frac{1}{t+12} = \frac{1}{\frac{45}{4}}$$

$$\frac{t+12+t}{t(t+12)} = \frac{4}{45}$$

$$90t + 540 = 4t^2 + 48t$$

$$4t^2 - 42t - 540 = 0$$

$$2t^2 - 21t - 270 = 0$$

$$2t(t-18) + 15(t-18) = 0$$

$$(t-18)(2t+15) = 0$$

t – 18 = 0

t = 18 minute

4. Two pipes A and B can fill a tank in 45 hrs and 36 hrs respectively. If both the pipes are opened together, then how long will it take to fill the tank ?

(a) 10 Hours (b) 20 Hours

(c) 2 Hours (d) 5 Hours

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

Ans : (b)

filled part by tank A in one hour $= \frac{1}{45}$

filled part by tank B in one hour $= \frac{1}{36}$

filled part by both (A+B) in one hour

$= \frac{1}{45} + \frac{1}{36} = \frac{4+5}{180} = \frac{9}{180} = \frac{1}{20}$

So all tank will fill by both pipes in 20 hours.

5. If two flood gates A and B work together then the reservoir will be filled in 6 hours. Gate A fills the reservoir 5 hour faster than Gate B. The Fast flood gate A will fill the reservoir in how many hours ?

(a) 5 Hours (b) 10 Hours

(c) 7 Hours (d) 13 Hours

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (b) Suppose B reservoir fills = in (x+5) hours and A reservoir fills = in x hours

As per the question,

$$\frac{1}{x} + \frac{1}{x+5} = \frac{1}{6}$$

$$\frac{x+5+x}{x^2+5x} = \frac{1}{6}$$

$$12x + 30 = x^2 + 5x$$

$$x^2 - 7x - 30 = 0$$

$$x^2 - 10x + 3x - 30 = 0$$

$$(x - 10)(x+3) = 0$$

$$\boxed{x = 10}$$

Hence fast flood gate A will the reservoir in 10 hours.

6. Pipe A and B can fill a tank in 30 and 45 min. respectively, while pipe C can empty the whole tank in 60 minutes. If the three pipes are opened together, then how long will it take to fill an empty tank.

(a) $\left(34+\frac{1}{2}\right)$ minute (b) 60 minute

(c) $\left(18+\frac{5}{7}\right)$ minute (d) $\left(25+\frac{5}{7}\right)$ minute

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (d) Capacity of pipe A in 1 hour $=\frac{1}{30}$

capacity of pipe B in 1 hour $=\frac{1}{45}$

capacity of pipe C in 1 hour $=\frac{1}{60}$

filled part by three pipes in 1 hour $=\frac{1}{30}+\frac{1}{45}-\frac{1}{60}$

$=\frac{6+4-3}{180}$

$=\frac{7}{180}$

Required time = $=\frac{180}{7}=\left(25+\frac{5}{7}\right)$min

7. Pipe A can fill an empty pool in 14 hours. Together with pipe B it can fill the empty pool in 12 hours. So pipe B can fill the empty pool in ____ hours ?

(a) 84 (b) 75

(c) 78 (d) 77

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (a) Time taken to fill the pool by A =14 hours

filled part by A in 1 hour $=\frac{1}{14}$ part

Time taken to fill the pool by A and B together = 12 hours

filled part by A and B in 1 hour $=\frac{1}{12}$ part

Suppose B can fill pool in n hours then filled part by B in 1 hour $=\frac{1}{n}$ part

from the question–

So, $\frac{1}{14}+\frac{1}{n}=\frac{1}{12}$

$\frac{1}{n}=\frac{1}{12}-\frac{1}{14}$

$\frac{1}{n}=\frac{7-6}{84}\Rightarrow\frac{1}{n}=\frac{1}{84}\Rightarrow\boxed{n=84}$

Hence time taken to fill the pool by B = 84 hours

8. A pipe can fill a tank in 12 hrs and the second pipe can fill it in 15 hrs. If both the pipes are opened at the same time, then how much time will it take to fill half of the tank ?

(a) $4\frac{2}{3}$ Hours (b) $3\frac{1}{3}$ Hours

(c) $6\frac{2}{3}$ Hours (d) $2\frac{1}{3}$ Hours

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) Filled part of cistern by pipe A in 1 hour $=\frac{1}{12}$ part

filled part of cistern by pipe B in 1 hour $=\frac{1}{15}$ part

Suppose half of the tank will be filled by both pipes in t hours.

As per the question,

$\Rightarrow \frac{t}{12}+\frac{t}{15}=\frac{1}{2}$

$\Rightarrow \frac{5t+4t}{60}=\frac{1}{2}$

$\Rightarrow 9t=30$

$\Rightarrow t=\frac{10}{3}$

$\Rightarrow t=3\frac{1}{3}$

Hence half part of cistern will fill in $3\frac{1}{3}$ hours.

9. Pipe J and K can fill a tank in 15 and 20 minutes respectively. If both the pipes are opened together then, what time will be taken to fill the tank ?

(a) $17\frac{1}{2}$ minute (b) $11\frac{3}{5}$ minute

(c) $15\frac{2}{3}$ minute (d) $8\frac{4}{7}$ minute

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (d) Filled part by pipe J in1 minute = $\frac{1}{15}$ part

Filled part by pipe K in 1 minute $=\frac{1}{20}$ part

Filled part by pipe J and K in 1 minute = $\frac{1}{15}+\frac{1}{20}$

$=\frac{4+3}{60}=\frac{7}{60}$ part

Time taken to fill the whole tank = $\frac{60}{7}=8\frac{4}{7}$ minute

10. Pipe A and B can fill an empty tank in 10 and 15 hrs respectively. Both can fill the tank in ___ hrs.

(a) 6:10 (b) 6

(c) 4 (d) 6:15

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (b) Filled part of tank by pipe A in 1 hour

$= \frac{1}{10}$ Part

Filled part of tank by pipe B in 1 hour $= \frac{1}{15}$ Part

Filled part of tank by pipe A and B in 1 hour $= \frac{1}{10} + \frac{1}{15}$

$= \frac{5}{30} = \frac{1}{6}$ Part

Hence time taken to fill the tank together = 6 hours

11. There are two pipes X and Y to fill an empty tank. Pipe X alone can fill 2/3 part of an empty tank in 10 hrs. Pipe Y alone can fill 1/6 part of an empty tank in 5 hrs. Both pipes following their own relative rate of flow will fill the tank in how many hours ?

(a) 30 Hours (b) 10 Hours
(c) 24 Hours (d) 15 Hours

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans. (b) :

Time taken in filling $\frac{2}{3}$ part by pipe X = 10 hours

$\therefore$ Time taken in filling all part by pipe X = $10 \times \frac{3}{2}$

= 15 hours

Time taken in filling $\frac{1}{6}$ part by pipe Y = 5 hours

$\therefore$ Time taken in filling all part by Y = 5 × 6 = 30 hours

Filled part of cistern by both pipe X and Y together in 1 hour

$= \frac{1}{30} + \frac{1}{15} = \frac{1+2}{30} = \frac{3}{30} = \frac{1}{10}$

$\therefore$ Time taken in filling whole tank = 10 hours

12. 44 pipes can fill a big tank of water in 21 hours. How much hours will be taken by 55 pipes to fill 5 such tanks ?

(a) 63 (b) 84
(c) 72 (d) 54

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (b) As per the question,

$$\frac{m_1 d_1}{w_1} = \frac{m_2 d_2}{w_2}$$

$$\frac{44 \times 21}{1} = \frac{55 \times x}{5}$$

$$\frac{44 \times 21}{1} = 11x$$

x = 4 × 21

x = 84 hours

13. Pipe A can fill an empty tank in 14 hours with another pipe B together A and B can fill the same tank in 10 hours. Pipe B alone can fill this empty tank in how many hours ?

(a) 35 (b) 20
(c) 30 (d) 25

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (a) According to the question,

Pipe A fills the empty cistern in 1 hour $= \frac{1}{14}$ Part

This empty cistern fills by (A+B) in 1 hour $= \frac{1}{10}$ Part

Time taken to fill the tank by pipe B $= \frac{1}{10} - \frac{1}{14}$

$= \frac{14-10}{140}$

$= \frac{4}{140} = \frac{1}{35}$ Part

Hence pipe B will fill the tank in 35 hours.

14. Pipe A and pipe B can fill a tank in 4 and 16 hours respectively. Both can fill the tank in how many hours ?

(a) $\frac{4}{15}$ Hours (b) $\frac{17}{3}$ Hours
(c) $\frac{16}{5}$ Hours (d) $\frac{16}{7}$ Hours

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (c) Filled part by pipe A in 1 hour = $\frac{1}{4}$ Part

Filled part by pipe B in 1 hour = $\frac{1}{16}$ Part

Filled part by pipe A and B in 1 hour

$= \frac{1}{4} + \frac{1}{16} = \frac{4+1}{16} = \frac{5}{16}$ Part

Hence time taken to fill the whole tank = $\frac{1}{5/16}$

$= \frac{16}{5}$ Hours

15. Two pipes A and B can fill a tank in X minute and 6 minute respectively. If both the pipes are working together, then they fill the tank in 1.5 minute. Find the value of X ?

(a) 1 minute (b) 2 minute
(c) 4 minute (d) 5 minute

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (b)

Time taken by pipe 'A' in filling the tank = X minute

Time taken by pipe 'B' in filling the tank = 6 minute

Total time taken by both in filling the tank = 1.5 minute

According to the 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 minute

16. There are two holes in a water tank. Hole 1 Alone takes 9 minutes to empty the tank and hole 2 alone can empty the tank in 6 minutes. If the leakage occurs at a fixed rate then by working the both pipes the tank will be emptied in how many minutes ?

(a) $3\frac{3}{5}$ (b) $\frac{3}{5}$

(c) $3\frac{1}{5}$ (d) $3\frac{2}{5}$

RRB NTPC 17.01.2017 Shift-1

Ans : (a) Portion emptied by hole- 1 in 1 minute $=\frac{1}{9}$

portion emptied by hole-2 in 1 minute $=\frac{1}{6}$

portion emptied by hole-1 and hole-2 of tank in 1 minute

$=\frac{1}{9}+\frac{1}{6}=\frac{9+6}{9\times 6}=\frac{15}{54}$

time taken by both hole together in emptying tank $=$

$=\frac{54}{15}=\frac{18}{5}=3\frac{3}{5}$ minute

17. A container has two holes. The first hole can empty the container individually in 15 minutes and the second hole can empty the container individually in 10 minutes. If the leakage occurs at a fixed rate in the container, then by the both holes together opening, the container will be emptied in how many minutes ?

(a) 6 (b) $\frac{1}{6}$

(c) $\frac{1}{7}$ (d) 7

RRB NTPC 17.01.2017 Shift-3

Ans : (a) Leakage by hole-1 in 1 minute $=\frac{1}{15}$ part

leakage by hole-2 in 1 minute $=\frac{1}{10}$ part

leakage by both holes in 1 minute $=$

$\frac{1}{15}+\frac{1}{10}=\frac{25}{150}$ part

Hence the time taken by hole-1 and holes 2 to empty the container $=\frac{150}{25}=6$ minute

Hence hole-1 and hole-2 will empty the container together in 6 minutes.

18. A tube has two holes. One hole alone empties it in 29 minutes. The second hole alone empties the tube in 6 minutes. If the leakage is happening at a fixed rate, then together the both hole can empty the tank in how much time?

(a) $\frac{34}{35}$ (b) $3\frac{34}{35}$

(c) $4\frac{33}{35}$ (d) $4\frac{34}{35}$

RRB NTPC 11.04.2016 Shift : 3

Ans : (d)

Portion emptied by hole-1 in 1 minute $=\frac{1}{29}$

portion emptied by hole-2 in 1 minute $=\frac{1}{6}$

leakage by hole-1 and hole-2 in 1 minute

$=\frac{1}{29}+\frac{1}{6}=\frac{6+29}{174}=\frac{35}{174}$

time taken by hole-1 and hole-2 to empty whole tank

$=\frac{174}{35}=4\frac{34}{35}$ minute

19. A tank has two holes. The first hole alone empties the tank in 21 minutes and the second hole alone empties the tank in 7 minutes. If the leakage is happening at a fixed rate then how much time will be taken by the both holes to empty the tank?

(a) $\frac{1}{4}$ (b) $4\frac{1}{4}$

(c) $5\frac{2}{4}$ (d) $5\frac{1}{4}$

RRB NTPC 07.04.2016 Shift : 1

Ans : (d) Time taken by holes in emptying the tank

$=\frac{1}{21}+\frac{1}{7}=\frac{1+3}{21}=\frac{4}{21}$

Required time $=\frac{21}{4}=5\frac{1}{4}$ minute

20. There is two holes in a glass filled with water. On opening the first hole alone, this glass is emptied in 9 minutes and on opening the second hole alone then the glass is emptied in 3 minutes. If the leakage of the glass is happening regularly, then on opening both the holes, the glass will be emptied in how many minutes?

(a) $\frac{1}{4}$ (b) $2\frac{2}{4}$

(c) $3\frac{1}{4}$ (d) $2\frac{1}{4}$

RRB NTPC 19.01.2017 Shift : 1

Ans : (d) Time taken to empty the glass by two holes when two holes are opened together $=\frac{1}{9}+\frac{1}{3}=\frac{3+9}{9\times3}$

$=\frac{9\times3}{12}=\frac{27}{12}=\frac{9}{4}=2\frac{1}{4}$

21. There are two holes in a tank. First hole empties the tank in 3 minutes. The second hole empties the tank in 5 minutes. If the leakage is happening at a fixed rate, then how much time will be taken by the both holes to empty the tank?

(a) $\frac{7}{8}$ (b) $2\frac{7}{8}$

(c) $1\frac{5}{8}$ (d) $1\frac{7}{8}$

RRB NTPC 26.04.2016 Shift : 2

Ans : (d) The tank emptied in 1 minute by the first hole $=\frac{1}{3}$

The tank emptied in 1 minute by the second hole $=\frac{1}{5}$

$\therefore$ portion emptied by both holes in 1 minute

$=\frac{1}{3}+\frac{1}{5}=\frac{5+3}{15}=\frac{8}{15}$

Hence the entire tank will be empty in $\frac{15}{8}=1\frac{7}{8}$ minute

22. A bowl has two holes. First hole alone can empty the bowl in 4 minutes. The second hole alone can empty the bowl in 12 minutes. If the leakage is happening at a fixed rate, then both holes will empty the bowl in how much time?

(a) 1.33 (b) 3.5

(c) 4 (d) 3

RRB NTPC 30.04.2016 Shift : 3

Ans : (d) Time taken by first hole = 4 minute

time taken by second hole = 12 minute

time taken by both holes together $=\frac{1}{4}+\frac{1}{12}$

$=\frac{3+1}{12}=\frac{4}{12}=\frac{1}{3}$

Hence required time = 3 minute

23. Two pipes X and Y can individually fill a tank in 48 and 72 minutes, respectively. If they are opened simultaneously, how long will it take for the tank to fill?

(a) 39.4 minutes (b) 60 minutes

(c) 28.8 minutes (d) 24 minutes

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (c) : Filled part of the tank by pipes X and Y in 1 minute

$=\frac{1}{48}+\frac{1}{72}=\frac{72+48}{48\times72}=\frac{120}{3456}$ part

Time taken by pipe X and Y in filling the whole tank

$=\frac{3456}{120}=28.8$ minute

Type - 2

24. A pipe can fill a tank in 20 minutes, but an outlet pipe can empty it in 28 minutes. When both the pipes are opened, then in how much time the tank will be filled?

(a) 72 minutes (b) 56 minutes

(c) 96 minutes (d) 70 minutes

RRB JE - 28/05/2019 (Shift-I)

Ans : (d) Portion filled by first pipe in 1 minute $=\frac{1}{20}$

portion emptied by out let pipe in 1 minute $=\frac{1}{28}$

portion filled in 1 minute by both pipe $=\frac{1}{20}-\frac{1}{28}$

$=\frac{28-20}{20\times28}=\frac{8}{20\times28}=\frac{1}{70}$ part

So time taken in filling the tank = 70 minute

25. Two pipes 'P' and 'Q' together can fill a tank in 4 hrs. When both the pipes are opened individually then Q takes 6 hours more as compared to P to fill the tank. P alone can fill the tank in how much time?

(a) 5 hours (b) 6 hours

(c) 8 hours (d) 7 hours

RRB JE - 02/06/2019 (Shift-I)

Ans : (b) Suppose pipe P takes x hours in filling cistern then Q will take time to fill cistern = x + 6

filled part by (P + Q) in 1 hour $=\frac{1}{4}$

filled part by P in 1 hour $=\frac{1}{x}$

filled part by Q in 1 hour $=\frac{1}{x+6}$

According to the question,

$\frac{1}{x}+\frac{1}{x+6}=\frac{1}{4}$

$\frac{(x+6)+(x)}{x(x+6)}=\frac{1}{4}$

$(2x + 6) \times 4 = x^2 + 6x$

$8x + 24 = x^2 + 6x$

$x^2 - 2x - 24 = 0$

$x^2 - (6-4)\,x - 24 = 0$

$(x^2 - 6x) + (4x - 24) = 0$

$x(x - 6) + 4\,(x - 6) = 0$

$(x + 4)\,(x - 6) = 0$

$x - 6 = 0,\ x = 6$

Hence P can fill tank in 6 hours

26. 2/5th part of tank A is filled with water. Pipe P can fill it in 10 minutes, while pipe Q can empty it in 6 minutes. If P and Q are opened together, then in how much time tank will be emptied?

(a) 6 minute (b) 6.5 minute
(c) 5.5 minute (d) 7 minute

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

Ans : (a) 1 minute work of pipe P and Q $=\frac{1}{10}-\frac{1}{6}$

$=\frac{3-5}{30}=\frac{-2}{30}=\frac{-1}{15}$

time taken by P and Q in emptying the tank

$=\frac{\frac{2}{5}}{\frac{1}{15}}=\frac{2}{5}\times\frac{15}{1}=6$ minute

27. A tank can be filled in 9 hours but due to a leakage, it takes 1 hour more. If tank is completely full, then due to leakage it will be empty in how much time?
(a) 60 hours (b) 75 hours
(c) 30 hours (d) 90 hours

RRB JE - 01/06/2019 (Shift-III)

Ans. (d) Filled part in 1 hour $=\frac{1}{9}$ part

leakage part in 1 hour $=\frac{1}{10}$ part

if tank is completely full

portion emptied by leakage in 1 hour $=\frac{1}{9}-\frac{1}{10}$

$=\frac{10-9}{90}=\frac{1}{90}$

Hence cistern will be empty by leakage in 90 hours.

28. 2/5 part of a water tank is filled. Pipe A can fill the tank in 12 minutes and pipe B can empty the same tank in 6 minute. If both pipes are opened together, then to fill the empty tank or to empty the full tank, what time will be taken?
(a) It will fill in 4.8 minutes.
(b) It will empty in 5.6 minutes.
(c) It will empty in 4.8 minutes.
(d) It will fill in 5.6 minutes.

RRB RPF SI – 10/01/2019 (Shift-II)

Ans. (c) Filled portion by pipe A in 1 minute $=\frac{1}{12}$

Emptied portion by pipe B in 1 minute $=\frac{1}{6}$

suppose time taken to fill tank completely or empty $=$ t minute

According to the question,

Time taken by both pipe to empty or fill the tank

$=\frac{t}{12}-\frac{t}{6}=\frac{2}{5}$

$\Rightarrow\frac{t-2t}{12}=\frac{2}{5}$

$\Rightarrow\frac{-t}{12}=\frac{2}{5}$

$\Rightarrow t=-4.8$ minute

where (–) indicates of emptying the cistern

29. A pipe can fill an empty cistern in 7.8 hours while another can drain the cistern when full in 19.5 hours. Both the pipes were turned on when the cistern was half-empty. How long will it take for the cistern to be full?
(a) 5.2 hours (b) 3.9 hours
(c) 7.8 hours (d) 6.5 hours

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : Filled portion by first pipe in one hour $=\frac{1}{7.8}$

Emptied portion by second pipe in one hour $=\frac{1}{19.5}$

filled portion by both pipes in one hour

$=\frac{1}{7.8}-\frac{1}{19.5}$

$=\frac{19.5-7.8}{19.5\times7.8}=\frac{11.7}{152.1}$

time taken in filling whole cistern$=\frac{152.1}{11.7}$ hour

Now time taken in filling remaining half portion of tank

$=\frac{152.1}{11.7}\times\frac{1}{2}$

$=\frac{152.1}{23.4}=6.5$ hours

30. A pipe can fill any tank in 7/4 hours while the other pipe can empty the full tank in 21/8 hours. Both pipes were opened at that time when the tank was 2/3 empty. How much time will be taken to fill the tank?
(a) 3 hours 20 minute (b) 3 hours 30 minute
(c) 3 hours 45 minute (d) 3 hours 15 minute

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) Suppose it will take t hours to fill the tank.
According to the question-

$\frac{t}{\frac{7}{4}}-\frac{t}{\frac{21}{8}}=\frac{2}{3}$

$\frac{4t}{7}-\frac{8t}{21}=\frac{2}{3}$

$\Rightarrow\frac{12t-8t}{21}=\frac{2}{3}$

$\Rightarrow\frac{4t}{21}=\frac{2}{3}$

$\Rightarrow t=\frac{2\times21}{3\times4}$

$\Rightarrow t=\frac{7}{2}h$

$\Rightarrow t=3\frac{1}{2}$

$\Rightarrow t=3:\frac{1}{2}\times60$

$\Rightarrow t=3h:30\,min$

Hence it will take 3 hours 30 minutes to fill the tank.

31. A tap can fill the tank in 25 minutes and the other can empty the tank in 50 minutes. If both the taps are opened simultaneously, then what time will the tank be filled in time?

(a) 1 hour, 5 minutes (b) 50 minutes
(c) 55 minutes (d) 1 hour, 5 minutes

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (b) : Suppose filling tank = A
emptying tank = B

filled portion of tank by Tap A in 1 minute $= \frac{1}{25}$

emptying portion of tank by Tap B in 1 minute $= \frac{1}{50}$

Hence filled portion of cistern in 1 minute by both tap =

$$= \frac{1}{25} - \frac{1}{50} = \frac{2-1}{50} = \frac{1}{50}$$

Hence time taken in filling whole tank = 50 minute

32. A tank has two taps. One tap can fill the tank in 8 hours and the second tap can empty it in 10 hours. If the both taps were opened together, then what time will be taken to fill the tank?

(a) 40 (b) 20
(c) 30 (d) 50

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (a) : It takes 8 hours by X in filling the tank.
Where as it takes 10 hours by Y in emptying the tank.

∴ filled portion of tank in one hour

$$= \frac{1}{X} - \frac{1}{Y} = \frac{1}{8} - \frac{1}{10} = \frac{1}{40}$$

∴ time taken to fill the tank = 40 hours

33. A tank has two taps, first fills water in tank, and second empties the tank. Tank is filled in 4 hours, when only first tap is 12 hrs. opened and filled in 12 hours when both taps can opened. How much time is taken to empty the full tank when only second tap is opened?

(a) 10 hours (b) 4 hours
(c) 6 hours (d) 8 hours

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (c) Filled portion of tank in 1 hour by first tap

$$= \frac{1}{4} \text{ part}$$

filled portion of tank in 1 hour by both tap $= \frac{1}{12}$ part

∴ filled portion of tank in 1 hour by second tap

$$= \frac{1}{4} - \frac{1}{12} \text{ part}$$

$$= \frac{3-1}{12}$$

$$= \frac{2}{12} = \frac{1}{6}$$

Hence second tap will empty the filled cistern in 6 hours

34. 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, then only tap B can empty the full tank in 70 hours. Find the time taken to fill the half filled tank?

(a) 35 hours (b) 40 hours
(c) 70 hours (d) 55 hours

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (a) : Filled portion of cistern in 1 hour by tap A = $\frac{1}{35}$

emptied portion of cistern in 1 hour by tap B $= \frac{1}{70}$

suppose time taken in filling half empty cistern completely = t time

According to the 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 hours

Hence It will take 35 hours in filling the half empty cistern completely.

35. A tap can fill a tank completely in 1 hour 30 min but due to leakage in the tank it takes 2 hours and 15 minutes. What time will be taken to empty the tank due to leakage?

(a) 45 minute (b) 4 hours 30 minute
(c) 1 hours 30 minute (d) 2 hours 45 minute

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (b) 1 hour 30 minute = 90 minute
2 hour 15 minute = 135 minute

According to the question-

emptied portion of cistern in 1 minute because of leakage

$$= \frac{1}{90} - \frac{1}{135} = \frac{3-2}{270} = \frac{1}{270}$$

Hence time taken in emptying the cistern = 270 minute
= 4 hours 30 minute

36. A tap can fill a tank in 25 minutes and the second tap can empty the same tank in 50 minutes. If the both taps are opened together, then tank will be filled ___ minutes?

(a) 55 (b) 45
(c) 20 (d) 50

Ans. (d) : A tap fills in 1 minute $= \frac{1}{25}$ part

second tap fills in 1 minute $= \frac{1}{50}$ part

$$= \frac{1}{25} - \frac{1}{50} = \frac{2-1}{50} = \frac{1}{50}$$

total time taken in filling the tank = 50 minutes

37. A tank has two pipes. Pipe M is to fill the tank and pipe N is to empty the tank. If pipe M takes 45 hours to fill the tank completely and N takes 90 hours to empty the tank completely. Then how much time will it take to fill the half empty tank?

(a) 45 hours (b) 35 hours
(c) 60 hours (d) 40 hours

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (a)
Filled portion of cistern by pipe M and N in 1 hour

$$=\frac{1}{45}-\frac{1}{90}=\frac{2-1}{90}=\frac{1}{90}$$

Time taken by M and N in filling whole cistern = 90 hours

$\therefore$ Time taken in filling half portion of cistern $=\frac{90}{2}=$ 45 hours

38. A tank normally gets filled in 8 hours, but due to leakage in its surface, it takes two hour more to get filled. If the tank is full, then the leakage will empty it in ____?

(a) 20 hours (b) 40 hours
(c) 30 hours (d) 10 hours

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (b) Time taken in filling full of tank = 8 hours

filled portion in 1 hour $=\frac{1}{8}$ parts

Due to leakage, time taken in filling tank = 8 + 2 = 10 hours

filled portion in 1 hour $=\frac{1}{10}$

Emptied portion of tank in 1 hour by leakage

$$=\frac{1}{8}-\frac{1}{10}=\frac{5-4}{40}=\frac{1}{40}\text{ part}$$

Hence due to leakage tank will be empty in 40 hours.

39. A tube can fill a tank in 15 hours. Due to leakage in its bottom, it gets filled in 20 hours. If the tank is fully filled, then due to leakage it will get empty in how much time?

(a) 20 hours (b) 60 hours
(c) 32 hours (d) 40 hours

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (b) Time taken in filling the cistern by the tap = 15 hours

filled portion in 1 hour $=\frac{1}{15}$ part

Because of leakage time taken in filling cistern = 20 hours

Hence filled portion in 1 hour $=\frac{1}{20}$ part

Suppose cistern will be empty in x hours by leakage

so $\frac{1}{x}=\frac{1}{15}-\frac{1}{20}$

$\frac{1}{x}=\frac{4-3}{60}=\frac{1}{60}$

x = 60 hours

40. A tank can be filled in 30 minutes. There is a leakage in the tank which can empty the tank in 90 minutes. Therefore the tank will be filled in how much time?

(a) 60 minute (b) 45 minute
(c) 55 minute (d) 50 minute

RRB NTPC 31.03.2016 : 2

Ans : (b) Filled portion of tank in 1 minute

$$=\frac{1}{30}-\frac{1}{90}$$

$$=\frac{3-1}{90}=\frac{1}{45}$$

$\therefore$ Tank will fill in 45 minutes.

41. It takes 12.5 minute for an utensil to get fully filled with juice. By this utensil the children drink juice at a fixed rate due to which the utensil is emptied in 25 minutes. By the present rate how much time will be taken to fill the utensil?

(a) 20 minute (b) 12.5 minute
(c) 25 minute (d) 30 minute

RRB NTPC 18.01.2017 Shift : 3

Ans : (c) Time taken in filling the vessel

$$=\frac{1}{12.5}-\frac{1}{25}=\frac{10}{125}-\frac{1}{25}=\frac{10-5}{125}$$

$$=\frac{5}{125}=\frac{1}{25}$$

hence vessel will fill in 25 minutes.

42. A tap can fill a tank in 20 minutes. If a leakage is capable of emptying the tank in 60 minute, then the tank will be filled in how much time?

(a) 1 hour (b) 45 minute
(c) 30 minute (d) 50 minute

RRB NTPC 06.04.2016 Shift : 1

Ans : (c)

Filled portion by filler tap in 1 minute $=\frac{1}{20}$

and emptied portion by emptying tap in 1 minute

$$=\frac{1}{60}$$

so filled portion by both tap in 1 minute $=\frac{1}{20}-\frac{1}{60}$

$$=\frac{40}{20\times 60}=\frac{1}{30}$$

hence, time taken in filling the tank completely by both = 30 minutes.

43. A Honda motor can fill a sintex tank in 4 hours. There was a leakage in the tank due to which it took six hour to fill the tank. Suppose that the tank is fully filled, in how much time leakage will empty the tank?

(a) 12 hours (b) 15 hours
(c) 11 hours (d) 10 hours

RRB NTPC 22.04.2016 Shift : 3

Ans : (a) Required time $= \frac{1}{4} - \frac{1}{6}$

$= \frac{3-2}{12} = \frac{1}{12}$

Hence leakage will empty the tank in 12 hours.

44. An oil tank takes 15 minutes to be filled. The oil tank is emptied by an outlet pipe which can empty it in 30 minutes. If this outlet pipe remains open, then how much time will it take to fill the tank completely?

(a) 20 minute (b) 25 minute
(c) 30 minute (d) 40 minute

RRB NTPC 28.04.2016 Shift : 3

Ans : (c) If outlet pipe is open then filled part in 1 minute = $\frac{1}{15} - \frac{1}{30} = \frac{30-15}{15\times 30}$

time taken to fill tank $= \frac{30\times 15}{30-15} = \frac{30\times 15}{15} = 30$ minute

45. A pump can fill a tank in 4 hours, but due to a leak, the tank now gets filled in 5 hours. How long will it take the leakage to empty the tank when it is full?

(a) 20 hours (b) 9 hours
(c) 1 hour (d) 4.5 hours

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (a) Let it will take 't' time in emptying the tank. Then-

$$\frac{1}{4} - \frac{1}{t} = \frac{1}{5}$$
$$\frac{1}{t} = \frac{1}{4} - \frac{1}{5}$$
$$\frac{1}{t} = \frac{5-4}{20}$$
$$\frac{1}{t} = \frac{1}{20}$$

tank will be empty in 20 hours

46. One pipe can fill an empty cistern in 4 hours while another can drain the cistern when full in 10 hours. Both the pipes were turned on when the cistern was half-empty. How long will it take to fill the cistern completely?

(a) 6 hours 40 minutes
(b) 5 hours 30 minutes
(c) 4 hours 20 minutes
(d) 3 hours 20 minutes

RRB ALP & Tec. (13-08-18 Shift-III)

Ans : (d) According to the question-

filled portion by first pipe in 1 hour $= \frac{1}{4}$,

emptied portion in 1 hour by second pipe $= \frac{1}{10}$ (First + Second)

filled portion in 1 hour by first and second pipe

$$= \left(\frac{1}{4} - \frac{1}{10}\right) = \frac{5-2}{20}$$
$$= \frac{3}{20} \text{ part}$$

$\because$ half portion of cistern is filled.

hence remaining portion of cistern $= 1 - \frac{1}{2} = \frac{1}{2}$

$\because$ time taken in filling $\frac{3}{20}$ portion = 1 hour

$\therefore$ time taken in filling $\frac{1}{2}$ portion $= \frac{20}{3} \times \frac{1}{2} = \frac{10}{3}$ hours

= 3 hours 20 minute

Type - 3

47. There are three inlets in a tank when the first two are opened then it takes the same time to fill the tank as the third inlet takes to fill the tank. The second inlet takes 5 hours more as compared to previous one and as compared to third inlet it takes 4 hours less. First inlet alone can fill the tank in how many hours?

(a) 15 hours (b) 6 hours
(c) 12 hours (d) 10 hours

RRB JE - 26/06/2019 (Shift-I)

Ans : (a) Let the time taken by the first inlet to fill the tank is x hours.

the second inlet takes time to fill the tank = (x + 5) hours

The third inlet takes time to fill the tank = (x + 9) hours

According to the question-

$$\frac{1}{x} + \frac{1}{x+5} = \frac{1}{x+9}$$
$$\frac{2x+5}{x^2+5x} = \frac{1}{x+9}$$
$$2x^2 + 5x + 18x + 45 = x^2 + 5x$$
$$x^2 + 18x + 45 = 0$$
$$x^2 + 15x + 3x + 45 = 0$$
$$x(x + 15) + 3(x + 15) = 0$$
$$(x + 15) + (x + 3) = 0$$
$$x + 15 = 0 \text{ or } x + 3 = 0$$
$$x = -15 \quad (\because \text{ Time is not negative})$$
$$\therefore x = 15 \text{ hours}$$

Hence the time taken to fill the cistern by the first inlet = 15 hours

48. A tap can fill tank completely in 6 hours. After filling half of the tank three more such tanks are opened. How much time will it take to fill the tank?

(a) 2 hours 20 minutes
(b) 4 hours 30 minutes
(c) 3 hours 25 minutes
(d) 3 hours 45 minutes

RRB JE - 31/05/2019 (Shift-III)

Ans. (d) Filled portion of tank in 1 hour by first tap $= \frac{1}{6}$

filled portion in 1 hour by 4 taps $= \frac{4}{6} = \frac{2}{3}$

Hence four tap can fill the tank in 3/2 hours or 90 minutes.

time taken in filling half tank $= \frac{90}{2} = 45$ minutes

time taken by first tap to fill the half tank $= 3$ hours

So total time taken to fill the tank $= 3$ hours 45 minute

49. Pipe A and C can fill a vacant tank in 7 hrs and 10.5 hours respectively while pipe B can empty the filled tank in 5.25 hours. If the three pipes are opened together when the tank is empty, how many hours will be taken to fill the 2/3 part of the tank?

(a) 14 (b) 21
(c) 12 (d) 15.75

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (a) Suppose three pipes will fill the 2/3 portion of cistern in x hours.

$$\Rightarrow \frac{x}{7} + \frac{x}{10.5} - \frac{x}{5.25} = \frac{2}{3}$$

(because it is to fill only 2/3 portion of cistern)

$$\Rightarrow \frac{x}{7} + \frac{10x}{105} - \frac{100x}{525} = \frac{2}{3}$$

$$\Rightarrow \frac{75x + 50x - 100x}{525} = \frac{2}{3}$$

$$\Rightarrow \frac{125x - 100x}{525} = \frac{2}{3}$$

$$\Rightarrow \frac{25x}{525} = \frac{2}{3}$$

$$\Rightarrow \frac{x}{21} = \frac{2}{3}$$

$$\Rightarrow x = \frac{21 \times 2}{3} = 14$$

$\Rightarrow$ x = 14 hours

50. Two pipes X and Y can fill a gas tank in 60 and 75 minutes respectively. There is an outlet Z. If all the three pipes are used together, then the tank gets full in 50 minutes. How much time will be taken by Z to empty the tank completely?

(a) 100 minutes (b) 75 minutes
(c) 90 minutes (d) 50 minutes

RRB RPF SI – 11/01/2019 (Shift-I)

Ans : (a) Suppose time taken by 'Z' is x minute

filled portion of cistern by 'X' in 1 minute $= \frac{1}{60}$

filled portion of cistern by 'Y' in 1 minute $= \frac{1}{75}$

emptied portion of cistern by 'Z' in 1 minute $= \frac{1}{x}$

As per the question-

$$\frac{1}{60} + \frac{1}{75} - \frac{1}{x} = \frac{1}{50}$$

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \left(\frac{1}{60} + \frac{1}{75}\right)$$

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \left(\frac{5+4}{300}\right)$$

$$\Rightarrow -\frac{1}{x} = \frac{1}{50} - \frac{9}{300}$$

$$\Rightarrow -\frac{1}{x} = \frac{6-9}{300} = -\frac{3}{300}$$

$$\Rightarrow -\frac{1}{x} = -\frac{1}{100}$$

$\Rightarrow$ x = 100 minute

Hence time taken by 'Z' $= 100$ minute

51. Pipe A and B can fill a tank in 7 and 10 hours respectively while pipe C can empty the tank in 14 hrs. If all the pipes start together, then how much time will it take to fill the tank?

(a) $6\frac{1}{6}$ hours (b) $6\frac{2}{3}$ hours
(c) $5\frac{1}{2}$ hours (d) $5\frac{5}{6}$ hours

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans. (d) : filled portion of tank by pipe A in 1 hour $= \frac{1}{7}$

filled portion of tank by pipe B in 1 hour $= \frac{1}{10}$

filled portion of tank by pipe C in 1 hour $= \frac{1}{14}$

from the question-

If all the three pipes are opened, then filled portion of tank in 1 hour $= \frac{1}{7} + \frac{1}{10} - \frac{1}{14}$

$$= \frac{10+7-5}{70} = \frac{12}{70} = 5\frac{5}{6}$$

Hence all three pipes will fill the tank in $5\frac{5}{6}$ hours

52. Two pipe working individually can fill a tank in 6.3 and 8.4 hours respectively, while the third pipe can empty filled tank in 4.8 hours. If all the 3 pipes are opened together when the tank is empty, then how much time will be taken to fill the tank completely?

(a) 13 hours 20 minutes
(b) 12 hours 18 minutes
(c) 14 hours 18 minutes
(d) 14 hours 24 minutes

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (d) : Filled portion in 1 hour by three pipes

$$= \frac{1}{6.3}+\frac{1}{8.4}-\frac{1}{4.8}$$
$$=\frac{10}{63}+\frac{10}{84}-\frac{10}{48}$$
$$=\frac{10(16+12-21)}{1008}$$
$$=\frac{10\times 7}{1008}=\frac{5}{72}$$

Hence time taken in filling the tank $=\frac{72}{5}=14\frac{2}{5}$ hours

=14 hours 24 minute

53. A, B and C are three valves connected to a tank. A, B together can fill a tank in 6 hours. B and C together can fill the tank in 10 hours. A and C together fill the tank in $7\frac{1}{2}$ hours. A alone will take how much time to fill the tank?

(a) 10 hours (b) 12 hours
(c) 11 hours (d) 13 hours

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (a) filled portion by A + B in 1 hour $=\frac{1}{6}$

filled portion by B + C in 1 hour $=\frac{1}{10}$

filled portion by C + A in 1 hour $=\frac{2}{15}$

Hence by three
filled portion by (A + B + B + C + C+ A) in 1 hour

$=\frac{1}{6}+\frac{1}{10}+\frac{2}{15}$

filled portion by 2(A + B + C) in 1 hour $=\frac{12}{30}$

filled portion by (A + B + C) in 1 hour $=\frac{12}{60}=\frac{1}{5}$

filled portion by A in 1 hour $=\frac{1}{5}-\frac{1}{10}$

filled portion by A in 1 hour $=\frac{2-1}{10}=\frac{1}{10}$

Hence cistern will fill by A in 10 hours.

54. There are three pipes connected to a tank. First pipe can fill the tank in 30 minutes and the second pipe can fill the tank in 45 minutes while the third pipe is to empty the tank. If it takes 27 minutes to fill the tank when all three pipes are opened. In what time the third pipe will empty the tank?

(a) 54 minutes (b) 52 minutes
(c) 50 minutes (d) 56 minutes

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (a) Time taken to fill the tank if three pipes are opened = 27 minute

suppose third pipe empty the tank in x minute then

$$\frac{1}{30}+\frac{1}{45}-\frac{1}{x}=\frac{1}{27}$$
$$\frac{1}{x}=\frac{1}{30}+\frac{1}{45}-\frac{1}{27}$$
$$=\frac{9+6-10}{270}$$
$$=\frac{15-10}{270}$$
$$=\frac{5}{270}$$
$$\frac{1}{x}=\frac{1}{54}$$
$$\boxed{x=54}$$

Hence third pipe will empty the tank in 54 minutes.

55. Tap A and Tap B can fill a tank in 2 and 8 hours respectively. Tap C can empty the tank in 4 hours. If all the taps are opened at a time, then how much time will be taken to fill the tank?

(a) $\frac{8}{3}$ hours (b) $\frac{9}{2}$ hours
(c) 3 hours (d) $\frac{3}{8}$ hours

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (a) filled portion of cistern by tap A in 1 hour = $\frac{1}{2}$

filled portion of cistern by tap B in 1 hour = $\frac{1}{8}$

emptied portion of cistern by tap C in 1 hour $=\frac{1}{4}$

As per the question,

∴ (A+B+C) will fill the tank in an hour $=\frac{1}{2}+\frac{1}{8}-\frac{1}{4}=\frac{3}{8}$ part

∴ Time taken by three taps to fill the cistern = $\frac{8}{3}$ hours

56. There is two entrance in a tank, which can fill the tank in 6 hrs and 8 hrs respectively. By an exit gate the whole tank can be emptied in 10 hours. If all the three pipes are opened together in an empty tank, then how much time will be taken to fill the tank completely?

(a) $5\frac{5}{23}$ hours (b) $6\frac{5}{23}$ hours

(c) $6\frac{5}{46}$ hours (d) $5\frac{5}{46}$ hours

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (a) Filled portion by A+B+C in 1 hour

$$= \frac{1}{6}+\frac{1}{8}-\frac{1}{10}=\frac{23}{120}$$

$\therefore$ time taken in filling whole cistern

$$= \frac{120}{23}=5\frac{5}{23}\text{ hour}$$

57. Two inlet pipes can completely fill a tank in 5 and 7 hours and an outlet can empty the filled tank in 14 hours. If all the three pipes are opened together in an empty tank, then how much time will it take to fill the tank completely?

(a) $4\frac{11}{13}$ hours (b) $5\frac{11}{13}$ hours

(c) $3\frac{13}{19}$ hours (d) $5\frac{2}{13}$ hours

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (c) Filled portion of tank by A in 1 hour $=\frac{1}{5}$

filled portion of tank by B in 1 hour $=\frac{1}{7}$

emptied portion of tank by C in 1 hour $=\frac{1}{14}$

filled portion by three taps in 1 hour $=\frac{1}{5}+\frac{1}{7}-\frac{1}{14}$

$$=\frac{14+10-5}{70}=\frac{19}{70}$$

Hence, tank can be fill by three taps in $3\frac{13}{19}$ hours.

58. In the three pipes the first two pipes can fill a 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 the three pipes are opened together, then the tank will be filled in how many hours?

(a) 13.2 (b) 12

(c) 14.4 (d) 15.6

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (b) Filled portion by three pipes in 1 hour

$$=\frac{1}{10.8}+\frac{1}{21.6}-\frac{1}{18}=\frac{10}{108}+\frac{10}{216}-\frac{1}{18}$$

$$=\frac{20+10-12}{216}=\frac{18}{216}=\frac{1}{12}\text{ part}$$

Time taken by three pipes in filling the tank = 12 hour

59. Two pipes working together can fill a tank in 3.9 hours and 5.2 hours respectively, while a third pipe, can empty the full tank in 10.4 hours. When the tank is 1/12 filled, all three pipes are opened together. How much time will be taken to fill the tank completely?

(a) 2 hours 45 minutes (b) 2 hours 10 minutes

(c) 2 hours 11 minutes (d) 2 hours 36 minutes

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (d) Remaining part of cistern $=1-\frac{1}{12}=\frac{11}{12}$ part

According to the question-

$$\frac{t}{3.9}+\frac{t}{5.2}-\frac{t}{10.4}=\frac{11}{12}$$

$$\frac{10t}{39}+\frac{10t}{52}-\frac{5t}{52}=\frac{11}{12}$$

$$\frac{40t+30t-15t}{156}=\frac{11}{12}$$

$$\frac{55t}{156}=\frac{11}{12}$$

$$t=\frac{13}{5}=2\text{ hours }36\text{ minute}$$

60. Pipe A can fill a tank in 8 hrs, pipe B can fill in P hours and Pipe C can fill in 24 hours. If all the pipes are opened then it takes 2.4 hours to fill the tank completely. Then find the value of P ?

(a) 2 hours (b) 1 hours

(c) 3 hours (d) 4 hours

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (d) Filled portion of cistern by pipe A in 1 hour

$=\frac{1}{8}$ part

filled portion of cistern by pipe B in 1 hour $=\frac{1}{P}$ part

filled portion of cistern by pipe C in 1 hour $=\frac{1}{24}$ part

all the three pipes fill the tank in 2.4 hours.

from the question-

filled part by (A + B + C) in 1 hour $=\frac{1}{8}+\frac{1}{P}+\frac{1}{24}=\frac{1}{2.4}$

$$\frac{1}{P}=\frac{10}{24}-\frac{1}{8}-\frac{1}{24}$$

$$\frac{1}{P}=\frac{10-3-1}{24}$$

$$\frac{1}{P}=\frac{6}{24}$$

$$\boxed{P=4\text{hour}}$$

61. A tank is filled by two taps A and B in 12 hrs and 16 hrs respectively. Complete tank can be emptied by the third tap in 8 hours. If all the taps are opened together at a time then how long will it take to fill the tank?

(a) 24 hours (b) 40 hours
(c) 16 hours (d) 48 hours

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (d) Suppose time taken in filling the empty tank is T

filled portion of tank by A in 1 hour $=\frac{1}{12}$

filled portion of tank by B in 1 hour $=\frac{1}{16}$

emptied portion of tank by third tap in 1 hour $=\frac{1}{8}$

As per the 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 hours

62. Tap A and B fills a tank in 5 hrs and 20 hrs respectively. Tap empties the full tank in 10 hours. If all the three taps are opened together then how long will it take to full the tank?

(a) $\frac{29}{2}$ hours (b) $\frac{17}{5}$ hours
(c) $\frac{20}{6}$ hours (d) $\frac{20}{3}$ hours

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (d) : Tap A fills the tank in 5 hours
Tap B fills the tank in 20 hours
Tap C fills the tank in 10 hours
filled portion of tank by three taps in 1 hour

$$=\frac{1}{5}+\frac{1}{20}-\frac{1}{10}=\frac{4+1-2}{20}=\frac{3}{20}$$

$\because$ total time taken in filling the tank $=\frac{20}{3}$ hours

63. A tap can fill a reservoir in 4 hrs. After the reservoir is half filled 3 more taps of the same size are opened. How much time will be taken by all the taps to fill the tank completely?

(a) 2 hours 30 minutes (b) 2 hours
(c) 1 hours 30 minutes (d) 3 hours

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (a) Suppose reservoir is filled in x hour.
As per the question,

$$\frac{1}{2}+\frac{x}{4}+\frac{x}{4}+\frac{x}{4}+\frac{x}{4}=1$$

$$\frac{4x}{4}=\frac{1}{2} \Rightarrow x=\frac{1}{2} \text{ hour}$$

total time taken in filling reservoir $= 2 + \frac{1}{2}$

= 2 hour 30 minute

64. A and C pipes can fill an empty tank in 60 hrs and 48 hrs, respectively while pipe B can empty the full tank in 24 hours. When the tank is full and all the three pipes are opened together then how much time will be taken to fill 1/3 part of the tank?

(a) 240 (b) 160
(c) 80 (d) 120

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (b) Filled portion of tank by pipe A

$= \frac{1}{60}$ part

filled portion of tank by pipe C in 1 hour $= \frac{1}{48}$ part

emptied portion of tank by pipe B in 1 hour $=\frac{1}{24}$ part

So emptied portion by three pipe in 1 hour

$$= \frac{1}{24}-\left(\frac{1}{60}+\frac{1}{48}\right)$$

$$= \frac{10-(4+5)}{240} = \frac{1}{240} \text{ part}$$

So time taken in emptying the $\frac{2}{3}$ portion of tank = time taken to fill the $\frac{1}{3}$ portion of tank= $\frac{2/3}{1/240}=160$ hours

65. A, B and C three tubes are attached with a reservoir. A and B together can fill the reservoir in 6 hours. B and C together can fill the reservoir in 10 hours. A and C together can fill the reservoir in $7\frac{1}{2}$ hours. How much time will be taken by C alone to fill the tank?

(a) 25 hours (b) 15 hours
(c) 40 hours (d) 30 hours

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (d)
Work done in 1 hour by A + B

$$=\left(\frac{1}{A}+\frac{1}{B}\right)=\frac{1}{6} \text{ part ..... (1)}$$

work done in 1 hour by B + C

$$=\left(\frac{1}{B}+\frac{1}{C}\right)=\frac{1}{10} \text{ part ..... (2)}$$

work done in 1 hour by A + C

$$=\left(\frac{1}{A}+\frac{1}{C}\right)=\frac{1}{\frac{15}{2}}=\frac{2}{15} \text{ part..... (3)}$$

on adding of equation (1), (2), (3)

$$\left(\frac{1}{A}+\frac{1}{B}\right)+\left(\frac{1}{B}+\frac{1}{C}\right)+\left(\frac{1}{A}+\frac{1}{C}\right)=\frac{1}{6}+\frac{1}{10}+\frac{2}{15}$$

$$2\left(\frac{1}{A}+\frac{1}{B}+\frac{1}{C}\right)=\frac{5+3+4}{30}$$

$$2\left(\frac{1}{A}+\frac{1}{B}+\frac{1}{C}\right)=\frac{12}{30}$$

$$\frac{1}{A}+\frac{1}{B}+\frac{1}{C}=\frac{12}{30\times 2}=\frac{1}{5}\text{.....(4)}$$

on subtracting the 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 in filling the reservoir by C = 30 hours

66. Two pipes can fill a tank in 5 hrs and 3 hrs respectively while the third pipe can empty the tank in 7.5 hours. When 1/10 part of the tank was filled then all the three pipes were opened together, then how long will it take to fill the tank?

(a) 2 hours 20 minutes (b) 2 hours
(c) 2 hours 15 minutes (d) 2 hours 30 minutes

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (c) :

Emptied portion of cistern $= 1-\frac{1}{10}=\frac{9}{10}$ part

filled portion by three pipes in 1 hour

$$=\frac{1}{5}+\frac{1}{3}-\frac{1}{7.5}$$

$$=\frac{1}{5}+\frac{1}{3}-\frac{10}{75}$$

$$=\frac{15+25-10}{75}=\frac{30}{75}=\frac{2}{5}\text{part}$$

$\because$ filled portion by three pipes in 1 hour $=\frac{2}{5}$

time taken in filling $\frac{2}{5}$ portion $=$ 1 hour

time taken in filling $\frac{9}{10}$ portion $=\frac{5}{2}\times\frac{9}{10}$

$=$ 2 hour 15 minute

67. Pipes A, B and C are attached to an empty cistern. While the first two can fill the cistern in 4 and 10 hours, respectively, the third can drain the cistern, when filled, in 6 hours. If all the three pipes are opened simultaneously when the cistern is half-full, how many hours will be needed to fill the cistern?

(a) $\frac{30}{11}$ (b) $\frac{60}{11}$
(c) $\frac{120}{11}$ (d) $\frac{90}{11}$

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (a) According to the question,

$$=\frac{1}{4}+\frac{1}{10}-\frac{1}{6}$$

$$=\frac{15+6-10}{60}=\frac{11}{60}\text{ part}$$

time taken in filling whole cistern $=\frac{60}{11}$ hour

When cistern is half fill then time taken

$$=\frac{60}{2\times 11}=\frac{30}{11}\text{ hour}$$

68. Out of three pipes the first two can fill an empty tank in 9 and 18 hours, respectively while the third can drain the filled tank in 15 hours. If all the three pipes are opened when the tank is empty, after how many hours will the tank be fill?

(a) 10 (b) 12
(c) 11 (d) 13

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (a)

Filled portion of cistern by pipe A in 1 hour $=\frac{1}{9}$

filled portion of cistern by pipe B in 1 hour $=\frac{1}{18}$

and emptied portion of cistern by pipe C in 1 hour $=\frac{1}{15}$

$\therefore$ filled portion of cistern by (A+B+C) in 1 hour

$$=\frac{1}{9}+\frac{1}{18}-\frac{1}{15}$$

$$=\frac{10+5-6}{90}$$

$$=\frac{9}{90}\Rightarrow\frac{1}{10}$$

so time taken in filling whole cistern= 10 hour

69. Raghu's tanker can fill a cistern in 4 hours. After half the cistern is filled, three more similar tankers are opened. what is the total time taken to fill the cistern completely ?

(a) 2 h 40 min (b) 2 h
(c) 3 h (d) 2 h 30 min

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

Ans : (d)

$\because$ Raghu's tanker fills half portion of reservoir in 2 hours.

$\therefore$ Three more tanker just like that = total 4 tanker will fill $\frac{1}{2}$ portion of cistern $=\frac{4}{4}\times\frac{1}{2}=30$ minutes

hence time taken in filling whole cistern $=$ 2 hours 30 minute

70. Pipes A and C can fill an empty cistern in 32 and 48 hours, respectively while Pipe B can drain the filled cistern in 24 hours. If the three pipes are turned on together when the cistern is empty, how many hours will it take for the cistern to be $\frac{2}{3}$ full?

(a) 96 (b) 64
(c) 72 (d) 48

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

Ans : (b) Filled portion by pipe 'A' in 1 hour $=\frac{1}{32}$

filled portion by pipe 'C' in 1 hour $=\frac{1}{48}$

emptied portion by pipe 'B' in 1 hour $=\frac{1}{24}$

filled portion by three pipes in 1 hour $=\frac{1}{32}+\frac{1}{48}-\frac{1}{24}$

$=\frac{3+2-4}{96}=\frac{1}{96}$

$\because$ It takes 1 hour in filling $\frac{1}{96}$ portion

$\therefore$ time taken in filling $\frac{2}{3}$ portion $=96\times\frac{2}{3}=64$ hours

71. Pipes A, B and C are attached to an empty cistern. While the first two can fill the cistern in 4 and 10 hours, respectively, the third can drain the cistern, when filled, in 6 hours. If all the three pipes are opened simultaneously when the cistern is three-fifth full, how many hours will be needed to fill the cistern?

(a) $\frac{36}{11}$ (b) $\frac{48}{11}$
(c) $\frac{60}{11}$ (d) $\frac{24}{11}$

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

Ans : (d) A, B and C will fill the cistern in 1 hour

$=\frac{1}{4}+\frac{1}{10}-\frac{1}{6}=\frac{15+6-10}{60}=\frac{11}{60}$ part

$\therefore$ All three pipes will fill the cistern completely

$=\frac{60}{11}$ hour

Remaining empty portion of cistern $=1-\frac{3}{5}=\frac{2}{5}$ part

$\therefore$ Time taken in filling remaining empty portion of cistern $=\frac{60}{11}\times\frac{2}{5}=\frac{24}{11}$ hour

Type - 4

72. Pipes P and Q can fill a tank in 6 hrs and 4 hrs respectively. Pipe P is opened at 7 O'clock and P and Q is opened one by one for an hour. Tank will be filled in how many hours?

(a) 6 hours
(b) 3 hours
(c) 4 hours 30 minutes
(d) 5 hours

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

Ans : (d) L.C.M of 6 and 4 = 12 unit work
1 hour work of P = 2 unit
1 hour work of Q = 3 unit
2 hour work of (P + Q) = 5 unit
Hence 2 × 2 hours work = 5 × 2 = 10 unit
Remaining work = 2 unit
$\therefore$ the time taken by P to finish 2 unit work = 1 hour
$\therefore$ the time taken to fill the tank = 2 × 2 + 1 = 5 hours

73. A tank can be filled by a tap in 10 hours, although due to a leakage it takes 11 hours to fill the tank. The tap is closed when the tank is full. In how much time the tank will be emptied due to leakage?

(a) 130 (b) 110
(c) 100 (d) 50

RRB RPF Constable – 20/01/2019 (Shift-I)

Ans. (b) : Filled part in 1 hour by tap = $\frac{1}{10}$ part

filled part in 1 hour = $\frac{1}{11}$ part

It takes x hours to empty the tank due to leakage.
According to the question,

$\frac{1}{10}-\frac{1}{x}=\frac{1}{11}$

$\Rightarrow\frac{1}{x}=\frac{1}{10}-\frac{1}{11}$

$=\frac{11-10}{110}$

$\Rightarrow\frac{1}{x}=\frac{1}{110}$

x = 110 hours

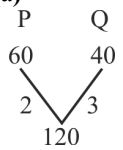
Hence the time taken for the tank to be emptied = 110 hours

74. Two taps P and Q individually take 60 min and 40 min to fill a tank. If tap Q is opened for the first half an hour and for remaining time tap P is opened, then how long will it take to fill the tank?

(a) 45 minutes (b) 32 minutes
(c) 36 minutes (d) 48 minutes

RRB JE - 30/05/2019 (Shift-I)

Ans : (a)



Let the total capacity of the tank is 120 liters.
[L.C.M of (60, 40) = 120]

∵ Q fills 3 liters of water in 1 minute.

∴ Q will fill in 30 minutes = 3 × 30 = 90 *l*

Remaining amount of the tank = 120 – 90 = 30 *l*

∵ P fills the remaining volume of the tank

$$\Rightarrow \frac{30}{2} = 15 \text{ min.}$$

required time = 30 + 15 = 45 min.

75. 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, then tank gets filled in 24 minutes. When was pipe Q closed?

(a) 12 minutes (b) 15 minutes
(c) 10 minutes (d) 16 minutes

RRB JE - 01/06/2019 (Shift-III)

Ans. (a) Filled part in 1 minute by pipe P $= \frac{1}{32}$ part

filled part in 1 minute by pipe Q $= \frac{1}{48}$ part

Pipe P will work from the starting to end.

filled part by P in 24 min. due to leakage $= \frac{24}{32} = \frac{3}{4}$ part

remaining part $= 1 - \frac{3}{4} = \frac{1}{4}$ part

time taken to fill remaining part by Q

$$= \frac{1}{4} \times 48 = 12 \text{ min.}$$

Hence pipe Q was closed after 12 min.

76. Tap P and Q can fill a bucket individually in 12 min and 15 min. Both the taps are opened, but after 3 minutes tap P is closed. What extra time will be taken by Q to fill the bucket?

(a) 6 minutes 15 sec.
(b) 8 minutes 15 sec.
(c) 6 minutes 30 sec.
(d) 9 minutes

RRB JE - 27/06/2019 (Shift-III)

Ans : (b) Let the extra time taken for tap Q to fill the bucket is t minute.

According to the question,

$$\frac{3}{12} + \frac{3+t}{15} = 1$$

$$\frac{3+t}{15} = 1 - \frac{1}{4}$$

$$\frac{3+t}{15} = \frac{3}{4}$$

12 + 4t = 45

4t = 33

$$t = \frac{33}{4}$$

$$t = 8\frac{1}{4} = 8 \text{ min } 15 \text{ sec.}$$

77. Two pipes P and Q fill a tank in 15 min and 20 min respectively. Both are opened but after 4 minute P is closed. In how much time tank is filled from the beginning?

(a) 16 minutes
(b) 16 minutes 20 sec.
(c) 14 minutes 20 sec.
(d) 14 minutes 40 sec.

RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (d) Let extra time taken by Q to fill the tank = t min.

from question,

$$\frac{4}{15} + \frac{t+4}{20} = 1$$

$$\frac{16+3t+12}{60} = 1$$

3t + 28 = 60

3t = 32

t = 10 min. 40 sec.

total time taken = 10 min 40 sec. + 4 min.

= 14 min. 40 sec.

78. Two pipes A and B can fill a tank in 12 min & 16 min respectively. Both pipes are opened together, but pipe A closed 4 minutes before the tank is filled. In how many minutes the tank is completely filled?

(a) 9 minutes 8 sec
(b) 10 minutes 9 sec
(c) 11 minutes 9 sec
(d) 11 minutes 29 sec

RRB NTPC 29.04.2016 Shift : 2

Ans : (a) Let it takes T minute to fill the tank.

According to the question,

$$\frac{T-4}{12} + \frac{T}{16} = 1$$

$$\Rightarrow \frac{4(T-4)+3T}{48} = 1$$

$\Rightarrow$ 4T – 16 +3T = 48

$\Rightarrow$ 7T – 16 = 48

$\Rightarrow$ 7T = 48 + 16

$\Rightarrow$ 7T = 64

$$\Rightarrow T = \frac{64}{7} = 9\frac{1}{7} \text{ minute} = 9 \text{ min.} \frac{1}{7} \times 60 \text{ sec.}$$

= 9 min 8.5 sec ≈ 9 min 8 sec.

79. Pipes A and B work together then they can fill an empty tank in 24 hours. If working together for 8 hours B is closed but A remains open, then it will take 28 hours to fill the tank. A alone will fill the tank in how much time?

(a) 30 hours (b) 31 hours
(c) 28 hours (d) 29 hours

RRB RPF SI – 12/01/2019 (Shift-III)

Ans. (a) : Let A will take t hours to fill the tank alone.
According to the question,

$$\frac{8}{24}+\frac{20}{t}=1$$

$$\frac{20}{t}=1-\frac{1}{3}$$

$$\frac{20}{t}=\frac{2}{3}$$

t = 30 hours

Hence A alone will take 30 hours to fill the tank.

80. Two pipes X and Y can fill a tank in 24 hrs and 32 hrs. If both the pipes are opened together then at what time first pipe should be closed that it may take only 16 hours to fill the tank?

(a) After 18 hours (b) After 10 hours
(c) After 15 hours (d) After 12 hours

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (d) : Let the first pipe should be closed after x hours.
According to the question,

$$\Rightarrow \quad \frac{x}{24}+\frac{16}{32}=1$$

$$\Rightarrow \quad \frac{x}{24}+\frac{1}{2}=1$$

$$\Rightarrow \quad \frac{x}{24}=\frac{1}{2}$$

x = 12 hours

Hence first pipe should be closed after 12 hours.

81. Two gas filling tube A and B can fill a cylinder in 12 and 15 minutes respectively. But a third tube can empty it in 6 minutes. First two tubes are opened for 5 minutes and then the third tube is also opened. In what time cylinder will be empty?

(a) 70 minutes (b) 45 minutes
(c) 60 minutes (d) 30 minutes

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (b) Tube A $\rightarrow$ 12 minutes
tube B $\rightarrow$ 15 minutes [L.C.M. of 12 and 15 = 60 unit]
tube C $\rightarrow$ in 6 minutes

tube A $\rightarrow$ 12 min $\rightarrow$ 60 unit
A $\rightarrow$ 1 min $\rightarrow$ 5 unit
tube B $\rightarrow$ 15 min $\rightarrow$ 60 unit
B $\rightarrow$ 1 min $\rightarrow$ 4 unit

filled part by both tubes (A + B) in 1 minute = 9 unit
both tubes (A + B) are opened for first 5 minutes, then work done = 5 × 9 = 45 unit

C will empty in 1 minute $= \frac{60}{6} = 10$ unit

when the C tube is also opened.
the work of (A + B – C) tube in 1 minute = 5 + 4 – 10
= –1 unit
therefore it will take 45 minutes to empty 45 units.

82. Two inlet pipes A and B can fill an empty tank in 22 and 33 hours respectively. They were opened together but 3 hours before when tank was completely filled, pipe A was stopped. How much time will be taken by both the pipes to fill the tank?

(a) 16.2 (b) 15
(c) 14.2 (d) 16

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) Let the time taken by both pipes to fill the tank in x hours.
from question,

$$\frac{x-3}{22}+\frac{x}{33}=1$$

$$\frac{3x-9+2x}{66}=1$$

5x – 9 = 66
5x = 75
x = 15
therefore it takes 15 hours to fill the tank by both pipes.

83. Two pipes A and B can fill an empty tank in 1.8 hrs and 2.7 hrs respectively. Without functioning of any pipe, Pipe C can empty the whole tank in 4.5 hrs. In the beginning pipe A and pipe C are opened after the tank is emptied. After some hours pipe A is closed and pipe B is opened. In this way total 5.5 hours is taken to fill the tank. For how much time pipe B remained open.

(a) 2.7 (b) 5
(c) 3 (d) 4.5

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (d) Filled part by pipe A in 1 hour $=\frac{1}{1.8}$

filled part by pipe B in 1 hour $=\frac{1}{2.7}$

emptied part by pipe C in 1 hour $=\frac{1}{4.5}$

Let pipe A is opened for x hours.
so pipe B is opened for (5.5–x) hours

$$\frac{x}{1.8}+\frac{(5.5-x)}{2.7}-\frac{5.5}{4.5}=1$$

$$=\frac{15x+55-10x-33}{27}=1$$

5x = 27 + 33 – 55
5x = 5
x = 1
Hence pipe A is opened for 1 hour
so pipe B worked = (5.5–1) = till 4.5 hours

84. Three flood gate A, B and C can fill a reservoir in 6 hours. After working for two hours together C was closed, remaining part is filled by flood gates A and B in 7 hours. What time will be taken by flood gate C to fill the reservoir?

(a) 16 (b) 12
(c) 14 (d) 10

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (c) Filled part by all the three flood gates A, B, C in 1 hour = $\frac{1}{6}$ part

$\therefore$ filled part by all three flood gates in 2 hour = $\frac{1}{6}\times 2=\frac{1}{3}$ part

$\therefore$ remaining part $=1-\frac{1}{3}=\frac{2}{3}$ part

filled part by A and B in 7 hours $=\frac{2}{3}$

filled part by A and B in 1 hour $=\frac{2}{21}$ part

part filled by C in 1 hour $=\frac{1}{6}-\frac{2}{21}$

$=\frac{7-4}{42}=\frac{3}{42}=\frac{1}{14}$

time taken by C to fill the reservoir = 14 hours

85. There are two entrance pipes in a tank by which the tank can be filled in 4 hours and 6 hours respectively. By an exit pipe the whole tank can be emptied in 8 hours. Both the entrance pipes are opened for an hour and then closed. Then after all the three pipes are opened together. Remaining part of the tank can be filled in ___ hours.

(a) 3 hours (b) $3\frac{1}{4}$ hours
(c) 2 hours (d) $5\frac{1}{3}$ hours

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c) Let the time taken to fill the remaining part of the tank = t hours

tank filled in 1 hours by both entrance pipes $=\frac{1}{4}+\frac{1}{6}=\frac{5}{12}$ part

remaining part $=1-\frac{5}{12}=\frac{7}{12}$ part

According to the question,

$$\frac{t}{4}+\frac{t}{6}-\frac{t}{8}=\frac{7}{12}$$

$$\frac{6t+4t-3t}{24}=\frac{7}{12}$$

$$\frac{7t}{24}=\frac{7}{12}$$

$$t=\frac{7\times 24}{7\times 12}$$

t = 2 hours

Hence the remaining part of the tank will be filled in 2 hours.

86. Three pipes A, B and C can fill a tank in 4 hours. Pipe A and pipe B can together fill the tank in 9 hours. If the three pipes A, B and C are opened together and after 3 hours pipe A and B are closed, then how much time will be taken by pipe C alone to fill the tank?

(a) 2 (b) 1.8
(c) 2.25 (d) 1.5

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b)

Filled part by (A+B+C) in 1 hour $=\frac{1}{4}$

filled part by (A+B) in 1 hour $=\frac{1}{9}$

filled part by C in 1 hour $=\frac{1}{4}-\frac{1}{9}=\frac{5}{36}$

time taken to fill whole tank by pipe C $=\frac{36}{5}$ hour

let C does the remaining work in t time.

According to the 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

87. Inlet pipe P can fill any tank in 7 hrs while an outlet pipe Q can empty a whole tank in 6 hrs. If only P is opened for first 3 hrs and then Q is also opened, then how many hours is needed to empty the tank?

(a) 24 (b) 28
(c) 21 (d) 18

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (d) Time taken by P and Q to fill the tank $=\frac{7\times 6}{7-6}=42$ hours

filled part of the tank by P in 1 hour $=\frac{1}{7}$ part

filled part of the tank by p in 3 hours $=\frac{3}{7}$ part

time taken to empty $\frac{3}{7}$ part by tank Q $=\frac{3}{7}\times 42$

= 18 hours

88. Two gas filling tube A and B can fill a gas cylinder in 15 min and 40 min respectively. Both the tubes are opened together but after 4 minutes tube A is closed. What will be the total time to fill the cylinder?

(a) 14 minutes 40 sec.
(b) 10 minutes 10 sec.

(c) 20 minutes 10 sec.
(d) 29 minutes 20 sec.

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (d) : Let the cylinder will be completely fill in time t.
According to the question,

$$\frac{4}{15}+\frac{t}{40}=1, \qquad \frac{32+3t}{120}=1$$

3t = 120–32

$$t=\frac{88}{3}$$

t = 29 min 20 sec.

89. Pipe A can fill an empty reservoir in 6.8 hrs while pipe B can fill it in 10.2 hrs. Only pipe B is opened for 1.7 hours, after which pipe A is also opened. What is the total time to fill the reservoir?

(a) 5 hours 6 minutes (b) 5 hours 10 minutes
(c) 5 hours 12 minutes (d) 5 hours 5 minutes

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (a) : Filled part by A in 1 hour = $\frac{1}{6.8}$

filled part by B in 1 hour = $\frac{1}{10.2}$

filled part by B in 1.7 hours = $\frac{1.7}{10.2}=\frac{1}{6}$

Remaining part = $1-\frac{1}{6}=\frac{5}{6}$ part

filled part by (A+B) in 1 hour

$$=\left(\frac{1}{6.8}+\frac{1}{10.2}\right)=\frac{25}{102}\text{ part}$$

time taken by (A+B) to fill $\frac{5}{6}$ part = $\frac{5}{6}\times\frac{102}{25}$ part

$$=\frac{17}{5}=3.4\text{ hours}$$

total time taken = 1.7+3.4= 5.1 hours
or 5 hour 6 minutes

90. Pipe C and D alone can fill a tank in 4 and 5 hrs respectively. If pipe C, is closed after 3 hours and at the same time pipe D is opened, then the tank will be filled in how many hours?

(a) 1.25 (b) 1
(c) 1.5 (d) 0.8

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (a) Filled part by pipe C in 1 hour $=\frac{1}{4}$

Filled part by pipe C in 3 hours $=3\times\frac{1}{4}=\frac{3}{4}$

Remaining part $=1-\frac{3}{4}=\frac{1}{4}$ part

Time taken by pipe D to fill whole tank = 5 hours

Hence time taken by pipe D to fill remaining $\frac{1}{4}$ part

$$=5\times\frac{1}{4}=\frac{5}{4}=1.25\text{ hours}$$

91. Pipe A alone can fill a tank in 10 hrs. Pipe B can fill the same tank in 12 hours. These pipes are opened together then it is known that due to a leakage in the tank an extra time of $\frac{60}{231}$ hours will be taken to fill the tank completely. If both the pipes are closed, then calculate the time to empty the full tank by the leakage?

(a) 110 hours (b) 132 hours
(c) 143 hours (d) 120 hours

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d) Filled part of the tank by pipe A in 1 hour

$$=\frac{1}{10}$$

Filled part of the tank by pipe B in 1 hour $=\frac{1}{12}$

Let the tank will be empty in x hours due to leakage.

$\therefore$ Empty part of tank in 1 hour due to leakage $=\frac{1}{x}$

Filled part of tank by (A + B) in 1 hour

$$=\left(\frac{1}{10}+\frac{1}{12}\right)=\frac{11}{60}$$

So pipes A and B together can fill the tank in $\frac{60}{11}$ hours

Total time taken to fill the tank due to leakage

$$=\frac{60}{11}+\frac{60}{231}=\frac{1320}{231}\text{ hour}$$

from question,

$$\frac{1}{A}+\frac{1}{B}-\frac{1}{x}=\frac{231}{1320}$$

$$\frac{1}{10}+\frac{1}{12}-\frac{1}{x}=\frac{231}{1320}$$

$$\frac{1}{x}=\frac{11}{60}-\frac{231}{1320}$$

$$\frac{1}{x}=\frac{242-231}{1320}=\frac{11}{1320}$$

$$x=\frac{1320}{11}=120\text{ hours}$$

Hence the whole tank should be empty in 120 hours by leakage.

92. Two inlet pipe A and B can fill a reservoir in 2.5 and 15 hrs respectively, while pipe C can empty the full reservoir in 7.5 hours. After the reservoir was empty pipe A, B and C were opened together, but pipe B was closed after sometime, due to which it took 3.5 hours to fill the reservoir. Pipe B was started for how many hours?

(a) 1 hour (b) 2 hours
(c) 1.5 hour (d) 0.5 hour

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (a) Let pipe B was opened for x hours.
According to the question,

$$\frac{1}{A}+\frac{1}{B}-\frac{1}{C}=1$$

$$\frac{3.5}{2.5}+\frac{x}{15}-\frac{3.5}{7.5}=1$$

$$\frac{7}{5}+\frac{x}{15}-\frac{7}{15}=1$$

$$\frac{x}{15}=1-\frac{7}{5}+\frac{7}{15}=\frac{15-21+7}{15}$$

$$\frac{x}{15}=\frac{1}{15} \Rightarrow x = 1 \text{ hour}$$

93. Three pumps can fill a water tank individually in 15, 20 and 30 hrs respectively. All three pumps were opened together at 8 A.M. At that time 1/5 of tank was filled. After 4 hours first pump was closed. After next two hours the third pump was also closed. At which time tank will be fully filled?

(a) 2:30 p.m. (b) 2:40 p.m.
(c) 3:20 p.m. (d) 1:20 a.m.

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (b) : Filled part of tank by first pump in 1 hour $=\frac{1}{15}$ part

Filled part of tank by second pump in 1 hour $=\frac{1}{20}$ part

Filled part of tank by third pump in 1 hour $=\frac{1}{30}$ part

Pre-filled part of the tank $=\frac{1}{5}$ (given)

Remaining part $=1-\frac{1}{5}=\frac{4}{5}$

Let it will take x hours to fill the tank.
According to the question,

$$\frac{4}{15}+\frac{x}{20}+\frac{6}{30}=\frac{4}{5}$$

$$\frac{16+3x+12}{60}=\frac{4}{5}$$

$28 + 3x = 48$
$3x = 20$

$x=\frac{20}{3}$ or 6 hour 40 minutes

Hence required time = 8 am + 6 hour 40 minutes = 2:40 pm

94. Pipe A can fill a tank in 15 hours while pipe B takes 25 hours to fill it. In the beginning only pipe A was started for some time and again it was closed and then just pipe B was started. Overall it takes 19 hours to fill the tank completely. Pipe A was started for how much time?

(a) 9 hours (b) 6 hours
(c) 7.5 hours (d) 3 hours

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (a) Let the pipe A was opened for x hour.
According to the 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

95. Two inlet pipe and one outlet pipe is present in a tank. The tank can be filled in 6 and 8 hrs respectively by the inlets individually and can be emptied in 10 hrs by the outlet pipe. If the inlet pipe is opened for 1 hour and then closed, and then all the three pipes are opened together, then how much time will be taken to fill the remaining part of the tank?

(a) 75/23 hours (b) 82/23 hours
(c) 85/23 hours (d) 72/23 hours

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (c) Let it will take n hour to fill the remaining tank.
According to the question,

$$\frac{n+1}{8}+\frac{n+1}{6}-\frac{n}{10}=1$$

$$\Rightarrow \frac{6n+6+8n+8}{48}-\frac{n}{10}=1$$

$$\Rightarrow \frac{7n+7}{24}-\frac{n}{10}=1$$

$$\Rightarrow \frac{70n+70-24n}{240}=1$$

$$\Rightarrow \frac{35n+35-12n}{120}=1$$

$$\Rightarrow 23n+35=120$$

$23 n = 85$

$$\boxed{n=\frac{85}{23}\text{hours}}$$

96. Pipe A alone can fill a tank in 4.5 hours, while along with pipe B it can be filled in 2.25 hours. If only pipe A is opened for half an hour after which pipe B is also opened, then how much time will be taken to fill the tank?

(a) 2 hours 30 minutes
(b) 2 hours 15 minutes
(c) 2 hours
(d) 2 hours 20 minutes

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (a) : Let the pipe B will fill the tank in x hours

Filled part of the tank by A in 1 hour $= \frac{1}{4.5}$

Filled part of the tank by A and B in 1 hour $= \frac{1}{2.25}$

$\therefore \quad \frac{1}{4.5} \times \frac{1}{2} + \frac{x}{2.25} = 1$

$\frac{10}{90} + \frac{100x}{225} = 1$

$\frac{1}{9} + \frac{4x}{9} = 1$

$1 + 4x = 9$

$\boxed{x = 2}$ hours

Hence total time to fill the tank =

2 hour + 30 minutes = 2 hour 30 minutes

97. Pipe A can fill an empty cistern in 4 hours while along with Pipe B it can be filled in 3 hours. Only Pipe A is turned on for an hour after which Pipe B is also turned on. How much total time will it take to fill up the cistern?

(a) 3 hours
(b) 3 hours 15 minutes
(c) 3 hours 25 minutes
(d) 3 hours 20 minutes

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (c) : Filled tank by pipe A in 1 hour $= \frac{1}{4}$ part

Filled tank by A and B in 1 hour $= \frac{1}{3}$ part

Emptied part of tank $= 1 - \frac{1}{4} = \frac{3}{4}$ part

$\frac{1}{3}$ part of tank can be filled by (A + B) = in 1 hour.

$\frac{3}{4}$ part of tank can be filled by both = $3 \times \frac{3}{4} = 2.25$

total time = 1 + 2.25 = 3.25 hours

98. Two pipes A and B can fill an empty cistern in 32 and 48 hours, respectively. Pipe C can drain the entire cistern in 64 hours when no other pipe is in operation. Initially, when the cistern was empty, Pipe A and Pipe C were turned on. After a few hours, Pipe A was turned off and Pipe B was turned on instantly. In all it took 112 hours to fill the cistern. For how many hours was Pipe B turned on ?

(a) 72 (b) 70 (c) 77 (d) 84

Ans : (a) Let tap A is closed after x hours and tap B is opened, so it can be assumed that tap A was opened for x hours, tap B was opened for (112-x) hours and C was opened for 112 hours.

then $\boxed{x.A+B(112-x)-C\times112 = 1}$

$\Rightarrow \quad \frac{x}{32} + \frac{112-x}{48} - \frac{112}{64} = 1$

$\Rightarrow \quad \frac{6x + (112-x)4 - 112\times3}{192} = 1$

$\Rightarrow \quad 6x+448-4x-336 = 192$

$\Rightarrow \quad 2x+112 = 192$

$2x = 192-112$

$2x = 80$

$x = 40$ hours

$\because$ Pipe B was kept running at 112-x hours.

Hence the required time = 112– x = 112 – 40 = 72 hours.

Type - 5

99. Pipe A can empty whole tank in 5.6 hours, while pipe B, can fill the same tank in 7 hours. In the situation of tank being full, if the pipes A and B is opened one by one for an hour, then how much time can be taken to empty the tank?

(a) 48 hours (b) 56 hours
(c) 55 hours (d) 47 hours

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (d)

A = (–)5.6 (–7)
B = (+) 7 (+5.6) 39.2

when, (–) outlet
(+) inlet

work done by (A + B) in 2 hours $= \frac{+5.6}{(-1.4)}$

work done by (A + B) in 46 hours = –1.4 × 23
= 32.2 unit

Remaining work = 39.2 – 32.2 = 7 unit

Now in 47 hours, A will drain 7 unit water.

So total time = 46 + 1 = 47 hours

100. An inlet pipe and outlet pipe are taking turns to fill and drain a cistern, respectively, for an hour each at a time, starting with the inlet pipe when the cistern is empty. It takes the inlet pipe 15 hours to fully fill the empty cistern, whereas the outlet pipe can drain the filled cistern completely in 21 hours. How many hours will it take for the cistern to be full?

(a) 100 (b) 52.5
(c) 105 (d) 99

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (d) : Filled portion of cistern in 2 hours $= \frac{1}{15} - \frac{1}{21}$

$= \frac{1}{15} - \frac{1}{21} = \frac{7-5}{105} = \frac{2}{105}$

On multiplying by 49.

Filled portion of cistern in 98 hours $= \frac{2}{105} \times 49 = \frac{14}{15}$

$\therefore$ Remaining portion $= 1 - \frac{14}{15} = \frac{1}{15}$

Hence A will now fill $\frac{1}{15}$ part in 1 hour.

So, it will take total 99 hours.

101. Pipe A can fill an empty tank in 1.5 hours while pipe B can empty a full tank in 2.4 hours. When the tank is empty then pipe A is opened for 1 hour and then closed. Now B pipe is opened for 1 hour to empty the tank and then closed. The tank was opened and closed alternately for one hour every time. How much time will it take to fill the tank completely?

(a) 4.75 hours (b) 6.375 hours
(c) 7 hours (d) 8 hours

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (d) : work done by pipe A in 1 hour $= \frac{1}{1.5}$ part

work done by pipe B in 1 hour $= \frac{1}{2.4}$ part

filled part in 2 hours

$$= \frac{1}{1.5} - \frac{1}{2.4} = \frac{2.4-1.5}{3.60} = \frac{.9}{3.6} = \frac{9}{36} = \frac{1}{4} \text{ part}$$

so the time taken to fill the entire part $= \frac{4 \times 2}{1} = 8$ hours

102. Starting from the inlet pipe in the reservoir, an inlet pipe and an outlet pipe take an hour to fill and empty the reservoir. The inlet pipe takes 11.25 hours to fill the empty reservoir and the outlet pipe can empty the filled reservoir completely in 22.5 hours. How much time will be taken to fill the reservoir?

(a) 44 hours
(b) 45 hours
(c) 43 hours 50 minutes
(d) 42 hours 45 minutes

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (d) Filled part by inlet pipe in 1 hour $= \frac{1}{11.25}$ part

emptied part by outlet pipe in 1 hour $= \frac{1}{22.5}$ part

filled part in 2 hours $= \frac{1}{11.25} - \frac{1}{22.5} = \frac{2-1}{22.5}$

$$= \frac{1}{22.5}$$

Water filled in 2×21 hours $= \frac{1}{22.5} \times 21$

Water filled in 42 hours $= \frac{42}{45}$ part

remaining part of tank $= 1 - \frac{42}{45} = \frac{3}{45}$

time taken to fill the $\frac{3}{45}$ part by inlet pipe

$$= \frac{3}{45} \times 11.25 = \frac{3}{4} \text{ hours}$$

$$= \frac{3}{4} \times 60 = 45 \text{ minute}$$

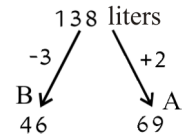
Total time = 42 hour 45 minutes

103. Pipe A is an inlet pipe which can fill an empty tank in 69 hours. Pipe B can empty a full filled tank in 46 hours. Starting with pipe B in the filled tank one by one, alternate both the pipes were open for one-one hour. How much time will it take to empty the tank?

(a) 11 day 12 hours (b) 11 day 10 hours
(c) 1 day 13 hours (d) 11 day 7 hours

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (d) Let total capacity



Emptied in 2 hours = 1 lit.
Emptied in (2×135) hours = 135 lit.
The last 3 liters will be emptied by pipe B in 1 hour.
Hence total time taken = 271 = 11 day 7 hours

104. An inlet pipe and an outlet pipes are opened in an order of one hour to fill and to empty a tank. When the tank is empty, starting is done from inlet pipe to fill the empty tank inlet pipe takes 10.5 hours, and the outlet can empty the full tank in 35 hours. How much time will be taken to fill in the tank?

(a) 28 hours 7 minutes
(b) 29 hours
(c) 30 hours
(d) 28 hours 42 minutes

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (d) Part filled by pipe A in 1 hour $= \frac{1}{10.5}$

Emptied part by pipe B in 1 hour $= \frac{1}{35}$

Filled part by (A – B) in total 2 hours $= \frac{1}{10.5} - \frac{1}{35}$

$$= \frac{2}{21} - \frac{1}{35}$$

$$= \frac{70-21}{21 \times 35} = \frac{49}{35 \times 21} = \frac{7}{105} = \frac{1}{15}$$

time taken to fill $\frac{1}{15}$ part = 2 hours

and filled part of tank in 2×14 hour. $= \frac{14}{15}$

Remaining part $= 1 - \frac{14}{15} = \frac{1}{15}$

Now time taken to fill $\frac{1}{15}$ part by pipe A.

$$= \frac{1}{15} \times 10.5 = 0.7 \text{ hour}$$

$$= 60 \times 0.7 = 42 \text{ minute}$$

Hence total time taken to fill the tank = 28 hour 42 minute

105. Pipe A is an inlet pipe, which can fill a tank in 57 hours. Pipe B can empty the same tank in 38 hrs. When the tank is full, both pipes are opened alternately for one hour each time starting with A. How much total time will be taken to empty the tank?

(a) 9 day 13 hours (b) 9 day 10 hours
(c) 9 day 12 hours (d) 9 day 7 hours

RRB Group-D – 15/11/2018 (Shift-III)

Ans. :(c) Filled part by pipe A in 1 hour $= \frac{1}{57}$

emptied part by pipe B in 1 hour $= \frac{1}{38}$

emptied part by both pipes in 2 hours $= \frac{1}{38} - \frac{1}{57}$

$= \frac{57-38}{57\times 38} = \frac{19}{57\times 38} = \frac{1}{114}$ part

time taken to fill $\frac{1}{114}$ part = 2 hours.

$\therefore$ Total time taken to empty the entire tank $2 \times 114 = 228$ hours

228 hours = 9 day 12 hours

106. Pipe A can empty a filled tank in 32 hours, while B can fill this empty tank in 40 hours. If pipe A and B is used alternately for 1 hours each time when the tank is filled, then what time will be taken to empty the tank?

(a) 315 hours (b) 320 hours
(c) 319 hours (d) 311 hours

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (d) Filled part of the tank in 1 hour $= \frac{1}{40}$

emptied part of the tank in 1 hour $= \frac{1}{32}$

emptied part in 2 hours $= \frac{1}{32} - \frac{1}{40} = \frac{5-4}{160} = \frac{1}{160}$

Time taken to fill the $\frac{1}{160} \times 155$ part of tank $= 2 \times 155$

Remaining part $= \frac{5}{160} = \frac{1}{32}$

time take to empty $\frac{1}{32}$ part = 1 hour

Hence total time taken to empty the entire tank

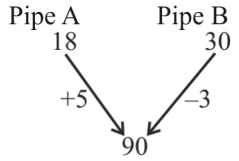
= 310 + 1 = 311 hours.

107. Pipe A could fill an empty cistern in 18 hours while Pipe B can drain a filled cistern in 30 hours. When the cistern is empty, Pipe A is turned on for an hour and then turned off. Now Pipe B is allowed to drain out water from the cistern for an hour and then turned off. The pipes were alternately left open for an hour each time till the cistern was full. How much time did it take for the cistern to be full?

(a) 45 hours
(b) 90 hours
(c) 86 hours 40 minutes
(d) 86 hours 48 minutes

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (d)



$\therefore$ work done by pipe A and B alternately in 2 hours = +5 – 3 = 2 unit

$\therefore$ 1 Cycle (2 hours)$\rightarrow$ 2 unit

$\downarrow \times 43$ $\downarrow \times 43$

86 hours 86 unit

time taken by pipe A to fill the reaming 4 units of work

$= \frac{4}{5} \times 60 = 48$ minutes

Hence total time to fill the tank = 86 hour 48 min.

108. Two pipes, when working one at a time can fill a cistern in 2 hours and 3 hours, respectively while a third pipe can drain the cistern empty in 6 hours. All the three pipes were opened together when the cistern was $\frac{1}{6}$ full. How long will it take for the cistern to be completely full ?

(a) 1 hour 15 minutes
(b) 1 hour 30 minutes
(c) 1 hour 20 minutes
(d) 1 hour

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (a) All three cistern will be filled in one 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 cistern $= 1 - \frac{1}{6} = \frac{5}{6}$

$\therefore$ Time taken to fill remaining cistern $= \frac{\frac{5}{6}}{\frac{2}{3}}$

$= \frac{5}{6} \times \frac{3}{2} = \frac{5}{4} = 1\frac{1}{4}$ hours

i.e. 1 hour 15 minutes

109. Pipe A can empty a filled tank in 28 hours while Pipe B can fill the same tank, when empty, in 35 hours. If alternately Pipes A and B are turned on for an hour each time, starting when the tank is full, how long will it take to empty the tank ?

(a) 279 hours (b) 271 hours
(c) 275 hours (d) 280 hours

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (b)

$A \rightarrow 28$ hours $\xrightarrow{-5}$ 140 (capacity of tank) $\xleftarrow{+4}$ $B \rightarrow 35$ hours

Emptied part by A in 1 hour = 1 × 5 = 5 units
Filled part by B in 1 hour = 1 × 4 = 4 units
∴ Tank emptied in 2 hours = – 5 + 4 = – 1 units
∵ 1 unit tank empties in 2 hours.
∴ 135 units will be emptied by tank (A + B)
= 135 × 2 = in 270 hours
And remaining 5 units will be emptied = In 1 hour (by A)
∴ Total time = 270 + 1 = 271 hours.

Type - 6

110. Pipe P can take out whole water from a tank in 20 hours. Another pipe Q can take out 20 liters per hours. If both the pipes are opened, then tank gets emptied in 12 hours, Find the capacity of the tank?

(a) 400 liters (b) 800 liters
(c) 650 liters (d) 600 liters

RRB JE - 02/06/2019 (Shift-II)

Ans. (d) $\frac{1}{12}-\frac{1}{20}=\frac{20-12}{240}=\frac{8}{240}\Rightarrow 30$ hours.
= 30 × 20 = 600 liters

111. There is a hole in a tank, which can empty it in 8 hours, one more pipe has been planted for the tank which can fill 6 litre of water per hour. pipe is opened, but due to (leakage) hole the tank gets empty in 12 hours. What is the capacity of the tank?

(a) 80 liters (b) 120 liters
(c) 144 liters (d) 78 liters

RRB JE - 27/06/2019 (Shift-I)

Ans : (c) 1 hour pure filler work of second tap

$$=\left(\frac{1}{8}-\frac{1}{12}\right)=\frac{1}{24}$$

It there were no other holes, then the tank would be filled in 24 hours.
∴ Tank capacitance = 6 × 24 = 144 liters.

112. If a bucket is filled 80% then it has two litre more water than when it is filled $66\frac{2}{3}\%$. Find the capacity of the bucket?

(a) 20 litre (b) 10 litre
(c) 15 litre (d) 12 litre

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) $80\% - 66\frac{2}{3}\% = 2$ liters

$$\frac{240-200}{3}\% = 2 \text{ liters}$$

$$\frac{40}{3}\% = 2 \text{ liters}$$

$$100\% = \frac{2\times 3}{40}\times 100 = 15 \text{ liters}$$

Hence capacity of Bucket = 15 liters

113. Kajipet, whose population is 4000, needs 9 litre water per day per person. It has tank of 15 m × 8m × 6m cuboid shaped. If the tank is fully filled with water, then the water of the tank will lest for how many days?

(a) 20 day (b) 25 day
(c) 10 day (d) 30 day

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (a) Number of days $=\frac{\text{Volume of cuboid}}{\text{Population} \times \text{Necessity}}$

$=\frac{15\times 8\times 6\times 1000}{4000\times 9}$ (∵ 1 m^3 = 1000 liters)

= 20 days

114. 2/5 of a vessel is filled with oil. When 20 litres of oil is used then it is 7/12 full. Find the capacity of the vessel?

(a) 1200 litres (b) 1400 litres
(c) 1600 litres (d) 1000 litres

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (a) Part of oil present in the vessel = $\frac{3}{5}$ part

Part of left oil after extracting 20 liters of oil from the same vessel $=\frac{7}{12}$ part

Therefore, the part which was filled with 20 liters of oil

$$=\frac{3}{5}-\frac{7}{12}$$

$$=\frac{36-35}{60}=\frac{1}{60} \text{ part}$$

∵Quantity of oil present in the $\frac{1}{60}$ portion = 20 liters

∴ Quantity of oil present in one part

$$=\frac{20\times 60}{1}=1200 \text{ liters}$$

Hence the capacity of vessel is 1200.

115. A water container was 3/5 full, when 38 litres of water is taken out of it, then 1/8 part remains what is the total capacity of the container?

(a) 60 litres (b) 65 litres
(c) 75 litres (d) 80 litres

RRB NTPC 03.04.2016 Shift : 3

Ans : (d) Let the total efficiency of the container be x*l*.
According to the question,

$$\frac{3}{5}x - 38 = \frac{1}{8}x$$

$$\frac{3}{5}x - \frac{x}{8} = 38$$

$$\frac{24x - 5x}{40} = 38$$

$$19x = 38 \times 40$$

$$x = 2 \times 40 \qquad x = 80\ l$$

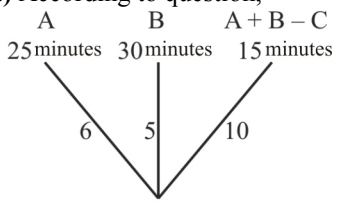
Hence total capacity of container is 80 *l*.

116. Two pipes namely A, B can fill a tank in 25 minutes and half an hour respectively and a pipe C can empty 3 gallons per minute. All the three pipes working together can fill the tank in 15 minutes. The capacity of the tank is:

(a) 450 gallons (b) 300 gallons
(c) 240 gallons (d) 600 gallons

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a) According to question,



L.C.M. of 25, 30, 15 = 150

or, A + B – C = 10

6 + 5 – C = 10

or C = 1

Hence time taken to empty the tank by C $= \frac{150}{1}$ min = 150 min

Thus the capacity of tank = 150 × 3 Gallon water ⇒ $\boxed{450 \text{ Gallon}}$

Type - 7

117. On starting pipe A, B and C together, they can fill any tank in 4 hours. Pipe a fills twice than that of pipe B and pipe C fills at the twice the speed of pipe A. How much time will by taken by pipe A to completely fill the tank?

(a) 7 hours (b) 30 hours
(c) 28 hours (d) 14 hours

RRB RPF SI – 12/01/2019 (Shift-II)

Ans. (d) : Time taken to filling the tank together by pipes = 4 hours

Let the time taken by pipe A to fill the tank = x hours

∴ The time taken by pipe B to fill the tank = 2x

∴ Time taken by pipe C to fill the tank = $\frac{x}{2}$

∴ Filled part of the tank by pipe A, B and C in 1 hour

$$\Rightarrow \frac{1}{x} + \frac{1}{2x} + \frac{1}{\frac{x}{2}} = \frac{1}{4}$$

$$\Rightarrow \frac{1}{x} + \frac{1}{2x} + \frac{2}{x} = \frac{1}{4}$$

$$\Rightarrow \frac{1}{x}\left[1 + \frac{1}{2} + 2\right] = \frac{1}{4}$$

$$\Rightarrow \frac{1}{x}\left[\frac{2+1+4}{2}\right] = \frac{1}{4}$$

$$\Rightarrow \frac{1}{x} \times \frac{7}{2} = \frac{1}{4}$$

$$\Rightarrow x = \frac{7 \times 4}{2}$$

$x = 7 \times 2 = 14$ hours

$\boxed{x = 14 \text{ hours}}$

Hence the time taken by pipe A to fill the tank alone = 14 hours.

118. A tank can be filled by two pipes in which one pipe can fill with the thrice speed as compared to other. If both the pipes together fill the tank in 36 minutes, then the slow pipe alone can fill the tank in how much time?

(a) 81 minutes (b) 144 minutes
(c) 120 minutes (d) 108 minutes

RRB JE - 30/05/2019 (Shift-III)

Ans : (b) Let a slow-speed pipe fills the tank in x min.

then the high-speed pipe will fill it in $\frac{x}{3}$ min.

$$\therefore \frac{1}{x} + \frac{3}{x} = \frac{1}{36}$$

$$\frac{4}{x} = \frac{1}{36}$$

x = 144

Hence slow-speed pipe will fill the tank in 144 minutes

119. Pipe P works twice as fast as Q. Q pipe works twice faster as R. All three pipes together can fill any tank in 8 hrs. How long Q alone takes to fill the tank?

(a) 56 hours (b) 14 hours
(c) 25 hours (d) 28 hours

RRB JE - 26/06/2019 (Shift-I)

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 hours

Hence time taken by Q to fill the tank = 2x

= 2 ×14 = 28 hours

120. Time taken by three taps P, Q and R individually to fill a tank is in the ratio of 2:1:6 which of the tap is fastest in these?

(a) can not be determined (b) P
(c) Q (d) R

RRB JE - 27/06/2019 (Shift-I)

Ans : (c)

	P		Q		R
Time	2	:	1	:	6
Efficiency	$\frac{1}{2}$	:	$\frac{1}{1}$	:	$\frac{1}{6}$

LCM of 2, 1, 6 = 6

$$\frac{1}{2}\times 6 : \frac{1}{1}\times 6 : \frac{1}{6}\times 6$$

$$3 : 6 : 1$$

Hence the capacity of the tap Q is high then this tap will be the fastest.

121. Three pipes P, Q and R can fill a tank in 30 min, 20 min and 10 min. When the tank is emptied, then the three pipes are opened while they discharge three chemical solutions, S, T and U respectively. Find the ratio of the solution U in the material present in the tank after 3 minutes?

(a) 7/11 (b) 4/11
(c) 6/11 (d) 5/11

RRB JE - 28/06/2019 (Shift-III)

Ans. (c) Filled part by P, Q and R in 1 minute

$$= \frac{1}{30}+\frac{1}{20}+\frac{1}{10}$$

$$\frac{2+3+6}{60}=\frac{11}{60}$$

Filled solution by R in 3 minutes = $\frac{1}{10}\times 3=\frac{3}{10}$

Ratio of solution U to R = $\frac{\frac{3}{10}}{\frac{11}{20}}=\frac{3\times 20}{11\times 10}=\frac{6}{11}$

122. If a pipe P fills a tank in 10 minutes. Five pipes, in which the capacity of each pipe is 20% of pipe P, can fill the tank in?

(a) 10 minutes (b) 50 minutes
(c) 130 minutes (d) 175 minutes

RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (a) Efficiency of P = 10 minutes

$\therefore$ 1 min efficiency of P = $\frac{1}{10}$

20% efficiency of P = $\frac{1}{10}\times\frac{20}{100}=\frac{1}{50}$

time to fill the tank by 5 pipes

$$= \frac{1}{50}+\frac{1}{50}+\frac{1}{50}+\frac{1}{50}+\frac{1}{50}$$

$$= \frac{5}{50} = \frac{1}{10}$$

Hence total time = 10 minutes

123. P, Q and R are channels which discharge solutions A, B, C respectively in a tank. When the tank is empty and all the three channels are opened, what is the proportion of the solution C in the tank after 3 minutes, if the channels, P, Q and R can fill the tank in 30 minutes and 20 minutes and 10 minutes respectively when they are opened simultaneously?

(a) 6 (b) $\frac{5}{11}$
(c) 5 (d) $\frac{6}{11}$

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (d) The ratio of work done by P, Q and R in 3 minutes are as follows

$$=\frac{3}{30}:\frac{3}{20}:\frac{3}{10}=\frac{1}{3}:\frac{1}{2}:\frac{1}{1}=2:3:6$$

i.e. the ratio of P, Q and R = 2 : 3 : 6

then the ratio of the solution $=\frac{6}{2+3+6}=\frac{6}{11}$

124. Working with full speed a pipe can fill can empty tank in 2 hrs. Although, during first hour it worked at 1/12 of its efficiency, during second hour it worked at 1/9 of its efficiency, during third hour it worked at 1/6 of its efficiency, during fourth hour it worked at 1/4 of its efficiency and during fifth hour the efficiency was 1/3 to that compared to which it should work. The second pipe also worked like this, but if it worked at its full speed, then it would have filled the tank in 4 hrs, if both the pipes and that pipe which empties the tank at a fixed speed, starts together them half emptied tank can be filled in 5 hrs. If alone the pipes which empties the tank is started then how much hours will it take to empty the tank?

(a) 20 (b) 24
(c) 30 (d) 32

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (b) Let the emptying pipe empties the tank in x hour.

From question-

$$\frac{1}{2}\left[\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}\right]+\frac{1}{4}\left[\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}\right]-\frac{5}{x}=\frac{1}{2}$$

$$\frac{1}{2}\times\frac{34}{36}+\frac{1}{4}\times\frac{34}{36}-\frac{5}{x}=\frac{1}{2}$$

$$\frac{17}{36}+\frac{17}{72}-\frac{5}{x}=\frac{1}{2}$$

$$\frac{34+17}{72}-\frac{1}{2}=\frac{5}{x}$$

$$\frac{51}{72}-\frac{1}{2}=\frac{5}{x}$$

$$\frac{51-36}{72}=\frac{5}{x}$$

$$\frac{15}{72}=\frac{5}{x}$$

$$x=\frac{5\times 72}{15}$$

x = 24

Hence the emptying pipe will empty the tank in 24 hours.

125. One of the two water filling pipe in a tank works 1.5 times more efficiently than the other. If these two pipes works with such adraining pipe which alone can empty the tank in 12 hours, then the empty tank can be filled in 28 hours. How much time will be taken by the less efficient pipe to fill the tank?

(a) 21 (b) 18
(c) 24 (d) 15

RRB Group-D – 05/10/2018 (Shift-II)

Ans : (a) Let working efficiency of tank A = 1
then, the working efficiency of second tank B = 1.5
A : B = 1 : 1.5 = 10 : 15 = 2 : 3
the ratio of times of A and B will be inversely proportional to their efficiencies.
hence ratio of times = 3 : 2
hence the time of A is 3x and time of B is 2x.
According to the question-

$$\Rightarrow \frac{1}{2x}+\frac{1}{3x}-\frac{1}{12}=\frac{1}{28}$$

$$\Rightarrow \frac{5}{6x}=\frac{1}{28}+\frac{1}{12}$$

$$\Rightarrow \frac{5}{6x}=\frac{12+28}{28\times 12}$$

$$\Rightarrow \frac{5}{x}=\frac{40}{56} \qquad \boxed{x=7}$$

time taken to fill the tank with less efficient pipe = 3x
= 3 × 7 = 21 hours

126. A water tank is filled with the help of three pipes X, Y and Z in 5 hours. Pipe Z is three times faster than pipe Y and pipe Y is two times faster than pipe X. How much time will be taken by the pipe X alone to fill the tank?

(a) 35 hours (b) 40 hours
(c) 60 hours (d) 45 hours

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (d) Let the time taken to fill the tank by pipe = t hour
According to the question-

$$\frac{1}{t}+\frac{2}{t}+\frac{6}{t}=\frac{1}{5}$$

$$\frac{9}{t}=\frac{1}{5}\Rightarrow \boxed{t=45\text{ hours}}$$

Hence pipe x will fill the tank in 45 hours.

127. Two inlet pipe, in which the first inlet pipe is twice capable than the second pipe. One another outlet pipe which can empty the filled tank in 12.5 hours, working together can fill the empty tank in 2.5 hours. In how many hours the less capable inlet pipe will fill the tank?

(a) 7.5 (b) 6.25
(c) 5 (d) 8.75

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (b) Let there be three pipes A, B and C

$$A = 2\times B$$

$$C=\frac{1}{12.5}h \text{ (Empties)}$$

$$A+B-C=\frac{1}{2.5}$$

$$A+B=\frac{1}{2.5}+\frac{1}{12.5}=\frac{10}{25}+\frac{10}{125}$$

$$A+B=\frac{50+10}{125}=\frac{60}{125}$$

$$\because A = 2B$$

$$3B=\frac{60}{125}\Rightarrow B=\frac{20}{125}=\frac{4}{25}$$

Hence the time taken to fill the less efficient pipe

$$=\frac{25}{4}=6.25\text{ hours.}$$

128. A pipe, working with its full speed can fill an empty tank in 2 hours. Although during its first two hours it worked with 1/12 part of its efficiency during its second two hours it worked with 1/9 part of its efficiency, during third two hours it worked with 1/6 part of its efficiency, during fourth two hours it worked with 1/4 part of its efficiency and during its fifth two hours it worked with 1/3 part of its efficiency. Another pipe also shows the same type of performance, but if it works at it full speed then it would have filled the tank in 4 hours. A drain pipe is also there which takes out the water from the tank at a fixed rate. If all the three pipes work together then the empty tank can be filled in 10 hrs. If rest of the two pipes remain closed then in how many hours the drain pipe will empty the full tank completely?

(a) 24 (b) 30
(c) 20 (d) 32

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (a) Let the emptying pipe empties the tank in total x hour.

According to the question-

$$\Rightarrow \frac{1}{2}\left[2\left\{\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}+\right\}\right]+\frac{1}{4}\left[2\left\{\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}\right\}\right]-\frac{10}{x}=1$$

$$\Rightarrow 2\left[\frac{3}{4}\left(\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}\right)\right]-\frac{10}{x}=1$$

$$\Rightarrow \frac{3}{4}\times\frac{34}{36}-\frac{5}{x}=\frac{1}{2}$$

$$\Rightarrow \frac{17}{24}-\frac{5}{x}=\frac{1}{2}$$

$$\Rightarrow \frac{5}{x}=\frac{17}{24}-\frac{12}{24}$$

$$\Rightarrow \frac{5}{x}=\frac{5}{24}$$

x = 24 hours

129. One inlet pipe among the two inlet pipes works twice as efficient as the other inlet pipe. A drain pipe can empty a fully filled tank in 12 hours. If all the three pipes are opened together, then the empty tank is filled in 12 hours. In how many hours the less efficient inlet pipe will alone fill the empty tank?

(a) 15 (b) 18

(c) 12 (d) 9

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (b) Let the another pipe fills the tank in x hours then first pipe will take $\left(\frac{x}{2}\right)$ hour (because works from double efficient). A third pipe empties the tank in 12 hours. Then According to the question,

$$\frac{1}{\frac{x}{2}}+\frac{1}{x}-\frac{1}{12}=\frac{1}{12} \text{ or}$$

$$\frac{2}{x}+\frac{1}{x}-\frac{1}{12}=\frac{1}{12}$$

$$\Rightarrow \frac{3}{x}=\frac{1}{12}+\frac{1}{12}$$

$$\Rightarrow \frac{3}{x}=\frac{2}{12}$$

$\Rightarrow x = 18$ hours.

130. A tank is filled by three pipes X, Y and Z in 6 hours. If Z is three time faster than Y and Y is two time faster than X, then how many hours is needed by X to fill the tank?

(a) 27 hours (b) 54 hours

(c) 30 hours (d) 45 hours

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) The time taken by X, Y and Z is 6T, 3T and 2T respectively.

X : Y : Z

x : 2x : 6x → efficiency

6 : 3 : 1 → time

According to the question-

$$\frac{1}{6T}+\frac{1}{3T}+\frac{1}{T}=\frac{1}{6}$$

$$\Rightarrow \frac{1+2+6}{6T}=\frac{1}{6}$$

$$\Rightarrow T=9$$

Hence time taken to fill the tank by X = 6T

$= 6\times 9 = 54$ hours

131. Two inlet taps, in which one tap's capacity is 4.5 times greater than the other, an outlet tap which can empty a tank in 9 hours, working together can fill an empty tank in 7.5 hours. How many hours will be taken by the less efficient pipe to fill the tank?

(a) 18 (b) 27

(c) 22.5 (d) 13.5

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (c) : If pipe A fills a tank in x hours then pipe B will fill that tank in $\frac{x}{4.5}$ hours because the efficiency of B is 4.5 times more than A.

According to question-

$$\left(\frac{1}{x}+\frac{4.5}{x}\right)-\frac{1}{9}=\frac{1}{7.5}$$

$$\frac{5.5}{x}-\frac{1}{9}=\frac{2}{15}$$

$$\frac{49.5-x}{9x}=\frac{2}{15}$$

$\Rightarrow 5(49.5 - x) = 6x$

$\Rightarrow 247.5 - 5x = 6x$

$\Rightarrow 11x = 247.5$

$$\Rightarrow x=\frac{2475}{110}$$

$\Rightarrow x = 22.5$ hours

132. Among the two inlet pipes A and B, A's efficiency is twice than that of B. Pipe C is an outlet pipe which takes three times the time taken by pipe A in emptying the filled reservoir. If the three pipes are opened together when the reservoir is empty then it takes 6 hours to fill the reservoir. When A and C are working together, then how much time will be taken to fill the reservoir?

(a) 15.75 hours (b) 10.5 hours
(c) 21 hours (d) 42 hours

Ans. (b) : Let the time taken by A to fill the tank is x hours.

The time taken by B to fill the tank will be 2x hours

The time taken by C to empty the tank will be 3x hours

According to question-

$$\frac{1}{x}+\frac{1}{2x}+\frac{1}{3x}=\frac{1}{6} \quad =\frac{6+3-2}{6x}=\frac{1}{6}$$

x = 7 hours

A = 7 hours, B = 14 hours, C = 21 hours

Filled part of the tank by A and C together in 1 hour =

$$\frac{1}{7}-\frac{1}{21}=\frac{2}{21}$$

Hence time taken to fill the reservoir by A and C together $=\frac{21}{2}=10.5$ hours

133. A tap can fill a water tank in 4 hours. The tap was opened and 3/4 part of the tank was filled then two taps of same filling capacity were opened. Then after 15 minutes, another tap of a capacity of two times the first tap was opened in order to take out the water from the tank. Calculate the time which it takes to fill the tank.

(a) 4 hours 15 minutes
(b) 4 hours
(c) 3 hours
(d) 3 hours 30 minutes

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (d) According to question, total filled part of the tank by pipes in 3 hour 15 min.

$$=\frac{3}{4}+\frac{1}{16}+\frac{1}{16}+\frac{1}{16}=\frac{15}{16}$$

let the time taken to fill the remaining 1/16 part of the tank is x hours

$$\therefore \quad \frac{x}{4}+\frac{x}{4}+\frac{x}{4}-\frac{x}{2}=\frac{1}{16}$$

$$\frac{3x}{4}-\frac{2x}{4}=\frac{1}{16}$$

$$\frac{x}{4}=\frac{1}{16} \Rightarrow x = 15 \text{ minutes}$$

time taken to fill the entire tank

= 3h. 15m + 15 min = 3 hour 30 min.

134. In two inlet pipes, one is twice capable than the other. There is also a third outlet pipe which can empty the fully filled tank in 10 hours, it takes 2.5 hours to fill the tank completely. How many hours will be taken by the low capacity pipe to fill the tank alone?

(a) 6 (b) 7
(c) 8 (d) 5

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (a) : Let,

Time taken by A = 2n

Time taken by B = n

from question-

$$\frac{1}{2n}+\frac{1}{n}-\frac{1}{10}=\frac{10}{25}$$

$$\frac{1}{2n}+\frac{1}{n}=\frac{2}{5}+\frac{1}{10}$$

$$\frac{1+2}{2n}=\frac{4+1}{10}$$

$$\frac{3}{2n}=\frac{5}{10}$$

$$\boxed{n = 3}$$

time taken by less efficient pipe = 2n = 2 × 3 = 6 hours.

135. Pipe A fills the tank in 1/4 time of B. Pipe C takes three times more time as compared to A. If all three pipes are opened together, they can fill an empty tank in 24 hours. If pipe C was not opened then how much time will be taken to fill the empty tank?

(a) 30.2 (b) 28.4
(c) 30.6 (d) 30.4

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (d) : Given-

A : B = 1 : 4

A : C = 1 : 3

A : B : C = 1 : 4 : 3

Let A, B, C fill the tank in x, 4x and 3x hours respectively.

According to question-

the ratio of efficiencies= A : B : C = $1:\frac{1}{4}:\frac{1}{3}$

= 12 : 3 : 4

total work = 19 × 24 = 456

total time taken by (A + B) = $\frac{456}{15}$ = 30.4 hours

136. One of the two inlet pipes works twice as efficient as the other. A drain pipe that can empty a tank in 8 hours, can fill the empty system is 8 hours. How many hours will the less efficient inlet pipe take to fill the empty system by itself ?

(a) 12 (b) 6

(c) 10 (d) 8

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (a) Let the high efficiency pipe fills the tank in x hours.

A low efficiency pipe fills the tank in 2x hours.

and the third empties that tank in 8 hours.

According to question-

$$\frac{1}{x}+\frac{1}{2x}-\frac{1}{8}=\frac{1}{8}$$

$$\frac{3}{2x}=\frac{2}{8}$$

x = 6 hours

Hence the time to fill the tank with low efficient pipe alone = 2x = 12 hours

137. A pipe, working at full speed, can fill an empty cistern in 1 hour. However, during the first hour it worked at one-twelth of its capacity, during the second hour at one-ninth of its capacity, during the third hour at one-sixth of its usual capacity, during the fourth hour at one-fourth of its usual capacity and during the fifth hour it was only one-third as efficient as it was supposed to be. A second pipe also displayed similar performance, but it worked at full speed would have filled the empty cistern in 2 hours. Together with a drain pipe that drained water out of the tank at a constant rate, the empty cistern could be filled in 5 hours, all the three pipes working simultaneously. How many hours will it take the drain pipe to empty the filled cistern if no other pipe was functioning during the time?

(a) 16 (b) 12

(c) 10 (d) 15

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

Ans : (b) Let drain pipe will be emptied the cistern in x hours

filled part of cistern in 5 hours by first pipe

$$=\frac{1}{12}+\frac{1}{9}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}$$

$$=\frac{3+4+6+9+12}{36}=\frac{34}{36}$$

then filled part of cistern in 5 hours by second pipe

$$=\frac{1}{2}\times\frac{34}{36}=\frac{17}{36}$$

when all three pipes are opened simultaneously-

$$\frac{34}{36}+\frac{17}{36}-\frac{5}{x}=1$$

$$\frac{51}{36}-1=\frac{5}{x},$$

$$\frac{15}{36}=\frac{5}{x},\quad x = 12 \text{ hours.}$$

138. Sita's bucket has thrice the capacity as Ramu's bucket. It takes 60 turns for Sita's bucket to fill the empty drum. How many turns it will take for both the buckets of Sita's and Ramu's, having each turn together to fill the empty drum?

(a) 45 (b) 40

(c) 50 (d) 30

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

Ans : (a) Let the capacity of Ramu's bucket = x

then capacity of Sita's bucket = 3x

capacity of drum = 60 × 3x

= 180 x

let both fill the bucket N times and turn into the drum

∴ N (3x+x) = 180x

$$N=\frac{180x}{4x}=45$$

14.

Simple Interest

Type - 1

1. A person borrows ₹5000 for 2 years at the rate of 4% per annum of simple interest and lends it to another person for 6 years at an annual rate of 6.25%. Find the profit received by him every years.

(a) ₹ 150 (b) ₹ 112.50
(c) ₹167.50 (d) ₹ 125

RRB JE - 22/05/2019 (Shift-III)

Ans : (b)
2 years simple interest at the rate of four percent on ₹5000.

Simple interest $= \frac{5000 \times 4 \times 2}{100}$

Simple interest = ₹400

Simple interest of one year $= \frac{400}{2} =$ ₹ 200

2 years simple interest at the rate of 6.25% on ₹5000.

Simple interest $= \frac{5000 \times 6.25 \times 2}{100}$

= 50 × 12.50 = ₹625

Simple interest if one year $= \frac{625}{2} =$ ₹ 312.50

Profit = 312.50 – 200 = 112.50

A person gains ₹112.50 by lending to another person at 6.25% interest instead of 4% per annum.

2. After 10 years the simple interest on a sum of money will be ₹600. If the principal is increased thrice after 5 years, what will be the total interest after 10 years?

(a) ₹300 (b) ₹900
(c) ₹1200 (d) ₹600

RRB JE - 23/05/2019 (Shift-II)
RRB JE - 25/05/2019 (Shift-I)

Ans : (c) Simple interest of 10 years $= \frac{P \times R \times T}{100}$

$\therefore 600 = \frac{P \times R \times 10}{100} \Rightarrow PR = 6000$

According to the question,

Total simple interest = Five year's SI_1 + five 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 Simple interest = ₹1200

3. What is the simple interest received at ₹2400 in 4 years 6 months at the rate of 4.5% per annum?

(a) ₹486 (b) ₹ 816
(c) ₹796 (d) ₹926

RRB JE - 24/05/2019 (Shift-I)

Ans : (a) Given-

Principal (P) = ₹ 2400

Rate (R) = 4.5%

Time (T) = 4 years 6 months $= \frac{9}{2}$ years

Simple interest (S.I) $= \frac{P \times R \times T}{100}$

$= \frac{2400 \times 4.5 \times 9}{100 \times 2} =$ ₹ 486

4. Find the ratio of simple interest of 4 years and 8 years for a particular amount at a fixed rate.

(a) 1 : 2 (b) 2 : 1
(c) 2 : 3 (d) 1 : 4

RRB JE - 30/05/2019 (Shift-II)

Ans : (a)

$\frac{\text{simple interest of 4 year}}{\text{simple interest of 8 year}}$

$= \frac{\frac{p \times r \times 4}{100}}{\frac{P \times r \times 8}{100}} = \frac{1}{2} = 1 : 2$

5. 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.

(a) 4: 3 (b) 3:5
(c) 4: 5 (d) 3: 4

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

Ans : (b)

$\Rightarrow \frac{S.I_1}{S.I_2} = \frac{\frac{P \times R \times 6}{100}}{\frac{P \times R \times 10}{100}}$

$\Rightarrow \frac{S.I_1}{S.I_2} = \frac{6}{10} = \frac{3}{5}$

$S.I_1 : S.I_2 = 3 : 5$

6. Find the simple interest from 5 February 2017 to 19 April 2017 for an amount of ₹5000 at the rate of 6.25% annual interest.

(a) ₹ 62.50 (b) ₹ 48.50
(c) ₹ 64 (d) ₹ 80

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (a) Rate = 6.25%, Amount = ₹ 5000

5 February 2017 to 19 April 2017 = 73 Day

$= \frac{73}{365}$ Years

Simple interest $= \frac{5000 \times 6.25 \times 73}{100 \times 365}$

$= \frac{50 \times 625 \times 73}{100 \times 365}$

$= \frac{1 \times 125 \times 73}{2 \times 73} =$ ₹ 62.5

7. At a fixed simple interest, the sum of ₹800 becomes ₹956 in 3 years, If the rate is increased by 4%. What will be the increase in investment?

(a) ₹ 108 (b) ₹ 96

(c) ₹ 1052 (d) ₹ 72

RRB JE - 28/06/2019 (Shift-III)

Ans. (b) S.I. $= \frac{P \times R \times T}{100}$

Amount − Principal = 956 – 800 $= \frac{800 \times R \times 3}{100}$

156 = 8 × R × 3

$R = \frac{52}{8} = \frac{13}{2}\%$

Again Rate increased to 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

8. How much interest will be received on the simple interest of ₹3680 at 4% annual simple interest rate in 2.5 years?

(a) ₹368 (b) ₹92

(c) ₹184 (d) ₹274

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

Ans. (a) : Principal = ₹ 3680

Rate = 4%

Time = 2.5 years

simple interest $= \frac{P \times R \times T}{100} = \frac{3680 \times 4 \times 2.5}{100}$

$= \frac{3680 \times 10.0}{100} =$ ₹ 368

9. What will be the interest received in 2 years and 3 months at ₹2500 at the rate of 6% annual interest?

(a) ₹ 423.50 (b) ₹ 445

(c) ₹ 337.50 (d) ₹ 375

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (c) : 2 year 3 months $= 2 + \frac{3}{12} = \frac{9}{4}$ Years

Simple interest $= \frac{P \times R \times T}{100}$

Interest received $= \frac{2500 \times 6 \times \frac{9}{4}}{100}$

$= \frac{675}{2} =$ ₹ 337.50

10. How much interest will be received in 10 years on the amount of ₹1600 if the rate of intrest is 7.25% per annum?

(a) ₹ 1240 (b) ₹ 1160

(c) ₹ 1220 (d) ₹ 1180

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (b) : Principal = ₹1600

Time = 10 Years

Rate = 7.25%

Simple interest $= \frac{P \times R \times T}{100} = \frac{1600 \times 7.25 \times 10}{100}$

= 16 × 10 × 7.25 = ₹1160

11. Divide ₹6,600 into two parts such 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 9% per annum for 4 years.

(a) ₹3600, 3000 (b) ₹4000, 2600

(c) ₹5000, 1600 (d) ₹6000, 600

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (a) Suppose first part x ₹6600 is abstract then

Second part = ₹ (6600 – x)

According to the question,

$x \times \frac{3 \times 10}{100} = (6600 - x) \times \frac{4 \times 9}{100}$

5x = 39600 – 6x

11x = 39600

First part, x = ₹ 3600

Second part, 6600 – 3600 = ₹ 3000

12. Sarathi deposited ₹3125 in a bank on which 8% simple interest was payable annually by the bank. If sarathi puts the money in the bank for 5 years, how much interest will be earn?

(a) ₹ 1,290 (b) ₹ 1,250

(c) ₹ 1,240 (d) ₹ 1,280

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (b) :

Simple interest $= \frac{P \times R \times T}{100}$

According to the question-

Simple interest $= \frac{3125 \times 8 \times 5}{100} =$ ₹ 1250

13. What will be the interest in 5 years at ₹4600 at the rate of 4.5% annual simple interest?

(a) ₹ 1,020 (b) ₹ 1,025
(c) ₹ 1,035 (d) ₹ 1,045

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (c) Principal = ₹ 4,600 , Rate = 4.5% Annual,
Time = 5 Years, interest = ?

Simple interest $= \frac{P \times R \times T}{100}$

$= \frac{4600 \times 4.5 \times 5}{100} = 46 \times 4.5 \times 5$

= ₹1035

14. 5.25% simple interest per annum will earn an interest ___ in 8 years on an amount of ₹3250.

(a) ₹ 1,425 (b) ₹ 1,395
(c) ₹ 1,365 (d) ₹ 1,465

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) Interest Rate = 5.25%
Principal Amount = ₹ 3250
Time = 8 Years

Simple interest $= \frac{P \times R \times T}{100}$

$= \frac{3250 \times 5.25 \times 8}{100}$

= ₹ 1365

15. Akshay borrows ₹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?

(a) ₹ 90 (b) ₹ 180
(c) ₹ 120 (d) ₹ 150

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (a) Simple interest of amount taken by Akshay

Simple interest $= \frac{3000 \times 6 \times 2}{100}$

= ₹360

Simple interest on money given to a friend

$= \frac{3000 \times 9 \times 2}{100}$

= ₹540

Akshay profits in two years = 540 – 360

= ₹ 180

Profit in a year $= \frac{180}{2}$ = ₹ 90

16. An interest on an amount borrowed at an annual rate of 6% in x years is 1/3 of its principal. Find x.

(a) $5\frac{5}{9}$ (b) $4\frac{2}{29}$
(c) $6\frac{3}{7}$ (d) $5\frac{3}{4}$

RRB NTPC 03.04.2016 Shift : 2

Ans : (a) Suppose Principal= P
from the question-

$\frac{P \times 6 \times x}{100} = \frac{1}{3}P$

$\Rightarrow \frac{6 \times x}{100} = \frac{1}{3} \Rightarrow x = \frac{100}{6 \times 3}$

$\Rightarrow x = \frac{50}{9} \Rightarrow x = 5\frac{5}{9}$

17. What is the ratio of simple interest earned on certain amount at the rate of 12% for 6 years and that for 12 years?

(a) 1 : 2 (b) 2 : 3
(c) 3 : 4 (d) 4 : 5

RRB NTPC 30.03.2016 Shift : 1

Ans : (a) Suppose certain Amount = ₹x

∴ Simple interest for 6 years $= \frac{x \times 12 \times 6}{100} = \frac{72x}{100}$

Simple interest for 12 years $= \frac{x \times 12 \times 12}{100} = \frac{144x}{100}$

∴ Intended ratio $= \frac{72x}{100} : \frac{144x}{100} = 1 : 2$

18. Find the simple interest on Rs. 50 for 6 months at the rate of 10% per months.

(a) ₹ 35 (b) ₹ 40
(c) ₹ 25 (d) ₹ 30

RRB NTPC 18.04.2016 Shift : 1

Ans : (d) simple interest $= \frac{P \times R \times T}{100}$

$= \frac{50 \times 10 \times 6}{100} = \frac{500 \times 6}{100}$ = ₹30

19. At a certain rate of simple interest, ₹800 becomes ₹956 in 3 years. If this principal becomes ₹1052 in the smae period, what is the percentage of increase in the rate of interest?

(a) 7% (b) 4%
(c) 5% (d) 9.5%

RRB NTPC 16.04.2016 Shift : 2

Ans : (b) Interest = Amount − Principal
= 956 – 800 = ₹156

Simple interest $= \frac{P \times R \times T}{100}$

$156 = \frac{800 \times 3 \times R}{100}$, $R = \frac{52}{8}$

According to the second dcondition, suppose growth rate in r.

$252 = \frac{800 \times 3 \times \left(\frac{52}{8} + r\right)}{100}$

$\frac{21}{2} = \frac{52}{8} + r$

r = 10.5 – 6.5

r = 4%

Hence rate increaed by 4%.

20. Find the total simple interest on ₹ 500 at 7% per annum, on ₹ 700 and 10% per annum and ₹1000 at 4% per annum for 3 years.

(a) 435 (b) 500
(c) 700 (d) 1000

RRB NTPC 12.04.2016 Shift : 3

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 = ₹435

21. Find the approximate simple interest on ₹ 2000 from March 9, 2010 to May 21, 2010 at 8.25% per annum.

(a) ₹43 (b) ₹37
(c) ₹33 (d) ₹40

RRB NTPC 12.04.2016 Shift : 3

Ans : (c) From question,
Principal (P) = ₹2000
Annual Interest Rate (R) = 8.25%
Time (T) = days number till 9th march, 2010 to 21st may, 2010 = 22 + 30 + 21
= 73 days $= \frac{73}{365}$ Years

simple interest $= \frac{PRT}{100} = \frac{2000 \times 8.25 \times \frac{73}{365}}{100}$

$= \frac{2000 \times 825 \times 73}{100 \times 100 \times 365} =$ ₹33

22. Rita invested a sum at 2.5% rate for 4 years. Sita invested the same amount at the same rate for 6 years. What is the ratio of the simple interest earned by Sita to that earned by Rita?

(a) 3 : 2 (b) 2 : 3
(c) 1 : 3 (d) 1 : 4

RRB NTPC 28.04.2016 Shift : 2

Ans : (a) Suppose amount is ₹x

$\therefore$ Simple interest for Rita $= \frac{x \times 2.5 \times 4}{100} = \frac{x}{10}$

Simple interest for Sita $= \frac{x \times 2.5 \times 6}{100} = \frac{3x}{20}$

$\therefore$ Intended ratio $= \frac{3x}{20} : \frac{x}{10} = 3 : 2$

23. The interest earned on ₹ 3,675 at the rate of 4% simple interest per annum for 2 years will be?

(a) ₹ 289.50 (b) ₹ 292
(c) ₹ 294 (d) ₹ 288.50

RRB ALP & Tec. (31-08-2018 Shift-II)

Ans. (c) : simple interest $= \frac{P \times R \times T}{100}$

$= \frac{3675 \times 4 \times 2}{100} =$ ₹294

24. A sum of ₹2,000 invested at the rate of 8.5% simple interest per annum for 6 years will yield an interest of:

(a) ₹935 (b) ₹1,020
(c) ₹510 (d) ₹1,275

RRB ALP & Tec. (31-08-2018 Shift-III)

Ans : (b) simple interest $= \frac{P \times R \times T}{100}$

$= \frac{2000 \times 8.5 \times 6}{100} =$ ₹1020

25. ₹ x invested at 9% simple interest per annum for 5 years yields the same interest as that on ₹y invested at 7.5% simple interest per annum for 4 years. Find x : y.

(a) 45 : 30 (b) 2 : 3
(c) 16 : 15 (d) 8 :9

RRB ALP & Tec. (30-08-2018 Shift-III)

Ans : (b) $\because SI = \frac{P \times R \times T}{100}$

According to the 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 = 2y
x:y = 2:3

26. Saathi deposited Rs. 825 in a bank that promised 8% simple interest per annum. If Saathi kept the money with the bank for 5 years, she will earn an interest of :

(a) ₹280 (b) ₹330
(c) ₹290 (d) ₹480

RRB ALP & Tec. (20-08-2018 Shift-I)

Ans : (b) Simple interest $= \frac{P \times R \times T}{100}$

Simple interest $= \frac{825 \times 8 \times 5}{100} = \frac{825 \times 2}{5} = \frac{1650}{5}$

Simple interest = ₹330

27. What will be the amount received in 6 years at simple annual interest rate of 7.6% at ₹1,640.

(a) ₹750 (b) ₹748
(c) ₹742 (d) ₹738

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (d) Principal = ₹ 1640
Rate = 7.5% Annual
Time = 6 Years

$\therefore$ Simple interest $= \frac{P \times R \times T}{100} = \frac{1640 \times 7.5 \times 6}{100}$

Simple interest = ₹ 738

Type - 2

28. If the amount of ₹750 becomes ₹1000 in 5 years at simple interest, then how much will it be in 10 years at simple interest?

(a) ₹ 1750 (b) ₹ 2000
(c) ₹ 1250 (d) ₹ 1500

RRB JE - 02/06/2019 (Shift-II)

Ans. (c) simple interest $= \frac{P \times R \times T}{100}$

$250 = \frac{750 \times R \times 5}{100}$

R = 20/3%

Second simple interest $= \frac{750 \times 20/3 \times 10}{100}$

Simple interest = 500

Total Amount = 750 + 500 = ₹1250

29. A sum of money was invested at a fixed rate of simple interest for 10 years. If it had been invested at a 5% higher rate, the interest would have been ₹1200 more. Find the amount.

(a) ₹ 2500 (b) ₹ 2000
(c) ₹ 3000 (d) ₹ 2400

RRB JE - 26/06/2019 (Shift-I)

Ans. (d) Suppose Amount = ₹ x

Rate of Interest = r %

If rate of interest are r% then,

Simple interest $= \frac{P \times R \times T}{100}$

$= \frac{x \times r \times 10}{100} = \frac{rx}{10}$

If rate of interest are (r + 5)% then,

Simple interest $= \frac{x \times (r+5) \times 10}{100} = \frac{rx + 5x}{10}$

According to the question,

$\frac{rx + 5x}{10} - \frac{rx}{10} = 1200$

$\frac{rx + 5x - rx}{10} = 1200$

$\frac{5x}{10} = 1200$

x = ₹ 2400

30. 2 years simple interest on an amount is ₹400. If 'r' was 4% more than the simple interest would have been ₹400 more. What is the original amount.

(a) ₹ 4000 (b) ₹ 12000
(c) ₹ 5000 (d) ₹ 10000

RRB JE - 22/05/2019 (Shift-I)

Ans : (c) Suppose principal = ₹P, Rate = r%

According to the first condition

$400 = \frac{P \times r \times 2}{100}$ ..... (i)

According to the second condition -

$400 + 400 = \frac{P \times (r+4) \times 2}{100}$

$800 = \frac{P \times (r+4) \times 2}{100}$ ..... (ii)

On division of equation (i) in (ii)

$\frac{1}{2} = \frac{r}{r+4}$

r = 4%

So $P = \frac{SI \times 100}{t \times r} = \frac{400 \times 100}{2 \times 4} =$ ₹ 5000

31. A seem of ₹26000 is divided into two amounts in such a way that 5 years simple interest at the rate of 10% one part is equal to simple interest of 6 years at the rate of 9% on the other part. Find the amount invested for 5 years at the rate of 10%.

(a) ₹15000 (b) ₹12500
(c) ₹13500 (d) ₹14000

RRB JE - 24/05/2019 (Shift-II)

Ans : (c) Let first amount = ₹x

Time = 5 Years, Rate 10%

and second Amount = ₹ (26000−x)

Time = 6 Years Rate = 9%

According to the 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 × 54 – 54x

104x = 26000 × 54

$x = \frac{26000 \times 54}{104} =$ ₹13500

Hence invest amount for 5 years at the rate of 10% = ₹13500

32. An investment of ₹16000 at 8% simple interest for 1 years and another investment at 18% simple interest for the same period, yields a profit of 10% on the total investment. Find the total amount invested.

(a) ₹22000 (b) ₹20000
(c) ₹20500 (d) ₹18000

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

Ans : (b) Suppose second investment = ₹ P

From question−

$\frac{16000 \times 8 \times 1}{100} + \frac{P \times 18 \times 1}{100} = \frac{(16000 + P)10}{100}$

$1280 + \frac{9P}{50} = 1600 + \frac{P}{10}$

$320 = \frac{9P}{50} - \frac{P}{10}$

$\frac{4P}{50} = 320$

P = 4000

Total investment = 16000+P = 16000 + 4000 = ₹20000

33. If 15 months simple interest at 7.5% per annum on an amount is ₹32.50 more than 8 months simple inerest at 12.5% annual rate on the same amount, find that amount.

(a) ₹ 3000 (b) ₹ 3060
(c) ₹ 3120 (d) ₹ 2900

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

Ans : (c) Suppose that Amount is ₹ 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 × 12.5 = 32.50 × 100 × 12

P × 125 = 325 × 100 × 12

∴ P = ₹ 3120

34. The simple interest charged in 2 years on any money borrowed at the rate of 7% per annum is the same as the amount of 4 years at 5% per annum for an amount of ₹1750. Find the amount.

(a) ₹1800 (b) ₹1600
(c) ₹ 2500 (d) ₹ 2400

RRB JE - 30/05/2019 (Shift-I)

Ans : (c) Let that amount is ₹x

According to the question,

$$\frac{x\times 7\times 2}{100}=\frac{1750\times 5\times 4}{100}$$

$$x=\frac{1750\times 5\times 4}{7\times 2}=₹2500$$

35. P_1, P_2 and P_3 are invested at 4%, 6% and 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 ₹2600, find the values of P_1, P_2 P_3 respectively.

(a) ₹1100, ₹800, ₹ 700
(b) ₹1200, ₹ 600, ₹ 800
(c) ₹1000, ₹ 900, ₹ 700
(d) ₹1200, ₹ 800, ₹ 600

RRB JE - 28/05/2019 (Shift-II)

Ans : (d) Simple interest is equal to P_1, P_2, P_3 and time is also equal.

Let simple interest (S.I) = ₹x

Time (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

$$x=\frac{P_2\times 6\times 1}{100}$$

$$P_2=\frac{50x}{3}$$

For P_3

$$x=\frac{P_3\times 8\times 1}{100}$$

$$P_3=\frac{25x}{2}$$

$P_1 + P_2 + P_3 = 2600$

$$25x+\frac{50x}{3}+\frac{25x}{2}=2600$$

$$\frac{150x+100x+75x}{6}=2600$$

325x = 2600 × 6

x = ₹48

$P_1 = 25x = 25 \times 48 =$ ₹1200

$$P_2=\frac{50x}{3}=\frac{50}{3}\times 48=₹800$$

$$P_3=\frac{25x}{2}=\frac{25}{2}\times 48=₹600$$

36. A fixed seem of money was invested for 5 years at a fixed rate at simple interest. If it had been invested at a 10% higher rate, it would have gained ₹2000 more. What was the principal invested?

(a) ₹3500 (b) ₹4000
(c) ₹4500 (d) ₹5000

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

Ans : (b) Suppose Principal = ₹P Rate = R% Time = 5 Years

From question-

$$\frac{P\times(R+10)\times 5}{100}-\frac{P\times R\times 5}{100}=2000$$

$$\frac{5PR+50P}{100}-\frac{5PR}{100}=2000$$

$$\frac{5PR+50P-5PR}{100}=2000$$

$$\frac{50P}{100}=2000$$

$P = 2000\times 2 =$ ₹4000

37. At the end of $3\frac{3}{4}$ years at 6% simple interest per annum, a sum of ₹2940 is received. What was the amount invested?

(a) ₹2,350 (b) ₹2,400
(c) ₹2,550 (d) ₹2,600

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (b) Rate = 6%

Time = $3\frac{3}{4}$ Years = $\frac{15}{4}$ Years

Amount = ₹2940, Principal = P

$$\text{Amount} = \text{Principal}\left[\frac{\text{Rate}\times\text{Time}}{100}+1\right]$$

$$2940 = P\left[\frac{6\times\frac{15}{4}}{100}+1\right] = P\left[\frac{90}{400}+1\right]$$

$$= P\times\frac{49}{40}$$

$$\Rightarrow P = \frac{2940\times 40}{49}$$

$$\Rightarrow P = 60\times 40$$

$$\Rightarrow P = ₹\ 2400$$

Hence amount invested = ₹ 2400

38. The interest earned on the money invested for 6 years at a simple interest rate of 9.5% per annum was ₹456. What was the amount invested?

(a) ₹ 750 (b) ₹ 775
(c) ₹ 800 (d) ₹ 850

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (c) Given-
simple interest = ₹ 456
Rate (R) = 9.5%
Time (T) = 6 Years

$$\text{simple interest} = \frac{P\times R\times T}{100}$$

$\Rightarrow 456 \times 100 = \text{Principal} \times 9.5 \times 6$

$$\Rightarrow \text{Principal} = \frac{45600}{57}$$

Principal = ₹ 800

39. An amount becomes ₹457 in 5 years and ₹574 in 10 years at the same simple interest rate. Find the value (in rupees) of the sum.

(a) 500 (b) 280
(c) 340 (d) 420

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) : Suppose Principal = ₹ P
and Rate = r % per years

$$P+\frac{P\times 5\times r}{100} = 457.....(i)$$

$$P+\frac{P\times 10\times r}{100} = 574.....(ii)$$

subtracting equation (ii) from equation (i)–

$$\therefore 117 = \frac{P\times r\times 5}{100}$$

$$\therefore 117 = \frac{P\times r}{20}.....(iii)$$

$\therefore$ from equation (i)
457 = P + 117
$\therefore$ P = 457 – 117
P = ₹ 340

40. Sushmita takes an annual rate of ₹900, at 6% simple interest, how much amount will she have to returen after 4 years?

(a) ₹261 (b) ₹1161
(c) ₹1116 (d) ₹216

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) Simple interest = $\frac{P\times R\times T}{100}$

$$\cdot\frac{900\times 6\times 4}{100} = 216$$

Amount = Simple interest + Principal
= 216 + 900 = ₹1116

41. Find out the principal which becomes ₹1000 in a months at 8% annual rate of simple interest?

(a) ₹781.40 (b) ₹981.40
(c) ₹943.40 (d) ₹843.40

RRB NTPC 28.03.2016 Shift : 3

Ans : (c) Suppose Principal = ₹x
$\therefore$ Simple interest = (1000 − x)

$$\frac{x\times 8\times 9}{100\times 12} = 1000 - x$$

$$3x = 50000 - 50x$$

$$53x = 50000$$

$$x = \frac{50000}{53} = ₹943.40$$

42. On a certain sum, simple interest for $\frac{5}{2}$ years at an annual rate of 12% is ₹50 less than the interest on the same sum for $\frac{7}{2}$ years at an annual rate of 10%. Find the sum.

(a) ₹ 1,500 (b) ₹ 1,000
(c) ₹ 2,000 (d) ₹ 1,200

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (b) : Let Amount = ₹ P
$\therefore$ According to the question,

$$\frac{P\times 10\times 7}{100\times 2} - \frac{P\times 12\times 5}{100\times 2} = 50$$

$$\frac{P\times 35}{100} - \frac{P\times 30}{100} = 50$$

$$\frac{P\times 5}{100} = 50$$

P = ₹ 1000

43. At the rate of 8% simple interest, a amount becomes ₹924 in $6\frac{3}{4}$ years. What amount was deposited initially.

(a) ₹ 626 (b) ₹ 650
(c) ₹ 600 (d) ₹ 675

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) Rate = 8%, Time $= 6\frac{3}{4}$ Years $= \frac{27}{4}$ Years

Amount = ₹ 924

$$A = P\left(1+\frac{RT}{100}\right)$$

$$924 = P\left(1+\frac{27\times 8}{4\times 100}\right)$$
$$924 = P\left(1+\frac{27}{50}\right)$$
$$924 = \frac{77P}{50} \Rightarrow P = \frac{924\times 50}{77}$$
P = ₹ 600

Deposite amount (Principal) in the starting = ₹ 600

44. The difference of interest of 4 years at the rate of 12% per annum simple interest on a sum of money and 5 years interest at the rate of 9% per annum simple interest on the same amount is ₹412.50. What is the sum?

(a) ₹13,900 (b) ₹ 14,630
(c) ₹14,080 (d) ₹13,750

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (d) Suppose that amount is ₹x

According to the question-
$$\frac{12\times 4\times x}{100} - \frac{9\times 5\times x}{100} = 412.50$$
48x – 45x = 41250
3x = 41250
x = 13750

So that amount is ₹13750.

45. A person has ₹2000. He gives a portion of the amount at 5% simple interest rate and the remaining amount at 4% simple interest rate. After one year he earns ₹96. What amount did he pay at 4% interest rate?

(a) ₹500 (b) ₹480
(c) ₹400 (d) ₹420

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (c) Let amount given at 4% Interest Rate = ₹ x

∴ Amount given on 5% = (2000–x)

According to the question,
$$\frac{x\times 4\times 1}{100} + \frac{(2000-x)\times 5\times 1}{100} = 96$$
$$\frac{4x}{100} + \frac{2000\times 5 - 5x}{100} = 96$$
$$\frac{-x}{100} + \frac{10000}{100} = 96$$
$$\frac{x}{100} = 4$$

Hence amount given at 4% interest rate = ₹ 400

46. ₹600 was given to two persons, of which the first one was given at 5% annual interest rate and the second one at 10% annual interest rate. After one year, the sum of interest of both is ₹40. Find the amount given to the first person.

(a) ₹ 400 (b) ₹ 420
(c) ₹ 380 (d) ₹ 200

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (a) : Let the amount given to other person at 10% interest = ₹ x

Then the amount given to the first person at 5% interest rate = ₹(600 – x)

simple interest = ₹ 40

According to the question,
$$\Rightarrow \left(x\times\frac{10}{100}\times 1\right) + \left\{(600-x)\times\frac{5}{100}\times 1\right\} = 40$$
$$\Rightarrow \frac{x}{10} + \left\{(600-x)\times\frac{1}{20}\right\} = 40$$
$$\Rightarrow \frac{x}{10} + \left\{30 - \frac{x}{20}\right\} = 40$$
$$\Rightarrow \frac{x}{20} = 40 - 30$$
x = ₹ 200

Given amount to the first person = 600 – x
= 600 – 200 = ₹400

47. An amount invested for 2 years 9 months at the rate of 8% annual simple interest becomes ₹915 at the end of the period. How much was invested initially?

(a) ₹725 (b) ₹700
(c) ₹675 (d) ₹750

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (d) Let principal is ₹x

$$\text{Interest} = \frac{P\times R\times T}{100}$$
$$915 - x = \frac{x\times 8\times\frac{11}{4}}{100}$$
91500 – 100x = 22 x
122x = 91500
x = ₹750

48. 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?

(a) 14:9 (b) 8:7
(c) 9:8 (d) 6:5

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (c) : Simple interest = $\frac{P\times R\times T}{100}$

Let first invest Amount = P_1

and second invest Amount = P_2

According to the question-
$$\frac{P_1\times 16\times 3.5}{100} = \frac{P_2\times 12.6\times 5}{100}$$
$$P_1\times 16\times 3.5 = P_2\times 12.6\times 5$$
$$P_1\times 11.2 = P_2\times 12.6$$
$$\frac{P_1}{P_2} = \frac{12.6}{11.2}$$
$$P_1 : P_2 = 9 : 8$$

49. When an amount was invested for 5 years, it yillded an amount of ₹ 5250. If the simple interest was 2% more per year, the amount received was ₹5600. What was the amount of investment.

(a) ₹4,000 (b) ₹3,750
(c) ₹3,250 (d) ₹3,500

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (d)
Suppose principal is ₹x and Interest Rate a %
According to the question,

$$\left\{x+\frac{x\times(a+2)\times5}{100}\right\}-\left\{x+\frac{x\times a\times5}{100}\right\}=5600-5250$$

$$\frac{10x}{100}=350$$

$\Rightarrow x = ₹\ 3500$

50. When an amount is invested for 5 years, the amount becomes ₹3640. If the rate of simple interest is already increased by 2% per annum, then this amount becomes ₹3920 what is the principal amount invested.

(a) ₹2,560 (b) ₹2,690
(c) ₹2,750 (d) ₹2,800

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (d) : Let rate x% and principal ₹ y
According to the question,

$$\frac{y\times(x+2)\times5}{100}-\frac{y\times x\times5}{100}=3920-3640$$

$$\frac{y\times2\times5}{100}=₹\ 280$$

$y = ₹\ 2800$

51. The simple interest for 'y' years at the rate of y% of a principal is y rupees. Find the principal.

(a) $100 \div y$ (b) $100 \times y$
(c) $100y^2$ (d) $100 \div y^2$

RRB NTPC 16.04.2016 Shift : 1

Ans : (a) Let Principal = ₹P
From question,

$$\text{Simple interest} = \frac{P\times R\times T}{100}$$

$$y=\frac{P\times y\times y}{100}$$

$$P=\frac{100\times y}{y\times y}$$

$$P=\frac{100}{y}$$

52. ₹ x invested at 9% simple interest per annum for 5 years yields the same interest as that on ₹ y invested at 6.25% simple interest per annum for 8 years. Find x : y.

(a) 16 : 15 (b) 10 : 9
(c) 45 : 50 (d) 5 : 8

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (b) According to the question

$$\frac{5\times9\times x}{100}=\frac{8\times6.25\times y}{100}$$

$$\frac{x}{y}=\frac{8\times6.25}{5\times9}$$

$$=\frac{8\times1.25}{9}=\frac{8\times125}{900}=\frac{8\times125}{9\times100}$$

$$\frac{x}{y}=\frac{8\times5}{9\times4}=\frac{10}{9}$$

x : y = 10 : 9

53. At 5% simple interest per annum a certain sum yields a total amount of ₹2,790 at the end of $3\frac{1}{4}$ years. The sum invested was :

(a) ₹ 2, 350 (b) ₹ 2, 400
(c) ₹ 2, 600 (d) ₹ 2, 550

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (b) $S.I=\frac{P\times R\times T}{100}=\frac{P\times5\times13}{100\times4}=\frac{65}{400}P$
According to the question,

$$P+\frac{65}{400}P=2790$$

$$\Rightarrow\frac{465P}{400}=2790$$

$$\Rightarrow P=\frac{2790\times400}{465}$$

$$\Rightarrow P=6\times400$$

$$\Rightarrow P=2400$$

So invested amount = ₹2400

54. Rahi deposited ₹ 600 in a bank that promised 8% simple interest per annum. If Rahi kept the money with the bank for 5 years, she will earn an interest of:

(a) ₹240 (b) ₹200
(c) ₹280 (d) ₹480

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

Ans : (a) Given
Principal = ₹600, Rate = 8%, Time =5 Years

$\because$ simple interest $=\frac{P\times R\times T}{100}$

simple interest $=\frac{600\times8\times5}{100}=₹240$

55. At 6% simple interest per annum a sum of money becames ₹834 in $6\frac{1}{2}$ years. The sum initially invested was :

(a) ₹ 600 (b) ₹ 626
(c) ₹ 675 (d) ₹ 650

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (a) Given-

Rate of simple interest = 6%

Time $=6\frac{1}{2}=\frac{13}{2}$ Years

Simple amount = ₹ 834

Let investing Amount = ₹P

simple interest $\Rightarrow$ 834 – P

$$834 - P = \frac{P \times 6 \times 13}{100 \times 2}$$

$$834 - P = \frac{39P}{100}$$

or 83400=139P

or P = ₹600

56. A sum of money was invested at the rate of 7.5% simple interest per annum for 4 years. If the investment was for 5 years, the interest earned would have been ₹ 375 more. What was the initial sum invested?

(a) ₹4,500 (b) ₹5,000

(c) ₹3,750 (d) ₹4,750

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (b) Let principal Amount is ₹x.

According to the question,

$$\frac{x \times 7.5 \times 5}{100} - \frac{x \times 7.5 \times 4}{100} = 375$$

$$\{\therefore \text{ simple interest} = \frac{P \times R \times T}{100}\}$$

$$\Rightarrow \frac{x \times 7.5 \times 1}{100} = 375$$

$$x = \frac{375 \times 100}{7.5}$$

x = 50 × 100 = ₹5000

Hence invested Amount will be ₹5000.

57. ₹ x invested at 8% simple interest per annum for 5 year yields the same interest as that on ₹ y invested at 7.5% simple interest per annum for 6 years. Find x : y.

(a) 9 : 8 (b) 5 : 6

(c) 16 : 15 (d) 40 : 45

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (a)

$$\text{simple interest} = \frac{P \times R \times T}{100}$$

According to the 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

Type - 3

58. If an amount doubles at a fixed rate in 4 years, then in how many years will this amount become 16 times at the same rate of simple interest?

(a) 25 Years (b) 16 Years

(c) 12 Years (d) 60 Years

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

Ans : (d)

$$T_2 = \frac{(n_2 - 1) \times T_1}{(n_1 - 1)} \text{ से,} \quad [\text{ T = Years, n = Double }]$$

$$T_2 = \frac{(16-1) \times 4}{(2-1)}$$

= 15 × 4 = 60 Years

59. At what rate of interest will an amount double itself in 30 years?

(a) $3\frac{1}{3}\%$ (b) 3%

(c) $3\frac{1}{2}\%$ (d) $3\frac{1}{4}\%$

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

Ans : (a) Let principal (P) = x

Amount (A) = 2x

Simple interest (S.I.) = 2x – x = x

$$\because \text{S.I.} = \frac{PRT}{100}$$

$$x = \frac{x \times R \times 30}{100}$$

$$R = \frac{100}{30} = 3\frac{1}{3}\%$$

60. At what rate will a sum of money double itself in twelve years?

(a) 8% (b) $8\frac{1}{2}\%$

(c) $8\frac{1}{3}\%$ (d) $8\frac{1}{4}\%$

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (c) Let Principal = ₹ P

Amount = ₹ 2P

Rate = r % Annual

Time = 12 Years

Simple interest = 2P – P = ₹ P

$$\therefore P = \frac{P \times r \times 12}{100}$$

$$r = \frac{100}{12} = \frac{25}{3}$$

$$r = 8\frac{1}{3}\%$$

61. In how many years will a certain sum be doubled at an annual interest rate of 28.75%.

(a) 6.00 (b) 3.47
(c) 3.00 (d) 3.90

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) Let Amount = ₹P Rate = 28.75%

Interest = ₹P

$$\text{Interest} = \frac{P \times R \times T}{100}$$

$$P = \frac{P \times 28.75 \times T}{100}$$

$$T = \frac{10000}{2875} = 3.47 \text{ Years}$$

62. In how much time will the amount invested will be tripled at the rate of $12\frac{1}{2}\%$ per annum simple interest?

(a) 12 Years (b) 8 Years
(c) 16 Years (d) 4 Years

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (c) The amount considered will triple in T years. from the formula,

$$\boxed{T = \frac{(n-1)100}{R}}$$

T = year
n = number
R = rate

$$T = \frac{(3-1)100}{\frac{25}{2}} = \frac{2 \times 100}{\frac{25}{2}}$$

T = 16 Years

63. At what rate percent will an amount be doubled in 15 years?

(a) 50% (b) 25%
(c) $\frac{20}{3}\%$ (d) 33.33%

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (c) : Let Amount = ₹ P , Interest = 2P–P = ₹P
Time = 15 Years, Rate = R%

$$\text{simple interest} = \frac{P \times R \times 15}{100}$$

$$P = \frac{P \times R \times 3}{20} \Rightarrow R = \frac{20}{3}\%$$

64. At what percentage simple interest per annum a certain sum will double in 10 years?

(a) 7% (b) 8%
(c) 9% (d) 10%

RRB NTPC 05.04.2016 Shift : 2

Ans : (d) Let Principal = x , Amount = 2x

∴ simple interest = Amount − Principal

= 2x – x = x

$$\frac{x \times R \times 10}{100} = x$$

Rate = 10%

65. A sum of money (P) becomes twice in 10 years. How much will this amount become in 20 years at the same rate of simple interest?

(a) P (b) 2P
(c) 3P (d) 4P

RRB NTPC 16.04.2016 Shift : 3

Ans : (c) simple interest $= \frac{P \times R \times T}{100}$

According to the question, $P = \frac{P \times R \times 10}{100}$

R = 10%

According to the second condition–

Total amount after 20 years (P + SI)

$$= P + \frac{P \times 20 \times 10}{100}$$

= P + 2P = 3P

66. A sum of money becomes 3 times of itself in 5 years. In how many years will this amount become 5 times of itself at the same rate of interest?

(a) 5 year (b) 10 year
(c) 9 year (d) 8 year

RRB NTPC 12.04.2016 Shift : 2

Ans : (b) Let (Principal) = P, Rate = R%

Amount = 3P

∴ Interest = 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

Type - 4

67. On deposits of ₹5000 for 4 years and ₹4000 for 5 years, a uniform annual rate of simple interest yields a total interest of ₹2400. Find the annual rate of interest.

(a) 4% (b) 7%
(c) 6% (d) 8%

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (c) $\because SI = \frac{P \times R \times T}{100}$

According to the question

$$2400 = \frac{5000 \times 4 \times R}{100} + \frac{4000 \times 5 \times R}{100}$$

2400 = 200 R + 200R

2400 = 400R

R = 6%

68. An amount of ₹25000 becomes ₹32000 in 4 years. Find the annual rate of interest.

(a) 6.5% (b) 8%
(c) 7% (d) 6%

RRB JE - 25/05/2019 (Shift-III)

Ans : (c) Given,

simple interest = 32000 – 25000 = 7000

$$\text{simple interest} = \frac{P \times R \times T}{100}$$

$$7000 = \frac{25000 \times R \times 4}{100}$$

$$R = \frac{7000}{1000} = 7\%$$

69. On a certain amount, the compound interest for 2 years is ₹309 and the simple interest is ₹300. Find the annual rate of interest.

(a) 7% (b) 6%
(c) 9% (d) 8%

RRB JE - 22/05/2019 (Shift-III)

Ans : (b) Simple interest $= \frac{P \times R \times T}{100}$

$$300 = \frac{P \times R \times 2}{100}$$

PR = 15000 ..... (i)

difference in simple interest and compound interest for 2 years.

$$D = P\left(\frac{R}{100}\right)^2$$

$$309 - 300 = P \times \frac{R}{100} \times \frac{R}{100}$$

$$9 = \frac{15000 \times R}{100 \times 100} \quad \text{(from the equation (i))}$$

R = 6%

70. If an amount is 4 times of itself in 20 years, then find the rate of simpel interest.

(a) $13\frac{1}{3}\%$ (b) 10%
(c) 20% (d) 15%

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) $4P = P\left(1 + \frac{R \times 20}{100}\right)$

$$4 - 1 = \frac{R}{5}$$

R = 15%

71. The loan of ₹2400 is repaid by giving an amount of ₹3264 at the end of the loan term, the duration of the years and the rate of interest is statistically equal. What is the rate of simple interest?

(a) 6% (b) 18%
(c) 5% (d) 10%

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

Ans : (a) Given− Rate (R) = Time (t)

$$\text{simple interest} = \frac{P \times R \times T}{100}$$

$$(3264 - 2400) = \frac{2400 \times R \times R}{100}$$

$864 = 24 \times R^2$

$$R^2 = \frac{864}{24}$$

$R^2 = 36$

R = 6%

72. If an amount becomes ₹20720 in 4 years and ₹24080 in 6 years, find the amount and the rate of simple interest.

(a) ₹16000, 8% (b) ₹14000, 10%
(c) ₹14000, 12% (d) ₹16000, 12%

RRB RPF SI – 05/01/2019 (Shift-III)

Ans : (c) Let that amont be P and the rate of simple interest is x%

$$A - P = \frac{P \times r \times t}{100}$$

According to the question,

$$20720 - P = \frac{P \times r \times 4}{100} \quad .....(i)$$

$$24080 - P = \frac{P \times r \times 6}{100} \quad .....(ii)$$

equation (i) divided by (ii)

$$\frac{20720 - P}{24080 - P} = \frac{P \times r \times 4}{100} \times \frac{100}{P \times r \times 6}$$

$$\frac{20720 - P}{24080 - P} = \frac{2}{3}$$

62160 – 3P = 48160 – 2P

P = 14000

putting the value P in equation (i)

$$20720 - 14000 = \frac{14000 \times r \times 4}{100}$$

6720 = 560 r

r = 12%

73. An amount at the same rate of simple interest becomes ₹9800 in 5 years and ₹12005 in 8 years what is the rate of interest?

(a) 12% (b) 15%
(c) 8% (d) 5%

RRB JE - 31/05/2019 (Shift-I)

Ans : (a) According to the question,

interest of three years

= amount of 8 Years – amount of 5 years

= 12005 – 9800 = 2205

$$\text{interest of one year} = \frac{2205}{3} = 735$$

$$735 = \frac{\{9800 - (735 \times 5)\} \times \text{Rate} \times 1}{100}$$

73500 = (9800 – 3675)× R

73500 = 6125 × R

R = 12%

74. The amount of ₹800 ₹956 in 3 years at a fixed rate of simple interest. Find the rate?

(a) 8.2% (b) 8%
(c) 7.5% (d) 6.5%

RRB JE - 31/05/2019 (Shift-III)

Ans. (d) Principal = ₹800, Time = 3 Years, Rate = r % (Let)

Amount = ₹956

simple interest = 956 – 800 = ₹156

$\Rightarrow \quad 156 = 800 \times \frac{r}{100} \times 3$

$\Rightarrow \quad r = \frac{156}{24} \quad \Rightarrow r = 6.5\%$ annual

75. Vimal that ₹5000 to Kamal for 2 years and to sumal ₹3000 for 4 years at simple interest at same interest rate and received ₹2200 as interest from both calculate interest rate per year.

(a) 13% (b) 15%
(c) 23% (d) 10%

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (d) both interest = ₹ 2200

$\frac{5000 \times 2 \times R}{100} + \frac{3000 \times 4 \times R}{100} = 2200$

100R + 120 R = 2200

220 R = 2200

$\boxed{R = 10\%}$

76. Find the simple interest rate at which a sum of money becomes five times the rate of simple interest in 10 years.

(a) 40% (b) 35%
(c) 25% (d) 50%

RRB NTPC 18.04.2016 Shift : 2

Ans : (a) Time = 10 Years

Let Principal = ₹x

∴ Amount = 5x

Interest = 5x – x = 4x

Rate = R%

simple interest $= \frac{PTR}{100}$

$4x = \frac{x \times 10 \times R}{100}$

R = 40%

77. Anju invested same 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 scheme for 2 years. If he has earned the same simple interest from both the schemes, what is the normal interest rate of the second scheme.

(a) 12% per year (b) 18% per year
(c) 6% per year (d) 9% per year

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (c) According to the question,

$\frac{P \times 12 \times 3}{100} = \frac{3P \times 2 \times R}{100}$

12×3 = 3×2×R

R= 6% per years

78. In investement of ₹775 for 6 years yields ₹372 as interest. What is the annual rate of simple interest?

(a) 7% (b) 8%
(c) 9% (d) 7.5%

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) Given– Principal = ₹775

Interest = ₹372

Time = 6 Years

Interest $= \frac{P \times R \times T}{100}$

$372 = \frac{775 \times R \times 6}{100}$

$\frac{6200}{775} = R$

R= 8%

so annual rate of simple interest will be 8%

79. Mani deposits ₹12500 in a bank and it becomes ₹15500 in 6 years at the rate of simple interest what is the rate of interest?

(a) 4% (b) 5%
(c) 3% (d) 6%

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (a) S.I. $= \frac{PRT}{100}$

S.I. = 15,500 – 12,500

S.I. = ₹3000

$3000 = \frac{12500 \times R \times 6}{100}$

R = 4%

80. An investment of ₹1125 for three months yields an interest of ₹27. Annual rate of simple interest will be:–

(a) 7.2% (b) 12%
(c) 9.6% (d) 2.4%

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (c) Principal = ₹1,125

Time = 3 months या 3/12 Years

Interest = ₹ 27

Rate = ?

$\text{Rate} = \frac{\text{interest} \times 100}{\text{principal} \times \text{time}}$

$\frac{27 \times 100}{1125 \times 3/12} = 9.6\%$

81. The money invested for 6 years yields ₹852 interest on ₹1775. What is the rate of simple interest per annum?

(a) 8% (b) 9%
(c) 7% (d) 7.5%

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (a) :

simple interest $= \frac{P \times R \times T}{100}$

$852 = \frac{1775 \times R \times 6}{100}$

$R = \frac{85200}{10650} = 8\%$

82. If the value of a bill of ₹600 becomes ₹660 in two years. What is the rate of simple interest per annum?

(a) 10% (b) 4%
(c) 6% (d) 5%

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (d) : simple interest = 660 – 600 = ₹ 60

simple interest $= \frac{P \times R \times T}{100}$

$60 = \frac{600 \times \text{Rate} \times 2}{100}$

Rate $= \frac{60 \times 100}{600 \times 2}$

Rate = 5%

83. Simple interest on a fixed amount is 1/36 of the principal. If the rate of interest and number of years are equal then what is the rate of interest?

(a) $\frac{6}{19}\%$ (b) $\frac{5}{3}\%$
(c) $\frac{10}{3}\%$ (d) $\frac{10}{12}\%$

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (b) Let Principal = ₹ P

$\therefore$ simple interest $= \frac{P}{36}$

Let Time = n Years

$\therefore$ Rate = n %

simple interest $= \frac{P \times R \times T}{100}$

$\frac{P}{36} = \frac{P \times n \times n}{100}$

$n^2 = \frac{100}{36} = \frac{25}{9}$

$n = \frac{5}{3}$ Years

$\therefore$ Rate $= \frac{5}{3}\%$

84. An investment of ₹1080 for 3 months yielded ₹27 as interest. The annual simple interest rate was:

(a) 7.5% (b) 5%
(c) 2.5% (d) 10%

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (d) Given-

Principal = ₹ 1080, Time = 3 months = $\frac{3}{12} = \frac{1}{4}$ Years

Interest = ₹ 27

Rate = ?

Simple interest $= \frac{P \times R \times T}{100}$

$27 = \frac{1080 \times r \times 1}{100 \times 4}$

r = 10%

85. ₹875 invested for 3 months earns ₹21 as interest what was the rate of simple interest per year?

(a) 12% (b) 2.4%
(c) 7.2% (d) 9.6%

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (d) : Given,

Interest = ₹ 21,

Principal = ₹ 875,

Time $= \frac{3}{12}$ Years

simple interest $= \frac{P \times R \times T}{100}$

$21 = \frac{875 \times \text{Rate} \times 3}{100 \times 12}$

Rate $= \frac{21 \times 100 \times 4}{875} = 9.6\%$

86. The simple interest is the 9/16th part of 'P' at a certain amount of 'P' and 'R'% per annum. If 'R' is equal to the number of years (N) then find the value of N.

(a) 8.5 (b) 7
(c) 7.5 (d) 6

RRB NTPC 17.01.2017 Shift-2

Ans : (c) Given–

R = N

$\therefore \frac{9}{16}P = \frac{PRT}{100}$ $\left[S.I. = \frac{PRT}{100}\right]$

$\Rightarrow \frac{9}{16}P = \frac{P \times N \times N}{100}$

$\Rightarrow N^2 = \frac{9}{16} \times 100 = \left(\frac{30}{4}\right)^2$

$\Rightarrow N = 7.5$

87. The maturity value after 3 years and 5 years at the same rate of simple interest as a fixed sum of money is ₹8255 and ₹9425 respectively. Find the annual rate of interest.

(a) 9% (b) 8%
(c) 7% (d) 6%

RRB NTPC 31.03.2016 Shift : 1

Ans : (a) Simple interest of 2 years = 9425 – 8255
= ₹1170

Simple interest of 3 years $= \frac{1170}{2} \times 3 = 1755$

∴ Principal = 8255 – 1755 = ₹6500

$\because \quad S.I. = \frac{PRT}{100}$

$1755 = \frac{6500 \times R \times 3}{100} \quad R = \frac{1755}{65 \times 3} = 9\%$

88. 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?

(a) 12.34% (b) 12.26%
(c) 12.38% (d) 12.36%

RRB NTPC 30.03.2016 Shift : 2

Ans : (d) Let Principal = ₹100

∴ Interest in last six months $= \frac{100 \times 12 \times 6}{100 \times 12} = 6$

∴ Principal for next six months = 100 + 6 = ₹106

Interest $= \frac{106 \times 12 \times 6}{100 \times 12} =$ ₹6.36

∴ Annual rate of effective Interest = 6+6.36 = 12.36%

89. Ram lent ₹6,000 to Shiva for 3 years and ₹8,000 to Krishna for 5 years at the same rate of simple interest per annum. He got total interest of Rs. 5,220 from both. Find the rate of interest per annum.

(a) 6% (b) 7%
(c) 8% (d) 9%

RRB NTPC 29.03.2016 Shift : 3

Ans : (d) Let annual rate of interest = R%

$\therefore \frac{6000 \times R \times 3}{100} + \frac{8000 \times R \times 5}{100} = 5220$

180 R + 400R = 5220

580 R = 5220

$R = \frac{5220}{580} = 9\%$

90. The simple interest at the amount of ₹8500 deposided for 3 years is ₹2040. Find the annual rate of interest.

(a) 8% (b) 8.5%
(c) 9% (d) 7.5%

RRB NTPC 18.01.2017 Shift : 1

Ans : (a)

$SI = \frac{P \times R \times T}{100}$

$2040 = \frac{8500 \times R \times 3}{100}$

2040 = 85 × R × 3

$R = \frac{2040}{85 \times 3} = 8\%$

91. The simple interest for 2 years 8 months on ₹7800 is ₹1976. Find the annual rate of interest.

(a) 8.5% (b) 9%
(c) 9.5% (d) 10%

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) Principal = ₹7800

Time- 2Years 8 months $= \left(2 + \frac{8}{12}\right)$ Years $= \frac{8}{3}$ Years

Rate = ?

simple interest = 1976

$S.I. = \frac{P \times T \times R}{100}$

$1976 = \frac{7800 \times R \times 8}{300}$

$\frac{1976 \times 300}{7800 \times 8} = R$

$R = \frac{19}{2} = 9.5\%$

92. The numerical value of the percentage and time of the given rate of interest are equal and the simple interest on an amount is 9/16 of the principal. Find the rate of simple interest.

(a) 9/2% (b) 11%
(c) 15/2% (d) 12%

RRB NTPC 22.04.2016 Shift : 3

Ans : (c) Simple interest = Principal $\times \frac{9}{16}$

$\frac{\text{Simple interest}}{\text{Principal}} = \frac{9}{16}$

R = N

∴ Interest की Rate $(R) = \frac{100 \times 9}{16 \times R}$

$R^2 = \frac{900}{16}$

$R = \sqrt{\frac{900}{16}} = \frac{30}{4} = \frac{15}{2}\%$

93. If the interest earned over a period of 8 years is equal to the principal, what is the rate of simple interest applied?

(a) 8 (b) 10.5
(c) 12 (d) 12.5

RRB NTPC 29.04.2016 Shift : 1

Ans : (d) Time (T) = 8 Years

Rate (R) = ?

Principal (P) = Simple interest (SI)

P = SI

$\because \quad SI = \frac{PTR}{100}$

$\therefore \quad P = \frac{P \times 8 \times R}{100}$

$\Rightarrow \quad R = \frac{P \times 100}{P \times 8}$

$\Rightarrow \quad R = 12.5\%$

94. ₹ 750 invested for 3 months gave an interest of ₹ 18. What was the simple rate of interest per annum?

(a) 2.4% (b) 9.6%
(c) 7.2% (d) 12%

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (b) simple interest = $\frac{P \times R \times T}{100}$

$18 = \frac{750 \times R \times \frac{3}{12}}{100}$

$18 \times 100 = 750 \times R \times \frac{1}{4}$

$\frac{18 \times 100 \times 4}{750} = R$

$R = \frac{18 \times 2 \times 4}{15} = \frac{48}{5}$

R = 9.6% per years

Type - 5

95. In how much time will an amount double if invested at a simple annual rate of 12.5%.

(a) 6 years (b) 7 years
(c) 9 years (d) 8 years

RRB RPF SI – 16/01/2019 (Shift-I)

Ans : (d) Let invested Amount = ₹x

Amount = Principal $\left(1 + \frac{\text{Rate} \times \text{Time}}{100}\right)$

$\Rightarrow 2x = x\left(1 + \frac{12.5 \times t}{100}\right)$

$\Rightarrow 2 = 1 + \frac{125 \times t}{1000}$

$\Rightarrow 1 = \frac{t}{8}$

Time (t) = 8 Years

96. 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?

(a) 25 years (b) 28 years
(c) 20 years (d) 35 years

RRB JE - 27/06/2019 (Shift-III)

Ans : (d) Let Principal = P

Amount = 4P

Interest = 4P – P = 3P

Time = 7 Years

Rate of Interest = $\frac{\text{Interest} \times 100}{\text{Time} \times \text{Principal}}$

$\frac{3P \times 100}{7 \times P} = \frac{300}{7}\%$

Time when the amount is 16 times = $\frac{15P \times 100}{\frac{300}{7} \times P}$

$= \frac{15 \times 100 \times 7}{300} = 35$ Years

97. If the simple interest is 12.5% more than the principal and (n) the number of years. n and the rate (r) is numerically in a ratio of 2:1 then find the value of n and r.

(a) n = 12, r = 6%
(b) n = 15, r = $7\frac{1}{2}\%$
(c) n=20, r=10%
(d) n= 14, r = 7%

RRB JE - 24/05/2019 (Shift-I)

Ans : (b) Let Principal = ₹ P

Time = 2x Years, Rate = x%

$\therefore$ Simple interest = $\frac{112.5}{100} \times P$

Simple interest = $\frac{P \times R \times T}{100}$

$\frac{112.5}{100} \times P = \frac{P \times 2x \times x}{100}$

$112.5 = 2x^2$

$x^2 = 56.25$

$x = 7.5 = 7\frac{1}{2}$

Hence Rate $7\frac{1}{2}\%$ and Time (n) = $2 \times 7\frac{1}{2} = 15$ Years

98. If a loan increases 3 times in 6 years at simple interest, then how much time will it take to get 8 times.

(a) 15 Years (b) 22 Years
(c) 20 Years (d) 21 Years

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

Ans : (d) Let Principal is ₹ x

$\therefore$ amount = ₹ 3x

According to first condition,

simple interest = 3x – x = ₹ 2x

$$\text{simple interest} = \frac{P \times R \times T}{100}$$

$$2x = \frac{x \times R \times 6}{100}$$

$$R = \frac{100}{3}\%$$

According to second condition,

$$\text{simple interest} = 7x = \frac{x \times R \times n}{100}$$

$$7 = \frac{100/3 \times n}{100}$$

n = 21 Years

99. Raghu has invested ₹1000 and received ₹1300 after x years at a simple interest rate of 6% per annum. Find the value of x?

(a) 2 Years (b) 5Years
(c) 3Years (d) 4Years

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (b) Interest = 1300 – 1000 = ₹ 300

$$\text{Interest} = \frac{P \times R \times T}{100}$$

$$300 = \frac{1000 \times 6 \times x}{100}$$

x = 5 Years

100. In what time will simple interest of ₹390 yielded at 5% rate at ₹1800 per annum.

(a) 5 years 3 months
(b) 5 years 4 months
(c) 4 years 4 months
(d) 4 years 2 months

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (c) Principal = ₹1,800

Rate = 5%

simple interest = ₹390

$$\text{simple interest} = \frac{P \times R \times T}{100}$$

$$390 = \frac{1800 \times 5 \times \text{time}}{100}$$

$$\text{Time} = \frac{78}{18} = \frac{26}{6} = \frac{13}{3} \text{ Years}$$

$$\text{Time} = 4\frac{1}{3} \text{ Years or 4 year 4 months}$$

101. 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?

(a) 12 years (b) 5.5 years
(c) 15 years (d) 7.5 years

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (c) simple interest = $\frac{P \times R \times T}{100}$

According to the question, Rate = Time

$$\frac{9P}{4} = \frac{P \times \text{time} \times \text{time}}{100}$$

$$\frac{9 \times 100}{4} = \text{Time} \times \text{Time}$$

$$\text{Time} = \sqrt{9 \times 25} = 15 \text{ Years}$$

102. In how much time simple interest will be ₹400 on ₹4000 (principal) at 6% per annum.

(a) 20 months (b) 22 months
(c) 14 months (d) 18 months

RRB NTPC 18.01.2017 Shift : 2

Ans : (a) simple interest = $\frac{P \times R \times T}{100}$

$$400 = \frac{4000 \times 6 \times t}{100}$$

$$\text{Time} = \frac{40000}{4000 \times 6} = \frac{10}{6} \text{ years} = \frac{10}{6} \times 12 = 20 \text{ months}$$

103. In how much time a sum of money will become 7/6 of itself at the rate of 25% simple interest?

(a) 6 months (b) 8 months
(c) 9 months (d) 10 months

RRB NTPC 18.04.2016 Shift : 3

Ans : (b) Let Principal is ₹x and amount is $\frac{7x}{6}$.

Then According to the question,

$$\frac{7x}{6} - x = \frac{x \times 25 \times \text{Time}}{100}$$

$$\Rightarrow \frac{x}{6} = \frac{x \times 25 \times \text{Time}}{100}$$

$$\Rightarrow \text{Time} = \frac{4}{6} \text{ Years} = \frac{4}{6} \times 12 \text{ months} = 8 \text{ months}$$

104. At what time will the simple interest of ₹8750 becomes 6/25 of the principal at an annual rate of 8%?

(a) 3 years (b) 4 years
(c) 2 years Years (d) 5 years

RRB NTPC 28.03.2016 Shift : 2

Ans :(a) From Question–

$$\text{Simple Interest} = 8750 \times \frac{6}{25} = 2100$$

$$\frac{8750 \times n \times 8}{100} = 2100$$

$$n = \frac{210000}{8750 \times 8}$$

n = 3 years

15.

Compound Interest

Type - 1

1. Mohit invested ₹10000 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 ₹ 2726, then what was the amount invested in PPF?

(a) ₹5000 (b) ₹4000
(c) ₹6000 (d) ₹7000

RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (b) Let invested amount in NSC = ₹ x
Invested amount in PPF = ₹ (10000 – x)

$$x\left(1+\frac{14}{100}\right)^2+(10000-x)\left(1+\frac{11}{100}\right)^2=10000+2726$$

$$x\times\frac{114}{100}\times\frac{114}{100}+(10000-x)\frac{111}{100}\times\frac{111}{100}=12726$$

$$\frac{12996x}{10000}+(10000-x)\frac{12321}{10000}=12726$$

$$\frac{12996x}{10000}+\frac{123210000-12321x}{10000}=12726$$

$$12996x+123210000-12321x=127260000$$

$$675x=4050000$$

$$x=\frac{4050000}{675}=6000$$

Amount of PPF = 10000–6000 = ₹4000

2. Find the amount of interest for the third year at the rate of annual compound interest on ₹2000 at a rate of 40%.

(a) ₹1500 (b) ₹1600
(c) ₹1568 (d) ₹1750

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (c) Principal = ₹2000
Rate = 40%

Interest for three year $=2000\left[\left(1+\frac{40}{100}\right)^3-1\right]$

$$=2000\times\left(\frac{7}{5}\right)^3-2000$$

$$=5488-2000=3488$$

Interest for two year $=2000\times\left(1+\frac{40}{100}\right)^2-2000$

$$=3920-2000=1920$$

Interest for third year = 3488 – 1920 = ₹1568

3. An amount of ₹16400 is borrowed and is to be repaid in 2 years in equal annual installments at the rate of 5% compound interest. Find the amount of annual payment.

(a) ₹ 7590 (b) ₹ 7495
(c) ₹ 7600 (d) ₹ 8820

RRB JE - 25/05/2019 (Shift-II)

Ans : (d) Given-

Total amount = installment $\left[\frac{1}{\left(1+\frac{r}{100}\right)^1}+\frac{1}{\left(1+\frac{r}{100}\right)^2}\right]$

$$16,400=x\left[\frac{1}{\left(1+\frac{5}{100}\right)^1}+\frac{1}{\left(1+\frac{5}{100}\right)^2}\right]$$

$$16,400=x\left[\frac{1}{\frac{21}{20}}+\frac{1}{\left(\frac{21}{20}\right)^2}\right]=x\left[\frac{20}{21}+\frac{400}{441}\right]$$

$$16,400=x\left[\frac{420+400}{441}\right]=x\times\frac{820}{441}$$

x = 20 × 441 = ₹ 8820

4. A women invested ₹200 at the beginning of every year at a 5% compound interest rate. At the end of the second year its total investment amount will be.

(a) ₹431 (b) ₹430.5
(c) ₹435 (d) ₹430

RRB RPF SI – 11/01/2019 (Shift-I)

Ans : (b) First Year, Principal = ₹200
Rate = 5% Time = 1 Year

Compound amount = Principal $\left(1+\frac{r}{100}\right)^t$

$$=200\left(1+\frac{5}{100}\right)^1=200\times\frac{21}{20}=₹\ 210$$

Again for second year
Principal = ₹ 210 + ₹ 200 = ₹ 410
Rate = 5%, Time = 1 Year

New Compound amount = $410\left(1+\frac{5}{100}\right)^1=410\times\frac{21}{20}$

= ₹ 430.50

5. A certain sum of money was invested at compound interest, at 4% per annum for 2 years at compound interest, this amount becomes ₹338. Find the amount.

(a) ₹320 (b) ₹ 312.5
(c) ₹318.53 (d) ₹315

RRB JE - 25/05/2019 (Shift-III)

Ans : (b) Given-

P = ?, r = 4%, Amount = ₹338, t = 2 Year

As per the question-

$$\text{Amount} = P\left(1+\frac{r}{100}\right)^t$$

$$338 = P\left(1+\frac{4}{100}\right)^2$$

$$338 = P\times\left(\frac{26}{25}\right)^2$$

$$P = \frac{211250}{676}$$

P = ₹312.5

6. An amount is invested for two years at 20% compound interest. If the interest is payable on a half yearly basis, then it receives ₹482 more than that which was payable on an annual basis. Find the amount.

(a) ₹ 19500 (b) ₹ 20000
(c) ₹ 21800 (d) ₹ 30000

RRB JE - 26/06/2019 (Shift-I)

Ans. (b) Let Principal amount = ₹x

Rate of Compound interest = 20%

$$\text{Compound interest} = \text{Principal}\left[\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}-1\right]$$

$$= x\left[\left(1+\frac{20}{100}\right)^2-1\right]$$

$$= x\left[\left(1+\frac{1}{5}\right)^2-1\right]$$

$$= x\left[\left(\frac{6}{5}\right)^2-1\right]$$

$$= x\left[\frac{36}{25}-1\right]$$

$$= \frac{11x}{25}$$

If interest are half yearly payable

Rate of interest = 10%

Time = 4 Year

$$\text{Compound interest} = \text{Principal}\left[\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}-1\right]$$

$$= x\left[\left(1+\frac{10}{100}\right)^4-1\right]$$

$$= x\left[\left(\frac{11}{10}\right)^4-1\right]$$

$$= x\left[\frac{11\times11\times11\times11-10000}{10000}\right]$$

$$= x\left[\frac{14641-10000}{10000}\right] = \frac{4641x}{10000}$$

As per the question,

$$\frac{4641x}{10000}-\frac{11x}{25} = 482$$

$$\frac{4641x-4400x}{10000} = 482$$

$$\frac{241x}{10000} = 482$$

x = 2 × 10000 = ₹20000

7. A fixed amount becomes ₹2420 in two years at a rate of compound interest and ₹2662 in three years, the interest was calculated on an annual compound basis. Find the amount and rate of interest annually.

(a) ₹1000 and 12% (b) ₹ 2000 and 10%
(c) ₹ 2250 and 15% (d) ₹ 2500 and 5%

RRB JE - 31/05/2019 (Shift-II)

Ans : (b) Let that amount P and interest rate is r%

$$\text{Compound amount} = P\left(1+\frac{r}{100}\right)^n$$

According to the question-

$$2420 = P\left(1+\frac{r}{100}\right)^2 \quad \text{----(i)}$$

$$2662 = P\left(1+\frac{r}{100}\right)^3 \quad \text{----(ii)}$$

Dividing equation (ii) in (i)

$$1+\frac{r}{100} = \frac{2662}{2420}$$

r = 10%

from equation (i) - $2420 = P\left(1+\frac{10}{100}\right)^2$

$$P = 2420\times\frac{10}{11}\times\frac{10}{11} = ₹2000$$

8. Mr. Marthi invested ₹16000 in a scheme. How much money will be get when he becomes on adult if he invests it for 9 months at a compound interest rate of 20% per annum.

(a) ₹ 18,523 (b) ₹ 18,521
(c) ₹ 18,524 (d) ₹ 18,522

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

Ans : (d)

Compound interest Rate on quarter $= \frac{20}{4}\% = 5\%$

time = 9 months = 3 quarter

Received amount on being adult of marthy

$$= 16000\left[1+\frac{5}{100}\right]^3$$

$$\left\{\because A = P\left(1+\frac{r}{100}\right)^n\right\}$$

$$= 16000\left(\frac{21}{20}\right)^3 = \frac{16000\times21\times21\times21}{20\times20\times20} = ₹18522$$

9. A person borrowed money at 9% simple interest and invested it at 10% compound interest for 3 years After 3 years he received profit of ₹1952. How much money did he borrow?

(a) ₹ 30000 (b) ₹ 32000
(c) ₹ 33000 (d) ₹ 32543

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (b) : Suppose borrowed amount = ₹ x

Compound interest = total Amount − Principal

Profit = Compound interest − simple interest

As per the question,

$$x\left[\left(1+\frac{10}{100}\right)^3-1\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\left(\frac{11}{10}\right)^3-1\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{1331}{1000}-1\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{1331-1000}{1000}\right]-\left[\frac{x\times9\times3}{100}\right]=1952$$

$$\Rightarrow x\left[\frac{331}{1000}\right]-\frac{27x}{100}=1952$$

$$\Rightarrow \frac{x(331-270)}{1000}=1952$$

$$\Rightarrow \frac{x\times61}{1000}=1952$$

$$\Rightarrow x = 32\times1000 = ₹32000$$

10. The money invested for two years is to be compounded on an annual basis, at a rate of 20% per annum. At maturity it becomes ₹324. What was the initial amount invested.

(a) ₹240 (b) ₹200
(c) ₹250 (d) ₹225

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d) Let Amount = ₹ P

time = 2 Year

, Rate = 20% Annual

$$324 = P\left(1+\frac{20}{100}\right)^2$$

$$324 = P\times\frac{6}{5}\times\frac{6}{5}$$

$$P = \frac{324\times25}{36}$$

$$P = ₹225$$

11. When there is an annual compound interest at the rate of around 9% per annum, what will be the amount of ₹5000 after 2 years.

(a) ₹5,940 (b) ₹9,950
(c) ₹5,970 (d) ₹5,936

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (a)

Principal (P) = ₹ 5000

Time (t) = 2

Rate (r) = 9%

$$\text{Compound amount} = \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}$$

$$= 5000\left(1+\frac{9}{100}\right)^2$$

$$= 5000\times\frac{109}{100}\times\frac{109}{100}$$

$$= \frac{5\times109\times109}{10} = 5940.5 \approx ₹\ 5940$$

12. Shyam deposits ₹x for 2 years at 8% per annum compound annual interest, which is ₹72900. Then what is the value of x?

(a) ₹60,500 (b) ₹62,000
(c) ₹60,000 (d) ₹62,500

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (d) r = 8%

n = 2 Year

A = ₹ 72,900

$$A = P\left(1+\frac{R}{100}\right)^n,\quad 72900 = P\left[1+\frac{8}{100}\right]^2$$

$$72900 = P\times\frac{108}{100}\times\frac{108}{100}$$

$$P = \frac{72900\times100\times100}{108\times108}$$

$$P = ₹\ 62500$$

13. If ₹10000 is invested at the rate of 20% per annum, at half yearly compound interest, then what will be the amount after 18 months.

(a) ₹16000 (b) ₹ 13310
(c) ₹13000 (d) ₹ 13140

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (b) time (t) = 18 month = 3 Half yearly

Rate (r) = 20% Annual = 10% Half yearly

Then required Amount = Principal $\left(1+\frac{r}{100}\right)^t$

$$=10000\left(1+\frac{10}{100}\right)^3$$

$$=10000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}=₹13310$$

14. If you have invested ₹100 on a 40% annual interest, which would be a quarterly compounded. How much amount will you get after one year?

(a) ₹148.11 (b) ₹146.41
(c) ₹145.61 (d) ₹149.01

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (b) interest Rate = 40% Annual

$\therefore$ quarter interest Rate $=\frac{40\times3}{12}=10\%$

time = 4 quarter

Amount after 1 year $=100\times\left(1+\frac{10}{100}\right)^4$

$$=100\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$$

$$=\frac{121\times121}{100}$$

$$=₹146.41$$

15. A women invests ₹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.

(a) ₹ 4305 (b) ₹ 430
(c) ₹ 4355 (d) ₹ 4350

RRB NTPC 17.01.2017 Shift-1

Ans : (a) Received amount in first year

= invested amount + simple interest

$$=2000+\frac{2000\times5\times1}{100}=2100$$

Received amount in second year

= invested amount + simple interest

$$=(2100+2000)+\frac{4100\times5\times1}{100}=4100+205=4305$$

Hence the women invest ₹4305 at the end of second year.

16. A person borrows a certain amount from a bank for 3 years at a rate of 7% compound interest annually. If he paid ₹85966 as total interest, then what was the amount borrowed?

(a) ₹462,000 (b) ₹382,000
(c) ₹354,000 (d) ₹428,000

RRB NTPC 04.04.2016 Shift : 1

Ans : (b) Let borrowed amuont = ₹x

Amount (A) = Principal + interest

= x + 85966

$$\because A=P\left(1+\frac{r}{100}\right)^n$$

$$x+85966=x\left(1+\frac{7}{100}\right)^3$$

$x + 85966 = x\,(1.07)^3$

$x + 85966 = 1.225043x$

$0.225043x = 85966$

$$x=\frac{85966}{0.225043}$$

x = 381998.107, x = ₹382000

17. After two years of ₹80000 from compound interest compounded annually, what will be the amount at the annual rate of 20%.

(a) ₹97,240 (b) ₹117,128
(c) ₹115,200 (d) ₹120,000

RRB NTPC 02.04.2016 Shift : 1

Ans : (b) $\because$ interest is half yearly

$\therefore$ Time = 2 Year = 4 Half year

Rate $=\frac{20}{2}=10\%$ Half yearly

$$\therefore A=80000\left(1+\frac{10}{100}\right)^4$$

$$=80000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}=₹117,128$$

18. A takes a fixed amount from a bank at a rate of 8% interest with interest compound half yearly. If he paid ₹196851 after one and a half year, find the principal.

(a) ₹ 168,000 (b) ₹ 175,000
(c) ₹ 179,000 (d) ₹ 184,000

RRB NTPC 31.03.2016 Shift : 3

Ans : (b) Given- Rate (r) = 8% Annual, = 4% Half yearly

Time n = 1 Year = 2 Half yearly

1.5 Year = 3 Half yearly

$$\text{Principal}=\frac{196851}{\left(1+\frac{4}{100}\right)^3}=\frac{196851}{(26/25)^3}$$

$$=\frac{196851\times25\times25\times25}{26\times26\times26}$$

$$=174999.82=₹175000$$

19. If 'P' expresses the principal invested at the semi annual rate for a period of 2 years at a 5% interest rate, then after 2 years how much amount will he receive?

(a) $P(1.025)^4$ (b) $P(1.1)$
(c) $P(1.05)^2$ (d) $P(1.025)^2$

RRB NTPC 18.01.2017 Shift : 2

Ans : (a) 2 year = 4 Half year

$$R = \left(\frac{5}{2}\right)\% \text{ Half year}$$

$$A = P\left(1+\frac{R}{100}\right)^n$$

$$A = P\left(1+\frac{5}{2\times100}\right)^4$$

$$A = P\left(\frac{41}{40}\right)^4$$

$$A = P(1.025)^4$$

20. A fixed amount becomes ₹7200 in 2 years at a compound interest rate of 20% per annum. Find the principal amount.

(a) ₹4800 (b) ₹6000
(c) ₹5400 (d) ₹5000

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) Compound amount $= P\left(1+\frac{r}{100}\right)^n$

$$7200 = P\left(1+\frac{20}{100}\right)^2$$

$$7200 = P\left(1+\frac{20}{100}\right)^2$$

$$7200 = P\times\frac{36}{25}$$

P = 200 × 25 = ₹5000

21. Prakash invests in a FD. What will be the matured amount with an annual compound interest rate of 20% for 6 months at ₹13000, interest is compounded quarterly?

(a) ₹14332.25 (b) ₹14332.5
(c) ₹14332.75 (d) ₹14332

RRB NTPC 07.04.2016 Shift : 3

Ans :(b) P = ₹13000

T = 6 months $= \frac{6}{3}$ 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

$$= 13000\times\left(1+\frac{1}{20}\right)^2 = 13000\times\left(\frac{21}{20}\right)^2$$

$$= 13000\times\frac{21}{20}\times\frac{21}{20} = ₹14332.5$$

22. Mr. Akhil deposited ₹13500 in a fixed deposit find the total money for 6 months at the rate of compound interest of 20% per annum if the interest is compound for every 3 months.

(a) ₹ 14, 883.35 (b) ₹ 14,883.75
(c) ₹ 14,883.5 (d) ₹ 14,883

RRB NTPC 19.01.2017 Shift : 1

Ans : (b) When Rate is quarter $= \frac{20}{4} = 5\%$

time = 6 month = 2 quarter

As per the question,

$$= 13500\left[1+\frac{5}{100}\right]^2$$

$$= 13500\times\frac{21\times21}{20\times20} = ₹14883.75$$

23. A women invested ₹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?

(a) ₹ 4410 (b) ₹ 4615
(c) ₹ 5000 (d) ₹ 4010

RRB NTPC 19.01.2017 Shift : 3

Ans : (a) $S.I = \frac{PRT}{100} = \frac{4000\times5\times1}{100} = 200$

$$C.I = \frac{4200\times105}{100} = ₹4410$$

24. Rakesh invests ₹10000 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 the fixed deposit?

(a) ₹ 10000 (b) ₹ 8500
(c) ₹ 11050 (d) ₹ 11025

RRB NTPC 22.04.2016 Shift : 1

Ans : (d) Given-

Principal (P) = ₹10000

Annual Rate (R) = 5%

time (t) = 2 Year

Formula– Compound Amount (A) $= P\left(1+\frac{R}{100}\right)^t$ from-

$$A = 10000\left(1+\frac{5}{100}\right)^2$$

$$= 10000\left(\frac{21}{20}\right)^2$$

$$= 10000\times\frac{441}{400}$$

$$= 25\times441 = ₹11025$$

25. A person invests ₹20000 for 1 year at an annual interest rate of 15%. If the interest is compounded half yearly, then the amount received by him at the end of the year will be.

(a) ₹16537.50 (b) ₹23112.50
(c) ₹18112.75 (d) ₹22175.30

RRB NTPC 22.04.2016 Shift : 3

Ans : (b) Principal (P) = ₹20,000
Time (n) = 2 (Half yearly)

Rate $(R) = \frac{15}{2}\%$ (Half yearly)

$$A = P\left(1+\frac{r}{100}\right)^n$$

$$= 20000\left(1+\frac{15}{2\times100}\right)^2$$

$$= 20000\times\frac{43}{40}\times\frac{43}{40} = ₹23112.50$$

26. Calculate the principal if an amount of ₹ 441 is received on compound interest at the rate of 5% per annum after 2 years

(a) ₹400 (b) ₹390
(c) ₹380 (d) ₹350

RRB NTPC 27.04.2016 Shift : 3

Ans : (a) As per the question,

$$\text{Amount} = \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}$$

$$441 = \text{Principal}\left(1+\frac{5}{100}\right)^2$$

$$441 = \text{Principal}\left(\frac{21}{20}\right)^2$$

$$441 = \text{Principal}\times\frac{441}{400}$$

$$\text{Principal} = \frac{441\times400}{441} = ₹400$$

27. Gitesh took a loan for 4 years at 5% compound interest. If the total interest paid was ₹ 431.01, Calculate the principal.

(a) ₹2000 (b) ₹2050
(c) ₹2100 (d) ₹2150

RRB NTPC 27.04.2016 Shift : 3

Ans : (a)

$$\text{Compound interest} = \text{Principal}\left[\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}-1\right]$$

$$431.01 = \text{Principal}\left[\left(1+\frac{5}{100}\right)^4-1\right]$$

$$431.01 = \text{Principal}\left[\frac{21}{20}\times\frac{21}{20}\times\frac{21}{20}\times\frac{21}{20}-1\right]$$

$$431.01 = \text{Principal}\left[\frac{194481}{160000}-1\right]$$

$$431.01 = \text{Principal}\left[\frac{194481-160000}{160000}\right]$$

$$431.01 = \text{Principal}\times\frac{34481}{160000}$$

$$\text{Principal} = \frac{431.01\times160000}{34481} = 1999.99 = ₹\,2000$$

28. A women deposited ₹100 at an annual interest rate of 10%. The women received ₹121 at the end of the period at an annual rate of compound interest. How long did he keep the money in the bank?

(a) 1 Year (b) 2 Year
(c) 2.5 Year (d) 3 Year

RRB NTPC 28.04.2016 Shift : 3

Ans : (b) Given–
Principal (P) = ₹100
Amount (A) = ₹121
Rate (R) = 10%
time t = ?

Formula– $A = P\left(1+\frac{R}{100}\right)^t$ से–

$$121 = 100\left(1+\frac{10}{100}\right)^t$$

$$\frac{121}{100} = \left(\frac{11}{10}\right)^t$$

$$\left(\frac{11}{10}\right)^2 = \left(\frac{11}{10}\right)^t$$

t = 2 Year

29. If a certain amount becomes ₹6655 at a compound interest rate of 10% in 3 years. Find the amount.

(a) ₹5000 (b) ₹5500
(c) ₹4500 (d) ₹4800

RRB NTPC 30.04.2016 Shift : 1

Ans : (a) $A = P\left(1+\frac{r}{100}\right)^n$

$$6655 = P\left(1+\frac{10}{100}\right)^3$$

$$6655 = \frac{1331P}{1000}$$

$$P = \frac{1000\times6655}{1331} = ₹5000$$

30. Rakesh invested ₹10000 in two different schemes in NSC and PPF at an annual compound interest rate of 14% and 11% respectively. If the total interest for 2 years is ₹2726, then what was the amount invested in it (NSC)?

(a) ₹5000 (b) ₹4000
(c) ₹6000 (d) ₹7000

RRB NTPC 30.04.2016 Shift : 2

Ans : (c) Let invested amount in NSC is ₹x. then invested amount in PPF will be ₹ (10000-x).
Total Amount = 10,000 + 2726 = ₹12726
As per the question,

$$12726 = x\left(1+\frac{14}{100}\right)^2+(10,000-x)\times\left(1+\frac{11}{100}\right)^2$$

$$12,726 = x \times \frac{114\times114}{100\times100} + 10,000 \times \frac{111\times111}{100\times100} - x \times \frac{111\times111}{100\times100}$$

$\Rightarrow$ 12,726×10,000=12,996x+12,321×10,000 – 12,321x

$\Rightarrow$ (12,726×10,000–12321×10,000) = 12996x – 12321x

10,000(405) = 675x

$$x = \frac{40,50,000}{675} = ₹6000$$

31. If ₹ 2,000 is invested at the rate of 20% per annum, compounded half-yearly, then the amount after 18 months will be:

(a) ₹2,628 (b) ₹2,662
(c) ₹3,200 (d) ₹2,600

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (b) Principal (P) = ₹2000

Rate (r) = 20% Annual, half yearly interest is payable

so Rate (r) = $\frac{20}{2}$, = 10%, time (T) = 18 month = 3 Half year

Formula- Compound interest

$$= \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}} = 2000\left(1+\frac{10}{100}\right)^3$$

$$= 2000\left(\frac{11}{10}\right)^3 = 2\times1331 = 2662$$

After 18 month amount will be ₹2662

Type - 2

32. In how many years ₹1728 will become ₹2197 at $8\frac{1}{3}$ annual rate of compound interest.

(a) 2 Year (b) $1\frac{1}{2}$ Year
(c) 3 Year (d) $2\frac{1}{2}$ Year

RRB RPF SI – 16/01/2019 (Shift-III)

Ans : (c) Principal = ₹1728

Amount = ₹ 2197

Rate (R) = $8\frac{1}{3}$

Time (n) = ?

$$\text{Amount} = \text{Principal}\left(1+\frac{R}{100}\right)^n$$

$$2197 = 1728\left(1+\frac{8\frac{1}{3}}{100}\right)^n = 1728\left(1+\frac{25}{300}\right)^n$$

$$\frac{2197}{1728} = \left(\frac{13}{12}\right)^n$$

$$\left(\frac{13}{12}\right)^3 = \left(\frac{13}{12}\right)^n$$

n = 3 Year

33. If the amount of ₹64 increases to ₹83.20 in 2 years, then at the same percentage rate of simple interest, how much amount of ₹86 will become in 4 years

(a) ₹ 114.8 (b) ₹ 124.70
(c) ₹ 127.40 (d) ₹ 137.60

RRB JE - 22/05/2019 (Shift-III)

Ans : (d) Let Rate is R%

$$\text{simple interest} = \frac{P\times R\times T}{100}$$

simple interest = Amount − Principal

= 83.20 – 64 = 19.20

$$\text{Simple interest} = \frac{P\times R\times T}{100}$$

$$19.200 = \frac{64\times R\times 2}{100}, \quad \frac{1920}{128} = R$$

R = 15%

Rate = 15%, Principal = ₹86, time = 4 Year,

Amount = ?

$$\text{simple interest} = \frac{86\times15\times4}{100} = 51.60$$

Amount = Principal + simple interest

= 86 + 51.60 = ₹137.60

34. The amount of ₹800 becomes ₹956 in 3 years at a fixed rate of simple interest. If the rate of interest increases by 4% then the amount of ₹800 will be increased in 3 years?

(a) ₹1025 (b) ₹1020.80
(c) ₹1052 (d) ₹1054

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (c) simple interest = Amount – Principal

$$\text{Simple interest} = \frac{P\times R\times T}{100}$$

$$156 = \frac{800\times\text{Rate}\times3}{100}, \quad \text{Rate} = \frac{156}{24} = 6.5\%$$

When rate increase 4% then

Amount = simple interest + Principal

$$= \frac{800\times10.5\times3}{100} + 800 = 8\times10.5\times3 + 800$$

= 84 × 3 + 800 = 1052

35. Ganesh took a loan of ₹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?

(a) ₹16200 (b) ₹18634
(c) ₹17940 (d) ₹18497

RRB JE - 31/05/2019 (Shift-III)

Ans. (b) Principal = ₹14000, time = 3 Year

Rate = 10% Annual

$$\text{Amount} = 14000\left(1+\frac{10}{100}\right)^3$$

$$= 14000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10} = ₹18634$$

36. Calculate 1.5 years of interest at a 10% annual interest rate on an amount of ₹1000 when interest is calculated on a half yearly compound interest basis.

(a) ₹167.36 (b) ₹157.63
(c) ₹150.25 (d) ₹160.55

RRB JE - 22/05/2019 (Shift-I)

Ans : (b) P = ₹1000, r = 10%, n = 1.5 Year = 3 Half year

$$CI = P\left(1+\frac{r}{200}\right)^n - P$$

$$= 1000\left(1+\frac{10}{200}\right)^3 - 1000$$

$$= 1000\times\frac{21}{20}\times\frac{21}{20}\times\frac{21}{20} - 1000$$

$$= \frac{9261}{8} - 1000 = 1157.63 - 1000 = ₹\ 157.63$$

37. When calculated by compound interest on a half yearly basis, find the compound interest of 18 months at 40% per annum on an amount of ₹18500.

(a) ₹ 13468 (b) ₹ 16280
(c) ₹ 16000 (d) ₹ 15469

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (a) P = ₹ 18500
R (Annual) = 40%
Half yearly Rate = r/2% = 20%
n = 3 [18 month = 3 Half year]

$$CI = P\left(1+\frac{r}{100}\right)^n - P$$

$$= 18500\left(1+\frac{120}{100}\right)^3 - 18500$$

$$= 18500\left(\frac{6}{5}\right)^3 - 18500$$

$$= 18500\times\frac{216}{125} - 18500$$

= 31968 – 18500 = ₹13468

38. At a rate of 10% half yearly compound interest at ₹6000. Find the compound interest received in $1\frac{1}{2}$ years

(a) ₹870 (b) ₹900
(c) ₹946 (d) ₹910

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) ∵ Interest is half yearly

$$\therefore\ R = \frac{10}{2} = 5\%$$

$$n = 1\frac{1}{2} = \frac{3}{2}\times 2 = 3 \text{ half yearly}$$

$$C.I. = P\left[\left(1+\frac{R}{100}\right)^n - 1\right]$$

$$C.I. = 6000\left[\left(1+\frac{5}{100}\right)^3 - 1\right]$$

$$C.I. = 6000\times\frac{(9261-8000)}{8000}$$

$$C.I. = 6\times\frac{1261}{8} = \frac{7566}{8} = 945.75$$

Compound interest (approximate) = ₹946

39. Divide the amount of ₹3364 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, after 7 years of investing B's share at the same rate will be equal to the amount received. Find the share of A.

(a) ₹1564 (b) ₹1600
(c) ₹1764 (d) ₹1864

RRB JE - 27/06/2019 (Shift-I)

Ans : (c) Let A's share = ₹x
∴ B's share = ₹(3364 – x)
Amount of A -

$$\text{Amount} = \text{Principal}\left(1+\frac{r}{100}\right)^t$$

$$= x\left(1+\frac{5}{100}\right)^5$$

$$= x\left(\frac{21}{20}\right)^5$$

Amount of B –

$$\text{Amount} = (3364 - x)\left(1+\frac{5}{100}\right)^7$$

$$= (3364 - x)\left(\frac{21}{20}\right)^7$$

$$x\left(\frac{21}{20}\right)^5 = (3364 - x)\left(\frac{21}{20}\right)^7$$

$$x = (3364 - x)\ \frac{21}{20}\times\frac{21}{20}$$

400x = 3364 × 441 – 441x
841x = 3364 × 441

$$x = \frac{3364\times 441}{841} = ₹1764$$

40. In what time will the amount of ₹1000 become ₹1331 at the rate of 10% annual compound interest?

(a) 4 Year (b) 3 Year
(c) 2 Year (d) 5 Year

RRB JE - 27/06/2019 (Shift-I)

Ans : (b) Principal (P) = ₹1000
Amount (A) = ₹1331
Rate (r) = 10%
Time (t) = ?

$$A = P\left(1+\frac{r}{100}\right)^t, \quad 1331 = 1000\left(1+\frac{10}{100}\right)^t$$

$$\frac{1331}{1000} = \left(\frac{11}{10}\right)^t$$

$$\left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^t$$

On comparing of powers,
t = 3 Year

41. Meena took a car loan of ₹275000 from the bank. She paid interest at an annual rate of 8% (p.a.) and paid full amount in 3 years While paying, she paid her old scooter and ₹335000 to the bank. What was the total price of the scooter?

(a) ₹60, 000 (b) ₹6,000
(c) ₹66,000 (d) ₹6,600

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (b)
Loan amount taken by meena (P) = ₹275000
Rate(r) =8%, time n = 3Year
Cost of scooter = Amount-335000

$$= 275000 + \frac{275000\times 8\times 3}{100} - 335000$$

$$= 275000 + 66000 - 335000$$

$$= 341000 - 335000 = ₹6000$$

Hence, cost of scoter is ₹6000

42. What will be the amount of ₹3000 after 2 years if compound interest is compounded annually at about 12 percent per annum interest rate?

(a) ₹3,763 (b) ₹3,773
(c) ₹3,873 (d) ₹3,766

RRB RPF Constable – 19/01/2019 (Shift-I)

Ans. (a) : Principal = ₹3000, Rate = 12%, Time = 2Year

$$\therefore \quad \text{Amount} = \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}}$$

$$= 3000\left(1+\frac{12}{100}\right)^2$$

$$= 3000\times\frac{28}{25}\times\frac{28}{25}$$

$$= \frac{784\times 24}{5}$$

$$= 3763.2 \approx ₹\ 3763$$

43. Satya invested some amount in a fixed deposit what amount of money would be receive on maturity if he invested ₹14500 at a 20% compound interest rate at quarterly compounding rate for a period of 6 months.

(a) ₹ 15,986.25 (b) ₹ 15, 986.5
(c) ₹ 15,986.35 (d) ₹ 15,986

RRB NTPC 17.01.2017 Shift-3

Ans : (a) Invested amount = ₹14500
Time = 6 month = 2 quarter

Rate = 20% Annual $= \frac{20}{4}$% quarter = 5% quarter

$$\because\ A = P\left(1+\frac{r}{100}\right)^n$$

Received amount on maturity to satya

$$= 14500\left(1+\frac{5}{100}\right)^2 = 14500\left(\frac{21}{20}\right)^2 = 14500\times\frac{441}{400}$$

= ₹15986.25

44. Neha's ₹8000 amount becomes ₹9200 after 3 years at a fixed simple interest rate. If the interest rate was increased by 2%, what amount she would have received?

(a) ₹8900 (b) ₹9800
(c) ₹2000 (d) ₹9680

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (d) Amount = Principal + Simple interest

$$9200 = 8000 + \frac{8000\times 3\times r}{100}$$

1200 = 80 × 3r
r = 5%
New Rate = 5 + 2 = 7%

$$\text{simple interest} = \frac{8000\times 3\times 7}{100}$$

= 1680
Total amount = 8000 + 1680 = ₹9680

45. An amount of 200 was invested in a scheme for one year, offering a simple interest of 10% per annum, compounding the interest annually. Another amount of ₹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?

(a) 50 paisa (b) ₹1
(c) 10 paisa (d) 25 paisa

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (a) Principal = ₹ 200, Rate = 10%, time = 1 Year

$$\text{Compound amount of first plan} = 200\left(1+\frac{10\times 1}{100}\right)$$

$$= \frac{200\times 11}{10} = 220$$

Compound amount of second plan

$$= \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{time}}$$

Principal = ₹ 200

Rate $= \frac{10\%}{2} = 5\%$ (Half yearly Compound interest)

time = 2 Half yearly

Compound amount $= 200 \times \left(1 + \frac{5}{100}\right)^2$

$= \frac{200 \times 21 \times 21}{20 \times 20} = \frac{441}{2} =$ ₹220.5

Profit earned under second plan = amount of second plan – amount of first plan = 220.50 – 220 = 50 paisa

46. Manoj invested ₹15000 in a fixed deposit scheme for 3 years, combining 5% per annum annually. What amount will Manoj get on maturity of fixed deposit.

(a) ₹13,764, .37 (b) ₹17,463.37
(c) ₹17,643.37 (d) ₹17,364.37

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (d)

Compound amount $= \text{Principal}\left(1 + \frac{\text{Rate}}{100}\right)^{\text{time}}$

$= 15000\left(1 + \frac{5}{100}\right)^3$

$= 15000 \times \frac{21}{20} \times \frac{21}{20} \times \frac{21}{20}$

$= \frac{138915}{8} =$ ₹ 17364.37

So on maturity of fixed deposit manoj will get ₹ 17364.37

47. Due to an intense campaign against smoking, the percentage of smokers in an area is falling by 10% every year as compared to previous year. If currently the numbers of smokers is 8748, then what was the number of smokers 3 years ago?

(a) 12000 (b) 16253
(c) 11643 (d) 10000

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (a) : From the Formula–

For the population of n year ago

$A = \frac{P}{\left(1 - \frac{r}{100}\right)^n}$

∵ Given–

P = 8748 r = 10%

n = 3 Year

$\therefore A = \frac{8748}{\left(1 - \frac{10}{100}\right)^3} = \frac{8748}{\left(\frac{9}{10}\right)^3}$

$A = 8748 \times \frac{10}{9} \times \frac{10}{9} \times \frac{10}{9} = 12000$

48. Sita borrowed ₹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 rupee did she gain at the end of 2 years?

(a) ₹ 2,000 (b) ₹ 1,600
(c) ₹ 2,200 (d) ₹ 1,800

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) : Rate = 10%, Principal = ₹ 180000,

Time = 2 Year

Simple interest $= \frac{P \times R \times T}{100}$

$= \frac{180000 \times 10 \times 2}{100}$

= ₹ 36000

Compound amount $= \text{Principal}\left(1 + \frac{\text{Rate}}{100}\right)^{\text{time}}$

Compound Amount $= 180000 \times \left(1 + \frac{10}{100}\right)^2$

$= 180000 \times \frac{11}{10} \times \frac{11}{10}$

$= 1800 \times 121$

= ₹ 217800

Compound interest = Compound Amount - Principal

= 217800 – 180000

= ₹ 37800

Gain profit in two year

= Compound interest – simple interest

= 37800 – 36000 = ₹ 1800

49. Mani deposits ₹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?

(a) ₹ 8500 (b) ₹ 8700
(c) ₹ 8820 (d) ₹ 8600

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (c) :

Compound amount $= \text{Principal}\left(1 + \frac{\text{Rate}}{100}\right)^{\text{time}}$

$= 8000\left(1 + \frac{5}{100}\right)^2$

$= 8000 \times \frac{21}{20} \times \frac{21}{20}$

$= 20 \times 441 =$ ₹8820

50. If the interest is calculated annually, then the amount of ₹2000 will be approximately after 3 years at the rate of 10% compound annual interest?

(a) ₹ 2510 (b) ₹ 2662
(c) ₹ 2520 (d) ₹ 2726

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (b) :

$$\text{Compound amount} = \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{time}}$$

$$= 2000\times\left(1+\frac{10}{100}\right)^3$$

$$= 2000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$$

$$= 2\times1331$$

$$= ₹\ 2662$$

51. A person takes ₹32000 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?

(a) ₹1,940 (b) ₹1,952
(c) ₹926 (d) ₹2,904

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (b) simple interest $= \frac{32000\times9\times3}{100} = 27\times320$

simple interest (S.I.) = ₹ 8,640

$$\text{Compound amount} = 32000\left(1+\frac{10}{100}\right)^3$$

$$= 32000\left(\frac{11}{10}\right)^3$$

$$= 32000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$$

$$= 32\times1331$$

$$= ₹\ 42,592$$

Compound interest = Compound amount – Principal
= 42592 – 32000
= ₹ 10,592

Growth in amount
= Compound interest – simple interest
= 10,592 – 8,640
= ₹ 1,952

52. Z paid ₹10920 after 4 years with 10% annual simple interest. How much money did he borrow?

(a) ₹7,600 (b) ₹7,800
(c) ₹8,200 (d) ₹7,400

RRB NTPC 05.04.2016 Shift-1

Ans : (b) Given-

Rate = 10% Annual, time = 4 Year

Amount = ₹10920

Suppose ₹x was borrowed by Z

As per the question-

$$x+\frac{x\times10\times4}{100} = 10920$$

$$\Rightarrow \frac{7x}{5} = 10920$$

$$\Rightarrow 7x = 10920\times5$$

$$\Rightarrow x = \frac{10920\times5}{7} = 1560\times5 = ₹7800$$

53. A man deposits ₹ 500 at the beginning of each year for 2 years at 10% annually compound interest rate. Find the maturity amount at the end of the 2nd year.

(a) ₹1.050 (b) ₹1,150
(c) ₹1,155 (d) ₹1,200

RRB NTPC 05.04.2016 Shift : 3

Ans : (c)

$$\text{Amount at end of first year} = 500\times\left(1+\frac{10}{100}\right)^1$$

$$= 500\times\frac{11}{10} = 550$$

Principal for second year $= 500+550 = 1050$

$$\text{Amount at end of second year} = 1050\times\left(1+\frac{10}{100}\right)^1$$

$$= 1050\times\frac{11}{10} = 1155$$

So maturity amount at end of 2year = ₹1155

54. A bank pays interest on a saving account at half the rate of 4%. What will be the effective interest rate at the end of the year?

(a) 4.04% (b) 4.01%
(c) 4.02% (d) 4.00%

RRB NTPC 31.03.2016 Shift : 1

Ans : (a) The rate of interest is combined for half yearly.

∴ for one Year,

Time = 2 Half year

$$\text{Rate} = \frac{4}{2} = 2\%\ \text{Half yearly}$$

$$\therefore \text{Amount}\ (A) = 100\left(1+\frac{2}{100}\right)^2 \quad \text{[Let Principal =100]}$$

$$= 100\times\frac{51}{50}\times\frac{51}{50} = 104.04\ \text{रु.}$$

∴ Effective interest rate at the end of year
= 104.04–100 = 4.04%

55. How much will the amount become while ₹37500 are invested at an annual compound interest rate of 8% in $1\frac{1}{2}$ years when interest rates are compounded half-yearly?

(a) ₹42,182.40 (b) ₹42,000
(c) ₹42,120 (d) ₹42,812.40

RRB NTPC 28.03.2016 Shift : 1

Ans : (a) Given-
Principal (P) = ₹ 37500, r = 8%
Annual = 4% Half yearly

$$\text{Time (t)} = 1\frac{1}{2}\text{ Year} = 3\text{ Half year}$$

$$\text{Amount}(A) = P\left(1+\frac{r}{100}\right)^t$$

$$= 37500\left(1+\frac{4}{100}\right)^3$$

$$= 37500\times\frac{26}{25}\times\frac{26}{25}\times\frac{26}{25} = ₹42182.40$$

56. 'A' invest ₹10000 in a scheme at a special rate. At the end of two years the amount becomes ₹11664. Find the annual interest rate if compound interest rate is applicable.

(a) 7.9 (b) 8.5
(c) 8.7 (d) 8.0

RRB NTPC 18.01.2017 Shift : 2

Ans : (d) Compound amount (A) = Principal

$$(P)\times\left(1+\frac{\text{Rate}}{100}\right)^{\text{time}}$$

$$\Rightarrow 11664 = 10000\left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow \frac{11664}{10000} = \left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow \frac{729}{625} = \left(1+\frac{R}{100}\right)^2$$

$$\Rightarrow 1+\frac{R}{100} = \frac{27}{25}$$

$$\Rightarrow \frac{R}{100} = \frac{2}{25}$$

$$\boxed{R = 8\%}$$

57. If Ram deposits ₹2000 in his saving account on which he gets 20% annual interest at the compound annual interest rate. How much will be amount in his account after one year (the interest calculated in half yearly)?

(a) ₹3530 (b) ₹ 2420
(c) ₹2630 (d) ₹ 3870

RRB NTPC 18.01.2017 Shift : 3

Ans : (b) one Year = 2 Half year

$$\text{Rate} = \frac{20}{2} \Rightarrow 10\%$$

$$\text{Compound amount} = 2000\times\left(1+\frac{10}{100}\right)^2$$

$$= 2000\times\frac{11}{10}\times\frac{11}{10} = ₹2420$$

58. ₹10000 was given at the rate of 20% compound interest per annum. If this interest is calculated half early, find the compound money after 2 years

(a) ₹14600 (b) ₹12500
(c) ₹14642 (d) ₹14641

RRB NTPC 16.04.2016 Shift : 1

Ans : (d) Interest calculated half yearly

$$\text{Rate} = \frac{20}{2} = 10\%$$

and time = 2 × 2 = 4 Year

$$\therefore \text{Amount} = \text{Principal}\left(1+\frac{\text{Rate}}{100}\right)^{\text{time}}$$

$$= 10000\left(1+\frac{10}{100}\right)^4$$

$$= 10000\left(1+\frac{1}{10}\right)^4 = 10000\left(\frac{11}{10}\right)^4$$

$$= 10000\times\frac{14641}{10000} = ₹14641$$

59. In what time will the principal of ₹10000 be increased to ₹13310 at the interest rate of 10% per annum in a bank when interest is compounded annually?

(a) 4 Year (b) 5 Year
(c) 3 Year (d) 6 Year

RRB NTPC 16.04.2016 Shift : 2

Ans : (c) Given-
Principal (P) = ₹10000
Amount (A) = ₹13310
Rate (R) = 10% Annual
time (t) = ?

Formula- $A = P\left(1+\frac{R}{100}\right)^t$ from-

$$13310 = 10000\left(1+\frac{10}{100}\right)^t$$

$$\left(\frac{11}{10}\right)^3 = \left(1+\frac{10}{100}\right)^t$$

$$\left(\frac{11}{10}\right)^3 = \left(\frac{11}{10}\right)^t$$

On comparing the powers of both sides -
t = 3 Year

60. Mr. Vagish invested money in Ekdi. How much amount will he get at maturity if ₹4500 is invested for 6 months at a compound interest rate of 20% annually and the interest is compounded quarterly?

(a) ₹4961.5 (b) ₹4961.25
(c) ₹4961.35 (d) ₹4961

RRB NTPC 11.04.2016 Shift : 3

Ans : (b) Rate (r) $= \frac{20}{4} = 5\%$

time (n) = 2 quarter

Amount (A) = P $\left(1+\frac{r}{100}\right)^n = 4500\left(1+\frac{5}{100}\right)^2$

$= 4500 \times \frac{21}{20} \times \frac{21}{20} = 4961.25$ ₹

61. Mr. Nishi barrows ₹2000 at an annual compound interest rate of 5% what will be the compound interest for 2 years when the interest is compounded annually.

(a) ₹205 (b) ₹2205
(c) ₹2250 (d) ₹250

RRB NTPC 07.04.2016 Shift : 1

Ans : (a) Rate = 5%, Time = 2 Year,
Principal = 2000

Amount = Principal $\left(1+\frac{\text{Rate}}{100}\right)^{\text{time}} = 2000\left(1+\frac{5}{100}\right)^2$

$= 2000 \times \left(\frac{21}{20}\right)^2 \Rightarrow 2000\left(\frac{21 \times 21}{20 \times 20}\right) = 2205$

Interest = Amount − Principal = 2205 – 2000 = 205

62. Prachi barrows ₹550 at a simple annual interest rate of 5%. How much will she have to pay after 4 years?

(a) 101 (b) 606
(c) 660 (d) 110

RRB NTPC 07.04.2016 Shift : 3

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 = 660

63. A person named Shri Ram invested ₹14000 in FD (fixed deposit) what amount will he get after the maturity period if he invests the amount (capital) for 6 months at quarterly basis at a compound interest rate of 20% per annum?

(a) ₹ 15,437 (b) ₹ 15,434
(c) ₹ 15,436 (d) ₹ 15,435

RRB NTPC 19.01.2017 Shift : 3

Ans : (d) Principal (P) = ₹14000
When rate pay is quarter then rate

$= \frac{\text{Annual rate}}{4} = \frac{20}{4} = 5\%$

time (n) = 6 month = 2 quarter

$A = P\left(1+\frac{R}{100}\right)^n$

$A = 14000\left(1+\frac{5}{100}\right)^2$

$A = 14000 \times \left(\frac{21}{20}\right)^2$

$\Rightarrow 14000 \times \frac{441}{400} = 441 \times 35 = \boxed{15435}$

64. At simple interest for the money ₹1500, the compound money becomes ₹1800 in two years, If the rate of interest is increased by 5%, what will be the compound money.

(a) ₹1500 (b) ₹1900
(c) ₹ 1950 (d) ₹2000

RRB NTPC 22.04.2016 Shift : 1

Ans : (c) Given −
Principal = ₹1500
time = 2 Year
Amount = ₹1800
∴ Interest = Amount – Principal
= 1800 -1500 = ₹300

Formula- Simple interest $= \frac{P \times R \times T}{100}$

$\Rightarrow 300 = \frac{1500 \times R \times 2}{100}$

$\Rightarrow R = 10\%$

after increasing interest rate by 5% = 10% + 5% = 15%

New Simple interest $= \frac{1500 \times 15 \times 2}{100} = 450$

New Amount = Principal + interest
= 1500 + 450
= $\boxed{₹1950}$

65. Mr. Yashwant invested a few rupees in FD. What will be the total amount on maturity if ₹10000 is invested for 6 months at a rate of 20% compound interest annually, compounded quarterly?

(a) 11025.25 (b) 11025
(c) 11025.75 (d) 11025.5

RRB NTPC 22.04.2016 Shift : 2

Ans : (b) Principal (P) = 10000, r = 20% Annual
$= \frac{20}{4}$% quarter, r = 5% quarter

(n) Time = 6 month,
= 2 quarter

Amount $= P\left(1+\frac{r}{100}\right)^n$

$= 10,000\left(1+\frac{5}{100}\right)^2$

$= 10,000\left(1+\frac{1}{20}\right)^2$

$= 10,000\left(\frac{21}{20}\right)^2$

$= 10,000 \times \frac{21}{20} \times \frac{21}{20}$ = ₹11025

66. Sanjeev invests in a fixed deposit. If ₹11000 is invested at the rate of 20% compound interest annually for 6 months and the interest is compounded quarterly, what is the total amount he will get on maturity?

(a) ₹12127.25 (b) ₹12127.50
(c) ₹12127.75 (d) ₹12127

RRB NTPC 26.04.2016 Shift : 2

Ans : (b) Interest is compounded in quarterly,

$$\text{Time} = \frac{6}{12} \times 4 = 2 \text{ quarter}$$

$$\text{Rate} = \frac{20}{4} = 5\%$$

$$\text{Amount } (A) = P\left(1+\frac{r}{100}\right)^n$$

$$= 11000\left(1+\frac{5}{100}\right)^2$$

$$= 11000 \times \frac{21}{20} \times \frac{21}{20}$$

$$= 12127.5$$

Type - 3

67. Ranjan borrows ₹7500 at an annual compound interest rate of 4%. What will be the compound interest for 2 years while the interest is compounded annually?

(a) ₹612 (b) ₹8112
(c) ₹8121 (d) ₹621

RRB RPF SI – 11/01/2019 (Shift-II)

Ans : (a) P = 7500, R = 4%, n = 2 Year

$$\text{C.I.} = P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

$$= 7500\left[\left(1+\frac{4}{100}\right)^2 - 1\right] = 7500\left[\left(\frac{26}{25}\right)^2 - 1\right]$$

$$= 7500 \times \frac{676-625}{625} = 7500 \times \frac{51}{625} = 612 ₹$$

68. Find the compound interest on ₹ 15,625 for 1 year 6 months at 8% compound interest rate per annum, when compounded half-yearly?

(a) ₹1,951 (b) ₹1,950
(c) ₹1,900 (d) ₹1,952

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (a) Principal = ₹ 15,625

Rate = 8% Annual ⇒ 4% Half yearly

Time = 1 Year 6 months = 3 Half year

$$\text{Compound interest } = 15,625\left(1+\frac{4}{100}\right)^3 - 15625$$

$$= 15625 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25} - 15625$$

$$= 17,576 - 15625 = 1951$$

69. What will be the compound interest for $2\frac{3}{4}$ years at 8% compound interest rate per annum on ₹31250?

(a) ₹ 7300 (b) ₹ 7800
(c) ₹ 7337 (d) ₹ 7387

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (d) $A = P\left(1+\frac{R}{100}\right)^2\left(1+\frac{3R}{400}\right)$

$$A = 31250 \times \left(1+\frac{8}{100}\right)^2\left(1+\frac{3\times 8}{400}\right)$$

$$A = 31250 \times \frac{27}{25} \times \frac{27}{25} \times \frac{106}{100}$$

$$A = 27 \times 27 \times 53$$

$$A = ₹\ 38637$$

∴ C.I. (Compound interest) = 38637 – 31250 = ₹ 7387

70. On investing a sum of money at a 4% annual rate of compound interest yields ₹78030 at the end of 1 year, when the interest is compounded half yearly. The fund is–

(a) ₹76,000 (b) ₹71,400
(c) ₹72,500 (d) ₹75,000

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (d) when interest compounded half yearly then,

$$r = \frac{4}{2}\% = 2\%$$

time = 1 Year = 2 Half yearly

$$\text{Amount} = P\left(1+\frac{r}{100}\right)^t$$

$$78030 = P\left(1+\frac{2}{100}\right)^2$$

$$78030 = P\left(1+\frac{1}{50}\right)^2$$

$$\left(\frac{51}{50}\right)^2 P = 78030$$

$$P = \frac{78030 \times 2500}{2601}$$

$$P = ₹75000$$

71. The interest received on a fixed amount at a rate of 10% in a year is ₹400. Compound interest for the same amount at the same rate and for the same period if the interest is compounded half yearly will be–

(a) ₹ 400 (b) ₹ 210
(c) ₹ 410 (d) ₹ 200

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) Let Amount = ₹ P, Rate = 10%, T = 1 Year

∴ As per the question,

$$400 = \frac{p \times r \times t}{100}$$

$$400 = \frac{p \times 10 \times 1}{100}$$

P = ₹ 4000

R = 10%, t = 2 Half yearly

Compound amount $= P\left(1+\frac{r}{2\times100}\right)^2$

$$\Rightarrow P\left(1+\frac{r}{2\times100}\right)^2$$

$$\Rightarrow 4000\left(1+\frac{10}{200}\right)^2$$

$$\Rightarrow 4000\left(\frac{21}{20}\right)^2$$

$$\Rightarrow 4000\times\frac{21}{20}\times\frac{21}{20}$$

⇒ ₹ 4410

Compound interest = Amount − Principal

Compound interest = 4410 – 4000 = ₹410

72. The simple interest on a sum of money for 3 years at 12% simple interest rate per annum is ₹6750. What will be the compound interest on the same amount at the same rate for the same period when compounded annually?

(a) ₹ 7,092.40 (b) ₹ 7,000

(c) ₹ 7,592.40 (d) ₹ 7,500.40

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (c) : $SI = \frac{PRT}{100}$

From,

$$6750 = \frac{P\times12\times3}{100}$$

$$P = \frac{6750\times100}{12\times3}$$

$$P = 18750$$

Compound amount $(A) = P\left(1+\frac{R}{100}\right)^n$

$$A = 18750\left(1+\frac{12}{100}\right)^3$$

$$A = 18750\times\frac{28}{25}\times\frac{28}{25}\times\frac{28}{25}$$

A = ₹ 26342.4

Compound interest = Amount (A) - Principal (P)

= 26342.4-18750 = ₹7592.4

73. Any money is deposited at 8% per annum compound interest rate. If the interest for the first year is 72, then get the interest for the second year.

(a) ₹77.56 (b) ₹ 77.64

(c) ₹ 77.76 (d) ₹ 85.77

RRB NTPC 17.01.2017 Shift-2

Ans : (c) $P = \frac{S.I.\times100}{R\times T}$

Amount $= \frac{72\times100}{8\times1} = 900$

amount for second year = 900 + 72 = 972

Interest of second year $= \frac{972\times8\times1}{100} = 77.76$

74. What will be the compound interest of ₹172000 3 years at the of 8% compound interest rate per annum.

(a) ₹44,670 (b) ₹11,667

(c) ₹41,280 (d) ₹46,470

RRB NTPC 04.04.2016 Shift : 2

Ans : (a) Given- Principal (P) = 172000,

Rate = 8% Annual

Time (n)=3 Year

$$C.I = P\left(1+\frac{r}{100}\right)^n - P = P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

$$= 172000\left[\left(1+\frac{8}{100}\right)^3 - 1\right]$$

$$= 172000\left[\left(\frac{27}{25}\right)^3 - 1\right]$$

$$= 172000\left[\frac{19683}{15625} - 1\right]$$

$$= 172000\times\frac{19683-15625}{15625}$$

$$= 11.008\times4058 = 44,670$$

75. Find the compound interest at ₹7500 at the rate of 12% per annum for 2 years 4 months to the nearest rupee, this interest is calculated on an annual basis?

(a) 2284 (b) 2176

(c) 2097 (d) 2235

RRB NTPC 03.04.2016 Shift : 1

Ans : (a) Principal P = ₹ 7500 , $t = 2\frac{1}{3}$ Year, r = 12% Annual

Compound amount $A = P\left(1+\frac{r}{100}\right)^t$

$$= 7500\left(1+\frac{12}{100}\right)^{2\frac{1}{3}}$$

$$= 7500\left(1+\frac{3}{25}\right)^2\left(1+\frac{3}{25}\right)^{\frac{1}{3}}$$

$$= 7500\times\frac{28}{25}\times\frac{28}{25}\times\left(1+\frac{1}{3}\times\frac{3}{25}\right)$$

$$= 7500\times\frac{28}{25}\times\frac{28}{25}\times\frac{26}{25} = ₹\ 9784.32$$

Compound interest = ₹ 9784.32 – 7500 = ₹ 2284.32

So Compound interest nearest will be ₹2284

76. Find the interest on ₹ 25000 at 12% per annum compounded annually for 3 years

(a) ₹9,000 (b) ₹9,833.40
(c) ₹10123.20 (d) ₹10,678.90

RRB NTPC 03.04.2016 Shift : 2

Ans : (c) Compound interest $= 25000\left[\left(1+\frac{12}{100}\right)^3 - 1\right]$

$= 25000\left[\left(1+\frac{3}{25}\right)^3 - 1\right]$

$= 25000\left[\left(\frac{28}{25}\right)^3 - 1\right]$

$= 25000\left(\frac{21952}{15625} - 1\right)$

$= 25000 \times \frac{6327}{15625} =$ ₹10123.20

77. What will be the compound interest at ₹24000 in 2 years at 25% per annum if the interest is compounded annually.

(a) ₹37,500 (b) ₹13,500
(c) ₹38,400 (d) ₹36,400

RRB NTPC 03.04.2016 Shift : 3

Ans : (b) Compound interest

$(C.I.) = P\left(1+\frac{r}{100}\right)^n - P$

$= 24000\left(1+\frac{25}{100}\right)^2 - 24000$

$= 24000\left(1+\frac{1}{4}\right)^2 - 24000$

$= 24000\left(\frac{5}{4}\right)^2 - 24000 \quad = 24000\left[\frac{25}{16} - 1\right]$

$= 24000\left(\frac{25-16}{16}\right) = 24000 \times \frac{9}{16} = 13,500$

78. If the interest is compounded annually then for 2 years at ₹48000, what will be the compound interest at 20% per annum?

(a) ₹69,120 (b) ₹21,120
(c) ₹76,800 (d) ₹72,000

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) P(Principal) = 48000, Rate (r) = 20%
time (T) = 2 years

Amount $= P\left(1+\frac{r}{100}\right)^T = 48000\left(1+\frac{20}{100}\right)^2$

$= 48000\left(1+\frac{1}{5}\right)^2 = 48000\left(\frac{6}{5}\right)^2$

$= 48000 \times \frac{6}{5} \times \frac{6}{5} = 69120$

interest = Amount – Principal
= 69120 – 48000 = 21120

79. How much will become ₹40,000 at 2% per annum at an annual rate of 20%, if interest is compounded annually?

(a) ₹48,620 (b) ₹58,564
(c) ₹57,600 (d) ₹60,000

RRB NTPC 02.04.2016 Shift : 3

Ans : (c) Given- Principal (P) = 40,000
time (n) = 2 Year
Rate=20% Annual

$A = P\left(1+\frac{r}{100}\right)^n$

$= 40000\left(1+\frac{20}{100}\right)^2$

$= 40000 \times \frac{6}{5} \times \frac{6}{5} = 57600$

80. If Jahnavi borrows ₹1,25,000 at an interest of 8% per annum, what will be the amount that is payable at the end of 2 years?

(a) ₹1,45,800 (b) ₹2,00,000
(c) ₹1,45,000 (d) ₹1,35,800

RRB NTPC 28.03.2016 Shift : 2

Ans :(a) P = 125000, R = 8%, n = 2 Year, 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 ×54 × 108 = ₹145,800

81. 20% compound interest is being given every year at ₹10000. Calculate the amount received after 2 years if interest is calculated charged half yearly.

(a) ₹10041 (b) ₹14641
(c) ₹12000 (d) ₹13660

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Given–
P = ₹10000

$r = \frac{20}{2} = 10\%$ Half yearly

∵ 1 Year = 2 Half year
∴ 2 Year = 4 Half year

$A = P\left(1+\frac{r}{100}\right)^t$ from-

$A = 10000\left(1+\frac{10}{100}\right)^4 = 10000\left(\frac{11}{10}\right)^4$

$= \frac{1331 \times 11 \times 10000}{10000} =$ ₹14641

82. Find the compound interest of ₹5000 for 3 years at an annual compound interest rate of 10%.

(a) 1655 (b) 1500
(c) 1600 (d) 1800

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) Principal (P) = ₹5000
time (t) = 3 Year
Annual interest Rate (R) = 10%

$$\text{Compound interest } (\text{C.I.}) = P\left[\left(1+\frac{R}{100}\right)^t - 1\right]$$

$$= 5000\left[\left(1+\frac{10}{100}\right)^3 - 1\right]$$

$$= 5000\left[\left(\frac{11}{10}\right)^3 - 1\right]$$

$$= 5000\left[\frac{1331-1000}{1000}\right]$$

$$= 5000 \times \frac{331}{1000} = 1655$$

83. Ibrahim barrowed ₹7500 at an annual compound interest rate of 5%. What will be the compound interest after 2 years which is compounded annually.

(a) ₹768.75 (b) ₹8268.75
(c) ₹8286.75 (d) ₹786.75

RRB NTPC 11.04.2016 Shift : 1

Ans : (a) Principal (P) = ₹7500
Annual Rate (R) = 5%
time (t) = 2 Year

$$\text{Compound interest } = P\left[\left(1+\frac{R}{100}\right)^t - 1\right]$$

$$= 7500\left[\left(1+\frac{5}{100}\right)^2 - 1\right]$$

$$= 7500\left[\left(\frac{21}{20}\right)^2 - 1\right] = 7500\left[\frac{441}{400} - 1\right]$$

$$= 7500\left[\frac{441-400}{400}\right] = 7500 \times \frac{41}{400}$$

= ₹768.75

84. Devesh borrowed ₹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.

(a) ₹367.2 (b) ₹4,867.2
(c) ₹4,876.2 (d) ₹376.2

RRB NTPC 11.04.2016 Shift : 2

Ans : (a) P = 4500, R = 4%, n = 2 Year

$$A = P\left(1+\frac{R}{100}\right)^n$$

$$= 4500\left(1+\frac{4}{100}\right)^2$$

$$= 4500\left(\frac{104}{100}\right)^2$$

$$= 4500 \times \frac{104 \times 104}{100 \times 100} = 4867.2$$

CI = A – P
= 4867.2 – 4500 = ₹367.2

85. Harsh borrowed ₹8000 at an annual rate of 4% compound interest. What will be the compound interest after 2 years if the interest is compounded annually.

(a) ₹ 652.8 (b) ₹ 8,652.8
(c) ₹ 8,625.8 (d) ₹ 625.8

RRB NTPC 07.04.2016 Shift : 2

Ans : (a)

$$\text{Compound interest} = \text{Principal}\left[\left(1+\frac{\text{Rate}}{100}\right)^{\text{Time}} - 1\right]$$

$$= 8000\left[\left(1+\frac{4}{100}\right)^2 - 1\right]$$

$$= 8000\left[\left(\frac{26}{25}\right)^2 - 1\right]$$

$$= 8000\left[\frac{676-625}{625}\right]$$

$$= 8000 \times \frac{51}{625}$$

$$= \frac{64 \times 51}{5}$$

$$= \frac{3264}{5}$$

= ₹ 652.8

86. Mr. Ayush borrowed ₹3000 at the rate of 5% compound interest annually. What will be the compound interest after 2 years?

(a) ₹370.5 (b) ₹307.5
(c) ₹3307.5 (d) ₹3370.5

RRB NTPC 19.01.2017 Shift : 1

Ans : (b) $\text{C.I.} = P\left(1+\frac{r}{100}\right)^n - P$

$$\text{C.I.} = 3000\left(1+\frac{5}{100}\right)^2 - 3000$$

$$= 3000\left[\left(\frac{21}{20}\right)^2 - 1\right]$$

$$= 3000\left(\frac{441}{400} - 1\right)$$

$$= 3000 \times \frac{41}{400}$$

$$= 7.5 \times 41 = 307.5$$

87. Mr. Yudish borrowed ₹3500 at an annual rate of 4% compound interest. What will be the compound interest for 2 years?

(a) ₹ 285.6 (b) ₹ 3785.6
(c) ₹ 3758.6 (d) ₹ 258.6

RRB NTPC 22.04.2016 Shift : 2

Ans : (a) P = ₹3500, r = 4 %
t = 2 Year, A = ?

$$A = P\left(1+\frac{r}{100}\right)^t$$

$$A = 3500\left(1+\frac{4}{100}\right)^2 = 3500\left(1+\frac{1}{25}\right)^2$$

$$A = 3500\left(\frac{26}{25}\right)^2$$

$$A = 3500\times\frac{26}{25}\times\frac{26}{25}$$

= 3785.6 रु.

interest = Amount – Principal
= 3785.6 – 3500 = ₹285.6

88. Mr. Ravish invests in a FD. What is the total amount he will get at maturity if ₹5500 is invested for 6 months at a compound interest rate of 20% per annum the interest is compounded quarterly?

(a) ₹6063.5 (b) ₹6063.75
(c) ₹6063.35 (d) ₹6063

RRB NTPC 26.04.2016 Shift : 3

Ans : (b) the interest is compounded quarterly,

Time $= \frac{6}{12}\times 4 = 2$ quarter

Rate $\frac{20}{4} = 5\%$

$$A = P\left(1+\frac{r}{100}\right)^n$$

$$A = 5500\left(1+\frac{5}{100}\right)^2$$

$$= 5500\left(1+\frac{1}{20}\right)^2$$

$$= 5500\times\frac{21}{20}\times\frac{21}{20}$$

$$= \frac{55\times 441}{4} = 6063.75$$

89. Mr. Manjunath borrowed ₹3500 at compound interest at an annual rate of 5%. What will be the compound interest of 2 years, if the interest is compounded annually?

(a) ₹358.75 (b) ₹3858.75
(c) ₹3885.75 (d) ₹385.75

RRB NTPC 26.04.2016 Shift : 3

Ans : (a) $A = P\left(1+\frac{r}{100}\right)^n = 3500\left(1+\frac{5}{100}\right)^2$

$$= 3500\times\frac{21}{20}\times\frac{21}{20} = \frac{35\times 441}{4} = \frac{15435}{4}$$

C.I. = Amount – Principal

$$CI = \frac{15435}{4} - 3500$$

$$= \frac{15435-14000}{4}$$

$$= \frac{1435}{4} = 358.75$$

90. Mr. Pritosh borrowed ₹4,500 at the rate of 5 percent compound interest. If the interest is compounded annually, what will be the compound interest for 2 years?

(a) ₹4961.25 (b) ₹461.25
(c) ₹4916.25 (d) ₹416.25

RRB NTPC 30.04.2016 Shift : 3

Ans : (b) P = 4500, r = 5%, t = 2 years, CI = ?

$$A = P\left(1+\frac{r}{100}\right)^t$$

$$A = 4500\left(1+\frac{5}{100}\right)^2$$

$$= 4500\left(1+\frac{1}{20}\right)^2$$

$$= 4500\left(\frac{21}{20}\right)^2$$

$$= 4500\times\frac{21}{20}\times\frac{21}{20}$$

= 4961.25
CI = A–P
CI = 4961.25 – 4500 = ₹461.25

91. The simple interest on a certain amount at 12% per annum for 3 years is ₹ 4,140. What is the compound interest on the same amount at 8% for two years?

(a) ₹2,012.40 (b) ₹1,840
(c) ₹1,913.60 (d) ₹1,886.50

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (c) $\because$ $SI = \frac{P\times R\times t}{100}$

$$4140 = \frac{P\times 12\times 3}{100}$$

P = 115×100
P = 11500

Again $\because$ $CI = P\left[\left(1+\frac{R}{100}\right)^t - 1\right]$

$$CI = 11500\left[\left(1+\frac{8}{100}\right)^2 - 1\right]$$

$$=11500\left[\left(1+\frac{2}{25}\right)^2-1\right]$$

$$=11500\left[\left(\frac{27}{25}\right)^2-1\right]$$

$$=11500\left[\frac{729-625}{625}\right]$$

$$=11500\left[\frac{104}{625}\right]=₹1913.60$$

92. Find the compound interest on ₹ 62500 at compound interest of 21% per annum for $1\frac{1}{2}$ years?

(a) ₹20,687.5 (b) ₹19,687.5
(c) ₹21,638.5 (d) ₹20,695

RRB ALP & Tec. (13-08-18 Shift-III)

Ans : (a) Given –

Principal = ₹62500

Rate of interest = 21% Annual

Time $=\frac{3}{2}$ Year

Then Compound amount= $62500\left(1+\frac{21}{100}\right)^{\frac{3}{2}}$

$$= 62500\left(\frac{121}{100}\right)^{\frac{3}{2}}$$

$$=62500\left(\frac{11}{10}\right)^3$$

Compound amount $=\frac{62500\times11\times11\times11}{1000}$

$$=\frac{625\times121\times11}{10}=₹83187.5$$

Now Compound interest

= 83187.5 – 62500 = ₹20687.5

Type - 4

93. The simple interest for 3 years at the rate of 8% on the amount of ₹'x' is equal to half of the compound interest of 2 years at the rate of 10% on the amount of ₹4000. Find the value of 'x'.

(a) ₹ 1750 (b) ₹ 1520
(c) ₹ 6000 (d) ₹ 1400

RRB JE - 28/06/2019 (Shift-III)

Ans. (a) Compound interest = Amount – Principal

$$= P\left(1+\frac{r}{100}\right)^n - P$$

$$= 4000\left(1+\frac{10}{100}\right)^2-4000$$

$$= 4000\times\frac{121}{100}-4000$$

$$= 4000\times\frac{21}{100}=840$$

As per the question–

Simple interest $=\frac{\text{compound interest}}{2}$

$\Rightarrow \frac{x\times8\times3}{100}=\frac{840}{2}$

$\Rightarrow \frac{x\times8\times3}{100}=420$

$\Rightarrow x=\frac{420\times100}{24}=\frac{7000}{4}=₹1750$

94. If the compound interest on a principal in 2 years at 5% per annum is ₹10 more than the simple interest on the same principal at the same time find the principal.

(a) ₹5,000 (b) ₹4,500
(c) ₹4,000 (d) ₹3,500

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (c) difference in compound interest and simple interest of two year

$$= \text{Principal}\left(\frac{r}{100}\right)^2$$

$$10 = \text{Principal}\left(\frac{5}{100}\right)^2$$ [∵ different = 10

r = 5%
n = 2

$$10 = \text{Principal}\left(\frac{1}{20}\right)^2$$

Principal = 10 × 4 00 = ₹4000

95. On a fixed amount, the compound interest and simple interest of 2 years at any interest rate is ₹696.30 and ₹660. Find the amount.

(a) ₹ 3000 (b) ₹ 4000
(c) ₹ 3300 (d) ₹ 3600

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

Ans : (a) Given -
C.I = ₹ 696.30
S.I. = ₹ 660
T = 2 Year
P = ?

Simple interest $=\frac{P\times R\times T}{100}$

$660 = \frac{P \times R \times 2}{100}$

$\frac{PR}{100} = 330$ —— (i)

Compound interest $= P\left[\left(1+\frac{R}{100}\right)^2 - 1\right]$

$\Rightarrow 696.30 = P\left[1+\frac{R^2}{100}+\frac{2R}{100}-1\right]$

$\Rightarrow 696.30 = \frac{PR^2}{(100)^2}+\frac{2PR}{100}$

from equation (i)– $\frac{P \times R \times T}{100}$

$696.30 = \frac{330R}{100}+660$

$\Rightarrow 696.30 - 660 = \frac{330R}{100}$

$36.30 = \frac{330R}{100}$

$R = \frac{363}{33}$

$R = 11\%$

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 = ₹ 3000

So Principal will be ₹ 3000

96. The simple interest of 3 years at a 5% annual rate on a fixed amount is ₹1260. Find the compound interest on the same amount for the same period.

(a) ₹1324.05 (b) ₹1384.05
(c) ₹1428.05 (d) ₹1448

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (a) Give–

Rate of simple interest (r) = 5%

time (t) = 3 Year

simple interest (S.I.) = ₹ 1260

simple interest $= \frac{P \times R \times T}{100}$

$1260 = \frac{P \times 5 \times 3}{100}$

$P = \frac{126000}{15}$

P = ₹ 8400

Compound interest = Principal $\left[\left(1+\frac{R}{100}\right)^t - 1\right]$

$= 8400\left[\left(1+\frac{5}{100}\right)^3 - 1\right]$

$= 8400\left[\left(\frac{21}{20}\right)^3 - 1\right]$

$= 8400\left[\frac{9261-8000}{8000}\right]$

$= 8400 \times \frac{1261}{8000}$

$= \frac{84 \times 1261}{80}$

= ₹ 1324.05

97. The compound interest of 2 years at a rate of 10% on a fixed amount is ₹2100. What will be the simple interest on the same amount at the same rate for the same period?

(a) ₹1600 (b) ₹1980
(c) ₹1800 (d) ₹2000

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

Ans : (d) compound interest $= P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$

$2100 = P\left[\left(1+\frac{10}{100}\right)^2 - 1\right]$

$2100 = P\left[\frac{121}{100} - \frac{1}{1}\right]$

$2100 = P\left[\frac{121-100}{100}\right]$

$2100 = P \times \frac{21}{100}$

$P = \frac{2100 \times 100}{21}$

Principal (P) = 10000

As per the question,

simple interest $= \frac{P \times R \times T}{100}$

$SI = \frac{10000 \times 10 \times 2}{100}$

$\boxed{SI = 2000}$

So SI will be ₹2000.

98. An amount was deposited for 7 years at 8% simple interest rate. The mature amount was invested in a scheme with an annual rate of 10% compound interest, yielding an interest of ₹1638 over 2 years. Find the principal amount.

(a) ₹6200 (b) ₹5000
(c) ₹7500 (d) ₹8000

RRB JE - 27/05/2019 (Shift-I)

Ans : (b) Let Principal Amount = ₹ P

simple interest = $P \times \frac{8}{100} \times 7 = \frac{56P}{100}$

Amount = $P + \frac{56P}{100} = \frac{156P}{100}$

As per the question,

Compound interest = ₹ 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 = ₹ 5000

99. On an amount, the simple interest of 2 years is ₹660, while the compound interest of two years is ₹696.30, keeping the rate of interest same. Find the rate of interest?

(a) 13% (b) 11%
(c) 10% (d) 12.75%

RRB JE - 27/05/2019 (Shift-II)

Ans : (b) Simple interest $(SI) = \frac{PRT}{100}$

$660 = \frac{P \times R \times 2}{100}$

PR = 330 × 100

PR = 33000 ..... (i)

difference in compound interest and simple interest for two year.

$= P\left(\frac{R}{100}\right)^2$

$696.30 - 660 = P \times \frac{R}{100} \times \frac{R}{100}$

$36.30 = \frac{33000 \times R}{100 \times 100}$ [PR = 33000

36.30 = 3.3 × R from the eq^n (1)]

$R = \frac{363}{33}$

$R = \frac{33}{3}$

R = 11%

100. An amount at a fixed rate of simple interest increases by 100% in 8 years What will be the compound interest for 2 years for ₹8000 at the same rate?

(a) ₹2050 (b) ₹2075
(c) ₹2125 (d) ₹2025

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

Ans : (c) Let Principal = P

Amount = 2P

interest = 2P – P = P

simple interest = $\frac{P \times R \times T}{100}$

$P = \frac{P \times R \times 8}{100}$

$R = \frac{25}{2}\%$

from question –

Compound interest $= P\left[\left(1+\frac{Rate}{100}\right)^{Time} - 1\right]$

$= 8000\left[\left(1+\frac{25}{200}\right)^2 - 1\right] = 8000 \times \frac{(81-64)}{64}$

$= 8000 \times \frac{17}{64} =$ ₹ 2125

101. Simple interest and compound interest on a fixed amount for two years are ₹8400 and ₹8652 respectively. Find the rate of interest.

(a) 5% (b) 6%
(c) 4.5% (d) 5.5%

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

Ans : (b) When time is 2 year then–

$C.I. - S.I. = P\left(\frac{R}{100}\right)^2$

$8652 - 8400 = \frac{PR^2}{10000}$

$252 = \frac{PR^2}{10000}$.....(i)

$S.I. = \frac{P \times R \times 2}{100}$

$8400 = \frac{PR}{50}$

PR = 8400 × 50 ..... (ii)

from the equation (i) and (ii)–

$PR^2 = 252 \times 10000$

PR × R = 252 × 10000

$R = \frac{252 \times 10000}{PR}$

$R = \frac{252 \times 10000}{8400 \times 50}$

$R = \frac{21 \times 10}{7 \times 5}$

R = 6%

102. Find the simple interest of same amount for, 2 years at the rate of 12.5% on an amount, if the compound interest of the same period at the same rate is ₹510?

(a) ₹480 (b) ₹500
(c) ₹408 (d) ₹420

RRB JE - 30/05/2019 (Shift-III)

Ans : (a) Compound interest = Amount – Principal

$$510 = P\left[1+\frac{r}{100}\right]^n - P$$

$$= P\left[1+\frac{r}{100}\right]^n - P$$

$$= P\left[1+\frac{12.5}{100}\right]^2 - P$$

$$= P\left[\frac{1125}{1000}\right]^2 - P$$

$$= P\left[\frac{9}{8}\right]^2 - P \quad = P\left[\frac{81-64}{64}\right]$$

$$510 = \frac{P\times 17}{64}$$

$$P = \frac{510\times 64}{17}$$

P = 1920

Simple interest $= \frac{P\times R\times T}{100}$

Simple interest $= \frac{1920\times 12.5\times 2}{100}$

Simple interest $= \frac{1920\times 25}{100}$

Simple interest = ₹480

103. Simple interest on a certain sum of money for 3 years at 5% per annum is ₹ 5250. What will be the compound interest on that sum of money at the same rate for the same period?

(a) ₹5,510.88 (b) ₹5,516.88
(c) ₹5,512.88 (d) ₹5,517.88

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

Ans : (b) simple interest $= \frac{P\times R\times T}{100}$

$$5250 = \frac{P\times 5\times 3}{100}$$

Principal $= \frac{5250\times 20}{3}$

Principal = 35000

Compound interest = Principal $\left[\left(1+\frac{r}{100}\right)^n - 1\right]$

$$= 35000\left[\left(1+\frac{5}{100}\right)^3 - 1\right]$$

$$= 35000\left[\frac{21\times 21\times 21 - 20\times 20\times 20}{20\times 20\times 20}\right]$$

$$= 35000\left(\frac{9261-8000}{8000}\right)$$

$$= 35\times\frac{1261}{8}$$

= 35 × 157.625 = ₹5516.88

104. Smita took a loan of ₹75000 at a simple annual interest rate of 15%. She give that money to her friend on the same day, at the same interest rate but according to the annual compound interest rate. How much profit will she earn after 2 years?

(a) ₹ 1,887.5 (b) ₹ 1,867.5
(c) ₹ 1,786.5 (d) ₹ 1,687.5

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (d) simple interest (SI) $= \frac{P\times R\times T}{100}$

$$= \frac{75000\times 15\times 2}{100} = ₹\ 22500$$

Compound amount

$$A = P\left(1+\frac{R}{100}\right)^n$$

$$A = 75000 \times \frac{115}{100}\times\frac{115}{100}$$

A = ₹ 99187.5

Compound interest = A – P

= 99187.5 – 75000 = ₹24187.5

Smita's Profit = 24187.5 – 22500 = ₹1687.5

105. Anjali borrowed ₹22500 for 2 years at the rate of 6% simple annual interest and on the same day she gives this amount to Ashoka at compound interest for the same interest rate and same time. How much loss or profit will she make?

(a) 73 Profit (b) 73 Loss
(c) 81 Loss (d) 81 Profit

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (d) R = 6%

T = 2

P = 22500

$$S.I. = \frac{22500\times 6\times 2}{100}$$

S.I. = 2700

= 22500 + 2700

Amount = 25200

$$A = 22500\left(1+\frac{6}{100}\right)^2 = 22500\times\frac{53}{50}\times\frac{53}{50}$$

= 25281

Total Profit = 25281 – 25200 = ₹81

106. ₹100 has been invested in a scheme for one year in which annual interest is given at the rate of 10% Another ₹100 has been invested in a one year plan that yields an annual interest rate of 10% but the interest is compounded half yearly The interest received by second plan is how much more than the first plan.

(a) ₹ 1 (b) 50 Paisa
(c) 25 Paisa (d) No difference

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (c) : Received simple interest of invested amount in first scheme $= \frac{100\times10\times1}{100}$ =₹ 10

Received simple interest of invested amount in second scheme

$$=100\left(1+\frac{5}{100}\right)^2-100$$

$$=100\times\left(\frac{21}{20}\right)^2-100$$

$$=100\times\frac{441}{400}-100$$

$$=\frac{441}{4}-100\Rightarrow\frac{441-400}{4}=\frac{41}{4}=₹10.25$$

Required difference = 10.25 – 10 = 25 paisa

107. A simple interest of 8% on an amount for 1.5 year is ₹360. If the time is doubled according to the same interest rate on the same amount, find the compound interest?

(a) ₹ 778.13 (b) ₹ 779.13
(c) ₹ 779 (d) ₹ 778

RRB Group-D – 01/10/2018 (Shift-III)

Ans : (b) As per the question,

$$\text{Simple interest}=\frac{Prt}{100}$$

$$360=\frac{P\times1.5\times8}{100}$$

P = ₹3000

doubling the time (t) = 2×1.5 year = 3 year

$$\text{Compound interest}=P\left[\left(1+\frac{r}{100}\right)^t-1\right]$$

$$=3000\left[\left(1+\frac{8}{100}\right)^3-1\right]$$

$$=3000\left[\left(1+\frac{2}{25}\right)^3-1\right]$$

$$=3000\left[\left(\frac{27}{25}\right)^3-1\right]=3000\left[\frac{19683}{15625}-1\right]$$

$$=3000\left[\frac{19683-15625}{625\times25}\right]$$

$$=\frac{4058\times3000}{625\times25}=\frac{4.8\times4058}{25}=\frac{19478.4}{25}$$

= ₹ 779.13

108. The simple interest of 8 years at 8% per annum on a deposit is ₹16000.What will be the compound interest of 2 years at the rate of one fourth of this rate on the same amount.

(a) ₹ 1,020 (b) ₹ 980
(c) ₹ 1,010 (d) ₹ 1,015

RRB NTPC 17.01.2017 Shift-2

Ans : (c) simple interest = $\frac{P\times R\times T}{100}$

$$\text{Principal}=\frac{16000\times100}{8\times8}=25000$$

As per the question,

r = 8% का $\times\frac{1}{4}$

$$\text{Compound interest}=25000\left(1+\frac{8\times\frac{1}{4}}{100}\right)^2-25000$$

$$=\frac{25000\times51\times51}{50\times50}-25000=26010-25000=1010$$

So Compound interest = ₹1010

109. Simple interest on a fixed sum of money is ₹1200 over 2 years at a fixed rate of interest. The compound interest of the same amount gets ₹1290 in 2 years at the rate of simple interest. What will be the principle?

(a) ₹1200 (b) ₹16000
(c) ₹6000 (d) ₹4000

RRB NTPC 02.04.2016 Shift : 2

Ans : (d) Rate = R, Time (T) = 2 years

SI = 1200, CI = 1290

and difference of CI to SI of two years

सूत्र $\boxed{D=P\left(\frac{R}{100}\right)^2}$

$$1290-1200=P\left(\frac{R^2}{10000}\right)$$

$PR^2 = 90 \times 10000$

$PR^2 = 900000$ ……..(1)

$$SI=\frac{PTR}{100}$$

$$1200=\frac{P\times2\times R}{100}$$

$$PR=\frac{1200\times100}{2}$$

PR = 60000 …….. (2)

From the equation (1)–

PR.R = 900000

60000 × R = 900000

$$R=\frac{900000}{60000}$$

R = 15%

From the equation (2)–

P × 15 = 60,000

$P=\frac{60000}{15}$ (Principal) P = ₹4000

110. An interest of ₹2000 is given on a fixed sum of money at a 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?

(a) 10.25 (b) 10.50
(c) 10.75 (d) 10.15

RRB NTPC 30.03.2016 Shift : 2

Ans : (b) Let Amount = x

Then,

$$2000 = x \times \frac{10}{100} \times 2$$

$$x = ₹10,000$$

$$CI = 10000\left(1+\frac{10}{100}\right)^2 - 10000$$

$$= 10000\left(\frac{121}{100} - 1\right) = 2100$$

So now interest rate on ₹2100

$$r = \frac{2100 \times 100}{10000 \times 2} = \frac{21}{2} = 10.5\%$$

111. On certain principal, simple interest is obtained to ₹ 2,000 in two years at the rate of 10% p.a. if the interest on this amount is compounded annually. So what will be the difference between the two types of interest?

(a) ₹200 (b) ₹220
(c) ₹100 (d) ₹120

RRB NTPC 29.03.2016 Shift : 3

Ans : (c) Let Principal = ₹x

$\because$ Simple interest $= \frac{P \times R \times T}{100}$

$$\Rightarrow 2000 = \frac{x \times 10 \times 2}{100}$$

x = 10000

$\therefore$ Compound interest for 2 years $= P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$

$$= 10000\left[\left(1+\frac{10}{100}\right)^2 - 1\right]$$

$$= 10000\left[\frac{121}{100} - 1\right]$$

$$= 10000 \times \frac{21}{100} = ₹2100$$

$\therefore$ Different in interest = 2100 – 2000 = ₹100

112. There was an increase of 40% by the simple interest on an amount in 4 years. What will be the compound interest at ₹6000 at the same rate in 3 years?

(a) ₹ 1260 (b) ₹ 1886
(c) ₹ 1986 (d) ₹ 7986

RRB NTPC 18.01.2017 Shift : 3

Ans : (c)

Let rate of interest = r %

Principal = ₹100

$$\text{interest} = 100 \times \frac{40}{100} = 40$$

As per the question

$$\Rightarrow 40 = \frac{100 \times 4r}{100}, r = 10\%$$

Compound interest of 3 years of ₹6000

$$\Rightarrow 6000 \times \left[\left(1+\frac{10}{100}\right)^3 - 1\right] = ₹1986$$

113. If the rate of interest is 8% per annum and ₹10000 are lent for half yearly at the compound interest, then calculate the rate of equivalent simple interest for the first year?

(a) 8.16% (b) 9%
(c) 7% (d) 10%

RRB NTPC 19.04.2016 Shift : 1

Ans : (a) $\because$ Interest is compounded for half yearly.

$\therefore r = \frac{8}{2} = 4\%$ half yearly

n = 1 year = 1 × 2 = 2 half yearly

Compound interest for the year

$$CI = P\left[\left(1+\frac{r}{100}\right)^n - 1\right]$$

$$= 10000\left[\left(1+\frac{4}{100}\right)^2 - 1\right]$$

$$= 10000\left[\frac{26}{25} \times \frac{26}{25} - 1\right]$$

$$= 10000\left[\frac{676-625}{625}\right]$$

$$= 10000 \times \frac{51}{625}$$

= ₹816

If simple interest be ₹816 for one year.

then $816 = \frac{10000 \times R \times 1}{100}$

$R = 8.16\%$

$\therefore$ equivalent simple interest rate = 8.16%

114. Find the compound interest at 7% of that amount for 3 years where whose simple interest will be ₹18900 at the rate of 7% in 3 years. (Rounded off to nearest ₹)

(a) ₹19,746 (b) ₹18,390
(c) ₹20,254 (d) ₹21,053

RRB NTPC 28.04.2016 Shift : 1

Ans : (c) simple interest $(S.I) = \frac{P \times R \times T}{100}$

$$18,900 = \frac{P \times 7 \times 3}{100}$$

$$P = \frac{18,900 \times 100}{7 \times 3} = 900 \times 100 = 90000$$

Again compound interest

$$(C.I) = 90000\left[\left(1+\frac{7}{100}\right)^3 - 1\right]$$

$$= 90000\left[\left(\frac{107}{100}\right)^3 - 1\right]$$

$$= 90000\left(\frac{1225043}{1000000} - 1\right)$$

$$= 90000 \times \frac{225043}{1000000} = 9 \times \frac{225043}{100}$$

$$= 20253.87 = ₹20254$$

Type - 5

115. The difference of 2 years compound interest and simple interest on a fixed amount at 12.5% is ₹45. Find the amount.

(a) ₹ 2880 (b) ₹ 3000
(c) ₹ 2000 (d) ₹ 2440

RRB JE - 22/05/2019 (Shift-I)

Ans : (a) r = 12.5% , t = 2 Year CI ~ SI = ₹45 P = ?
difference between CI and SI of two years

$$= P \times \left(\frac{r}{100}\right)^2$$

$$45 = P \times \frac{(12.5)^2}{(100)^2}$$

$$P = \frac{45 \times 100 \times 100}{12.5 \times 12.5} = ₹\ 2880$$

116. At a fixed amount for, 2 years simple interest at 4% is ₹140. Find the difference between the compound interest and the simple interest for the same rate and the same period at the same amount.

(a) ₹ 2.80 (b) ₹ 2.40
(c) ₹ 3 (d) ₹ 1.80

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

Ans : (a) Given–
R = 4% time = 2 Year
Simple interest = 140

Simple interest $= \frac{P \times R \times T}{100}$

$$140 = \frac{P \times 4 \times 2}{100}$$

$$P = \frac{7000}{4} = 1750$$

As per the question –

$$A = P\left(1+\frac{r}{100}\right)^n$$

$$A = 1750\left(1+\frac{4}{100}\right)^2$$

$$A = 1750 \times \frac{26}{25} \times \frac{26}{25}$$

$$A = 1892.8$$

Interest = 1892.8 – 1750 = 142.8
Difference of interest = 142.8 – 140 = ₹ 2.8

117. Find the difference between compound interest and simple interest for 2 years at the rate of 8% per annum on ₹15000.

(a) ₹100 (b) ₹96
(c) ₹108 (d) ₹12

RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (b) Given-
P = ₹ 15000
R = 8%
time (t) = 2 Year

When time is 2 year and then difference of compund interest and simple interest.

$$D = P\left(\frac{R}{100}\right)^2 \text{ from,}$$

$$= 15000\left(\frac{8}{100}\right)^2$$

$$= 15000 \times \frac{4}{625} = ₹\ 96$$

118. On what principal will the difference of compound interest and simple interest at the rate of 10% for three years will be ₹620?

(a) ₹ 18000 (b) ₹ 25000
(c) ₹ 24000 (d) ₹ 20000

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) Let Principal = ₹P
As per the question–

$$620 = \left[P\left(1+\frac{10}{100}\right)^3 - 1\right] - \frac{P \times 10 \times 3}{100}$$

$$620 = P\left[\left(\frac{1331-1000}{1000}\right) - \frac{10 \times 3}{100}\right]$$

$$620 = P\left[\frac{331-300}{1000}\right]$$

$$620 = P\left[\frac{31}{1000}\right]$$

P = ₹20000

119. Find the difference between compound interest and simple interest, received in 4 years at the rate of 10% on the amount of ₹ 1000.

(a) ₹64.10 (b) ₹52
(c) ₹74 (d) ₹16.40

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

Ans. (a)

Compound amount after n Year $A = P\left(1+\frac{r}{100}\right)^n$

Compound amount after 4 Year $=1000\left(1+\frac{10}{100}\right)^4$

$=1000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$ = ₹1464.1

∴ Compound interest = 1464.1 – 1000 = 464.1

Simple interest after 4 years $=\frac{PRT}{100}$

$=\frac{1000\times10\times4}{100}=400$

So intended difference = 464.1 – 400 = ₹64.10

120. The difference between compound interest and simple interest of 2 years at a rate of 8% on a fixed amount is ₹8. Find the amount.

(a) ₹2000 (b) ₹1250
(c) ₹1500 (d) ₹1000

RRB JE - 02/06/2019 (Shift-I)

Ans : (b) Given–

interest Rate = 8%

time = 2 Year

difference of compound interest and simple interest= ₹8

Let amount = P [where D = difference]

$D=P\left(\frac{R}{100}\right)^2$ from–

$8=P\left(\frac{8}{100}\right)^2$

$8=P\times\frac{4}{625}$

P = ₹1250

121. The difference between compound interest and simple interest is ₹124.05 when calculated on a half yearly basis for 2 years at the rate of 10% on a fixed amount. Find the amount.

(a) ₹ 8400 (b) ₹ 10000
(c) ₹ 8000 (d) ₹ 8200

RRB JE - 02/06/2019 (Shift-I)

Ans : (c) Given

interest Rate = R/2 = 10/2 = 5% (Half yearly)

time = 2 Year = 4 Half year

Let Principal = P

$P\left[\left(1+\frac{R}{100}\right)^T-1\right]-\left(\frac{P\times R\times T}{100}\right)=124.05$

$P\left[\left(1+\frac{5}{100}\right)^4-1\right]-\left(\frac{P\times5\times4}{100}\right)=124.05$

$P\left[\frac{21\times21\times21\times21-20\times20\times20\times20}{20\times20\times20\times20}\right]-\left(\frac{P\times5\times4}{100}\right)=124.05$

$P\left[\frac{194481-160000}{160000}\right]-\frac{P\times5\times4}{100}=\frac{12405}{100}$

$P\left[\frac{34481-32000}{160000}\right]=\frac{12405}{100}$

$P\left[\frac{2481}{1600}\right]=12405$

$P=\frac{12405\times1600}{2481}$ = ₹8000

122. The difference between the simple interest on a principal, at the rate of 8% in 8 months and at the rate of 6% in 14 months is 200. Find the principal.

(a) ₹12000 (b) ₹12800
(c) ₹24000 (d) ₹14400

RRB JE - 01/06/2019 (Shift-I)

Ans : (a) Let Principal = ₹x

simple interest of 8 month at the rate of 8%

Rate (R) = 8%, time $(T)=\frac{8}{12}$ Year $=\frac{2}{3}$ Year

simple interest $=\frac{P\times R\times T}{100}$

$=\frac{x\times8\times\frac{2}{3}}{100}$

$=\frac{16x}{300}$

simple interest of 14 months at the rate of 6%

Rate (R) = 6%, time $(T)=\frac{14}{12}=\frac{7}{6}$ Year

simple interest $=\frac{P\times R\times T}{100}$

$=\frac{x\times6\times\frac{7}{6}}{100}$

$=\frac{7x}{100}$

difference between simple interest = 200

$\frac{7x}{100}-\frac{16x}{300}=200$

$\frac{21x-16x}{300}=200$

$\frac{5x}{300}=200$

x = 40 × 300

x = ₹12000

123. The difference between simple interest received on a sum of money at 4% per annum for 2 years and compound interest is ₹8. Find that amount.

(a) ₹4000 (b) ₹10000
(c) ₹8000 (d) ₹5000

RRB JE - 01/06/2019 (Shift-III)

Ans. (d) for 2 Year,
Formula:– Compound interest – simple interest

$$= \text{Principal}\left(\frac{\text{Rate}}{100}\right)^{\text{time}}$$

$$8 = \text{Principal}\left(\frac{4}{100}\right)^2$$

$$8 = \text{Principal} \times \frac{1}{25} \times \frac{1}{25}$$

Principal = 8 × 25 × 25
Principal = ₹5000

124. The difference between simple interest and compound interest on a certain amount at the rate of 5% for 3 years is ₹14.48. Find the amount.
(a) ₹ 1850 (b) ₹ 1999
(c) ₹ 1899 (d) ₹ 2160
RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (c) simple interest $= \frac{P \times R \times T}{100}$

Let P = ₹x

simple interest $= \frac{x \times 5 \times 3}{100} = \frac{3x}{20}$

Compound interest $= x\left[\left(1+\frac{5}{100}\right)^3 - 1\right]$

$$= x\left[\left(1+\frac{1}{20}\right)^3 - 1\right] = x\left[\left(\frac{21}{20}\right)^3 - 1\right]$$

$$= x\left(\frac{9261-8000}{8000}\right) = \frac{1261}{8000}x$$

As per the question,

$$\frac{1261}{8000}x - \frac{3x}{20} = 14.48$$

$$\frac{1261x - 1200x}{8000} = 14.48$$

$$61x = 14.48 \times 8000$$

$$x = \frac{1448 \times 80}{61} = ₹1899$$

125. Find the difference between compound interest and simple interest of ₹400 for 2 years at an interest rate of 5%.
(a) ₹10 (b) ₹4 (c) ₹3 (d) ₹1
RRB RPF Constable – 24/01/2019 (Shift-III)

Ans. (d) When difference is two year between simple interest and compound interest,

$$\text{Difference} = \text{Principal}\left(\frac{R}{100}\right)^2$$

$$\text{Difference} = P\left(\frac{r}{100}\right)^2$$

r = 5%, P = ₹400

$$\text{Difference} = 400\left(\frac{5}{100}\right)^2 = \frac{400}{20 \times 20} = ₹1$$

126. Find the difference between simple interest and compound interest at a ₹2000 for 2 years at 10% annual interest rate.
(a) ₹ 0 (b) ₹ 30
(c) ₹ 20 (d) ₹ 10
RRB Group-D – 25/09/2018 (Shift-III)

Ans. (c) : Given-
t = 2 Year
p = ₹ 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 = ₹20

127. The difference between compound interest and simple interest is ₹2 for 2 years at an interest rate of 5% on an amount. Find the principal amount.
(a) ₹650 (b) ₹920
(c) ₹800 (d) ₹700
RRB Group-D – 29/10/2018 (Shift-III)

Ans : (c)

$D = P\left(\frac{R}{100}\right)^2$ from the formula,

$$2 = P\left(\frac{5}{100}\right)^2$$

P = 2 × 20 × 20 = ₹ 800

128. Find the difference between compound interest and simple interest at ₹8000 at the interest rate of 5% for 3 years
(a) ₹ 61 (b) ₹ 58
(c) ₹ 95 (d) ₹ 68
RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a) $A = P\left(1+\frac{R}{100}\right)^n$

$$A = 8000\left(1+\frac{5}{100}\right)^3$$

$$A = 8000 \times \frac{105}{100} \times \frac{105}{100} \times \frac{105}{100}$$

A = ₹ 9261

Compound interest = Amount (A) – Principal (P)
= 9261 – 8000 = ₹ 1261

simple interest (SI) $= \frac{P \times R \times T}{100}$

$$= \frac{8000 \times 5 \times 3}{100} = 1200$$

difference between compound interest and simple interest = 1261 – 1200 = ₹ 61

129. The difference between simple interest and compound interest received in two years at ₹20,000 is ₹800. What is the annual rate of interest?

(a) 30% (b) 15%
(c) 25% (d) 20%

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (d) Difference of simple interest and compound interest of 2 year = ₹800

Formula $\boxed{d = \frac{PR^2}{100^2}}$

d = difference, P = Principal
R = Rate

$800 = \frac{20000 \times R^2}{100 \times 100}$

$R^2 = 400$

$\boxed{R = 20\%}$

130. These is a difference of ₹180 between 15% simple annual interest and compound annual interest on a certain amount for 2 years Find the principal amount.

(a) ₹ 9000 (b) ₹ 7000
(c) ₹ 8000 (d) ₹ 6000

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) Let Principal = ₹ P

simple interest = $\frac{P \times 15 \times 2}{100}$ ____(i)

Compound interest $= P\left[\left(1+\frac{15}{100}\right)^2 - 1\right]$

$= P\left[\left(\frac{23}{20}\right)^2 - 1\right]$

$= P\left[\frac{529-400}{400}\right] = \frac{P \times 129}{400}$ _____(ii)

As per the 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 = ₹8000

131. What will be the difference between simple interest and compound interest of 2 years at 10% interest rate on ₹8500?

(a) ₹ 68 (b) ₹ 50
(c) ₹ 85 (d) ₹ 70

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (c) :
Difference of simple interest and Compound interest of 2 year is

$D = P\left(\frac{R}{100}\right)^2$

$D = \frac{8500 \times 10}{100} \times \frac{10}{100}$ = ₹ 85

132. The difference between the simple interest and compound interest of the amount invested at 5% per annum for 2 years is ₹15. Find the amount.

(a) ₹ 4,980 (b) ₹ 3,000
(c) ₹ 4,800 (d) ₹ 6,000

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (d) Difference of simple interest and Compound interest of 2 year is–

$D = P\left(\frac{R}{100}\right)^2$

$15 = P\left(\frac{5}{100}\right)^2$

P = 15 × 20 × 20 = ₹6000

133. The difference in simple interest paid by two banks for two years at ₹ 5000 is ₹25. Explain the difference between the interest rates of the two banks.

(a) 0.25% (b) 0.60%
(c) 1% (d) 0.10%

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (a) Suppose the first bank gives interest at the rate of R_1% and the second bank gives interest at the rate of R_2%.

Interest by first bank $= \frac{5000 \times R_1 \times 2}{100} = 100R_1$ .....(i)

Interest by second bank

$= \frac{5000 \times R_2 \times 2}{100} = 100R_2$ .....(ii)

As per the question,

$100\ R_1 - 100\ R_2 = 25$

$100\ (R_1 - R_2) = 25$

$R_1 - R_2 = \frac{25}{100} = \frac{1}{4} = 0.25\%$

134. The difference between the compound interest and simple interest of an amount at the rate of 15% per annum for 3 years is ₹283.50. Find the amount.

(a) ₹ 4,040 (b) ₹ 4,000
(c) ₹ 4,400 (d) ₹ 4,444

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (b) :
Difference = Compound interest – simple interest

Difference = $\left[P\left(1+\frac{R}{100}\right)^3 - P\right] - \left(\frac{PRT}{100}\right)$

$$283.50 = P\left[\left(1+\frac{15}{100}\right)^3 - \frac{15\times 3}{100} - 1\right]$$

$$\Rightarrow \quad 283.50 = P\left[\frac{115}{100}\times\frac{115}{100}\times\frac{115}{100} - \frac{45}{100} - 1\right]$$

$$\Rightarrow \quad 283.50 = P\left[\frac{12,167 - 3600 - 8000}{8000}\right]$$

$$P = \frac{283.5\times 8000}{567}$$

$$P = ₹\ 4000$$

135. Find the difference between simple interest and compound interest of 2 years at an annual rate of 20% on a principal of ₹4000.

(a) 160 (b) 120
(c) 90 (d) 110

RRB NTPC 09.04.2016 Shift : 3

Ans : (a) Principal (P) = ₹4000
Rate (R) = 20%
Difference of CI and SI of two years

Compound interest – simple interest $= P\times\left(\frac{R}{100}\right)^2$

$$= 4000\times\left(\frac{20}{100}\right)^2 = 4000\times\frac{20}{100}\times\frac{20}{100} = ₹160$$

136. Find the difference between the maturity values of (i) simple interest for 5 years and (ii) annual compound interest at the same rate for a amount of ₹5000.

(a) ₹11.00 (b) ₹11.50
(c) ₹12.00 (d) ₹12.50

RRB NTPC 06.04.2016 Shift : 2

Ans : (d) Principal = ₹5000
Rate = 5%
time = 2 Year
difference in Compound interest and simple interest for two years

$$= \left(\frac{R}{100}\right)^2 \times \text{ Principal } = \left(\frac{5}{100}\right)^2 \times 5000$$

$$= \frac{25}{100\times 100}\times 5000 = ₹12.50$$

137. Each of the two amounts of ₹10,000 was invested for 2 years (i) at the rate of 5% simple interest (ii) at the same rate of annual compound interest. Whjat is the difference in their moturity value?

(a) ₹ 30 (b) ₹ 25
(c) ₹ 20 (d) ₹ 40

RRB NTPC 26.04.2016 Shift : 1

Ans : (b)
Difference between of CI and SI for two **years**

$$(D) = P\left(\frac{R}{100}\right)^2 = 10000\left(\frac{5}{100}\right)^2$$

$$= 10000\times\frac{25}{10000} = ₹\ 25$$

138. M borrowed some money for 1 year at certain simple interest. But the interest rate was increased to 2% then the difference of simple interest is ₹ 120. Find the principal amount.

(a) ₹4,000 (b) ₹5,000
(c) ₹6,000 (d) ₹7,000

RRB NTPC 27.04.2016 Shift : 2

Ans : (c) As per the question-

$$\frac{P\times(r+2)\times 1}{100} - \frac{P\times r\times 1}{100} = 120$$

$$\frac{P}{100}(r+2-r) = 120$$

$$\frac{P}{100}\times 2 = 120$$

$$P = 120\times 50$$

$$P = ₹6000$$

139. Find the difference between simple interest and compound interest of ₹23,465 received at the rate of 7.5% in the second year.

(a) 132 (b) 66
(c) 147 (d) 73.5

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) Given, Principal (P) = 23,465
and Rate (r) = 7.5%
Formula for difference of 2 years compound interest and simple interest–

$$\text{Difference (D)} = P\left(\frac{r}{100}\right)^2 = 23,465\left(\frac{7.5}{100}\right)^2$$

$$= 23465\left(\frac{75}{1000}\right)^2 = 23465\left(\frac{3}{40}\right)^2$$

$$= 23465\times\frac{9}{1600} = \frac{211185}{1600} \Rightarrow 131.99 = 132$$

Type - 6

140. The amount lent at a fixed rate of compound interest becomes ₹1460 in 2 years and ₹1606 in 3 years Find the rate of interest.

(a) 11% (b) 12%
(c) 10% (d) 8%

RRB JE - 02/06/2019 (Shift-II)

Ans. (c) From $A = P\left(1+\frac{r}{100}\right)^n$

$$\frac{\text{Amount of 3 years}}{\text{Amount of 2 years}} = \frac{1606}{1460}$$

$$\frac{P\left(1+\frac{r}{100}\right)^3}{P\left(1+\frac{r}{100}\right)^2} = \frac{1606}{1460}$$

$$\frac{1606}{1460}=\left(1+\frac{R}{100}\right)^1$$

$$\frac{803}{730}=\left(1+\frac{R}{100}\right)^1$$

$$\frac{803}{730}-1=\frac{R}{100}$$

$$R=\frac{803-730}{730}=\frac{73}{730}\times 100=10\%$$

141. Deepa deposits an amount of ₹6250 in the bank which becomes ₹7840 at the rate of compound annual interest in two years the rate of interest is?

(a) 13% (b) 10%

(c) 12% (d) 11%

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (c) Principal = ₹ 6250

Time = 2 Year

Amount = ₹ 7840

Let Rate = R % Annual

$$\text{Amount} = \text{Principal} \times\left(1+\frac{R}{100}\right)^2$$

$$7840=6250\times\left(1+\frac{R}{100}\right)^2$$

$$\frac{7840}{6250}=\left(\frac{100+r}{100}\right)^2$$

$$\left(\frac{28}{25}\right)^2=\left(\frac{100+R}{100}\right)^2$$

$$\Rightarrow\frac{28}{25}=\frac{100+R}{100}$$

$\Rightarrow 28 \times 4 = 100 + R$

R = 112 – 100

R = 12% Annual

142. Hari invested ₹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?

(a) ₹ 120 (b) ₹ 110

(c) ₹ 100 (d) ₹ 105

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) : As per the question–

$$\frac{11.03\times100\times3}{100}+100=P\left(1+\frac{10}{100}\right)^3$$

$$33.09+100=P\times\frac{11\times11\times11}{10\times10\times10}$$

$$\frac{133.09\times10\times10\times10}{11\times11\times11}=P$$

$$\frac{133090}{1331}=P$$

= ₹ 99.9925 ≅ ₹100

143. Mr. X invested ₹300 for 3 years at a simple interest rate of 11.03%. How much should Mr. Y invest after 3 years to get the same amount to return, but at a compound interest rate of 10%?

(a) ₹ 250 (b) ₹ 300

(c) ₹ 350 (d) ₹ 400

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (b)

The amount given on compound interest is ₹P_1.

As per the question-

$$P_1\left(1+\frac{r}{100}\right)^n=\frac{P_2\times R\times t}{100}+P_2$$

$$P_1\left(1+\frac{10}{100}\right)^3=\frac{300\times3\times11.03}{100}+300$$

$$P_1\left(\frac{11}{10}\right)^3=99.27+300$$

$$P_1\left(\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}\right)=399.27$$

$$P_1=\frac{39927\times10}{1331}=299.97\approx₹300$$

144. Raju invested ₹5000 on annual compound interest rate for 3 years After 3 years he received the ₹1655 more, then what is the rate of interest.

(a) 40 (b) 30

(c) 10 (d) 20

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (c) Principal = ₹ 5000

Compound interest = ₹ 1655

Compound amount = 5000 + 1655

= ₹ 6655

Time = 3 Year, Rate = R %

Formula–

$$\text{Compound amount} = \text{Principal}\left[1+\frac{\text{Rate}}{100}\right]^{\text{Time}}$$

$$6655 = 5000\left(1+\frac{R}{100}\right)^3$$

$$\frac{6655}{5000} = \left(1+\frac{R}{100}\right)^3$$

$$= \frac{1331}{1000} = \left(1+\frac{R}{100}\right)^3$$

$$= \left(\frac{11}{10}\right)^3 = \left(1+\frac{R}{100}\right)^3$$

$$\Rightarrow \frac{11}{10} - 1 = \frac{R}{100}, \Rightarrow \frac{1}{10} = \frac{R}{100}$$

R = 10%

145. A loan of ₹ 305 was taken at a certain rate per annum of compound interest, for 3 years After three years the amount repaid was ₹ 670, calculate the rate of compound interest.

(a) 30% (b) 35%

(c) 33% (d) 25%

RRB NTPC 27.04.2016 Shift : 1

Ans : (a) Amount $(A) = P\left(1+\frac{r}{100}\right)^n$

Time = 3Year

$$670 = 305\left(1+\frac{r}{100}\right)^3$$

$$\frac{670}{305} = \left(1+\frac{r}{100}\right)^3$$

$$2.197 = \left(1+\frac{r}{100}\right)^3$$

$$1+\frac{r}{100} = 1.3$$

$$\frac{r}{100} = 0.3$$

r = 30% Annual

Type - 7

146. In what time will ₹4400 become ₹4576 at 8% per annum compound interest rate. The interest compounded half-yearly?

(a) 6 month

(b) 2 Year

(c) 7 month

(d) 1 Year

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (a) Let, Time = n year = 2n half year

Given,

Amount (A) = ₹4576

Principal (P) = ₹4400

Rate $(r) = \frac{8\%}{2}$

= 4% Half yearly

As per the question,

Time = 2n Half year

$A = P\left(1+\frac{r}{100}\right)^n$ from,

$$\Rightarrow 4576 = 4400\left(1+\frac{4}{100}\right)^{2n}$$

$$\frac{4576}{4400} = \left(1+\frac{4}{100}\right)^{2n}$$

$$\left(\frac{26}{25}\right)^1 = \left(\frac{26}{25}\right)^{2n}$$

$$\Rightarrow \quad 2n = 1 \Rightarrow n = \frac{1}{2}$$

So required time = 6 months

147. Under a new scheme, a bank offers an interest of 30% per annum compounded annually. Suraj deposits ₹ 10,000 under this new scheme and at the end of the tenure receives ₹ 28,561. What was the tenure of the scheme that Suraj had chosen?

(a) 2 Year (b) 3.5 Year

(c) 4 Year (d) 4.5 Year

RRB NTPC 28.04.2016 Shift : 2

Ans : (c) A = ₹28,561

P = ₹10,000

r = 30%

n = ?

$$\because A = P\left(1+\frac{r}{100}\right)^n$$

$$28561 = 10000\left(1+\frac{30}{100}\right)^n$$

$$\frac{28561}{10000} = \left(\frac{130}{100}\right)^n = \left(\frac{13}{10}\right)^n = \left(\frac{13}{10}\right)^4$$

$\therefore$ n = 4 Year

16.

Problems Based on Age

Type - 1

1. The difference of age of father and son is 24 years. Two years before the age of father was as the twice of the present age of the son what is the present age of the father?

(a) 46 (b) 42
(c) 44 (d) 38

RRB JE - 24/05/2019 (Shift-II)

Ans : (a) Let the present age of father is = x years
and present age of son = y years
difference between the age of father and son = 24 years

$x - y = 24$ ----(i)

According to question,

$x - 2 = 2y$

$x - 2y = 2$ ----(ii)

from eq^n (i) and (ii)−

$x - y = 24$
$x - 2y = 2$
$y = 22$ years

Putting the value of y in eq^n (i)

$x - y = 24$
$x - 22 = 24$
$x = 46$

Hence, Present age of father = 46 years

2. The ratio of age of mother and daughter is 9:2. At the time of daughters birth, mothers age was 28 years. What is the age of daughter?

(a) 12 Years (b) 8 Years
(c) 4 Years (d) 6 Years

RRB JE - 27/05/2019 (Shift-II)

Ans : (b) Let the age of daughter = 2x years
Age of mother = 9x years
According to question,
∵ At the time of daughter's birth the age of mother = 28 years
∴ At the time of daughter's birth the age of mother = (9x – 2x) years

$\therefore 9x - 2x = 28$
$7x = 28$
$x = 4$

Age of daughter = 2x = 2 × 4 = 8 years

3. The difference between the age of mother and daughter is 20 years. After 5 years the age of daughters will be half of her present age of mother. What is the age of daughter?

(a) 15 Years (b) 12 Years
(c) 10 Years (d) 8 Years

RRB JE - 30/05/2019 (Shift-I)

Ans : (c) Let the present age of mother is x year and the present age of daughter is y year.
According to question,

$x - y = 20$ ....(i)

After 5 years the age of daughter will be half of the present age of mother

$\Rightarrow \frac{x}{2} = y + 5$

$x - 2y = 10$ ....(ii)

by subtracting equation (i) from equation (ii)

$x - y = 20$
$x - 2y = 10$
$- \quad + \quad -$
$y = 10$

Hence, present age of daughter is 10 years.

4. After 4 years, the total age of the two members of the family will be 64. Four years ago the ratio of their age was 3 : 1. Find the age of the younger member.

(a) 10 (b) 16
(c) 12 (d) 15

RRB JE - 01/06/2019 (Shift-II)

Ans : (b) Let the age of younger member = y year
and age of elder member = x year
First condition-

$x + 4 + y + 4 = 64$
$x + y = 56$ ----(i)

Second condition-

$\frac{x-4}{y-4} = \frac{3}{1}$

$x - 4 = 3y - 12$
$x - 3y = -8$ ----(ii)

from equation (i) and (ii)

$x + y = 56$
$x - 3y = -8$
$- \quad + \quad +$
$4y = 64$
$y = 16$

Hence the age of younger member = y = 16 years

5. The sum and the difference of the ages of two children is 33 and 3 respectively. What is the age of the elder one?

(a) 15 Years (b) 16 Years
(c) 18 Years (d) 24 Years

RRB JE - 01/06/2019 (Shift-II)

Ans : (c) Let the age of elder child = x years
And age of younger child = y years
According to question,
$x + y = 33$ ----(i)
$x - y = 3$ ----(ii)
from equation (i) and (ii)
$x + y = 33$
$x - y = 3$
$2x = 36$
$x = 18$
Hence age of elder child = 18 years

6. The ratio of age of three persons are 4:7:9. 8 years before total age of them were 56. What is present age of the eldest one?
(a) 28 (b) 32
(c) 36 (d) 42
RRB JE - 01/06/2019 (Shift-III)

Ans. (c) Let the present age of first person = 4x years
Present age of second person = 7x years
Present age of third person = 9x years
before 8 years sum of ages of all three persons = 56 years
$4x - 8 + 7x - 8 + 9x - 8 = 56$
$20x = 80$
$x = 4$
Hence present age of eldest person
$= 9x = 9 \times 4 = 36$ years

7. The father's age at the time of his sons' birth was equal to the present age of son. If the age of son is 20, then find the present age of the father.
(a) 39 Years (b) 30 Years
(c) 60 Years (d) 40 Years
RRB JE - 26/06/2019 (Shift-III)

Ans : (d) If present age of son = 20 Years
So presents age of father = (20+20) = 40 Years

8. P is 2 years older than Q, Q is 4 years younger than R. If the sum of their ages is 27 then the age of Q is?
(a) 8 Years (b) 9 Years
(c) 11 Years (d) 7 Years
RRB JE - 27/06/2019 (Shift-III)

Ans : (d) Let the age of Q = x Years
Age of P = (x +2) Years
Age of R = (x + 4) Years
from question–
$(x + x + 2 + x + 4) = 27$
$3x + 6 = 27$
$3x = 21$
$x = 7$
The age of Q is 7 years.

9. Six years ago, the ratio of the ages of two persons P and Q was 3 : 2. After four years, ratio their age will be 8:7. What is the age of P?
(a) 10 Years (b) 12 Years
(c) 14 Years (d) 8 Years
RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (b)
Let the age of P and Q befor 6 years was 3x and 2x.
Present age of P and Q is (3x+6) year and (2x+6) years
According to question,
$$\frac{3x+10}{2x+10} = \frac{8}{7}$$
$21x + 70 = 16x + 80$
$5x = 10$
$x = 2$
Present age of P = (3x+6) = 3×2+6 = 12 Years

10. The ratio of the age of Deepika and her mother is 3 : 11. After 3 years theirs age ratio becomes 1:3. What is the age of Deepika.
(a) 15 Years (b) 9 Years
(c) 13 Years (d) 11 Years
RRB RPF SI – 11/01/2019 (Shift-I)

Ans. (b) : Let the age of Deepika and her mother is 3x and 11x years respectively.
According to question,
$$\frac{3x+3}{11x+3} = \frac{1}{3}$$
$\Rightarrow 9x+9 = 11x+3$
$\Rightarrow 2x = 6$
$\Rightarrow x = 3$
Therefore age of Deepika = 3×3 = 9 Years

11. The ratio of present ages of X and Y is 3 : 4. Five years ago their age ratio was 5:7. Then what is the present age of Y.
(a) 50 Years (b) 60 Years
(c) 30 Years (d) 40 Years
RRB RPF Constable – 17/01/2019 (Shift-I)

Ans. (d) : Let the present age of X and Y is 3x and 4x years respectively.
The Ratio of age before 5 years = 5 : 7
$$\frac{3x-5}{4x-5} = \frac{5}{7}$$
$21x - 35 = 20x - 25$
$21x - 20x = -25 + 35$
$x = 10$
So present age of Y = 4x = 4 × 10 = 40 Years

12. The ratio of the age of father, mother and daughter is 22:20:9. After 10 years the age ratio of will be 27:25:14. Find the present age of the mother.
(a) 21 (b) 26
(c) 27 (d) 40
RRB Group-D – 07/12/2018 (Shift-III)

Ans : (d) Let the age of father, mother and daughter is 22x, 20x and 9x years respectively.
According to question,-
$$\frac{22x+10}{20x+10} = \frac{27}{25}$$
$550x + 250 = 540x + 270$
$10x = 20$
$x = 2$
The present age of Mother = 20x
$= 20 \times 2 = 40$ Years

13. 6 years ago, the ratio of age of Saina and Sagar was 6 : 5 therefore in the next four years the ratio of their age will be 11:10. What is the present age of Sagar?

(a) 14 Years (b) 16 Years
(c) 12 Years (d) 18 Years

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (b)
Let the age of Saina and Sagar before 6 years
= 6x, 5x Years
The present age of Saina and Sagar = (6x + 6)Years, (5x + 6) Years
According to question,-

$$\frac{6x+6+4}{5x+6+4}=\frac{11}{10}$$

60x + 100 = 55x + 110
5x = 10
x = 2
Present age of Sagar = 5x + 6 = 5 × 2 + 6 = 16 Years

14. S is 7 years younger than R. If their age ratio is 7:9, then what is the age of S.

(a) 16 Years (b) 28 Years
(c) 18 Years (d) 24.5 Years

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) Let the age of S = x Years
Age of R = (x + 7) Years
According to question,-

$$\frac{x}{x+7}=\frac{7}{9}$$

$\Rightarrow$ $9x = 7x + 49$
$\Rightarrow$ $2x = 49$
$\Rightarrow$ $x = 24.5$ Years
Therefore Age of S is 24.5 years.

15. The sum of the ages of 6 persons A, B, C, D E and F working in the same company is 105 years. There is a diffeence of 5 years when they are born. What is the age of the eldest one?

(a) 20 Years (b) 25 Years
(c) 30 Years (d) 15 Years

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (c) Let the age of eldest person = x years
∴ Therefore the age of All 6 people is
x, (x –5), (x – 10), (x–15), (x – 20) and (x – 25) Years
According to question,
x + x – 5 + x – 10 + x – 15 + x – 20 + x – 25 = 105
6x – 75 = 105
6x = 180
$\boxed{x = 30}$
Therefore the age of eldest person = 30 years.

16. The present age ratio of Naresh and suparna is 7:3, three years later from now their age ratio will be 2:1. Present age of Naresh is ___ years.

(a) 10.5 (b) 28
(c) 14 (d) 21

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (d) Let the present age of Naresh = 7 x
Present age of suparna = 3x
Age of Naresh after 3 years = (7x + 3)
Age of suparna after 3 years = (3x + 3)
According to question,

$$\frac{7x+3}{3x+3}=\frac{2}{1}\Rightarrow 7x + 3 = (6x + 6)$$

$\Rightarrow$ x = 6–3
$\Rightarrow$ $\boxed{x = 3}$
Present age of Naresh = 7 × 3 = 21 Years

17. The ratio of the present ages of x and y is 5: 4. Three years later from now, their age ratio will be 11:9. What is the present age of Y.

(a) 26 Years (b) 22 Years
(c) 27 Years (d) 24 Years

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (d)
Let the present age of X and Y = 5x and 4x Years
According to question,

$$\frac{5x+3}{4x+3}=\frac{11}{9}$$

45x + 27 = 44x + 33
x = 33 – 27
x = 6
Present age of Y = 4 × 6 = 24 Years

18. The present ages of S and A are in the ratio of 5: 4 respectively. Therefore after three years, their age ratio will be 11:9 respectively. What is the present age of S in years?

(a) 24 (b) 30
(c) 40 (d) 27

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b) Let the present age of S = 5x years
Present age of A = 4x Years
from question−

$$\frac{5x+3}{4x+3}=\frac{11}{9}$$

45x + 27 = 44x + 33
x = 6
Therefore present age of S = 5x = 5 × 6 = 30 Years

19. Aman is as young as vinay and 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?

(a) 20 Years (b) 22 Years
(c) 25 Years (d) 30 Years

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (a) According to question,
Age of Vinay – age of Aman = age of Aman – age of Arun
Age of Vinay + age of Arun = 2 × age of Aman
2 × Age of Aman = 40
Age of Aman = 20 Years

20. The present age ratio of J and K is 11:6. After 5 years their age ratio will be 12 :7. What is the present age of K.

(a) 30 Years (b) 60 Years
(c) 55 Years (d) 35 Years

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (a) Let the present age of J and K is 11x and 6x years respectively.
According to question,

$$\frac{11x+5}{6x+5}=\frac{12}{7}$$

77x + 35 = 72x + 60
77x – 72x = 60 – 35
5x = 25
x = 5
Therefore, present age of K = 6 × 5 = 30 Years

21. The ratio of present age of Rekha and Rashmi is 7:4. Three years later from now their age ratio will be 8:5. What is the present age of Rashmi (in years)?

(a) 15 (b) 9
(c) 8 (d) 12

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (d) : Let the present age of Rekha and Rashmi is 7x and 4x years.
According to question,

$$\frac{7x+3}{4x+3}=\frac{8}{5}$$

35x + 15 = 32x + 24
3x = 9
x = 3
Therefore, Present age of Rashmi = 4x = 4×3 = 12Years

22. The ratio of present age of Meena and Seena is 4:3. After 6 years age of Meena will be 26. What is the present age of Seena?

(a) 12 Years (b) 19 Years 6 months
(c) 15 Years (d) 21 Years

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) Let the present age of Meena = 4x Years
and present age of Seena = 3x Years
According to question,
4x + 6 = 26
4x = 20
x = 5
Present age of Seena = 3x = 3 × 5 = 15 Years

23. When the age of father is 54 years, then the difference between the ages of the two sisters is 4 years. Father is two years older than mother. The younger sister is half of the age of the mother. Find the age of the elder sister.

(a) 26 (b) 27
(c) 29 (d) 30

RRB NTPC 06.04.2016 Shift : 1

Ans : (d) The age of father = 54 years
∴ Age of mother = 54 − 2 = 52 Years

$$\text{Age of younger sister} = \frac{\text{Age of Mother}}{2} = \frac{52}{2} = 26\,\text{year}$$

Age of elder sister – age of younger sister = 4 years
Age of elder sister − 26 = 4
∴ Age of elder sister = 4 + 26 = 30 Years

24. There is a difference of two years in the age of two sisters, while the age of her father is 52 years. Father is two years older than mother. If the age of the elder sister is half of the age of mother, find the age of the younger sister.

(a) 27 (b) 21 (c) 25 (d) 23

RRB NTPC 06.04.2016 Shift : 2

Ans : (d) Let the age of elder sister = x Years
then age of younger sister = (x – 2) Years
Age of father = 52 Years
Age of Mother = 52 -2 =50 Years

$$\frac{\text{Age of mother}}{2} = \text{Age of elder sister}$$

$$\frac{50}{2}=x$$

Elder sister (x) = 25 Years
Younger sister = x – 2 = 25 − 2 = 23 Years

25. Sarika has three children. First is 5 years older than the second one and the second one is 4 years older than the third. The sum of their ages is 22 years. Find the age of the eldest child.

(a) 7 (b) 9 (c) 11 (d) 12

RRB NTPC 29.04.2016 Shift : 1

Ans : (d) Let the age of second child = x Years
then age of third child = (x – 4) Years
and age of first child = (x + 5) Years
According to question,
x – 4 + x + x + 5 = 22
3x + 1 = 22
3x = 21
x = 7
Age of eldest child = x + 5= 7 + 5 = 12 Years

26. Neetu is 10 years elder to Meetu, and Meetu is 7 years elder to Geetu. If the sum of their ages is 48 years, what is Neetu's age (in years)?

(a) 25 (b) 22
(c) 28 (d) 27

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (a) According to question, where

$$\left\{\begin{array}{l} N \Rightarrow \text{Neetu} \\ M \Rightarrow \text{Meetu} \\ G \Rightarrow \text{Geetu} \end{array}\right\}$$

N = M + 10 .....(i)
M = G + 7 .....(ii)
N + M + G = 48 .....(iii)
from equation (i), (ii) and (iii)–
M + 10 + M + M – 7 = 48
3M = 45
M = 15
Age of Meetu is 15 years,
Age of Neetu = M + 10 = 25 Years

27. Two-thirds of my present age is the same as three-fourths of that of one of my cousins'. My age three years ago will be his age four years hence. My present age is _____ years.

(a) 72 (b) 63
(c) 54 (d) 81

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (b) If my present age = x year and present age of my cousin = y year
Then according to first condition–

$\frac{2x}{3} = \frac{3y}{4}$

8x – 9y = 0 ..... (i)
According to second condition–
x – 3 = y + 4
x–y = 7
y = x – 7
y = x–7 putting in equation (i)–
8x – 9 (x–7) = 0
8x – 9x + 63 = 0
–x + 63 = 0
x = 63 years

28. The ages difference between A and B is 16 years. If 6 years ago, the elder one was 3 times as old as the younger one, find the present age of the younger between A and B ?

(a) 15 years (b) 11 years
(c) 14 years (d) 12 years

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

Ans : (c) Let Age of B = x Years
∴ Age of A = (16 + x) Years
According to question, before 6 Years–
3 (x –6) = (16 + x –6)
3x–18 = x + 10
2x = 28
x = 14
Therefore, the age of younger person is 14 years.

29. Present ages of Sai and Sateesh are in the ratio of 5 : 4 respectively. Three years after, the ratio of their ages will be 11 : 9 respectively. What is the present age of Sateesh in years?

(a) 22 (b) 23
(c) 21 (d) 24

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

Ans : (d) Let the present age of Sai and Sateesh is 5x years, 4x years respectively.
According to question,

$\frac{5x+3}{4x+3} = \frac{11}{9}$

⇒ 9(5x+3) = 11(4x+3)
⇒ 45x+27 = 44x +33
⇒ 45x – 44x = 33 – 27
⇒ x = 6
Therefore, Present age of Sateesh = 6×4 = 24 Years

Type - 2

30. Neeraj's age is half of suraj's age. If 8 years is subtracted from Neeraj's age and 5 years is added in Suraj's age then Suraj's age will be 5 times more than Neeraj. Suraj's and Neeraj's age was -

(a) 30 Years and 15 Years
(b) 28 Years and 14 Years
(c) 26 Years and 12 Years
(d) 28 Years and 13 Years

RRB RPF SI – 16/01/2019 (Shift-II)

Ans. (d) : Let the present age of suraj is x years, and present age of Neeraj is $\frac{x}{2}$ years.
According to question,

$5\left(\frac{x}{2} - 8\right) = (x+5)$

⇒ $\frac{5x}{2} - 40 = x + 5$

⇒ $\frac{5x}{2} - x = 5 + 40$

⇒ $\frac{3x}{2} = 45$

⇒ x = 30 Years
Age of Suraj before 2 years = 30 – 2 = 28 Years
Age of Neeraj before 2 years = 15 – 2 = 13 Years

31. The age ratio of A and B is 3:2. After 10 years the sum of their age will be 80. What is their present age?

(a) 27, 28 (b) 36, 24
(c) 42, 28 (d) 45, 30

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

Ans : (b) Let the present age of A = 3x Years
Present age of B = 2x Years
According to question,
3x + 10 + 2x + 10 = 80
5x = 60
x = 12
Present age of A = 3 × 12 = 36 Years
Present age of B = 2 × 12 = 24 Years

32. One year before the age ratio of two sisters was 2:3. Sum of their present age is 12. Find their present age.

(a) 9, 3 (b) 7.5, 4.5
(c) 8, 4 (d) 5, 7

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

Ans : (d) Let the present age of both sisters is x years and y years.
x + y = 12 ..... (i)
According to question,

$\frac{x-1}{y-1} = \frac{2}{3}$

⇒ 3x – 3 = 2y – 2

$\Rightarrow 3x - 2y = 1$ ..... (ii)
from equation (i) and (ii)
$[x + y = 12] \times 2$ {multiplying by 2 in eq^n (i)}
$3x - 2y = 1$

$5x = 25$
$x = 5$
putting the value of x in equation (i)
$x + y = 12$
$5 + y = 12$
$y = 7$
Therefore, their present age is = 5 Years and 7 Years

33. The sum and the difference of age ratio of two brothers is 5:1. If the product of their age is 96, then find their age?
(a) 8, 12 (b) 6, 16
(c) 6, 10 (d) 24, 4
RRB JE - 26/06/2019 (Shift-III)

Ans : (a) Let the age of both brothers = x, y Years
According to question,
$$\frac{x+y}{x-y} = \frac{5}{1}$$
$x + y = 5x - 5y$
$6y = 4x$
$$y = \frac{2}{3}x$$
$\because$ $xy = 96$ ....(i)
$$x \times \frac{2}{3}x = 96$$
$$x^2 = 96 \times \frac{3}{2}$$
$x = \sqrt{144}$
$x = 12$
putting the value of x in equation (i)
$12 \times y = 96$
$y = 8$
Therefore, their age is 8, 12.

34. The sum of the age of Sindu and Bindu is 30 years? The product of their age is 221. What is theirs age?
(a) 17 Years, 13 Years
(b) 16 Years, 14 Years
(c) 15 Years, 15 Years
(d) 18 Years, 12 Years
RRB Group-D – 16/10/2018 (Shift-I)

Ans. (a) : Let the age of Sindu is x years and age of Bindu is (30-x) years.
According to question,
$x \times (30 - x) = 221$
$30x - x^2 = 221$
$x^2 - 30x + 221 = 0$
$x^2 - 17x - 13x + 221 = 0$
$x(x - 17) - 13(x - 17) = 0$
$(x - 17)(x - 13) = 0$
If $x - 17 = 0$
x = 17 so another's age = 30-17=13 Years
If x-13=0
x =13 so another's age = 30-13 = 17 Years

35. Sudha's age is twice as of Radha. If 6 years is subtracted from Radha's age and 4 years is added to Sudha's age, then Sudha's age will be four times of Radha's age, Two years before from now, what will be the age of Sudha and Radha?
(a) 30 Years and 14 Years
(b) 26 Years and 12 Years
(c) 34 Years and 20 Years
(d) 30 Years and 16 Years
RRB Group-D – 09/10/2018 (Shift-I)

Ans. (b) : Let the present age of Radha is x years and present age of Sudha is 2x years.
According to question,
$4(x - 6) = (2x + 4)$
$\Rightarrow 4x - 24 = 2x + 4$
$\Rightarrow 4x - 2x = 28$
$\Rightarrow 2x = 28$
$\Rightarrow x = 14$
$\therefore$ age of Sudha before 2 Years $= 2x - 2$
$= 2 \times 14 - 2$
$= 28 - 2 = 26$ Years
and age of Radha before 2 years = 14 – 2 = 12 Years

36. Kiran said to Varun that her brother Abhi is 4 year younger as compared to her. She also told that the sum of their age was 32. Help Varun in finding out the age of Kiran and Abhi.
(a) Kiran's age is 18 years and Abhi's age is 14
(b) Kiran's age is 16 years and Abhi's age is 12
(c) Kiran's age is 12 years and Abhi's age is 16
(d) Kiran's age is 10 years and Abhi's age is 14
RRB Group-D – 11/10/2018 (Shift-III)

Ans : (a) Let the age of Kiran = x Years
Then age of brother Abhi = (x–4) Years
$\because$ $x + x - 4 = 32$
$\therefore$ $2x = 36$, $\Rightarrow x = 18$
Age of Kiran (x) = 18 Years
Age of Abhi = (x – 4) Years = 18 – 4 = 14 Years

37. A man says to his son seven years before I was 7 times of your age and three years after of your age, I will be three times of your age. Find his age.
(a) 42, 12 (b) 52, 12
(c) 40, 14 (d) 20, 42
RRB Group-D – 12/12/2018 (Shift-I)

Ans. (a) Let the age of father is y years and age of son is x years.
According to question,
$7(x-7) = (y-7)$
$7x - 49 = y - 7$
$7x - y = 42$ .....(i)
And
$3(x+3) = (y+3)$
$3x + 9 = y + 3$
$3x - y = -6$ .....(ii)
from equation (i) and (ii)
$7x - y = 42$
$3x - y = -6$
$- \quad + \quad +$
$4x = 48$
$x = 12$
from equation (i)
$7x - y = 42$
$7 \times 12 - y = 42$
$84 - 42 = y$
$y = 42$
therefore age of father = 42 Years
and age of son = 12 Years

38. Ankita is two years younger than Anu. Four years after Anu's age before three years will be twice the age of Ankita. Find the present age of Ankita and Anu.
(a) 14 Years and 16 Years
(b) 15 Years and 17 Years
(c) 12 Years and 14 Years
(d) 13 Years and 15 Years

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) : Let the present age of Anu = x Years
Then present age of Ankita = (x – 2) Years
According to question,
$(x + 4) = (x - 2 - 3) \times 2$
$x + 4 = (x - 5) \times 2$
$x + 4 = 2x - 10$
$x = 14$
Present age of Ankita = x – 2
= 14 – 2 = 12 Years
Therefore, the present age of Ankita and Anu is 12 years and 14 years respectively.

39. The sum of present age of Nitya and Satya is 40 years.The product of their age is 351. What is their present age in years?
(a) 27 and 13 (b) 28 and 12
(c) 25 and 15 (d) 26 and 14

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (a) Let the present age of Nitya = a years
Present age of Satya = b years
According to question, a + b = 40 .....(i)
ab = 351 .....(ii)
$(a-b)^2 = (a+b)^2 - 4ab$
$= (40)^2 - 4 \times 351$
$= 1600 - 1404$
$a - b = \sqrt{196} = 14$
a – b = 14 .....(iii)
from equation (i) and (iii)
a = 27, b = 13
∵ Their present age in years is 27 years and 13 years.

40. Father's age is four times the age of the son. In 20 years his age will be twice of his son's age. Find his age?
(a) 36 Years, 9 Years
(b) 44 Years, 11 Years
(c) 40 Years, 10 Years
(d) 60 Years, 15 Years

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (c) : Let the present age of son = x Years
Present age of father = 4x Years
According to question,
$2(x+20) = 4x + 20$
$2x + 40 = 4x + 20$
$40 - 20 = 4x - 2x$
$2x = 20$
$x = 10$ Years
Therefore present age of son = 10 Years
present age of father = 4 × 10 = 40 Years

41. Age ratio of two brothers is 5:8 and the difference of their age is 12 years, find their age.
(a) 20, 32 (b) 16, 28
(c) 18, 30 (d) 22, 34

RRB NTPC 31.03.2016 Shift : 3

Ans : (a) Let the age of both brothers is 5x and 8x years respectively.
from question–
$8x - 5x = 12$
$3x = 12 \Rightarrow x = 4$
Therefore, the age of both brothers is 20 years 32 years.

42. The difference in ages of Sunita and Sheela is 12 years. If 9 years before the elders age was 4 times than, that of younger one, then what is their present age?
(a) 11 and 23 (b) 15 and 27
(c) 13 and 25 (d) 23 and 35

RRB NTPC 18.04.2016 Shift : 2

Ans : (c) Let the present age of sunita = x Years
Present age of sheela = (x – 12) Years
According to question,
$x - 9 = 4(x - 12 - 9)$
$x - 9 = 4(x - 21)$
$x - 9 = 4x - 84$
$4x - x = 84 - 9$
$3x = 75$
$x = 25$
Present age of Sunita = x = 25 Years
Present age of Sheela = x – 12 = 25 – 12 = 13 Years

43. The difference of the age of Vinay and Vijay is 20 years. If 5 years before the elder boys age was 5 times of younger boy. Then what is their present age?

(a) 15 and 35 (b) 5 and 25
(c) 10 and 30 (d) 8 and 28

RRB NTPC 22.04.2016 Shift : 3

Ans : (c) Let the present age of Vijay = x Years
Present age of Vinay = (x+20) Years
According to question,
$x + 20 - 5 = 5(x-5)$
$x + 15 = 5x - 25$
$4x = 40$
$\therefore x = 10$
Therefore, their present age is 10 and 30 years.

Type - 3

44. The present age ratio of mother and daughter is 8:3. After 12 years their age ratio will be 2:1. What is the sum of the present age of mother and daughter.

(a) 66 Years (b) 74 Years
(c) 71 Years (d) 69 Years

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (a) Let the present age of Mother and Daughter is 8x years and 3x years
According to question,
$$\frac{8x+12}{3x+12} = \frac{2}{1}$$
$8x + 12 = 6x + 24$
$2x = 12$
$x = 6$
$\therefore$ Present age of (Mother + daughter) = (8x + 3x) = 11x
= 11 × 6 = 66 Years

45. The age ratio of father and son is 3:1 and the product of their age is 147. Find the sum of their age.

(a) 28 (b) 32
(c) 36 (d) 35

RRB JE - 24/05/2019 (Shift-I)

Ans : (a) Let the age of father = 3x Years
Age of son = x Years
According to question,
$3x \times x = 147$
$x^2 = 49$
$x = 7$
Sum of age of father and son = 3x + x = 4x
= 4 × 7 = 28 Years

46. The age ratio of mother and daughter is 12:5. After 10 years, mother's age will be twice to the age of daughter. What is the sum of their age at present?

(a) 60 (b) 75
(c) 65 (d) 85

RRB JE - 27/05/2019 (Shift-II)

Ans : (d) Let the present age of mother is 12x years and present age of daughter is 5x years.
According to question,
After 10 years the age of mother will be twice to the age of daughter
$12x + 10 = 2 \times (5x + 10)$
$12x + 10 = 10x + 20$
$2x = 10$
$x = 5$
sum of their age at present = 12x + 5x
= 17x
= 17 × 5
= 85 Years

47. A's age is twice of B. Sum of their present age is 60 years. What will be the sum of their age after 5 years?

(a) 70 (b) 80
(c) 65 (d) 75

RRB JE - 31/05/2019 (Shift-I)

Ans : (a) Let the age of B = a Years
Age of A = 2a Years
$2a + a = 60$
$3a = 60$
$a = 20$
Sum of their age after 5 years = 2a + 5 + a + 5
= 2 × 20 + 5 + 20 + 5
= 40 + 30 = 70 Years

48. The difference between the age of A and B is 6. Their ratio is 3:5. Find the sum of their age.

(a) 24 (b) 40
(c) 16 (d) 32

RRB JE - 31/05/2019 (Shift-III)

Ans. (a) Let the age of A = 3x Years
and Age of B = 5x Years
According to question,
$5x - 3x = 6$
$2x = 6$
$x = 3$
Age of A = 3 × 3 = 9 Years
Age of B = 5 × 3 = 15 Years
Sum of their age = 9 + 15 = 24 Years

49. If P's age is twice of Q's age and after 5 years the sum of their age is 70, then find their present age (in years).

(a) 60 (b) 40
(c) 30 (d) 50

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

Ans : (a) Let the age of Q is x years and Age of P is 2x years.
So According to question,-
$2x + 5 + x + 5 = 70$
$3x = 60$
$x = 20$
Sum of age of P and Q = $2x + x$ = 40 + 20 = 60 Years

50. The present age ratio of P and D is 3 : 4 while the present age ratio of D and A is 5:6. After 15 years from now, the age ratio of P and D will be 4:5. What is the sum of the present age of all three?

(a) 180 Years (b) 183 Years
(c) 177 Years (d) 175 Years

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (c)

P : D and D : A
3 : 4 5 : 6

P : D : A
3 : 4
5 : 6

P:D:A =15 : 20 : 24
Let the present age 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,

$$\frac{15x+15}{20x+15}=\frac{4}{5}$$

75x + 75 = 80x + 60
5x = 15
$\boxed{x = 3}$
Sum of Present age of all three people
= 15 × 3 + 20 × 3 + 24 × 3
= 45 + 60 + 72 = 177 Years

51. The difference between the age of Waqar and Nasima is 8 years. 30 years before they were married then the four times of Waqar's age was equal to 5 times of Nasima's age. Find the sum of their present age.

(a) 130 Years (b) 134 Years
(c) 132 Years (d) 135 Years

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (c) : Let the present age of Nasima = x Year
So present age of Waqar = (x + 8) Year

before 30 Years,
Age of Nasima = (x – 30) Years
Age of Waqar = (x + 8 – 30) Years
= (x –22) Years
According to condition,
4 (x – 22) = 5 (x – 30)
4x – 88 = 5x – 150
5x – 4x = 150 – 88
x = 62
∴ Present age of Nasima = 62 Years
Present age of Waqar = 62 + 8 = 70 Years
Sum of their age = 62 + 70 = 132 Years

52. The present age ratio of X and Y is 3 : 8 while the present age ratio of Y and Z is 4:5. Two years before the age ratio of X and Y was 1:3. The sum of present age of all three is___?

(a) 126 Years (b) 63 Years
(c) 84 Years (d) 105 Years

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) The ratio of present age of X and Y is 3:8 and Ratio of present age of Y and Z is 4 : 5.
Ratio of Present age of X:Y:Z is

X : Y : Z
3 : 8
4 : 5
12 : 32 : 40

Let the present age of X and Y is 12x and 32 x respectively.

$$\frac{12x-2}{32x-2}=\frac{1}{3}$$

36x – 6 = 32x – 2
4x = 4
x = 1
Sum of present age of X, Y and Z = 12 + 32 + 40
= 84 Years

53. 28 months before A's age was 3.5 times of B's age 4 months after from now A's age will be 2.5 times of B's age. What is the sum of their present age?

(a) 23 Years
(b) 22 Years 8 month
(c) 23 Years 2 month
(d) 22 Years 10 month

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (b) Let the present age of A is x month and present age of B is y month.
According to question,-
x – 28 = 3.5 (y–28)
x – 3.5y = 28 – 98
x – 3.5 y = –70 .....(i)
After 4 years
x + 4 = 2.5 (y + 4)
x – 2.5y = 10–4
x – 2.5 y = 6 .....(ii)
subtracting equation (ii) from equation (i)
x – 3.5y = -70
x – 2.5y = 6
– + –
– y = -76
y = 76
from equation (ii),
x – 2.5 × 76 = 6
x – 190 = 6 ⇒ x = 196
Sum of present age of A and B
= x + y = 76 + 196 = 272 months
= 22 Years 8 months

54. At present the age ratio of Teertha and Pradeep is 2:3 while the present age ratio of Pradeep and Umar is 4:5. Four years before the age ratio of Teertha and Pradeep was 5: 8. What is the sum of ages of all three at present?

(a) 140 Years (b) 120 Years
(c) 90 Years (d) 105 Years

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (d)

Teertha : Pradeep = 2 : 3
Pradeed : Umar = 4 : 5
Teertha : Pradeep : Umar
2 : 3
4 : 5
8 : 12 : 15

Let the present age of Teertha, Pradeep and Umar is 8x, 12x and 15x years respectively.
before 4 years.
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 – 20
4x = 12
x = 3

The sum of present age of all three people
= 8 × 3 + 12 × 3 + 15 × 3
= 24 + 36 + 45 = 105 Years

55. Chavan's age before 15 years was 4 times of Pawan's age. Pawan's present age 1/3 of Sunil two years before age, while Chavan present age is 3/5 of Sunil present age. What is the sum of age of all three?

(a) 130 Years (b) 120 Years
(c) 128 Years (d) 125 Years

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (d) : Let the present age of sunil = x Years

$\therefore$ present age of chavan $=\frac{3}{5}x$ Years

so present age of pawan $=\frac{(x-2)}{3}$ Years

According to question,-

$$\frac{3}{5}x-15=4\left(\frac{(x-2)}{3}-15\right)$$

$$\frac{3x-75}{5}=4\left(\frac{x-2-45}{3}\right)$$

3(3x –75) = 20 (x – 47)
9x – 225 = 20 x – 940
20x – 9x = 940 – 225
11x = 715

$$x=\frac{715}{11}$$

x = 65

Sum of present age of all three people

$$=x+\frac{3}{5}x+\frac{(x-2)}{3}$$

$$=\frac{15x+9x+5x-10}{15}$$

$$=\frac{29x-10}{15}$$

$$=\frac{29\times65-10}{15}=\frac{1885-10}{15}=\frac{1875}{15}=125\text{ Years}$$

56. 9 months before, Trisha's age was three times of Rishabh's age who is 4 months older than Yawan. After 25 months from now Yavan 20 times age will be equal Trisha 9 times age. What is the sum of present age of her?

(a) 19 Years 11 months (b) 19 Years 9 months
(c) 19 Years 5 months (d) 18 Years 9 months

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (c) Let before 9 months
Age of Yawan = x month
$\therefore$ Age of Rishabh = (x + 4) months
Age of Trisha = (x + 4) × 3 = (3x + 12) months
In present,
Age of Yawan = (x + 9) months
Age of Rishabh = (x + 13) months
Age of Trisha (3x + 21) months
According to question,
After 25 months–
(3x + 46) × 9 = (x + 34) × 20
27x + 414 = 20x + 680
7x = 266
x = 38
Therefore, present age of Yawan = x + 9 = 47 month
Present age of Rishabh = x + 13 = 51 month
Present age of Trisha = 3x + 21 = 135 month
Sum of present age of all people
= 233 months or 19 Year 5 months

57. Ten months ago, Tiyasha's age was 2.5 times of Rishi's age, who is 15 months older than Shravan. 30 months after from now. 16 times of Shrawan's age will be 7 times of Tiyasha's age. What is the sum of the present ages of Tiyasha, Rishi and Shravan?

(a) 30 years 9 month (b) 31 years 9 month
(c) 31 years 3 month (d) 31 years 11 month

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (c) Before 10 months,
Let the age of shravan = x month
$\therefore$ Age of Rishi = (x + 15) months
Age of Tiyasha = (x + 15) × 2.5 = (2.5x + 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,
After 30 months,

$(x + 10 + 30) \times 16 = (2.5x + 47.5 + 30) \times 7$
$(x + 40) \times 16 = (2.5x + 77.5) \times 7$
$16x + 640 = 17.5x + 542.5$
$1.5x = 97.5$
$x = 65$
Therefore Present age of Shravan = (x+10) = 75 months
Present age of Rishi = (x + 25) = 90 months
Present age of Tiyasha = (2.5x + 47.5) = 210 months
Sum of present age of all people = 75+90+210
= 375 months
375 months = 31 year 3 months

58. Biju's age is 28 years less than three times of Subham's age. Subham's age is 16 years more than Amir's 4/5 age. Kaveri is 10 years younger than Amir and half of the age of Subham. What is the sum of their ages?
(a) 196 Years (b) 182 Years
(c) 180 Years (d) 188 Years
RRB Group-D – 11/12/2018 (Shift-I)

Ans. (b) : Let the age of Shubham = x Years
Age of Kaveri $= \frac{x}{2}$ Years
Age of Amir $= \left(\frac{x}{2} + 10\right)$ Years
Age of Biju = y Years
According to question,
$y = 3x - 28$
$3x - y = 28$ ---------- (i)
$16 + \left(\frac{x}{2} + 10\right)\frac{4}{5} = x$
$16 + \frac{2x}{5} + 8 = x$
$24 = x - \frac{2x}{5}$
$24 = \frac{5x - 2x}{5}$
$24 = \frac{3x}{5}$
$x = 40$ Years
putting the value of x in equation (i)
$3x - y = 28$
$3 \times 40 - y = 28$
$y = 92$ Years
Age of Shubham = x Years
= 40 Years
Age of Kaveri $= \frac{x}{2} = \frac{40}{2} = 20$ Years
Age of Amir $= \frac{x}{2} + 10 = \frac{40}{2} + 10 = 30$ Years
Age of Biju = y Years = 92 Years
Sum of age of all people
$= 40 + 20 + 30 + 92 = 182$ Years

59. 7 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?
(a) 81 (b) 90
(c) 87 (d) 84
RRB Group-D – 12/11/2018 (Shift-II)

Ans : (a) Age of all seven children Respectively = x, (x + 1), (x + 2), (x + 3), (x + 4), (x + 5), (x + 6) Years
Sum of age of eldest three children = 93
$(x + 4) + (x + 5) + (x + 6) = 93$
$3x + 15 = 93$
$3x = 93 - 15$
$3x = 78$
$\boxed{x = 26}$
So,
Sum of age of youngest three children = x+(x+1)+(x+2)
= 3x + 3
putting the value of x,
$= 3 \times 26 + 3 = 78 + 3 = 81$ Years

60. Seven children with the same birth date were born in 7 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?
(a) 57 (b) 54
(c) 51 (d) 60
RRB Group-D – 18/09/2018 (Shift-III)

Ans. (c) : Let the age of all seven children = x, (x + 1), (x + 2), (x + 3), (x + 4), (x + 5), (x + 6) Years
Sum of age of eldest three children
= (x+4)+(x+5)+(x+6)
$63 = 3x + 15$
$3x = 48$
$x = 16$
Sum of age youngest three children
= x + (x + 1) + (x + 2) = 3x + 3
putting the value of x,
$= 16 \times 3 + 3 = 51$ Years

61. The difference between Peter and Preeti's ages is 5 years. When they married each other 35 years ago, 4 times of Peter's age was the same as 5 times the age of Preeti. What is the sum of their present age?
(a) 105 years (b) 110 years
(c) 115 years (d) 112 years
RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (c) If the present age of peter is x years and age of Preeti is y years then,
$x - y = 5$ .....(i)
According to question,
Before 35 years,
$4(x - 35) = 5(y - 35)$
$4x - 140 = 5y - 175$
$4x - 5y = -35$.....(ii)

by multiplying 4 in equation (i) and on solving (ii)
4x–4y=20
4x–5y=–35
y=55 Years
putting y = 55 in equation (i),
x – y = 5
x = 55 + 5 = 60 Years
sum of present age of both = x+y = 60+55 = 115 years

62. The difference between Charles' and Shriya's age is 6 years. When they married each other 30 years ago, 4 times of Charles's age was the same as 5 times the age of Shriya. What is the sum of their present age?
(a) 112 years (b) 114 years
(c) 115 years (d) 110 years
RRB ALP & Tec. (10-08-18 Shift-III)

Ans : (b) Let the age of Shriya = x years
so charles age will be = (x+6) Years
According to question,
(x–30) × 5 = (x+6–30) × 4
5x–150 = 4x–96
x = 150–96
x = 54 Years
∴ Age of Charles = x+6 = 54+6 = 60 Years
Sum of age of both = 60+54 =114 Years

Type - 4

63. 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?
(a) 4 : 1 (b) 2 : 3
(c) 2 : 1 (d) 3 : 4
RRB RPF Constable – 25/01/2019 (Shift-III)

Ans. (d) : Present age of P = 15 Years
Let present age of Q = x Years
According to question,-
x + 6 = 26
x = 20 Years
Present age of Q = 20 Years
Ratio of present age of P and Q = 15 : 20 = 3 : 4

64. The age of A, B and C are in the ratio of 2:4:5 and the sum of their age is 77. Find the ratio of the age of A and B after 10 years.
(a) 10 : 17 (b) 12 : 19
(c) 13 : 18 (d) 11 : 14
RRB JE-24/05/2019 (Shift-I)

Ans : (b) Let the age of A = 2x Years
Age of B = 4x Years
Age of C = 5x Years
According to question,
2x + 4x + 5x = 77
11x = 77
x = 7
∴ Ratio of age of A and B after 10 years
= 2x + 10 : 4x + 10
= 2 × 7 + 10 : 4 × 7 + 10
= 24 : 38
= 12 : 19

65. The daughter's age is one-fourth of her father's age. Five years later, she will be one third of her father's age. Later, after 5 years, what will be the ratio of her and her father's age?
(a) 2 : 5 (b) 3 : 5
(c) 3 : 4 (d) 5 : 2
RRB JE - 27/05/2019 (Shift-I)

Ans : (a) Let the present age of father = x Years
∴ present age of daughter = $\frac{x}{4}$ 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 (Age of father)
Age of daughter = $\frac{x}{4} = \frac{40}{4}$ = 10 Years
Age of both after 10 years =
40 + 10 = 50 Years and 10 + 10 = 20 Years
Age of daughter : age of father = 20 : 50
= $\boxed{2:5}$

66. 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.
(a) 15: 17 (b) 17: 15
(c) 12: 13 (d) 11: 14
RRB JE - 28/05/2019 (Shift-I)

Ans : (d) A G {A = Ajit
5x 7x (before 7 years) G = Ganesh}
↓ ↓
(5x+7) (7x+7) (present age)
According to question,-
(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) = 0
x = 3
Ratio of present age = $\frac{5x+7}{7x+7} = \frac{5\times3+7}{7\times3+7} = \frac{22}{28} = \boxed{\frac{11}{14}}$

67. The ages of A, B and C are in the ratio of 2:3:8. The sum of their ages is 108. What will be the ratio of their ages after 12 years?

(a) 2 : 5 : 6 (b) 1 : 2 : 3
(c) 1 : 3 : 5 (d) 3 : 4 : 5

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

Ans : (d) Let the age of A, B and C = 2x, 3x, 4x Years
from question−
2x + 3x + 4x = 108
9x = 108
$\boxed{x = 12}$
Ratio of their age after 12 years
= 2x + 12 : 3x + 12 : 4x + 12
= 24 + 12 : 36 + 12 : 48 + 12
= 36 : 48 : 60
Ratio of their ages = 3 : 4 : 5

68. The father's age is 3 times more than his son. After 8 years his age become 2.5 times of sons age what will be the age ratio of his and his son after 8 years?

(a) 5 : 2 (b) 3 : 1
(c) 2 : 1 (d) 11 : 4

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

Ans : (a) Let the age of son = x Years
Age of father = 3x Years
Age of son after 8 years = (x + 8)
Age of father after 8 years = (3x + 8)
from question−
3x + 8 = 2.5 (x+8)
3x +8 = 2.5x + 20
0.5x = 12
$x = \frac{12}{0.5}$
$\boxed{x = 24}$
Age of father after 8 years = 3x + 8
= 3 × 24 + 8 = 72 + 8 = 80
Age of son after 8 years = x + 8 = 24 + 8 = 32
Ratio of their ages = 80 : 32 = 5 : 2

69. Before ten years, mother's age was three times her son's age. After 10 years her age will become twice of the age of son. Find the ratio of their present age.

(a) 7 : 4 (b) 4 : 3
(c) 7 : 3 (d) 3 : 2

RRB JE - 30/05/2019 (Shift-II)

Ans : (c) Let the age of son before 10 years = x Years
∴ age of mother before 10 years = 3x Years
present age of son = (x + 10) Years
present age of mother = (3x + 10) Years
According to question,
3x + 10 + 10 = 2 (x + 10 + 10)
3x + 20 = 2x + 40
x = 20
∴ Ratio of present age of both $= \frac{3x+10}{x+10}$
$= \frac{3\times 20+10}{20+10} = \frac{70}{30} = 7 : 3$

70. Before four years, the ratio of age of A and B was 2:1. After four years, this ratio will become 3:2. Find the ratio of their present age.

(a) 5 : 2 (b) 2 : 5
(c) 5 : 4 (d) 5 : 3

RRB JE - 28/05/2019 (Shift-II)

Ans : (d) Let the age of B before 4 years = x years
and age of A = 2x Years
Present age of A = (2x + 4) Years
Present age of B = (x + 4) Years
According to question,
After 4 years,
$\frac{2x+4+4}{x+4+4} = \frac{3}{2}$
$\frac{2x+8}{x+8} = \frac{3}{2}$
4x + 16 = 3x + 24
x = 8
Present age of A = 2x + 4
= 2 × 8 + 4 = 20 Years
Present age of B = x + 4
= 8 + 4 = 12 Years
Ratio of present age = A : B = 20 : 12 = 5 : 3

71. Pooja's age before 4 years is equal to Deepa's age after 4 years. The ratio of Pooja's age before 4 years and Deepa's age after 4 years is 3:1. What is the ratio of their present age?

(a) 5 : 7 (b) 5 : 2
(c) 4 : 7 (d) 5 : 3

RRB JE - 31/05/2019 (Shift-I)

Ans : (d) Let the present age of Pooja = x years
and present age of Deepa = y Years
First condition,
x – 4 = y + 4
x – y = 8 -----(i)
Second condition,
$\frac{x+4}{y-4} = \frac{3}{1}$
x + 4 = 3y – 12
x - 3y = – 16 -----(ii)
from equation (i) and (ii)-
x – y = 8
x – 3y = –16
– + +
2y = 24
y = 12
putting the value of y in equation (i)
x = 20
Therefore, ratio of present age of pooja and deepa
= 20 : 12 = 5 : 3

72. The present age ratio of P and Q is 6:7. Q is 4 years older than P. The ratio of their age after 4 years will be–

(a) 7 : 9 (b) 7 : 8
(c) 5 : 8 (d) 8 : 3

RRB JE - 02/06/2019 (Shift-III)

Ans : (b) Let the present age of P = x Years
Present age of Q = (x + 4) Years
According to question,

$$\frac{x}{x+4}=\frac{6}{7}$$

7x = 6x + 24
x = 24
Present age of P = 24 Years
Present age of Q = 24 + 4 = 28 Years
Ratio of age of P and Q after 4 years–

$$\frac{24+4}{28+4}=\frac{28}{32}=\frac{7}{8}=7:8$$

73. Before five years, the ratio of age of P and Q was 7:9 after 10 years this ratio will be 5:6. Find the ratio of their age at present.

(a) 6 : 7 (b) 5 : 4
(c) 2 : 1 (d) 4 : 5

RRB JE - 01/06/2019 (Shift-I)

Ans : (d) Let the age of P before 5 years = 7x years
Age of Q = 9x Years
Present age of P = (7x + 5) Years
Present age of Q = (9x + 5) Years
Age of P after 10 years = (7x + 5 + 10) Years
= (7x + 15) Years
Age of Q after 10 years = (9x + 5 + 10) Years
= (9x + 15) Years
According to question,

$$\frac{7x+15}{9x+15}=\frac{5}{6}$$

42x + 90 = 45x + 75
3x = 15
x = 5
Present age of P = 7x + 5
= 7 × 5 + 5
= 40
Present age of Q = 9x + 5
= 9 × 5 + 5
= 50
The ratio of present age–
P : Q = 40 : 50
= 4 : 5

74. Y years before Mauma age was 1/5 of Saumi. Y years after from today Mauma age will be 1/4 of Saumi age. What is the ratio of present age of Mauma and Saumi?

(a) 16 : 25 (b) 4 : 5
(c) 7 : 31 (d) 2 : 9

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (c) Let the present age of Mauma = a Years
Present age of Saumi = b Years
before Y years,

$$a-y=(b-y)\frac{1}{5}$$

5a – 5y = b – y
5a – b = 4y ...(i)
After Y years,

$$a+y=(b+y)\frac{1}{4}$$

4a + 4y = b + y
4a – b = –3y ...(ii)
by solving equatin (i) and (ii)
5a – b = 4y
4a – b = –3y
– + +
a = 7y
Therefore,
5a – b = 4y
5 × 7y – b = 4y
b = 35y – 4y
b = 31y
a : b = 7y : 31y
Therefore: a : b =7 : 31

75. Before y years Juthika's age was one fourth of Ruby's age. After y years from today Juthika age will be 1/3 of Ruby's age. What will be the ratio of present age of Juthika and Ruby?

(a) 5 : 17 (b) 9 : 16
(c) 3 : 4 (d) 2 : 7

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (a) Let the age of Ruby before y years = x years
Age of Juthika $=\frac{x}{4}$ 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 + 8y
3x – 4x = 8y – 12y – 12y
x = 16y
∴ present age of Ruby = (16y + y) = 17y
and present age of juthika $=\left(\frac{16y}{4}+y\right)=5y$
Therefore, Ratio of present age of Juthika and Ruby-
5y : 17y = 5 : 17

76. The ratio of the present age of father and son is 2:1. The product of their age is 200, what will be the ratio of their ages after 5 years?

(a) 9 : 5 (b) 10 : 7

(c) 9 : 2 (d) 5 : 3

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (d) Let the present age of father = 2x Years
present age of son = x Years
According to question,
$2x \times x = 200$
$2x^2 = 200$
$x^2 = 100$
$x = 10$
Ratio of their ages after 5 years–
$$\frac{2x+5}{x+5} = \frac{2\times10+5}{10+5} = \frac{25}{15} = 5:3$$

77. Before 10 years, father's age was three times more than his daughter's age. After 10 years, the father's age will be more than double of his daughter's age. What is the ratio of their present age?
(a) 3 : 1 (b) 7 : 3
(c) 5 : 2 (d) 4 : 7

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) :

	Age of daughter	age of father
before 10 years→	x Years (let)	3x Years
At present →	(x+ 10)years	(3x + 10) years

According to question,-
$2(x + 20) = (3x + 20)$
$2x + 40 = 3x + 20$
$x = 20$
Present age of daughter = 20 + 10 = 30 Years
Present age of father = 3 × 20 + 10 = 70 Years
∴Required ratio = 70 : 30 = 7 : 3

78. 10 years ago mother's age was three times her son's age. After 10 years the mother's age will be twice the age of his son. What is the ratio of their present age?
(a) 7 : 3 (b) 12 : 5
(c) 4 : 2 (d) 6 : 1

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (a) Let the present age of son is y years and present age of mother is x years.
So according to question,
$(x - 10) = 3(y - 10)$
$x - 10 = 3y - 30$
$x - 3y = -30 + 10$
$x - 3y = -20$ --------(i)
Their age after 10 years-
$(x + 10) = 2(y + 10)$
$x + 10 = 2y + 20$
$x - 2y = 20 - 10$
$x - 2y = 10$ --------- (ii)
By solving equation (i) and (ii),
$x = 70$
$y = 30$
$$\text{RequiredRatio} = \frac{x}{y} = \frac{70}{30} = 7:3$$

79. Before 10 years Murali's age was three times of 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?
(a) 9 : 2 (b) 13: 4
(c) 5 : 2 (d) 7: 3

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (d) Let the present age of Murli is x years and present age of his son Satish is y years.
According to question,
Before 10 years–
$(x-10) = 3(y-10)$
$x - 10 = 3y - 30$
$x - 3y = -20$ ----- (i)
After 10 years, $x + 10 = 2(y+10)$
$x - 2y = 10$ ----(ii)
On solving both equation-
x = 70 and y = 30
Ratio of present age of murli and satish
$$= \frac{x}{y} = \frac{70}{30} = \frac{7}{3} = 7:3$$

80. The age ratio of Jay and Jog is 5:2. The sum of their age is 63. What will be their age ratio after 9 years?
(a) 5:2 (b) 2:1
(c) 3:2 (d) 4:3

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) Let the present age of Jay and Jog is 5x and 2x respectively.
According to question,
$5x + 2x = 63$
$7x = 63$
$x = 9$
∴ Ratio of age after 9 years = (5×9+9) : (2×9+9)
= 54 : 27
= 2 : 1

81. The present ratio of the age of Seema and Reema is 2:3. Seema is 6 years younger than Reema. After 6 years the age ratio of Seema and Reema will be.
(a) 2:3 (b) 2:7
(c) 3:4 (d) 7:8

RRB NTPC 22.04.2016 Shift : 1

Ans : (c) Given–
Present age of Seema and Reema is 2x and 3x respectively.
According to question,-
$3x - 2x = 6$
x = 6 Years
Therefore Present age of Seema and Reema = 2×6, 6×3
= 12 Years, 18 Years
Ratio of age of Seema and Reema after 6 years–
= (12+6) : (18 + 6)
= 18 : 24 = 3 : 4

Type - 5

82. The average age of 4 persons is 42 years. If their age are in the ratio of 1:3:4:6 respectively. Find the difference between the age of the youngest and the eldest person.

(a) 61 Years (b) 60 Years
(c) 70 Years (d) 59 Years

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

Ans : (b) Let the age of all 4 people = x, 3x, 4x and 6x years
Average age of 4 people = 42 years
Sum of age of all 4 people = 42 × 4 = 168 Years

$x + 3x + 4x + 6x = 168$
$14x = 168$
$x = \frac{168}{14}$
$\boxed{x = 12}$

Age of eldest person = 6x
= 6 × 12
= 72 Years
Age of youngest person = 12 Years
Age difference between both = 72 – 12 = 60 Years

83. When Asha was born at that time her father's age was 38. When her brother was born. Who is 4 year younger than her, her mother's age was 36 years. Find the age difference of their parents.

(a) 8 Years (b) 6 Years
(c) 4 Years (d) 2 Years

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Let the present age of Asha = x Years
Present age of father = (x + 38) Years
Present age of borther = (x – 4) Years
Present age of mother = (36 + x – 4) Years
= (32 + x) Years
age difference between father and mother
= (x+38) – (32+x) = 6 years

84. When the age of mother was 43 years, there was a difference of 21 years between the age of mother and son. If the father is 3 years older than mother, when the father's age will be 50 years, what will be the difference between the age of father and son?

(a) 21 (b) 22
(c) 23 (d) 24

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (d) Age of Mother = 43 Years,
Age of Son = 43–21 = 22 Years
Age of Father = 46 Years
Age difference b/w father and son after 4 years=
= 50 – 26 = 24 Years

85. Monica's father's age was 38 years old when Monica was born, while her mother age was 36 when her four year old younger sister was born. What is the difference between the age of their parents?

(a) 2 Years (b) 8 Years
(c) 4 Years (d) 6 Years

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (d) : Monica's father's age when Monica's 4 years younger sister was born = 38 + 4 = 42 Years
Age of her mother at that time = 36 Years
∴ Age difference of mother and father = 42-36 = 6 Years

86. The ratio of the present age 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 X and Y.

(a) 22 Years (b) 11 Years
(c) 9 Years (d) 13 Years

RRB NTPC 19.04.2016 Shift : 3

Ans : (a) Let the present age of X and Y is 2x and x respectively.
According to question,

$\frac{2x+14}{x+14} = \frac{29}{18}$
$36x + 252 = 29x + 406$
$7x = 154$
$x = 22$

∴ Age difference = 2x – x = x = 22 Years

Type - 6

87. Tom's father is three times older than Tom. 10 years ago, Tom's father was 7 times of his age. How old is Tom?

(a) 15 Years (b) 16 Years
(c) 14 Years (d) 17 Years

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (a) Let the present age of Tom = x years
Then present age of Tom's father = 3x Years
According to question,

$7(x - 10) = (3x - 10)$
$7x - 70 = 3x - 10$
$4x = 60,\ x = 15$ Years

Therefore, Present age of Tom (x) = 15 Years

88. Rajan was married 8 years ago. Then he was 5/6 of his present age. At the time of his marriage, his sister was 10 years younger than him. What is the present age of sister?

(a) 38 (b) 32
(c) 26 (d) 40

RRB JE - 22/05/2019 (Shift-I)

Ans : (a) Let the present age of Rajan = x Years
then present age of sister = (x – 10) Years
According to question,

$x - 8 = \frac{5}{6}x$

$x - \frac{5}{6}x = 8$

$\frac{x}{6} = 8$

x = 48 Years

Therefore present age of sister = 48 – 10 = 38 Years

89. Raja is three times older than Arun. Three years ago, he was four times older than Arun. How old is Raja now?

(a) 6 (b) 15
(c) 27 (d) 12

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

Ans : (c) Let the age of Raja = 3x Years

Age of Arun = x Years

from question−

(3x –3) = 4 (x–3)

3x – 3 = 4x – 12

$\boxed{x = 9}$

Present age of Raja = 3 × 9 = 27 Years

90. Present age of a son is 2/5 his mother's age. 8 years later her age will be half of her mother's age. What is his mother's present age?

(a) 36 (b) 42
(c) 40 (d) 50

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

Ans : (c) Let The present age of mother = x Years

Present age of son $= \frac{2x}{5}$ years

∴ from question,

$\frac{2x}{5} + 8 = \frac{x+8}{2}$

$\frac{2x+40}{5} = \frac{x+8}{2}$

4x + 80 = 5x + 40

x = 40 Years

Present age of Mother = 40 Years

91. Three times of my age before three years, Subtracting from three times of my age after three years, then my present age is found then find my present age.

(a) 21 Years (b) 15 Years
(c) 24 Years (d) 18 Years

RRB RPF SI – 06/01/2019 (Shift-II)

Ans. : (d) Let My present age is x years.

from question−

3 (x+3) – 3 (x–3) = x

3x + 9 – 3x + 9 = x

x = 18 Years

92. The ratio of age of a brother and sister is 4:3. Afer 3 years the age of the sister will be double of her present age. What is present age of brother?

(a) 4 Years (b) 12 Years
(c) 6 Years (d) 8 Years

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

Ans : (a)

Let the present age of brother and sister is 4x, 3x years respectively.

Age of sister after 3 years = (3x + 3) Years

According to question,

(3x + 3) = 3x × 2

3x + 3 = 6x

3 = 3x

$\boxed{x = 1}$

Present age of brother = 4x = 4 × 1 = 4 Years

93. The sum of the age of father and son is 45 years. Five years ago, the product of their age was four times that of his father age at that time. What is the present age of father?

(a) 36 (b) 42
(c) 28 (d) 60

RRB JE - 27/06/2019 (Shift-III)

Ans : (a) Let the present age of son = x Years

present age of father = (45 – x) Years

Age of son before 5 years = (x – 5) Years

Age of father before 5 years = (40 – x) Years

According to question,-

(x–5) (40 – x) = 4(40 – x)

x – 5 = 4

x = 9

Present age of father = 45 – x = 45 – 9 = 36 Years

94. A father is 5 times older than his son. Five years ago, he was six times older than his son. Find the age of his son.

(a) 32 Years (b) 35 Years
(c) 25 Years (d) 28 Years

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) Let the present age of son = x years

Present age of father = 5x Years

Age of son before 5 years = x – 5

Age of father before 5 years = 5x – 5

from question−

5x – 5 = 6(x –5)

5x – 5 = 6x – 30

x = 25

Therefore the age of son will be 25 years.

95. A father's age is three times of his son's age and the son's age is 3/8 of his mother's age. If the difference between his mother's age and the father's age is 4 years, then find the age of the son.

(a) 10 Years (b) 9 Years
(c) 11 Years (d) 12 Years

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (d) Let the age of son = x years

$\therefore$ Age of father = 3x Years

and age of mother $= \frac{8}{3}x$ Years

According to question,-

$$3x - \frac{8}{3}x = 4$$

$$9x - 8x = 12$$

$$x = 12 \text{ Years}$$

Therefore Age of son = 12 Years

96. 17 years later from today chetna's age will be twice as Mahim's age. Before 5 years from today Mahim's age was one year less than 1/3 part of chetna's age. What is the present age of chetna?

(a) 65 Years (b) 63 Years
(c) 67 Years (d) 61 Years

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (a) Before 5 years-

Age of Chetna = x Years

Age of Mahima $= \frac{x}{3} - 1 = \left(\frac{x-3}{3}\right)$ Years

After 17 years,

$$x + 5 + 17 = \left(\frac{x-3}{3} + 5 + 17\right) \times 2$$

$$x + 22 = \left(\frac{x-3}{3} + 22\right) \times 2$$

$$x + 22 = \frac{2x-6}{3} + 44$$

$$x - \frac{2x-6}{3} = 22$$

$$3x - 2x - 6 = 66$$

$$x = 60$$

Present age of Chetna = 60 + 5 = 65 Years

97. The sum of the present age of the two cousins is 54. Before 11 years, the elder brother was three times old as the younger one. What is the present age of the eldest brother.

(a) 36 Years (b) 35 Years
(c) 32 Years (d) 34 Years

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (b) Let the present age of first brother = x years (elder brother)

then present age of second brother = (54–x) years

Age of both before 11 years would be–

(x–11)years, (54–x–11)years or (43–x)years respectively.

According to condition-

$x - 11 = (43 - x) \times 3$

$x - 11 = 129 - 3x$

$4x = 140$

$x = 35$ years

Therefore, present age of elder brother will be 35 years.

98. A's present age is 9 years more than B. After 10 years, A's age will be double of B's age, as of 10 years ago. What is the present age of A?

(a) 48 (b) 39
(c) 36 (d) 23

RRB JE - 30/05/2019 (Shift-II)

Ans : (a) Let the present age of B = x Years

present age of A = (x + 9) Years

According to question,-

$$x + 9 + 10 = 2(x - 10)$$

$$x + 19 = 2x - 20$$

$$x = 39$$

Therefore present age of A = x + 9

= 39 + 9 = 48 years

99. My age is 5 times more than my son's age. In six years, my age will be three times of my son's age. After two years what will be ours age.

(a) 30 Years and 10 Years
(b) 32 Years and 8 Years
(c) 26 Years and 12 Years
(d) 28 Years and 14 Years

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) : Let the present age of son = x Years

$\therefore$ Present age of father = 5x Years

According to question,-

$(5x + 6) = (x + 6) \times 3$

$5x + 6 = 3x + 18$

$2x = 12$

$x = 6$

present age of father $\rightarrow$ 5x= 5 × 6 = 30 Years

Age of father after 2 years = 30 + 2 =32 Years

Age of son after 2 years = 6 +2

= 8 Years

100. Pinaki is 9 years younger than Bhaswati. After thirteen years Bhaswati's age will be 1.2 times of Pinaki's age. Find present age of Pinaki.

(a) 28 years (b) 32 years
(c) 30 years (d) 33 years

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (b) Let the present age of Bhasvati = x Years

Present age of Pinaki = (x–9) Years

Age of Bhaswati after 13 years = (x+13) Years

Age of Pinaki after 13 years = (x–9+13) = (x+4)Years

According to question,

$$(x+13) = 1.2(x+4)$$

$$x+13 = 1.2x+4.8$$

$$0.2x = 8.2$$

$$x = \frac{8.2}{0.2} = 41$$

Therefore, Present age of Pinaki = (x–9) = (41–9) = 32 Years

101. Priyamvad's present age is five years more than the twice of his cousin Ritika. 16 years later from today. Priyamvads age will be 150% more than Ritika. At present what is the age of Priyamvads (in years)?

(a) 33 (b) 23
(c) 26 (d) 17

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (d) : Let the age of Ritika = x Years
Present age of Priyamvad = (2x + 5) Years
According to question,-

$$\left(1+\frac{50}{100}\right)(x+16) = 2x+5+16$$

$$\frac{3}{2}(x+16) = 2x+21$$

3x + 48 = 4x + 42

$\boxed{x = 6}$

Present age of Priyamvad = 2x+5 = 2×6+5 = 17 Years

102. 3/7th of my present age is same as 4/5th of one of my cousin's age my age before 3 years was equal to his age after 10 years. What is my present age?

(a) 42 (b) 35
(c) 21 (d) 28

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : Let my present age = x years
and present age of cousin = y Years
According to first condition -

$$x\times\frac{3}{7} = y\times\frac{4}{5}$$

$15x = 28y$ .....(i)

∴ My age before 3 years = (x-3) Years

∴ The age of cousin after 10 years from now.
= (y+10) Years

According to second condition-

$(y+10) = (x-3)$

$x = y+13$

Putting x = y + 13 in equation (i)

$15(y+13) = 28y$

$15y+195 = 28y$

$13y = 195$

or y=15 Years

Now my present age = x = 15+13= 28 years

103. Shan's present age is 4 yrs less than 1.6 times of Udhalaks age. Before 26 yrs Udhalaks age was one years less than half of the Shan's age. What is the present age of Shan?

(a) 68 (b) 84
(c) 76 (d) 60

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (c) Let the present age of Udhlak = x Years
∴ Present age of Shan = (1.6x - 4) Years
∴ Age of Udhlak before 26 years = (x - 26)
∴ Age of Shan before 26 years = 1.6x - 4 -26
= (1.6x - 30)

According to question,-

$$\frac{1.6x-30}{2}-1 = x-26$$

1.6x - 30 -2 = 2x -52
0.4x = 52 - 32
0.4x = 20

$$x = \frac{20\times10}{4}$$

x = 50

∴ Present age of Shan
50 × 1.6 - 4 = 80 - 4 = 76 Years

104. 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 Nihkil?

(a) 31 Years (b) 32 Years
(c) 34 Years (d) 33 Years

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (c) Let the age of nikhil before 18 years = x Years
Age of Cyrus before 18 years = 2.5x Years
Present age of Nikhil = (x + 18) Years
Present age of Cyrus = (2.5x + 18) Years
According to question,-

(x + 18) + (2.5x + 18) = 92
3.5x + 36 = 92
3.5x = 92 – 36
3.5x = 56

$$x = \frac{56}{3.5}$$

$$x = \frac{560}{35}$$

$\boxed{x = 16}$

Present age of Nikhil = x +18 = 16 + 18 = 34 years

105. Robin's father is 2.8 times older than his. Six years ago, age of Robin's father was 4 times of his age. What is Robin's present age?

(a) 16 Years (b) 15 Years
(c) 14 Years (d) 17 Years

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (b) Let the present age of Robin = x years
Present age of Robin's father = 2.8x years
Age of Robin before 6 years = (x – 6) Years
Age of father before 6 years = (2.8x – 6) Years
According to question,-

(2.8x – 6) = 4 (x – 6)
2.8 x – 6 = 4x – 24
2.8 x – 4x = – 24 + 6
–1.2x = –18

$$x = \frac{180}{12}$$

x = 15

Therefore age of Robin = 15 Years

106. After three years from now, Panna's age will be four years less than three times of Eugene's age. The sum of their present age is 54 years. What is the present age of Panna?

(a) 36 Years (b) 43 Years
(c) 39 Years (d) 41 Years

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (d) Let the present age of Panna = x Years
$\therefore$ Present age of Eugene = $(54 - x)$ Years
after 3 years,
Age of Panna = $(x + 3)$ Years
Age of Eugene = $(54 - x + 3)$
= $(57 - x)$ Years
According to question,
$3(57 - x) - 4 = x + 3$
$171 - 3x - 4 = x + 3$
$4x = 164$
$x = 41$ Years
Therefore present age of Panna = 41 Years

107. The total age of mother and daughter is 50 years. After 5 years the mother's age will be 4 times more than the daughter's age. Find the present age of the daughter?

(a) 12 years (b) 10 years
(c) 7 years (d) 15 years

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) Let the present age of Daughter = x Years
then present age of mother = (50 – x) Years
Age of Mother after 5 years = (50 – x + 5) Years
= (55 – x) Years
Age of Daughter after 5 years = (x + 5) Years
So, according to condition—
$(55 - x) = 4(x + 5)$
$55 - x = 4x + 20$
$55 - 20 = 4x + x \Rightarrow 5x = 35$
$\Rightarrow x = 7$
Therefore present age of Daughter = 7 years

108. Anish is three times older than as old as his son and the sum of their age is 48 years. Find age of Anish.

(a) 36 (b) 20
(c) 40 (d) 12

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (a) Let the age of son = x Years
and age of Anish = 3x Years
$3x + x = 48$
$x = 12$
Therefore, age of aneesh = $3 \times 12 = 36$ Years

109. Five years ago, the son's age was one third of his mother's age at that time. If the sum of their present age is 70, find the present age of the mother.

(a) 45 (b) 55
(c) 50 (d) 60

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (c) Let the age of Mother before 5 years = x Years
$\therefore$ Present age of Mother = $(x + 5)$ Years
and age of son before 5 years = $\frac{x}{3}$ Years
$\therefore$ Present age of son = $\left(\frac{x}{3} + 5\right)$ Years
According to question,-
$$x + 5 + \frac{x}{3} + 5 = 70$$
$$\frac{4x}{3} + 10 = 70$$
$4x + 30 = 210$
$4x = 180$
$x = 45$
Present age of Mother = $x + 5$ Years
= 45 + 5 = 50 Years
Therefore, present age of Mother is 50 years.

110. Soham is 10 years younger than Parth. Before 8 years soham's age was three times of his present age that was 4 years more than twice of the age of Parth. Find Soham's present age.

(a) 28 years (b) 32 years
(c) 30 years (d) 33 years

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (b) : Let the present age of Soham = x years
Present age of Parth = (x + 10) years
Age of Soham before 8 years = (x – 8)
Age of parth before 8 years = x + 10 – 8 = (x + 2)
According to question,
$3(x - 8) = 2(x + 2) + 4$
$3x - 24 = 2x + 4 + 4$
x = 32 years
Present age of Soham = 32 years

111. Nilanjan is 11 years younger than Bharti. Fifteen years later, Bharti's age will be 1.2 times as that of Nilanjan's age. What is Nilanjan's present age?

(a) 38 Years (b) 40 Years
(c) 42 Years (d) 43 Years

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (b) : Let the present age of Bharti = x Years
Present age of Nilanjan = (x – 11) Years
According to question,-
$(x + 15) = (x - 11 + 15)\ 1.2$
$(x + 15) = (x + 4) \times 1.2$
$(x + 15) = 1.2x + 4.8$
$15 - 4.8 = 0.2x$
$10.2 = 0.2x$
x = 51 Years
Present age of Nilanjan = 51 – 11 = 40 Years

112. Srinivas is four times older than his daughter. Five years ago, Srinivas was nine times older than his daughter's age at that time. What is his daughter's present age?

(a) 8 Years (b) 6 Years
(c) 5 Years (d) 10 Years

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (a) : Let the present age of daughter = x Years
Present age of Srinivas = 4x Years
According to question,
9 (x – 5) = 4x – 5
9x – 45 = 4x – 5
5x = 40
x = 8
Therefore Present age of daughter = 8 Years

113. Eight years ago, Ashwin's age was 1 year less than 3 times of Arpit's age. Six years ago Ashwin's age was 1 year more than twice of Arpit's age. What will be the age of Arpit after 7 years?

(a) 19 Years (b) 15 Years
(c) 16 Years (d) 12 Years

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (a) : Let the age of Arpit before 8 years = x years
Age of ashwin = (3 x – 1) Years
Present age of Arpit = (x + 8) Years
and present age of Ashwin = (3x + 7) Years
According to question,-
(3x + 7 – 6) = 2 (x + 8 – 6) + 1
3 x + 1 = 2x + 4 + 1
x = 4
Present age of arpit = x + 8 = 4 + 8 = 12 Years
Age of arpit after 7 years = 12+7 = 19 Years

114. After 19 years from now vinod's age will be twice of Anand's age. Seven years ago, Anand's age was 1/4 of Vinod's age. What is Vinod's present age?

(a) 53 Years (b) 57 Years
(c) 55 Years (d) 59 Years

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (d) Let the age of Anand before 7 years = x Years
Let the age of vinod 7 years ago = 4x Years
Present age of anand = (x + 7) Years
Present age of vinod = (4x + 7) Years
According to question,
2(x + 7 + 19) = (4x + 7 + 19)
2x + 52 = 4x + 26
2x = 26
x = 13
Present age of vinod = 4x + 7 = 4 × 13 + 7 = 59 Years

115. After 11 years, Raghav's age will be 5 times of his 5 years before age. What is the present age of Raghav?

(a) 7 Years (b) 8 Years
(c) 4 Years (d) 9 Years

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : Let, the present age of Raghav = x Years
Age of Raghav after 11 years = (x+11) Years
Age of Raghav before 5 years = (x-5) Years
According to question,
(x+11)= (x-5)×5
x+11= 5x-25
36=4x
x= 9
∴ Present age of Raghav = 9 Years

116. Rani is two years older than Ragini, who is twice the age of Nag. If the age of Rani, Ragini and Nag is 27 years, then the age of Ragini will be?

(a) 9 (b) 8
(c) 10 (d) 7

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (c) Let the age of Ragini = x Years
Age of Rani = $(x + 2)$ Years
Age of Naag = $\frac{x}{2}$ Years
According to question,-
$x + x + 2 + \frac{x}{2} = 27$
$2x + 2x + 4 + x = 54$
$5x = 50$
$x = 10$ Years

117. Vishal is 20 years younger than Arya. After 12 years Arya's age will be 1.25 times of Vishal's age. Arya's age now is _____ years.

(a) 72 (b) 68
(c) 88 (d) 78

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (c) Let the age of Vishal = x Years
age of Arya = (x + 20) Years
According to question,
$(x + 20 + 12) = (x + 12)\ \frac{5}{4}$
$x + 32 = \frac{5x + 60}{4}$
$4x + 128 = 5x + 60$
x = 68
Therefore, Present age of Arya = x+20
= 20+68 = 88 Years

118. Five years before Rohit's age was 2/3 times of Rohan's age. After 5 years Rohan's age will be 5/4 times of Rohit's age. What is the present age of Rohit.

(a) 25 Years (b) 20 Years
(c) 10 Years (d) 15 Years

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (d) Let the Present age of Rohit = x Years
Present age of Rohan = y Years
According to first condition,
$(x - 5) = (y - 5) \times \frac{2}{3}$

$3x - 15 = 2y - 10$

$3x = 2y + 5$

$x = \frac{2y+5}{3}$ .....(i)

According to second condition–

$\frac{5}{4} \times (x+5) = (y+5)$

$5x + 25 = 4y + 20$

$5x - 4y = -5$

or, $5x = 4y - 5$

$x = \frac{4y-5}{5}$ .....(ii)

from equation (i) and (ii)

$\frac{2y+5}{3} = \frac{4y-5}{5}$

$10y + 25 = 12y - 15$

$2y = 40$

$y = 20$ Years

Putting the value of y in equation (i)

$x = \frac{2 \times 20 + 5}{3}$

$x = \frac{45}{3} = 15$ years

Therefore, Present age of Rohit = 15 Years

119. One year ago, Akash's father age was 9 times of Akash's age. After 3 years his father's age will be 5 times of his age. What will be the age of Akash next year?

(a) 6 Years (b) 8 Years
(c) 5 Years (d) 4 Years

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (a) Let the present age of Akash's father is x years and age of akash is y years.

According to question,

$(x-1) = 9(y-1)$

$x - 1 = 9y - 9$

$x - 9y = -8$ ..... (i)

Again after 3 years

$(x+3) = 5(y+3)$

$x + 3 = 5y + 15$

$x - 5y = 12$ .....(ii)

on solving both equation (i) and (ii)

$4y = 20$

$y = 5$

Therefore, the age of akash next years = 5 +1 = 6 Years

120. 5 years ago a man was 7 times older than his son. Now in 5 years, he will be 3 times older than his son. What was their age before two years?

(a) 26 Years and 10 Years
(b) 36 Years and 12 Years
(c) 38 Years and 8 Years
(d) 30 Years and 6 Years

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) Let the age of father before 5 years = 7x Years

Age of son before 5 years = x Years

Present age of father = (7x + 5) Years

Present age of son = (x + 5) Years

According to question,

$7x + 5 + 5 = 3(x + 5 + 5)$

$7x + 10 = 3x + 30$

$4x = 20$

$x = 5$

Present age of father = 7 × 5 + 5 = 40 Years

Present age of son = 5 + 5 = 10 Years

Age of father before 2 years from now = 40–2 = 38 Years

Age of son before 2 years from now = 10–2 = 8 Years

121. A person is 9 times older than his son. Two years after, the father will be one year less than 6 times of his son. Find their present age?

(a) 27 Years and 3 Years
(b) 30 Years and 6 Years
(c) 26 Years and 10 Years
(d) 36 Years and 12 Years

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (a) Let the present age of son = x Years

∴ Present age of father = 9x Years

from question–

$(9x + 2) = 6(x+2) - 1$

$9x + 2 = 6x + 12 - 1$

$9x - 6x = 12 - 1 - 2$

$3x = 9$

$\boxed{x = 3}$

Age of father = 9x = 9 × 3 = 27 Years

Age of son = x = 3 Years

122. Daliya is 20 years older than Neetu and in two years her age will be twice the age of Neetu. What is Neetu's present age.

(a) 18 Years (b) 16 Years
(c) 20 Years (d) 22 Years

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (a) Let the present age of Neetu = x Years

then Present age of Daliya = (20 + x) Years

According to question,

$[(20 + x) + 2] = 2(x+2)$

$22 + x = 2x + 4$

$\boxed{x = 18}$

Therefore, present age of Neetu = x = 18 Years

123. Before 5 Years Sindhu's age was three times as old Kaveri's age. 10 years later from now, Kaveri's age will be half of sindhu's age. After 5 years from now, what will be Kaveri's age.

(a) 15 (b) 20
(c) 55 (d) 25

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (d) : Let the present age of Kaveri = x Years
and Present age of Sindhu = y Years
According to question,
from first condition–
$y - 5 = 3(x - 5)$
$y - 5 = 3x - 15$
$3x - y = 15 - 5$
$3x - y = 10$ .....(i)
from second condition–
$\frac{(y+10)}{2} = (x+10)$
$y + 10 = 2x + 20$
$2x - y = 10 - 20$
$2x - y = -10$ .....(ii)
by subtracting equation (ii) from equation (i)
$3x - y = 10$
$2x - y = -10$
$- \quad + \quad +$
$3x - 2x = 20$
$x = 20$
Present age of Kaveri = 20 Years
Age of Kaveri after 5 years = 20 + 5 = 25 Years

124. The sum of Daniel and Dinara's age is 115 years. Five years ago two times of Dinara's age was equal to three times Daniel's age. What is the present age of Dinara?
(a) 62 Years (b) 64 Years
(c) 66 Years (d) 68 Years
RRB Group-D – 05/12/2018 (Shift-I)

Ans : (d) Let the present age of Deniel = x Years
and present age of Dinara = y Years
According to first condition–
$x + y = 115$ .....(1)
According to second condition–
$3(x-5) = (y-5) \times 2$
$3x - 15 = 2y - 10$
$3x - 2y = -10 + 15$
$3x - 2y = 5$.....(2)
By multiplying 3 in equation (i) and adding in equation (ii)-
$2x + 2y = 130$
$3x - 2y = 5$
$5x = 235$
$x = 47$
again from equation (i)–
$y = 115 - 47$
$y = 68$
Therefore, Present age of Dinara = y = 68 Years

125. The sum of father and mother's age is 7.5 times that of son's age. 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?
(a) 15 (b) 10
(c) 18 (d) 12
RRB Group-D – 04/12/2018 (Shift-III)

Ans. (b) According to question,
Father + Mother = 7.5 × age of son ...(i)
Age of mother = 35Years ...(ii)
Age of father = 4 × age of son ...(iii)
putting the value of equation (ii) and (iii) in equation (i)-
4×age of son + 35 = 7.5×age of son
(7.5 − 4) × age of son = 35
3.5 × age of son = 35
Age of son = 35/3.5 = 10 Years

126. The sum of the present age of two persons is seven times the difference of their age. After 5 years the sum of their age will be nine times the difference between their age. What is the present age of the elder person?
(a) 32 Years (b) 10 Years
(c) 20 Years (d) 35 Years
RRB Group-D – 15/11/2018 (Shift-II)

Ans : (c) Let the present age of both person is x and y years.
According to question,
$x + y = 7(x - y)$
$x + y = 7x - 7y$
$6x = 8y$
$\frac{x}{y} = \frac{8}{6}$
$\frac{x}{y} = \frac{4}{3}$ x = 4k, y = 3k
According to question,
$(x + 5) + (y + 5) = 9[x + 5 - (y + 5)]$
$x + y + 10 = 9(x + 5 - y - 5)$
$x + y + 10 = 9(x - y)$
$9x - x - 9y - y = 10$
$8x - 10y = 10$
Putting the value of x and y-
$\because x = 4k$
$y = 3k$
$32k - 30k = 10$
$2k = 10$
$k = 5$
$x = 4k$
$= 4 \times 5$
= 20 Years
$y = 3k$
$= 3 \times 5$
= 15 Years
Therefore, Age of eldest person = x = 20 Years

127. The product of the age of Anusha and Neelima is 240. If twice the age of Neelima is equal to the 4 more over the age of Anusha, so how old is Anusha?
(a) 18 Years (b) 16 Years
(c) 20 Years (d) 14 Years
RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) : Let the age of anusha = x Years
Age of Neelima = y Years
According to question,
$x \times y = 240$ ..... (i)
And, $x + 4 = 2y$
$y = \left(\frac{x+4}{2}\right)$ .....(ii)
putting the value of y in equation (i)
$x \times \left(\frac{x+4}{2}\right) = 240$
$x^2 + 4x = 480$
$x^2 + 4x - 480 = 0$
$x^2 + (24 - 20)x - 480 = 0$
$x^2 + 24x - 20x - 480 = 0$
$x(x + 24) - 20(x + 24) = 0$
$(x + 24)(x - 20) = 0$
$x = -24, 20$
Therefore, age of Anusha = x = 20 Years

128. 2/3of my age is 3/4 of my cousin's age. My age before 3 years was exactly what my cousin will be one year later. What is my present age (in years)?
(a) 36 (b) 18
(c) 45 (d) 27
RRB Group-D – 05/11/2018 (Shift-II)

Ans : (a) Let My present age is x years and age of cousin is y years-
According to question,
$\frac{2x}{3} = \frac{3y}{4}$
$8x - 9y = 0$ … (i)
And, $x - 3 = y + 1$
$x - y = 4$ … (ii)
by multiplying 9 in equation (ii) and subtracting from equation (i)–
$8x - 9y = 0$
$\underline{9x - 9y = 36}$
$-x = -36$
x = 36 Years

129. The present age of Raghu and Sita are 17 years and 41 years respectively. 5 years before Raghu's age was _____of Sita age.
(a) 3/4 (b) 1/3
(c) 1/2 (d) 2/3
RRB Group-D – 24/10/2018 (Shift-III)

Ans. (b) : Present age of Raghu = 17 Years
Present age of Sita = 41 Years
Age ratio of both before 5 years = $\frac{17-5}{41-5} = \frac{12}{36}$
= 1 : 3
Therefore, Raghu's age was 1/3 of Sita's age.

130. At present Bratin is 18 years old, while his cousin is 7 years old. In how many years Bratin's age will be 1.5 times that of his cousin's age?
(a) 13 (b) 14
(c) 16 (d) 15
RRB Group-D – 01/10/2018 (Shift-III)

Ans : (d) Let after x years, Bratin's age will be 1.5 times that of cousin's age.
(x+18) =1.5(x+7)
x+18 = 1.5x+10.5
0.5x = 7.5
x = 15

131. A man is 24 years older than his son. Four years later, his age will be twice of his son's age. What is the present age of father?
(a) 40 Years (b) 44 Years
(c) 42 Years (d) 48 Years
RRB NTPC 04.04.2016 Shift : 3

Ans : (b) Let the present age of father = x Years
∴ Present age of son = $(x - 24)$ Years
Age of father after 4 years = $(x + 4)$ Years
and age of son after 4 years = $(x - 20)$ Years
According to question,
$x + 4 = 2 \times (x - 20)$
$x + 4 = 2x - 40$
$2x - x = 4 + 40 \Rightarrow x = 44$
Therefore, Present age of father is 44 years.

132. At present, Ram is 4 times of his son's age. After 5 years he will be 3 times the age of his son. Find their present age?
(a) 60,15 (b) 40,10
(c) 20,5 (d) 32,8
RRB NTPC 28.03.2016 Shift : 1

Ans : (b) Let the Present age of Ram's Son = x Years
Present age of Ram = 4x Years
According to question,
$4x + 5 = 3(x + 5)$
$\Rightarrow 4x + 5 = 3x + 15 \Rightarrow x = 10$
Therefore, Present age of Ram and his son is 40 years and 10 years respectively.

133. After five years, Mayank age will be 3/5th of his father's age. Five years ago the ratio of their age was 2:5. Find the present age of Mayank.
(a) 17 (b) 13
(c) 19 (d) 15
RRB NTPC 19.04.2016 Shift : 3

Ans : (b) Let before 5 years Mayank's age is 2x years and father's age is 5x years.
Then after 5 years
$\frac{\text{Age of Mayank}}{\text{Age of Father}} = \frac{3}{5}$

$$\frac{2x+10}{5x+10}=\frac{3}{5}$$
$10x + 50 = 15x + 30$
$5x = 20$
$x = 4$
Therefore, Present age of Mayank $= 2x + 5$
$= 2 \times 4 + 5 = 13$ Years

134. 6 years ago a man's age was 5 times of his son's age. After 10 years, he will be 3 times of his son. What is his son's present age?
(a) 20 (b) 18
(c) 24 (d) 22
RRB NTPC 18.04.2016 Shift : 3

Ans : (d) Let the present age of father and son is x and y respectively.
from question-
$x-6 = 5(y-6) \Rightarrow x-5y = -24$ .....(i)
and
$x+10 = 3(y+10) \Rightarrow x-3y = 20$ ..... (ii)
from equation (i) and (ii)–
$x = 86, y = 22$
Therefore, Present age of son is 22 years.

135. 2 years after from today a man's age will be four times that of his son and 4 years after that the man's age will be 3 times of his son's age. After how many years will the father's age be twice of his son?
(a) 15 years (b) 16 years
(c) 17 years (d) 18 years
RRB NTPC 10.04.2016 Shift : 3

Ans : (d) Let the age of Man = x Years
and age of son = y Years
from question,
$(x + 2) = (y + 2) \times 4$
$x + 2 = 4y + 8$
$x = 4y + 6$ …….(i)
again
$(x+6) = (y + 6) \times 3$
$x + 6 = 3y + 18$
$x = 3y + 12$ ……..(ii)
from equation (i) and (ii)
$4y + 6 = 3y + 12$
$y = 6$ Years
Putting the value of y in equation (i)
$x = 4\times6+6$
$x = 30$ Years
Now, Let after A years, father's age will be 2 times that of his son.
$\therefore (30 + A) = (6 + A) \times 2$
$30 + A = 12 + 2A$
$A = 18$ years

136. The product of Sapna and Anubha's age is 150. If 4 times the age of Anubha is 10 years more than the age of Sapna. Find the age of Sapna.
(a) 20 (b) 27
(c) 19 (d) 17
RRB NTPC 22.04.2016 Shift : 1

Ans : (a) Let the age of Sapna = x Years
Age of anubha = y Years
According to question,
$xy = 150$ .....(i)
$4y = x + 10$ .....(ii)
from equation (i) $y = \frac{150}{x}$ putting in equation (ii)
$$4\times\frac{150}{x} = x + 10$$
$600 = x^2 + 10x$
$x^2 + 10x - 600 = 0$
$x^2 + 30x - 20x - 600 = 0$
$x(x+30) - 20(x+30) = 0$
$(x+30)(x-20) = 0$
$x + 30 = 0$
$x = -30$ (invalid)
$x - 20 = 0$
$x = 20$
Therefore, Age of Sapna = 20 Years

137. Bipul is 16 years younger than Saibal after. 12 years from now, Saibal's age will be 1.5 times that of Bipul. Saibal is now _____ years old.
(a) 42 (b) 45
(c) 40 (d) 36
RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) Let the present age of saibal = x years
then, Present age of Bipul = (x–16) years
Age of Saibal after 12 years = (x+12) Years
Age of Bipul after 12 years = (x–16+12) = (x–4) Years
According to question,
$(x+12) = 1.5 (x-4)$
$x+12 = 1.5x-6$
$0.5x = 18$
$x = \frac{18}{0.5}$
$x = 36$ Years
Therefore, Saibal's present age is 36 years.

138. 15 years ago, Shyam was twice as old as Prabhat. After 5 years from now Prabhat's age will be $\frac{5}{8}$ of Shyam's age. What is Shyam's present age?
(a) 72 years (b) 75 years
(c) 80 years (d) 64 years
RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (b) Let the present age of prabhat = x years
Present age of shyam = y years
According to question,
$2(x-15) = (y-15)$
$2x-30 = y-15$
$2x-y = 15$ ..... (1)
Both age after 5 years from present,
$$(x+5) = \frac{5}{8}(y+5)$$

$8x+40 = 5y+25$

$8x-5y = -15$ ..... (2)

By multiplying 5 in equation (1)

$(2x-y)5 = 15\times5$

$10x-5y = 75$ ..... (3)

By subracting equation (3) from equation (2)−

$$\begin{array}{r} 8x-5y = -15 \\ 10x-5y = 75 \\ - \quad + \quad - \\ \hline -2x = -90 \\ x = 45 \end{array}$$

Putting the value of x in equation (1)–

$2 \times 45 - y = 15$

$y = 90-15$

$y = 75$ Years

There, Prsent age of Shyam is 75 years.

139. Jina is 24 years younger than her mother. Eight years after her mother's age will be $\frac{5}{3}$ times her age. What is Jina's present age (in years)?

(a) 24 (b) 22
(c) 26 (d) 28

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (d) Let the present age of Jeena = x Years

Present age of Mother = (x + 24) Years

Age of Jeena after 8 years = (x + 8) Years

Age of Mother after 8 years = (x+24+8) Years

According to question,

$$x + 32 = \frac{5}{3}(x+8)$$

$3x + 96 = 5x + 40$

$2x = 56$

$x = 28$

Therefore Present age of Jeena = 28 Years

140. Priyankur's present age is seven years less than thrice the age of his cousin Rihana. After sixteen years from now Priyakur's age will be 150% of that of Rihana. What is Priyankur's present age (in years)?

(a) 17 (b) 23
(c) 20 (d) 26

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (b) Let the Present age of Rihana = x Years

Then Present age of Priyankur = (3x–7) Years

According to question,

$$(3x-7+16) = (x+16)\times\frac{150}{100}$$

$$(3x+9) = (x+16)\times\frac{3}{2}$$

$6x+18 = 3x+48$

$6x-3x = 48-18$

$3x = 30$

$x = 10$

Present age of Priyankur = 3x–7 = 3×10–7

= 30–7= 23 Years

141. Jeremy is 26 years younger than his father. Eight years after his father's age will be two years less than twice his age. What is Jeremy's present age (in years)?

(a) 20 (b) 24
(c) 22 (d) 18

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (a) Let the present age of Jeremyi = x Years

Present age of Father = (x + 26) Years

According to question,

Then, $2(x+8) - 2 = (x+26+8)$

$2x + 16 - 2 = x + 34$

$x = 34 - 14$

$x = 20$ Years

142. The sum of the present age of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:

(a) 20 years (b) 21 years
(c) 15 years (d) 19 years

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

Ans : (a) Let the age of son = x Years

Then age of father = (60 – x) Years

Age before 6 years

According to question,

$5(x-6) = (60-x-6)$

$5x - 30 = 54 - x$

$6x = 84,$

$x = 14$

Age of son after 6 years = 14 + 6 = 20 Years

143. Satheesh is two years older than Gautam who is twice as old as Sai. If the total of the ages of Satheesh, Gautam and Sai is 27, then how old is Gautam?

(a) 12 (b) 10
(c) 11 (d) 13

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

Ans : (b) Let the age of Sai = x Years

Age of Gautam = 2x Years

And age of Satish = (2x+2) Years

According to question,

$x+2x+2x+2 = 27$

$5x = 27-2$

$$x = \frac{25}{5} = 5$$

So, Age of Gautam = 2x = 2×5= 10 Years

144. John is 15 years younger than Jill. 12 years ago, Jill's age was 1.5 times that of John. Jill is now .....years old.

(a) 57 (b) 45
(c) 30 (d) 42

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (a) Let the age of John is x years and age of Jill is y years.

According to question,

$y - x = 15$ .....(i)

and $(y-12) = (x - 12)\ 1.5$

$y - 12 = 1.5\ x - 18$

$y - 1.5\ x = -6$ .....(ii)

From equation (i) and (ii)−

$y - x - (y - 1.5x) = 15 - (-6)$

$y - x - y + 1.5x = 15 + 6$

$0.5\ x = 21$

$x = \frac{21}{0.5}$

$x = 42$

putting the value of x in equation (i)−

$y - 42 = 15$

$y = 15+42 = 57$

So, Present age of Jill is 57 years.

145. Roshan's present age is three years less than 1.5 times that of Usha's. 12 years ago Usha's age was three years more than half of Roshan's age. What is Roshan's present age in years?

(a) 42 (b) 39

(c) 33 (d) 30

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

Ans : (a) Let the present age of Roshan is x years and present age of Usha is y years.

According to first Condition−

$x = 1.5y - 3$ ..... (i)

According to second Condition−

$\frac{x-12}{2} + 3 = y - 12$ ..... (ii)

Putting the value of x in equation (ii) from equation (i),

$\frac{(1.5y-3)-12}{2} + 3 = y - 12$

$1.5y - 15 + 6 = 2y - 24$

$0.5y = 15$

$y = 30$

Putting y = 30 in equation (i)

$x = 1.5 \times 30 - 3$

$x = 45.0 - 3$

$x = 42$ Years

So present age of Roshan = 42 years.

146. 13 years ago Ram was twice as old as Sunny. Three years from now Sunny's age will be $\frac{3}{5}$ of Ram's age. What is Ram's present age?

(a) 64 years (b) 72 years

(c) 80 years (d) 77 years

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (d) If present age of Ram = x Years

and Present age of sunny = y Years

Age of Ram and Sunny before 13 years would be (x-13) and (y-13) respectively–

from question,

$(x-13)=(y-13)\times 2$

$x - 13 = 2y - 26$

$x - 2y = -13$ .....(i)

Age of Ram and Sunny after 3 years will be (x+3) and (y+3) respectively.

$(x+3) \times \frac{3}{5} = y+3 \Rightarrow 3x + 9 = 5y + 15$

or $3x - 5y = 6$ .....(ii)

By Multiplying 3 in equation (i) and subtracting from equation (ii)−

$3x - 6y = -39$

$3x - 5y = 6$

$y = 45$ Years

Putting the value of y in equation (i),

$x - 2\times 45 = -13$

$x - 90 = -13$

$x = 77$ years

147. Three years from now Dharitri's age will be eight years less than twice of Yunees age. The sum of their present ages is 61 years. What is Dharitri's present age?

(a) 43 years (b) 36 years

(c) 41 years (d) 39 years

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (d) Let the present age of Dharitri and Yunees is x, y years respectively.

According to question,

$x + 3 = 2(y + 3) - 8$

$x + 3 = 2y + 6 - 8$

$x + 3 = 2y - 2$

$x - 2y = -5$ .....(i)

and $x + y = 61$ .....(ii)

By subtracting equation (ii) from equation (i),

$x - 2y = -5$

$x + y = 61$

$-3y = -66$

$y = 22$

Putting y = 22 in equation (ii),

$x + 22 = 61$

$x = 39$

So, Present age of Dharitri is 39 years.

148. Seven years from now Virat will be twice as old as Mohinder. Five years ago Mohinder's age was one years less than $\frac{2}{5}$ of Virat's age. What is Virat's present age?

(a) 53 years (b) 51 years

(c) 57 years (d) 55 years

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (d) Let the age of Virat before 5 years = x years

Age of Mohindar before 5 years $= \left(\frac{2x}{5} - 1\right)$ Years

Present age of Virat = (x + 5) Years

Present age of Mohindar $= \left(\frac{2x}{5} + 4\right)$ Years

According to question,

$x + 5 + 7 = 2\left(\frac{2x}{5} + 4 + 7\right)$

$5(x + 12) = 4x + 110,\quad x = 50$

Present age of Virat = x + 5 = 50 + 5 = 55 Years

Type - 7

149. The average age of P and Q is 24 years. Average age of P, Q and R is 22 years. Find the sum of their age in the previous year?

(a) Data is insufficient (b) 90
(c) 87 (d) 95

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

Ans : (a) P + Q = 24 × 2 ..... (i)
P + Q + R = 22 × 3 ..... (ii)
By subtracting equation (i) from equation (ii)–
R = 66 – 48 = 18 Years
The different ages of P and Q are not knwon so the data is insufficient to answer the question.

150. The sum of the ages of father and son is 50. 6 years before the age of father was 6 more than thrice of the age of son. What will be the fathers age after 6 years.

(a) 40 Years (b) 48 Years
(c) 42 Years (d) 50 Years

RRB JE - 28/05/2019 (Shift-I)

Ans : (c) Let the age of father = x Years
and age of son = y Years
x + y = 50 ---- (i)
According to question,
(x–6) = (y –6) ×3 + 6
x – 6 = 3y – 18 + 6
x – 3y = –6 ----(ii)
From equation (i) and (ii)-
x + y = 50
x – 3y = –6
– + +
4y = 56
y = 14
Putting the value of y in equation (i),
x = 36
So, Age of father after 6 years = 36 + 6 = 42 years.

151. The age of father is 5 years more than the mother age. Mother's present age is thrice of the daughter's age. The Present age of daughter is 12 years. What was the age of father at the time of daughter's birth?

(a) 29 Years (b) 25 Years
(c) 31 Years (d) 32 Years

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (a) ∵ Present age of daughter = 12 Years
So Present age of Mother = 3 × 12 = 36 Years
Given, present age of father = 36 + 5 = 41 Years
Therefore, at the birth of daughter the father's age
= 41–12 = 29 Years

152. A father says to his son "that at the time of your birth my age was as your present age. If the father's present age is 40 years, then what was the son's age before 5 years?

(a) 15 Years (b) 13 Years
(c) 17 Years (d) 23 Years

RRB Group-D – 31/10/2018 (Shift-II)

Ans. (a) Let the age of father at the birth of son = x years
So present age of son = x Years
Given, present age of father = 40 Years
$\Rightarrow (40 - x) = x$
$40 = 2x$
$x = 20$ Years
∴ Age of son before 5 years = 20 - 5 = 15 Years
So, before 5 years son's age was 15 years.

153. At the time of marriage, the age of a person was 6 year more than the age of his wife but after 12 years of marriage His age is 1.2 times of his wife's age. What was their age during the marriage?

(a) 27 Years, 18 Years
(b) 24 Years, 18 Years
(c) 21 Years, 18 Years
(d) 23 Years, 19 Years

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) Let the age of the Man's wife at the time of marriage = x Years
and Age of Man = (x + 6) Years
∴ Age of man after 12 years = x+6+12 = (x+18) Years
According to question, x + 18 = (x + 12) × 1.2
x + 18 = 1.2x + 14.4
0.2x = 3.6
x = 18
So the age of the Man's wife = x = 18 Years
And age of Man = (x + 6) = (18 + 6) = 24 Years

154. The present age of Z is half of A's age. After 5 years the ratio of A and Z will be 11:6. After 3 years what will be the age of Z?

(a) 25 (b) 30
(c) 28 (d) 22

RRB NTPC 31.03.2016 Shift : 1

Ans : (c) If the present age of Z and A is x and 2x years.
According to question, $\frac{2x+5}{x+5} = \frac{11}{6}$
12x + 30 = 11x + 55
x = 25
Age of Z after 3 years = x + 3 = 28 Years

155. Rathin is now 16 years old while his cousin is 7 years. After how many years will Rathin's age be 1.5 times that of his cousin?

(a) 12 (b) 11
(c) 9 (d) 10

RRB ALP & Tec. (13-08-18 Shift-I)

Ans. (b) Let after x years, Rathin's age will be 1.5 times that of his Cousin's age.
Age of Rathin After x years = (x + 16) Years
Age of Cousin = (x+7) Years
(x+16) = (x+7)×1.5
x+16=1.5x+10.5
5.5=0.5x
$x = \frac{5.5}{0.5}$
x = 11 years

Type - 8

156. At the time of birth of Priya her father's age was 38 years. At the time of birth of her 4 year younger brother her mother's age was 36 years. How old is his mother younger than his father?

(a) 4 (b) 5
(c) 8 (d) 6

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

Ans : (d) According to question,
Age of father = 38 Years
∵ Mother's age during birth of 4 years younger brother = 36 Years
∴ Mother's age at priya's birth = 36 – 4 = 32 Years
∴ Age of father – age of mother = 38 – 32 = 6 Years

157. The average age of three children born at two years interval is 8 years. What is the age of the eldest child?

(a) 12 Years (b) 7 Years
(c) 10 Years (d) 8 Years

RRB JE - 24/05/2019 (Shift-II)

Ans : (c) Let the three children are A, B and C
A = x, B = x + 2, C = x + 4
According to question,

$$\frac{x+x+2+x+4}{3}=8$$

x + x + 2 + x + 4 = 24
3x = 18
x = 6
So, the age of eldest children = x + 4 = 6 + 4 = 10 Years

158. The average sum of 5 children born at 4 years interval is 80. What is the age of the eldest child?

(a) 18 (b) 24
(c) 16 (d) 28

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

Ans : (b) Let the five children are A, B, C, D and E
∵ A = x year
B = x + 4
C = x + 8
D = x + 12
E = x + 16
According to question,
x+ x+ 4+x+8+x+12+x+16 = 80
5x + 40 = 80
5x = 40
x = 8
∴ Age of eldest children = x + 16 = 8 + 16
= 24 Years

159. In a group of students, age of 1/5 students is less than 8 years. 2/5 students of the rest students is more than 8 years. What part of the groups age is exact 8 years?

(a) 4/25 (b) 12/25
(c) 2/5 (d) 3/5

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

Ans. (b)
Let the total number of students in the group = x
Number of students under 8 yers of age = $\frac{x}{5}$
Number of students over 8 years of age

$$=\left(x-\frac{x}{5}\right)\times\frac{2}{5}=\frac{8}{25}x$$

Number of students of 8 years =

$$x-\left(\frac{x}{5}+\frac{8x}{25}\right)=x-\frac{13x}{25}=\frac{12x}{25}$$

Part of exactly 8 years old students in the group = $\frac{12}{25}$

160. I have a brother who is 3 years elder to me when my brother was born then my sister was 6 years old. Our average age is 14. Now what is the age of my sister?

(a) 20 Years (b) 19 Years
(c) 17 Years (d) 18 Years

RRB RPF Constable – 19/01/2019 (Shift-III)

Ans : (b) Let the present age of Man = x Years
Present age of Man's brother = (x + 3) Years
Present age of Man's Sister · (x + 3 + 6) = (x + 9) Years
∴ According to question,
x + x + 3 + x + 9 = 3 × 14
3x + 12 = 3 × 14
x + 4 = 14
x = 10 Years
∴ Age of sister = 10 + 9 = 19 Years

161. The age ratio of two brothers is 7:15. The LCM of their age is 210. What is the age of elder brother?

(a) 45 (b) 42
(c) 15 (d) 30

RRB JE - 30/05/2019 (Shift-III)

Ans : (d) Let the age of younger brother is 7x years and age of elder brother is 15x years.
According to question,
L.C.M. of Number 7x and 15x = 105x
105 x = 210
x = 2
Age of elder borther = 15x = 15 × 2 = 30 Years

162. If 4 is subtracted from any person's age and is divided by 5, then the result represents the age of his grand son. There is a sister of grand son whose age is 5 years, 6 years less than the grandson. What is the age of grand father?

(a) 58 (b) 57
(c) 60 (d) 59

RRB JE - 31/05/2019 (Shift-III)

Ans. (d) Let the age of grandfather = x Years
According to question,
Age of Daughter = 5 Years
∴ Age of son = 11 Years
$\frac{x-4}{5}=11$
x – 4 = 55
x = 59 Years

163. A grand father and his grand daughter's age ratio is 9:2. The sum of their age is a whole number. The difference of their age may be multiple of 11, then find their age?
(a) 90, 20 (b) 95, 25
(c) 72, 16 (d) 99, 22
RRB JE - 02/06/2019 (Shift-II)

Ans. (d) According to question,
Age of grandfather = 9x Years
Age of grand daughter = 2x Years
$9x + 2x = x^2$
$11x = x^2$
x = 11
Age of grand father = 9x = 9 × 11 = 99 Years
Age of grand daughter = 2x = 2×11 = 22 Years

164. The age of a father is twice of his son's age. The HCF of their age is 22. What is the age of the son?
(a) 18 Years (b) 24 Years
(c) 22 Years (d) 20 Years
RRB JE - 02/06/2019 (Shift-I)

Ans : (c) Let age of son = x Years
then, age of father = 2x Years
HCF of x and 2x = x = x × 1
2x = x × 2 × 1
So, HCF = x
Therefore age of son = x Years = 22 Years

165. The total age of A and B is 12 years more than the total age of B and C. Who is the younger in A and C and By how many years?
(a) A, 6 Years (b) A, 12 Years
(c) C, 12 Years (d) C, 6 Years
RRB JE - 28/06/2019 (Shift-III)

Ans. (c) According to question,-
A + B = B + C + 12
A = C + 12
Therefore, It is clear that C is 12 years younger than A.

166. A grand father's age is 5 times more than the age of grandson. Which of the following numbers not support the approximate of the total age of the grand father and his grandson?
(a) 50 (b) 54
(c) 72 (d) 66
RRB RPF SI – 10/01/2019 (Shift-III)

Ans : (a) Let the age of Grandson = x Years
Age of Grandfather = 5x Years
Total age = 6x Years
Since Divisible Numbers from 6 are 54, 72 and 66.
Therefore, option (a) does not support of total age.

167. The age of P and Q is 50 and 40 respectively. Before how many years the ratio of their age was 3:2?
(a) 20 Years (b) 10 Years
(c) 15 Years (d) 5 Years
RRB JE - 02/06/2019 (Shift-I)

Ans : (a) Let Ratio of their age before x years was 3 : 2
According to question,-
$\frac{50-x}{40-x}=\frac{3}{2}$
100 – 2x = 120 – 3x
x = 20 Years

168. Sum of the age of two sisters is 81. Their age ratio is 4:5. How old is one sister than other?
(a) 9 (b) 27
(c) 18 (d) 12
RRB JE - 27/06/2019 (Shift-I)

Ans : (a) Let the age of both sisters is 4x, 5x
According to question,
4x + 5x = 81
9x = 81
x = 9
Age of first sister = 4x = 4 × 9 = 36 Years
Age of second sister = 5x = 5 × 9 = 45 Years
So, first sister is 9 years younger than second.

169. The age of Sita is twice the average age of Ram, Mohan and Sita. Ram's age is half of 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?
(a) 10 Years (b) 8 Years
(c) 7 Years (d) 15 Years
RRB Group D 07/12/2018 (Shift-I)

Ans : (a) Age of sita = $\frac{\text{Ram}+\text{Mohan}+\text{Sita}}{3}\times 2$
Given Mohan = 5 Years
3 × Sita = (Ram + 5 + Sita) × 2
3 × Sita = 2 × Ram + 10 + 2 × Sita
Sita = 2 × Ram + 10 -------(1)
Age of Ram = $\frac{\text{Ram}+\text{Mohan}+\text{Sita}}{3}\times\frac{1}{2}$
6 × Ram = Ram + 5 + Sita
5 × Ram = 5 + Sita
Sita = 5 × Ram – 5 -------(2)
By subtracting equation (1) from equation (2)
Age of Ram = 5, Aage of Sita = 20, Age of Mohan = 5
So Average Age = $\frac{\text{Ram}+\text{Sita}+\text{Mohan}}{3}$
$=\frac{5+20+5}{3}=10$ years

170. If 2/3 Children are in the age group of 1-12, 1/2 children are in the age group of 1-8. Then find the part of children in the age group of 9-12?
(a) 1/3 (b) 1/4
(c) 1/6 (d) 1/2
RRB NTPC 28.03.2016 Shift : 1

Ans : (c) The part of Students of 9-12 age group = part of student of (1-12) years – part of student of (1-8) years.

$$= \frac{2}{3} - \frac{1}{2} = \frac{4-3}{6} = \frac{1}{6}$$

171. The sum of the ages of 4 children born at the intervals of 4 years is 48. Find the age of the youngest child.

(a) 4 years (b) 5 years
(c) 6 years (d) 7 years

RRB NTPC 05.04.2016 Shift : 3

Ans : (c) All four children are x_1, x_2, x_3 and x_4.
Let the age of youngest $(x_1) = x$ Years
The age of older than that boy $(x_2) = (x + 4)$ Years
The age of older than that of that boy
$(x_3) = (x + 8)$ Years
The age of eldest boy $(x_4) = (x + 12)$ Years
$\therefore x + x + 4 + x + 8 + x + 12 = 48$ Years
$4x + 24 = 48$ Years
$4x = 24 \Rightarrow x = 6$ Years
$\therefore$ Age of the youngest boy = 6 Years

172. The average age of mother, father and two children is 30 years and 8 years respectively then find the average age of the family?

(a) 16 Years (b) 19 Years
(c) 18 Years (d) 17 Years

RRB NTPC 05.04.2016 Shift : 3

Ans : (b) Average age of family $= \frac{30\times2+8\times2}{4}$

$$= \frac{60+16}{4} = \frac{76}{4} = 19 \text{ Years}$$

173. 3 years before the age of John was 12 years and the age of Shankar was 15 years. What will be their average age after 5 years from today?

(a) 21.5 (b) 22.5
(c) 18.5 (d) 19.5

RRB NTPC 31.03.2016 Shift : 3

Ans : (a)
Age of John after 5 years from present
= 12 + 3 + 5 = 20 years
Age of Shankar after 5 years from present
= 15 + 3 + 5 = 23 years
Intended Average = $\frac{20+23}{2} = \frac{43}{2} = 21.5$ Years

174. The average age of 27 students in a class is 22. If the teacher's age is also included then average is raised by one. Then find the age of the teacher?

(a) 42 (b) 48
(c) 50 (d) 52

RRB NTPC 29.03.2016 Shift : 1

Ans : (c)
Total sum of age of 27 student
= 27 × 22 = 594 years
Total sum of age of (teacher + students)
= 28 × 23 = 644 Years
$\therefore$ Age of teacher = 644 – 594 = 50 Years

175. The average age of a group of 19 members is 24 years. If the age of the faculty is also included then the average is raised by 4 months. What is the age of faculty?

(a) 35 Years
(b) 30 Years 8 months
(c) 37 Years 4 months
(d) 32 Years 8 months

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Total age of 19 members of a group = 19×24 = 456 Years

Total age of 19 members with faculty $= 20\times\left(24+\frac{4}{12}\right)$

$$= 20\times\frac{73}{3}$$

$\therefore$ Age of faculty $= 20\times\frac{73}{3} - 456$

$$= \frac{1460-1368}{3} = \frac{92}{3} = 30\frac{2}{3} \text{ Years}$$

$= 30\text{Years} + \frac{2}{3}\times12 \text{ months} = 30 \text{ Years } 8 \text{ months}$

176. The product of the age of swati and Aparna is 120. If thrice the age of Aparna is 2 years more than swati's age, then find the age of swati?

(a) 18 (b) 20
(c) 24 (d) 16

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) Let the age of swati is x years and age of Aparna is y 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)–
$x \times \left(\frac{x+2}{3}\right) = 120$
$x^2 + 2x - 360 = 0$
$x^2 + 20x - 18x - 360 = 0$
$x(x + 20) - 18(x + 20) = 0$
$(x + 20)(x - 18) = 0$
$x + 20 = 0$ or $x - 18 = 0$
$x = -20$ (Invalid) or $x = 18$
Therefore age of Swati = 18 Years

177. If in class 1st the average age of 20 students is 10 years and in class IInd the average age of 25 students is 12 years. What is the average age of all the students (in years)?

(a) 11 (b) 11.111
(c) 10.50 (d) 10.85

RRB NTPC 27.04.2016 Shift : 3

Ans : (b) Average age of all students

$$= \frac{\text{Total sum of age of all students}}{\text{Number of all students}}$$

$$= \frac{20\times10+25\times12}{20+25} = \frac{200+300}{45}$$

$$= \frac{500}{45} = 11.111$$

178. 15 years ago Cynthia was thrice as old as Brittany. The sum of their present ages is 94 years. How old is Brittany now?

(a) 33 Years (b) 32 Years
(c) 30 Years (d) 31 Years

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (d) If present age of Cynthia is x years and present age of Brittany is y years. Then,

x + y = 94 Years .....(i)

Their age before 15 years was (x-15) years and (y-15) years respectively. Then,

According to question

(x – 15) = 3(y – 15)

x – 15 = 3y – 45

x – 3y = –30 .....(ii)

By multiplying 3 in equation (i) and adding equation (ii)–

3x + 3y = 282

x – 3y = –30

4x = 252

x = 63 Years

Present age of Brittany ⇒ 63 + y = 94

or y = 94 – 63 = 31 years

179. The present age of Kavita, Rajita and Harita are in the ratio of 4 : 7: 9. Eight years ago, the sum of their age was 56. Find their present age (in years) :

(a) 16, 36, 28 (b) 16, 28, 36
(c) 20, 35, 45 (d) 12, 21, 27

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

Ans : (b) Let the age of Kavita, Rajita and harita is 4x, 7x, 9x years respectively–

4x, 7x, 9x Years

According to question,

$$(4x-8)+(7x-8)+(9x-8)=56$$

20x – 24 = 56

x = 4

So present age of kavita = 4x= 4×4 =16 Years

Present age of Rajita = 7x = 7×4 = 28 Years

Present age of Harita = 9x = 9×4 = 36 Years

180. What is the age of the eldest sister if, the sum of age of 5 sisters born at the intervals of 3 years each is 50 years?

(a) 16 years (b) 4 years
(c) 14 years (d) 18 years

RRB ALP & Tec. (13-08-18 Shift-III)

Ans. (a) Let the age of eldest sister is x years then, age of other 4 sisters born at 3 years gap is (x-3), (x-6), (x-9) and (x-12) years respectively–

According to question,

x + x - 3 + x - 6 + x - 9 + x - 12 = 50

5x = 50 +30

5x = 80

x = 16 Years

181. The sum of one third of Poojith's age of three years ago and half of her present age after two years is 20 year. What is her present age?

(a) 23 years (b) 24 years
(c) 26 years (d) 25 years

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

Ans : (b) Let the present age of Pujeetha = x Years

Age of Pujeetha before 3 years = (x – 3) Years

Age of Pujeetha after 2 years = (x + 2) Years

According to question,

$$\left(\frac{x-3}{3}\right)+\left(\frac{x+2}{2}\right)=20$$

$$\frac{2x-6+3x+6}{6}=20$$

$$\frac{5x}{6}=20$$

x = 6 × 4

x = 24 Years

Present age of Pujeetha = 24 Years

182. 3/5th of my present age is same as 5/6th of one of my cousin's age. My age before ten years will be his four years later age from now. What is my present age?

(a) 55 (b) 45
(c) 60 (d) 50

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (d) Let my present age = x Years

Age of cousin = y Years

According to question,

$$\frac{3x}{5}=\frac{5y}{6}$$

18x = 25y

18x – 25y = 0 ---------- (I)

And, x–10 = y + 4

x – y = 14 ----------(II)

From equation (II) × 25 – equation (I)

25x – 25y = 350

18x – 25y = 0

– + –

7x = 350

x = 50 Years

Therefore, my present age is 50 years.

17.

Average

Type - 1

1. Find the average of 3/4, 5/8, 7/12, 15/16

(a) 139/192 (b) 135/64
(c) 11/32 (d) 21/64

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (a)

$$\text{Average} = \frac{\text{sum of terms}}{\text{number of terms}}$$

$$\text{Average} = \frac{\frac{3}{4}+\frac{5}{8}+\frac{7}{12}+\frac{15}{16}}{4}$$

$$\text{Average} = \frac{\frac{36+30+28+45}{48}}{4}$$

$$= \frac{139}{48\times 4} = \frac{139}{192}$$

$$\text{Average} = \frac{139}{192}$$

2. The average of 5 consecutive even numbers is 40. Find the value of smallest number among these numbers.

(a) 35 (b) 36
(c) 44 (d) 48

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (b) Let the 5 consecutive even numbers are x, x +2, x + 4, x + 6 and x + 8

According to question,

$$\frac{x+x+2+x+4+x+6+x+8}{5} = 40$$

5x + 20 = 200

5x = 180

$\boxed{x = 36}$

Therefore, smallest number is x = 36.

3. If the average of 4 numbers a, b, c, d is 26. If the average of 'a' and 'b' is 19.5 then average of c and d will be.

(a) 33 (b) 35.5
(c) 31.5 (d) 32.5

RRB RPF Constable – 18/01/2019 (Shift-I)

Ans : (d) According to first condition,

$$\frac{a+b+c+d}{4} = 26$$

$\therefore$ a + b + c + d = 104 ....(i)

According to second condition,

Average of a and b = 19.5

a + b = 39 ....(ii)

putting the value of a+b of equation (ii) in equation (i)

$\because$ a + b + c + d = 104

39 + c + d = 104

c + d = 104 – 39

c + d = 65

Therefore Average of c and d $= \frac{c+d}{2}$

$= \frac{65}{2} = 32.5$

4. W, X, Y and Z are four numbers arranged in ascending order.The average of smallest 3 numbers is 22 while the average the largest 3 numbers is 28. Find the range of data?

(a) 19 (b) 18
(c) 17 (d) 16

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (b) Let the numbers are w < x < y < z

w + x + y = 22 × 3 ____ (i)

x + y + z = 28 × 3 _____ (ii)

Range = Greatest number− smallest number

by subtracting equation (i) from equation (ii)

$\Rightarrow$ z – w = 84 – 66 = 18

5. The average of three numbers is 7. The average of first two is 5, while the average of last two is 8. Which are three consecutive numbers?

(a) 3, 7 and 9 (b) 2, 8 and 8
(c) 5, 5 and 11 (d) 4, 6 and 10

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (c) Let the numbers are *x, y, z*

According to question–

$\Rightarrow \frac{x+y+z}{3} = 7$ -----(i)

$\Rightarrow \frac{x+y}{2} = 5$ -----(ii)

$\Rightarrow \frac{y+z}{2} = 8$ -----(iii)

$\Rightarrow$ from equation (i) and (ii)

$\Rightarrow$ z = 21-10 = 11, z = 11

$\Rightarrow$ putting the value of z in equation (iii)

$\Rightarrow$ y = 16-11 = 5, y = 5

$\Rightarrow$ putting the value of y in equation (ii)

$\Rightarrow$ x = 10-5 = 5, x = 5

Therefore, the numbers are 5,5 and 11

6. Arranging the four digits in ascending order, their order is w, x, y and z. The average of smallest three digit is 25.5. While the largest three digit average is 29.5. Find the rang of data.

(a) 13 (b) 12
(c) 10 (d) 11

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (b) Let the number are z > x > y > w
According to the 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)

by subtracting equation (i) from equation (ii)

$\boxed{z - w = 12}$

Therefore, range = greatest digit – smallest digit
z – w = 12

7. The average of three numbers is 8. The average of first two numbers is 6 and the average of last two numbers is 9. Find the three numbers.
(a) 4, 9, 9 (b) 4, 8, 12
(c) 5, 7, 12 (d) 6, 6, 12

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (d) Let the three numbers are a, b and c.
According to question,

$\frac{a+b+c}{3} = 8$

a + b + c = 24 ------(i)

$\frac{a+b}{2} = 6$

a + b = 12 ------(ii)

and $\frac{b+c}{2} = 9$

b + c = 18 ------(iii)

from equation (i) , (ii) and (iii)
a = 6, b = 6 and c = 12
∴ c = 24 - 12 = 12
Therefore, three numbers are 6, 6 12 respectively.

8. The average of three number is 28. If in the smallest number 2 is added and from the largest number 5 is subtracted, then the middle digit becomes the arithmetic mean, while the range of this new set becomes 36. What is the largest number among these three numbers of the original set.
(a) 50 (b) 48
(c) 47 (d) 45

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (a) Let all the three numbers are x, y, z and x < y < z

x + y + z = 28 × 3
x + y + z = 84 --------(i)

According to condition-

$\frac{(x+2)+y+(z-5)}{3} = y$

x + y + z = 3y + 3
x – 2y + z = 3 --------(ii)

with the same condition range is

z – 5 – (x + 2) = 36
z – x = 43 --------(iii)

by subtracting equation (ii) from equation (i)
y = 27

from equation (i)
x + y + z = 84
x + z = 84 – 27
x + z = 57
+ z – x = 43
2z = 100
z = 50

There, largest number of original set = 50

9. The average of three numbers is 28. If 7 is added in the smallest number and 10 is subtracted from the largest number, then the middle digit is the arithmetic mean and the range of this new set becomes 20. What is the largest number among the original set of three numbers?
(a) 47 (b) 40
(c) 45 (d) 50

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (a) : Let the first, second and third number is x, y and z respectively and x < y < z
According to question,
sum of all three numbers = 28 × 3
x + y + z = 84 ....(i)
according to second condition

$\because \frac{z-10+y+x+7}{3} = y$

x +y+ z – 3 = 3y
x + z – 2y = 3 .....(ii)
z – 10 – x – 7 = 20
z – x = 37 .....(iii)
from equation (i), (ii) and (iii)
x + y + z = 84

$z - 37 + \frac{2z-40}{2} + z = 84$

2z - 74 + 2z – 40 + 2z = 168
6z = 168 + 114
6z = 282
z = 47

10. Four numbers a, b, c and d are such that their total average 39. The average of a and b is 29.5. The average of c and d will be –
(a) 48.5 (b) 48
(c) 49.5 (d) 47.5

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (a) : sum of the number = a+b+c+d = 39×4
= 156
sum of number = a+b = 29.5 × 2 = 59
sum of the number = c+d = [(a+b+c+d) – (a+b)]
= [156 – 59] = 97

∴ Average of number = c + d $= \frac{97}{2} = 48.5$

11. Average of first 50 natural number is–
(a) 26.5 (b) 25.5
(c) 26 (d) 25

RRB NTPC 17.01.2017 Shift-3

Ans : (b) ∵ Average of first n natural numbers

$$= \frac{n+1}{2}$$

∴ Average of first 50 natural numbers $= \frac{50+1}{2} = 25.5$

12. The sum of 7 numbers is 1050. The average of first 3 numbers is 120, fourth number is 126, then find the average of last 3 numbers.

(a) 200 (b) 165
(c) 188 (d) 173

RRB NTPC 05.04.2016 Shift : 2

Ans : (c) Sum of first three numbers = 120×3 = 360
Sum of last three numbers = 1050– (360+126)
= 1050–486
= 564

Average of last three numbers are $= \frac{564}{3} = 188$

13. Find the averge of 8, 5, 6, 3, 7, 4, 3, 9

(a) 5.63 (b) 5.64
(c) 5.65 (d) 5.66

RRB NTPC 05.04.2016 Shift : 2

Ans : (a) Average $= \frac{8+5+6+3+7+4+3+9}{8}$

$$= \frac{45}{8} = 5.625 = 5.63$$

14. Find the averge of 1, 9, 7, 3, 5, 5, 6, 4, 2, 8

(a) 3 (b) 4
(c) 5 (d) 6

RRB NTPC 05.04.2016 Shift : 3

Ans :(c) Average $= \frac{1+9+7+3+5+5+6+4+2+8}{10}$

$$= \frac{50}{10} = 5$$

15. Find the average of first 20 multiples of 7–

(a) 66.5 (b) 67.5
(c) 73.5 (d) 74.5

RRB NTPC 03.04.2016 Shift : 3

Ans : (c) Sum of the first n coefficients of K

$$= \frac{K\left[n(n+1)\right]}{2}$$

Sum of the first 20 coefficients of 7 $= \frac{7\times\left[20(20+1)\right]}{2}$

$$= \frac{7\times 20\times 21}{2}$$

= 1470

$$\boxed{\text{Average} = \frac{\text{sum total}}{n}}$$

Average $= \frac{1470}{20}$

Average = 73.5

16. Find the average of first 20 multiples of 8–

(a) 78 (b) 80
(c) 84 (d) 82

RRB NTPC 02.04.2016 Shift : 1

Ans : (c) 8, 16, 24 …… 160

Sum of terms = $\frac{n}{2}(a+\ell)$

$$= \frac{20}{2}(8+160) = 10 \times 168 = 1680$$

∴ Average $= \frac{1680}{20} = 84$

17. What is the average of first 30 multiples of 9?

(a) 142 (b) 138.5
(c) 139.5 (d) 143.5

RRB NTPC 16.04.2016 Shift : 1

Ans : (c) Sum of the first n coefficient of K $= \frac{K\left[N(N+1)\right]}{2}$

∴Sum of the first 30 coefficient of 9 $= \frac{9\left[30(30+1)\right]}{2}$

$$= \frac{9\times 30\times 31}{2}$$

= 4185

Average $= \frac{4185}{30} = 139.5$

18. Three numbers are given in which second number is thrice the first, and twice of the third number. If the average of three numbers is 66. Then find the first number?

(a) 36 (b) 54
(c) 108 (d) 72

RRB NTPC 12.04.2016 Shift : 3

Ans : (a) Let the second number = x

∴ first number $= \frac{x}{3}$

third number $= \frac{x}{2}$

∴ from question,

$$\frac{\frac{x}{3}+x+\frac{x}{2}}{3} = 66$$

$$\Rightarrow \frac{2x+6x+3x}{6\times 3} = 66$$

$$\Rightarrow \frac{11x}{18} = 66$$

$$\Rightarrow x = 6 \times 18 = 108$$

∴ first number $= \left(\frac{x}{3}\right) = \frac{108}{3} = 36$

19. The average of 5 consecutive numbers is 50. What is the difference of the products of the largest and smallest number to the product of fourth and second number?

(a) 3 (b) –3
(c) 0 (d) 10

RRB NTPC 27.04.2016 Shift : 1

Ans : (b) Let the 5 consecutive numbers are x, x + 1, x + 2, x + 3 and x + 4

$$\therefore \quad \frac{x+(x+1)+(x+2)+(x+3)+(x+4)}{5}=50$$

5x + 10 = 250

5x = 240

x = 48

∴ from question,

x(x + 4) – (x + 1) (x + 3)

$= x^2 + 4x - (x^2 + 4x + 3) = -3$

20. The average of 5 consecutive numbers is 10 then which will be the middle number?

(a) 10 (b) 11

(c) 8 (d) 9

RRB NTPC 29.04.2016 Shift : 3

Ans. (a) : Let the 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 × 5

5x + 10 = 50

5x = 40

x = 8

∴ Middle number = (x + 2) = 8 + 2 = 10

21. The average of 5 consecutive number is 100, find the first number?

(a) 98 (b) 99

(c) 100 (d) 101

RRB NTPC 30.04.2016 Shift : 1

Ans : (a) Let the five consecutive numbers are

$x, x+1, x+2, x+3, x+4$

$$\therefore \quad \frac{x+x+1+x+2+x+3+x+4}{5}=100$$

$5x+10=500$

$5x=490$

$x=98$

Therefore, first number is 98.

22. The average of 5 consecutive number is 100, then the difference of the square of highest number and the square of the lowest number will be?

(a) 800 (b) 990 (c) 900 (d) 1000

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) Let the first consecutive numbers are: x, x +1, x + 2, x + 3 and x + 4 respectively

According to the question,

$$\frac{x+x+1+x+2+x+3+x+4}{5}=100$$

$$\frac{5x+10}{5}=100$$

5x + 10 = 500

5x = 490

$\boxed{x=98}$

Largest number = x + 4 = 98 + 4 = 102

Smallest number = x = 98

Therefore, difference between squares of largest and smallest numbers

$=(102)^2-(98)^2=(102+98)(102-98)=200\times 4=800$

Type - 2

23. The average mark of 3 students of a class in a test is 18 out of 25. Two new students take test. How much is such minimum number that can be obtained by the new student and this be less than other students and the total average of other 5 students is raised to 20.

(a) 23 (b) 20

(c) 21 (d) 22

RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (c) Maximum marks of three students

= 25 × 3 = 75 Marks

and sum of their marks = 18 × 3 = 54 marks

Total marks of 5 students = 20 × 5 = 100 marks

5 – 3 = 2 marks obtained by students = 100 – 54 = 46

46

(because maximum marks is 25) 25 21

Maximum marks minimum marks

There minimum 21 marks can be obtained by a student.

24. The number of students of three groups of a college G_1, G_2 and G_3 is 20, 40 and 60 respectively. The average marks obtained by group G_1, G_2 and G_3 is 50%, 60% and 70% what is the average marks of all the sudents of the college?

(a) 62% (b) 61%

(c) 60% (d) 63%

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (d) According to question-

Total marks of G_1 = 20 × 50 = 1000

Total marks of G_2 = 40 × 60 = 2400

Total marks of G_3 = 60 × 70 = 4200

Total marks of G_1, G_2 and G_3

= 1000 + 2400 + 4200 = 7600

Total students = 20 + 40 + 60 = 120

Average of marks of all students $=\frac{7600}{120}$

= 63.3% ≈ 63%

25. The average marks obtained by Reena in 16 tests is 26. The average marks obtained by shreya till now is 24, but she has taken only 12 tests till now. How much average marks has to be obtained by shreya in order to equalise the performance of Reena in the rest tests.

(a) 28 (b) 32

(c) 30 (d) 26

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (b) : Average of marks obtained by Reena in 16 examinations = 26

∴ Total marks = 26 × 16 = 416

Average of marks obtained by Shreya in 12 examinations = 24

∴ Total marks = 24 × 12 = 288

Total difference of Reena and Shreya's marks = 416 – 288 = 128

Difference between their examinations = 16 – 12 = 4

Average score of 4 tests of Shreya = $\frac{128}{4}$ = 32 marks

Therefore, In order to perform like reena, shreya has to score 32 marks in 4 examinations.

26. In a class there were 9 boys and some girls. In a test, the mean score obtained by the boys was 13 while that obtained by the girls was 15. If the overall average was 14.28, what was the total number of students in the class?

(a) 24 (b) 25
(c) 26 (d) 27

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (b) : Let the number of Girls = x

According to question -

$9 \times 13 + 15 \times x = 14.28\ (x+9)$

$117 + 15x = 14.28x + 128.52$

$0.72x = 11.52$

$x = \frac{1152}{72}$

$x = 16$

Therefore number of girls = 16

Number of total students = x + 9 = 16 + 9 = 25

27. In a 25 marks test the mean of marks obtained by three students is 16. Two new students took part in the test. In order to raise the average of students to 19 how much marks have to be obtained by the new student who obtains less marks than other new student?

(a) 22 (b) 21
(c) 20 (d) 23

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a) Let the three boys are x, y and z

According to question,

x + y + z = 48 ----- (i)

Let there be tow newly included students A and B

Then sum of the marks obtained by 5 students =

x + y + z + A + B = 95 -----(ii)

from equation (i) and (ii),

A + B = 95 – 48

A + B = 47 -----(iii)

Maximum marks for A + B = 25 + 25 = 50 marks

If we give the highest marks to A, then the minimum marks obtained by B is 47 – 25 = 22 marks.

28. The average marks obtained in a test of 18 boys of a class is 16, while the average of the total 30 students of the class is 18.1 what is the average of the girls?

(a) 21.25 (b) 20.5
(c) 20.75 (d) 21

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (a) Average of marks obtained by 18 boys in the test = 16

total marks = 16 × 18 = 288

Average of all 30 students = 18.1

total marks = 18.1 × 30 = 543

total obtained mark by 12 girls = 543 – 288

= 255

Average of all 12 girls = $\frac{255}{12}$ = 21.25

29. 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 mark of five students to be 40?

(a) 41 (b) 42
(c) 40 (d) 43

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) Sum of marks of all 5 students = 40 × 5 = 200

Sum of mark of first three students = 38 × 3 = 114

Sum of mark of remaining two new students = 200–114 = 86

Maximum marks in examination = 45

Hence, one of both new students can score a maximum 45 marks.

and second student will be able to get minimum 86–45 = 41 marks

30. The average marks of 12 test obtained by Raghuveer is 25. The average of Rumela is 23 marks till now but she had taken part only in 8 tests. How much marks Rumela has to get in the rest 4 test in order to equal Raghuveer's average?

(a) 27 (b) 29
(c) 26 (d) 28

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (b) Total score in 12 tests by Raghuveer = 12 × 25 = 300

Total score in 8 tests by Rumela = 8 × 23 = 184

Required marks of 4 tests to reach at the level of Raghuveer = 300 – 184 = 116

Intended Average = $\frac{116}{4}$ = 29

31. The group of five students took an exam. One more students later joined the group after taking exam. If his marks are included then the average of group is raised by 2 marks. Without including his average marks this student scored the ___ more marks?

(a) 18 (b) 14
(c) 12 (d) 15

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (c)

Let the five students are A, B, C, D, E and their average = x

According to question,

⇒ A + B + C + D + E = 5*x* _____(i)

Let the newly included student = F

$\Rightarrow$ A+ B+ C + D + E + F = 6 (x+2) = 6x + 12 ___ (ii)
from equation (i) and (ii)

$\Rightarrow 6x + 12 - 5x = F$

$\Rightarrow F = x + 12$

Hence, the marks of the newly included student is 12 more than the average marks.

32. There were 28 boys and some girls in a class. In an exam the average marks obtained by boys was 12.5. While the girls obtained 14.5 if the total average was 13.1 then what was the total no. of students in the class?

(a) 42 (b) 40
(c) 44 (d) 38

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (b) Let the number of girls = x
According to question,

$$13.1 = \frac{28 \times 12.5 + x \times 14.5}{28 + x}$$

366.8 + 13.1x = 350 + 14.5 x
1.4 x = 16.8
x= 12
number of boys in class = 28
number of girls in class = 12
Total number = 28 + 12 = 40

33. In a class of 40 students the ratio of boys and girls is 7:3. Average marks of boys is 65 and the average marks of the girls is 72. What is the average mark of the whole class?

(a) 67.1 (b) 68.4
(c) 68.3 (d) 68.2

RRB Group-D – 31/10/2018 (Shift-II)

Ans : (a) No. of boys = $40 \times \frac{7}{10} = 28$

No. of girls = $40 \times \frac{3}{10} = 12$

Ratio of Boys and Girls = 7 : 3
Total marks of boys = 65×7 = 455
Total marks of girls = 72× 3 = 216
Total marks = 671
Number = 10

Therefore, Average of whole class $= \frac{671}{10} = \boxed{67.1}$

34. In a class of 45 students. The ratio of boys and girls is 4:5 average marks of boys is 75 and that of girls is 82. What is the approximate average marks of the class?

(a) 78.6 (b) 78.5
(c) 78.9 (d) 79.0

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (c) : Let the number of boys and girls in a class of 45 students are 4x, 5x respectively.

$\therefore$ 4x + 5x = 45
9x = 45
x = 5

Number of boys 4×5 = 20
Number of Girls 5×5 = 25
Total marks of boys 75×20 = 1500
Total marks of girls 25×82= 2050
Total marks of girls and boys = 1500+2050 = 3550

Average of marks of class $= \frac{3550}{45} = 78.88$, $= 78.9$

35. The average test score of 18 boys in a class was 15, while the over all average of all the 25 students of the class was 16.12. What was the average score of the girls?

(a) 18.5 (b) 19.5
(c) 19 (d) 18.8

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (c) Number of girls = 25 – 18 = 7
Hence the average test score of a girls

$$= \frac{25 \times 16.12 - 18 \times 15}{7}$$

$$= \frac{403 - 270}{7} = \frac{133}{7} = 19$$

36. The average marks of students in 5 subject is 75. Average of his first two subjects is 65 and the average of his last two subjects is 85. How much did he score in the third subject?

(a) 80 marks (b) 65 marks
(c) 75 marks (d) 70 marks

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (c) Average marks of obtained by the student in 5 subjects = 75

Total marks obtained by the students = 75 × 5 = 375

$\because$ Average of first 2 subjects = 65

Sum of first 2 subjects = 65 × 2 = 130

$\because$ Average of last 2 subjects = 85

Sum of last two subjects = 85 × 2 = 170
Obtained marks in third subject =
sum of all five subjects − (sum of first two subjects+ sum of last two subjects)
= 375 – (130 + 170) = 375 – 300 = 75
Hence obtained marks in third subject is = 75

37. In a class of 50 students, the ratio of boys and girls is 2:3. The average marks of the boys is 60 and the average marks of the girls is 70. What is the average of the class?

(a) 65 (b) 66
(c) 67 (d) 64

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (b) Given–
Ratio of girls and boys is 2 : 3

Number of boys $= \frac{50 \times 2}{5} = 20$

Number of girls $= \frac{50 \times 3}{5} = 30$

Average marks of whole class $= \frac{60 \times 20 + 30 \times 70}{50}$

$$= \frac{1200 + 2100}{50} = \frac{3300}{50} = 66$$

38. A group of 19 students took a test, one more students took test and joined the group. By including his marks, the average is raisedby 1.5 marks. Without including him this student obtained ____ more marks than the average?

(a) 25 (b) 30
(c) 24 (d) 28.5

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (b) Let the Average marks of 19 students = x

$$\frac{student_1 + student_2 + ----+student_{19}}{19} = x$$

$student_1 + student_2 + -----+student_{19} = 19x$ ---- (i)

After including new student–

$$\frac{student_1 + student_2 + ----+student_{20}}{20} = x + 1.5$$

$student_1 + student_2 + -----+student_{20} = 20x + 30$ --- (ii)

by subtracting equation (i) from equation (ii)

$student_{20} = 20x + 30 - 19x = x + 30$

It is clear that the student included in the group has scored 30 marks more than the average-

39. The average marks obtained by Suvir in 15 exams is 29. Ruchira has maintained the average of 27 but till now she has taken only 11 tests. How much Ruchira has to perform in the rest test to match the average of Suvir performance?

(a) 35 (b) 34.5
(c) 36 (d) 35.5

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (b) Given-

Average marks of suveer in 15 examinations = 29

Total marks of suveer = 29 × 15 = 435

Average marks of Ruchira in 11 examinations = 27

Total marks of Ruchira = 27 × 11 = 297

Total required marks of Ruchira in remaining 4 examinations = 435−297 = 138

Hence, Required average marks of Ruchira $= \frac{138}{4} = 34.5$

40. A group of seven students took an exam. After exam one more students joined the group. After including the new students the average marks is raised by 2. In comparison with the average marks of initial seven students, how much more marks did the new student obtain?

(a) 16 (b) 18
(c) 14 (d) 20

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (a) : Let Average marks of 7 students = x

∴ Total obtained marks by 7 students = 7x

Again let the marks of new student = y

According to question,

$$\frac{7x + y}{8} = (x + 2)$$

7x + y = 8x + 16

y = x + 16

Hence, student scored 16 marks more than the average marks.

41. In a class the average marks obtained by 35 students is 63. If two more students whose average is 85.5 is added, then the new average of the class is?

(a) 64.20 (b) 67.90
(c) 63.62 (d) 65.35

RRB NTPC 04.04.2016 Shift : 2

Ans : (a) Total sum of marks of 35 students

= 35×63=2205

from question-

New Average of class $= \frac{2205 + 2 \times 85.5}{35 + 2}$

$$= \frac{2205 + 171}{37} = \frac{2376}{37} = 64.21 \cong 64.20$$

42. The average marks obtained by James in maths, science and history is 89. If the marks of Language is also added then the averages decreases to 88.25. Find out the marks obtained by him in the language.

(a) 90 (b) 82
(c) 86 (d) 83

RRB NTPC 28.03.2016 Shift : 3

Ans : (c) maks obtained by him in the language

= 4 × 88.25 − 3 × 89

= 353 − 267 = 86

Type - 3

43. In a class of 10 students, the average age was 16 years. When two students dropped the class then the average age of the rest students was 16.25 years. What was the total age of the dropped students?

(a) 32 years (b) 30 years
(c) 34 years (d) 28 years

RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (b) Total average age of 10 students

= 16 × 10 = 160

Total average age of remaining 8 students = 8 × 16.25

= 130.00

Total age of dropout students = 160–130 = 30 Years

44. In a group of 5 people the ratio of the average age of first three and the last two is 9:7. If the difference of their age is 12, then what will be the average age of all the five?

(a) 46.8 (b) 49.2
(c) 48.4 (d) 64.8

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (b) Average age of group of 3 people = 9 x years
Average age of group of 2 people = 7x years
Average age difference of both group = 12
$\therefore$ 9x – 7x = 12
2x = 12
$\boxed{x = 6}$
Average age of 3 people = 9 × 6 = 54 years
Average age of 2 people = 7 × 6 = 42 years
Total age of 3 people = 3 × 54 = 162 years
Total age of 2 people = 2 × 42 = 84 years
Total age of 5 people = (162+84) = 246 years
Average age of 5 people $= \frac{246}{5} = 49.2$ years

45. The average of 40 students age is 30 years, average of 25 students age is 36 years. Find the average age of the rest of the students?
(a) 20 (b) 15
(c) 25 (d) 18
RRB NTPC 05.04.2016 Shift : 2

Ans : (a) Average age of remaing students
$$= \frac{40\times30-25\times36}{40-25}$$
$$= \frac{1200-900}{15}$$
$$= \frac{300}{15} = 20 \text{ years}$$

46. If the average age of 40 students of class first is 10 years and the average age of 30 students in class IInd is 12 years. Find the average age of all students (in years).
(a) 11 (b) 10.54
(c) 10.58 (d) 10.85
RRB NTPC 29.04.2016 Shift : 2

Ans : (d) Total age of 40 students = 10×40 = 400 years
Total age of 30 students = 12 × 30 = 360 years
Average age of all students $= \frac{400+360}{70}$
$= \frac{760}{70} = 10.85$ years

Type - 4

47. Average of 81 results is 54. If the average of first 59 results is 52 and last 21 results is 60, then calculate the 60th result?
(a) 52 (b) 60
(c) 46 (d) 62
RRB Group-D – 11/12/2018 (Shift-I)

Ans. (c) : Grand Total of 81 results = 81×54= 4374
Grand Total of first 59 results = 59 × 52 = 3068
Grand Total of last 21 results = 21 × 60 = 1260
60th result = 4374 – 3068 – 1260 = 46

48. Average of 11 results is 50. The average of first 6 results is 49 and last 6 results average is 52. Then what will be the value of the 6th result?
(a) 48 (b) 51
(c) 56 (d) 49
RRB NTPC 02.04.2016 Shift : 3

Ans : (c) 6th result = grand total of first 6 results + grand total of last 6 results - grand total of 11 results.
$$= 6\times49+6\times52-11\times50$$
$$= 294+312-550$$
$$= 606-550 = 56$$

49. The average of 45 results is 23. The average of first 22 is 18 and last 22 is 21. What is the value of 23 result?
(a) 172 (b) 190
(c) 177 (d) 187
RRB NTPC 18.04.2016 Shift : 3

Ans : (c) Total value of 45 results = 45 × 23 = 1035
Average of first 22 results = 22 × 18 = 396
Averge of last 22 results = 22 × 21 = 462
value of 23rd results = 1035 – (396+462)
= 1035–858 = 177

Type - 5

50. A person received 4 packets in January, whose average weight was 300g and in February 8 packets were received whose average weight was 400g. What will be the average weight (g) in received by that person in the two months?
(a) 350g (b) 366.67g
(c) 412.67g (d) 376.67g
RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (b)
In January, total weight of 4 packets = 4×300 = 1200 g
In February, total weight of 8 packets = 8×400 =3200g
Average weight of total packets
$$= \frac{\text{sum of total weight}}{\text{Number of total packets}}$$
$$= \frac{1200+3200}{12} = \frac{4400}{12} = \frac{1100}{3}$$
= 366.67 g

51. The average weight of 25 items is 50 kg. If any other item X weight included, then average weight is increased by 500 g. What is the weight of item X ?
(a) 28 kg (b) 36 kg
(c) 82 kg (d) 63 kg
RRB Group-D – 25/09/2018 (Shift-II)

Ans : (d) Total weight of 25 goods = 25 × 50
= 1250 kg
Total average weight of including the weight of the new object X
= (50 + .5) kg = 50.5 kg
Hence total weight of total 26 goods = 50.5 × 26
= 1313 kg
Weight of X = 1313 – 1250 = 63 kg

52. The mean weight of six kids is 17.5 kg. If the individual weights of 5 of those kids are 14, 19, 23, 21 and 13 kg, respectively, find the weight of the sixth kid.

(a) 17 kg (b) 15 kg
(c) 16 kg (d) 18 kg

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : Let the weight of 6th child is x kg

$\therefore 17.5 = \frac{14+19+23+21+13+x}{6}$

105.0 = 90 + x

x = 15

Hence weight of 6th child = 15 kg

53. The average weight of 42 boys of a class is 41 kg. A boy of 39 kg weight joins the class. A boy already present in the class, whose weight was counted as 34 kg in place of 43 kg. What will be the new average?

(a) 39.81 (b) 40.74
(c) 41.16 (d) 40.92

RRB NTPC 26.04.2016 Shift : 1

Ans : (c) Total weight of 42 boys = 42 × 41 = 1722

On inclusion of 39 kg boy

New weight = 1722 + 39 = 1761

According to question,

New Average = $\frac{1761+43-34}{43} = \frac{1770}{43} = 41.16$

54. Average of 5 person weight is 76 kg. in these four persons weight is 72, 74, 75 and 81 kg. 5th persons weight in kg will be.

(a) 77 (b) 78
(c) 79 (d) 80

RRB NTPC 26.04.2016 Shift : 3

Ans : (b) Total weight of 5 people $= 76 \times 5 = 380$

weight of 4 people $= 72 + 74 + 75 + 81$

$= 302$

weight of 5th person $= 380 - 302 = 78$ kg

55. In a class the average of 30 student age is 25 kg. If the class teacher's weight is also included in this, then average weight is increased by two kg. What is the weight of the class teacher (in kg) ?

(a) 86 (b) 84
(c) 81 (d) 87

RRB NTPC 27.04.2016 Shift : 1

Ans : (d) Weight of teacher in the class = 31 × 27 – 30 × 25

= 837 – 750 = 87 kg

56. The average weight of 29 students of any class is 48. If the class teacher weight is added then the average weight is increased by 1/2 kg. Class teacher weight (in kg) is?

(a) 63 (b) 65
(c) 60 (d) 68

RRB NTPC 29.04.2016 Shift : 3

Ans. (a) : Total weight of 29 students = 29 × 48 = 1392 when the weight of the class teacher is added.

Then total weight = 30 × 48.5 = 1455 kg

∴ weight of class-teacher = 1455 – 1392 = 63 kg

57. The average weight of 30 students of a class is 15 kg. If the weight of the class teacher is included in it then the average weight is increased by 1 kg. What is the weight of the class teacher (in kg).

(a) 46 (b) 45
(c) 16 (d) 92

RRB NTPC 30.04.2016 Shift : 1

Ans : (a) Total weight of 30 students in the class $= 30 \times 15 = 450$

Total weight if class teacher is also included

$= 31 \times 16 = 496$

Hence the weight of class teacher $= 496 - 450 = 46$ kg

Type - 6

58. The average score of a group of cricketers was 42. A new player joins and score 250% of the average of the group. As a result the overall average is increased by 30% what was the numbers of cricketers in the group before, the new player joined?

(a) 3 (b) 5
(c) 6 (d) 4

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

Ans : (d) Let the Number of cricketers in the group =x, and average = 42

the, total score = 42x

Number of cricketers after including one player in the group = x + 1

New average $= \frac{42 \times 130}{100}$

= 54.6

Score of new player $= \frac{42 \times 250}{100} = 105$

Now total score = (105 + 42x)

Hence sum = average × number

105 + 42x = 54.6 (x + 1)

105 – 54.6 = 54.6x – 42x

50.4 = 12.6x

$x = \frac{50.4}{12.6} = 4$

Therefore number of cricketers in first group (x) = 4

59. After 11 innings, the average score of a batsman is 52 per innings. After 13 innings, the average is raised to 54. If the batsman made 16 runs more than the last inning in the 13 inning then how much did he make in 12th inning?

(a) 54 (b) 57
(c) 56 (d) 55

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (b) : Total score after 11 innings = 52×11 = 572

total score after 13 innings = 54×13 = 702

12th inning+ score of 13th inning = score of 13 innings – score of 11 innings = 702 − 572 = 130

According to question-

Let the Run in 12th innings = x

Run in 13th innings = x+16
then, x + (x+16) = 130
2x = 130 –16
2x =114
$\boxed{x = 57}$

60. The average score of 12 members of a group was 8. While another group of n members had an average score of 10. If the joint average was 9.2 find the value of n.
(a) 18 (b) 24
(c) 16 (d) 30

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (a) : Sum of group of 12 members = 12×8= 96
Sum of the group of n members = 10×n = 10n
∵ Combined average = 9.2
∴ According to question-

$$9.2 = \frac{96+10n}{(12+n)}$$
$$(12+n) = \frac{960+100n}{92}$$
$$1104+92n = 960+100n$$
$$144 = 8n$$
$$n = \frac{144}{8} = 18$$
$$\therefore n = 18$$

61. The average run scored by a batsman is 125 in 5 matches. In the first two matches is average score was 150. The average of runs scored in the last two matches is 110. How many runs that batsman scored in the third match?
(a) 115 run (b) 125 run
(c) 105 run (d) 95 run

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (c) : Total score make in 5 matches = 125×5= 625
Total score make in first 2 matches = 150 × 2 = 300
Total score make in last 2 matches = 110 × 2 = 220
∴ Total runs scored in the third match
= 625–(300+220)
= 625 – 520
= 105 run

62. After 12 innings, a batman per inning average score was 55. After 14 innings his average score reached to 60. If the batsman scored 20 runs more in the 14th innings than the last innings, then how much did he score in the 13th innings?
(a) 90 (b) 85
(c) 80 (d) 75

RRB Paramedical Exam – 21/07/2018 (Shift-I)

Ans : (c) Average score of 12 innings = 55
∴ Total score = 55×12 = 660
Average score of 14 innings = 60
∴ Total score = 14×60 = 840
Total score of 12th and 14th innings = 840 – 660 = 180
Let the score of 13th inning is x. then score of 12th inning = x + 20
According to question-
∴ x + 20 + x =180
2x = 160 ⇒ x = 80

63. In a football tournament Real madrid did 33 goals and 22 goals were done against it. Find the average number of goals done by each player of the real madrid?
(a) 1 (b) 2
(c) 3 (d) 0

RRB NTPC 30.04.2016 Shift : 2

Ans : (c) Real Madrid average number of goals scored for each palyer

$$= \frac{\text{Number of goals in real madrid}}{\text{number of players of football}} = \frac{33}{11} = 3$$

64. After 10 innings the average score per innings of a batsman was 52. After 12 innings the average score to 54. If the batsman had scored 16 more runs in the 12th innings than in the previous one, how many runs did he score in the 11th innings?
(a) 55 (b) 56
(c) 54 (d) 53

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

Ans : (b) According to question,
Total score of 10 innings = 10 × 52 = 520
Total score of 12 innings = 12 × 54 = 648
Let, makes x run in 11th innings
According to question,
x + x + 16 = 648 – 520
2x = 128 – 16
2x = 112
x = 56 run
Hence the bats man has scored 56 runs in 11th innings.

Type - 7

65. The sales quanity in a shop is recorded for four different quarters. Following data is-

Quarter	Selling Amount
Quarter 1	200
Quarter 2	100
Quarter 3	350
Quarter 4	550

per quarter average selling is?
(a) 300 (b) 500
(c) 250 (d) 350

RRB RPF SI – 12/01/2019 (Shift-III)

Ans : (a) Average sales per quarter

$$= \frac{(200+100+350+550)}{4}$$
$$= \frac{1200}{4} = 300$$

66. Based on the following table, what is the average number of screws manufactured in the unit in given 6 months?

Months	No. of screws manufactured
January	200
February	300
March	250
April	250
May	250
June	250

(a) 300 (b) 200
(c) 250 (d) 150

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (c) : Average = $\frac{\text{sum of terms}}{\text{number of terms}}$

Average of the screw

$$= \frac{200+300+250+250+250+250}{6}$$

$$= \frac{1500}{6} = 250$$

67. A private swimming pool offers different time slots for its users, and the following table represents the number of pool visitors of the week?

Days	No. of users of swimming pool
Monday	**8**
Tuesday	**4**
Wednesday	**15**
Thursday	**15**
Friday	**20**
Saturday	**25**
Sunday	**25**

On average how many visitors visited on a day of that week?

(a) 12 (b) 16
(c) 14 (d) 15

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) Number of visitors in the whole week =
8 + 4 + 15 + 15 +20 +25 + 25 = 112

average = $\frac{112}{7} = 16$

Hence, an average of 16 visitors visited throughout the week.

68. Two football teams, Team A and Team B played in a tournament and following are the goals done in six matches.

Play	Goal by Team A	Goal by Team B
Kesue 1	2	3
Kesue 2	1	0
Kesue 3	0	1
Kesue 4	4	5
Kesue 5	3	2
Kesue 6	2	1

Based on average targets, what conclusion we can derive?

(a) The average score of Team A and B is same.
(b) Team A's average score is comparatively more than B.
(c) Team A is similar to B.
(d) Team B's average score is comparatively more than A.

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) Average score of Team A

$$= \frac{2+1+0+4+3+2}{6} = \frac{12}{6} = 2$$

Average score of Team B

$$= \frac{3+0+1+5+2+1}{6} = \frac{12}{6} = 2$$

69. What is the difference in average price per kg (in ₹) for vegetables, three months between two years, according to the data given in the following table?

Months	Per Kg Price-year 1	Per Kg Price-year 2
January	**40**	**35**
February	**40**	**50**
March	**40**	**35**

(a) There is no difference in the average price.
(b) We can't compare values.
(c) The average price of vegetables in year 1 is less than year 2.
(d) The average price of vegetables in year 2 is less than year 1.

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a)

Average price of first years $= \frac{40+40+40}{3} = 40$

Average price of second years $= \frac{35+50+35}{3} = 40$

Difference = 40 − 40 = 0

Hence, there is no difference in the average price.

70. The number of people going through the way of shop is recorded for four different quarters. The following data is given for this. What is the average number of people going through the shop way in all the quarters?

Quarters	No. of People
Quarter1	**2,000**
Quarter2	**1,000**
Quarter3	**3,500**
Quarter4	**5,500**

(a) 12,000 (b) 4,000
(c) 10,000 (d) 3,000

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (d)

Average number $= \frac{2000+1000+3500+5500}{4}$

$= \frac{12000}{4} = 3000$

Direction (71 to 73)

71. The given table represents the marks obtained by four students W, X, Y and Z in four subjects P, C, B and M with the maximum marks in each subject being 100.

The average marks of all the four students in subject C is.

Students/ Subject	P	C	B	M
W	70	90	50	85
X	55	80	95	60
Y	60	20	90	40
Z	90	80	40	65

(a) 67.5 (b) 67

(c) 67.75 (d) 67.25

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (a)

Average marks of all four students in subject C

$= \frac{90+80+20+80}{4} = \frac{270}{4} = 67.5$

72. What is the average mark of four students in M?

(a) 62 (b) 62.25

(c) 62.75 (d) 62.5

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (d) Average marks of all four students in M

$= \frac{85+60+40+65}{4}$

$= \frac{250}{4} = 62.5$

73. What is the average mark of the four students in P?

(a) 68.5 (b) 68

(c) 68.75 (d) 68.25

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (c) Average marks of all four students in P

$= \frac{70+55+60+90}{4} = \frac{275}{4} = 68.75$

Type - 8

74. A person expenditure has increased ₹10000 in each month in February and March. If his expenditure in January was ₹10000, then find the average expenditure (in ₹) from January to march.

(a) 20000 (b) 15000

(c) 10000 (d) 25000

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) January expenses of the person = ₹10000

expenses for the month of february

= 10000 + 10000 = ₹20000

And expenses for the month of March

= 20000 + 10000 = ₹30000

Average expenses from January to March

$= \frac{10000+20000+30000}{3}$

$= \frac{60000}{3}$ = ₹20000

75. A person expenditure has increased by ₹50000 in the months of February and March. If his expenditure in January was ₹50000, then find his average expenditure (in ₹) from January to March.

(a) 100000 (b) 150000

(c) 75000 (d) 50000

RRB NTPC 27.04.2016 Shift : 3

Ans : (a) Expense in January Month = ₹ 50000

∵ In the month of February and March, expenses increase by ₹ 50000

∴ Expenses for the month of February

= 50000 + 50000

= ₹ 100000

Expenses for the month of March = 100000 + 50000

= ₹ 150000

Hence, Average expenses from January to March

$= \frac{50000+100000+150000}{3}$

$= \frac{300000}{3}$ = ₹ 100000

18.

Speed, Time & Distance

Type - 1

1. Two buses from a house run at a speed of 25 km/h at an interval of 15 minutes. How much more speed (km/h) does a woman coming from the opposite side of the house have to walk so that the buses meet at an interval of 10 minutes.

(a) 12 (b) 12.25
(c) 12.5 (d) 12.75

RRB RPF SI – 06/01/2019 (Shift-III)

Ans : (c) Speed of bus = 25 Km./hr.

Let the speed of woman = x km/h

Distance = D, Time = 15 minute $= \frac{15}{60} = \frac{1}{4}$ hours

then time after women's speed = 10 minute

$= \frac{10}{60} = \frac{1}{6}$ hours

Then Relative speed $(S) = \frac{D}{T}$

$\Rightarrow \quad D = S \times T$

$D = 25 \times \frac{1}{4}$

$\because \quad D = \frac{25}{4}$ .....(i)

$D = \frac{25+x}{6}$ .....(ii)

from equation (i) and equation (ii)

$\frac{25+x}{6} = \frac{25}{4}$

$25 + x = \frac{150}{4}$

$x = \frac{150}{4} - 25$

$x = \frac{150-100}{4}$

$x = \frac{50}{4}$

Speed of woman x = 12.5 Km./hr.

2. 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?

(a) 50 Km./hr. (b) 40 Km./hr.
(c) 30 Km./hr. (d) 80 Km./hr.

RRB RPF Constable – 19/01/2019 (Shift-III)

Ans : (c) Let distance = x km

According to question,

$\text{speed} = \frac{\text{distance}}{\text{time}}$

$50 = \frac{x}{8}$

$\boxed{x = 400\text{km}}$

After covering 400 km distance in 5 hours

$\text{speed} = \frac{400}{5} = 80\text{km/h}$

then,

speed increase = 80–50= 30Km./hr.

3. The speed of 14 meters per second is equal to:

(a) 46.6 Km./hr. (b) 50.4 Km./hr.
(c) 70 Km./hr. (d) 28 Km./hr.

RRB RPF SI – 05/01/2019 (Shift-I)

Ans : (b) The speed of 14 meter per second is the same as 50.4 Km./hr.

1 m/sec = 18/5 Km./hr.

14 m/sec = $\frac{18}{5} \times 14 =$ 50.4 Km./hr.

4. Prithi is going to Delhi from Rajdhani express which is running 6 minutes late. Driver in creases. It's speed by 4 km/hr. By doing this, the train arrives on time at the next station which is at the distance of 36 km. Find the actual speed of the train.

(a) 20 Km./hr. (b) 26 Km./hr.
(c) 36 Km./hr. (d) 30 Km./hr.

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

Ans. (c) : Let the speed of train = x Km./hr.

Distance between both stations = 36 Km.

According to question,

$\frac{36}{x+4} = \frac{36}{x} - \frac{6}{60}$

(time = distance/speed)

$\Rightarrow 36\left(\frac{1}{x} - \frac{1}{x+4}\right) = \frac{1}{10}$

$\Rightarrow 36\left(\frac{x+4-x}{x(4+x)}\right) = \frac{1}{10}$

$\Rightarrow 36 \times 4 \times 10 = x^2 + 4x$

$\Rightarrow x^2 + 4x - 1440 = 0$

$\Rightarrow x^2 + 40x - 36x - 1440 = 0$

$\Rightarrow x(x+40) - 36(x+40) = 0$

$\Rightarrow (x+40)(x-36) = 0$

$\therefore x = 36\text{Km/h}$

5. Kishan cycled 96 km at a certain speed. If he cycled 4 km/h slower, then he would have taken an addition time of two hours to reach the destination. What is the speed, at which kishan actually cycled in Kilometers?

(a) 12 (b) 18
(c) 16 (d) 15

RRB Group-D–11/10/2018 (Shift-II)

Ans : (c) Let actual speed = x Km./hr.
Distance = 96 km
New speed = (x–4) Km./hr.
According to question,

$$\frac{96}{x-4}-\frac{96}{x}=2$$

$$\frac{48}{x-4}-\frac{48}{x}=1$$

$$48\left(\frac{1}{x-4}-\frac{1}{x}\right)=1$$

$$48\left(\frac{x-x+4}{x(x-4)}\right)=1$$

$48 \times 4 = x(x-4)$
$x^2 - 4x - 192 = 0$
$x^2 - 16x + 12x - 192 = 0$
$x(x-16) + 12(x-16) = 0$
$(x+12)(x-16) = 0$
Hence $x - 16 = 0$
$x = 16 \quad x \neq -12$
Actual speed = 16 Km./hr.

6. A person has to cover a distance of 40 km. He covers a distance of 16 km and the remaining distance is covered by a tanga. If he covers a distance of 16 km. from a tanga and the remaining distance at a speed of 4 km/hr. So takes more than 1 hour. Find the speed of the tanga.

(a) 12 Km./hr. (b) 8 Km./hr.
(c) 16 Km./hr. (d) 10 Km./hr.

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (b) Let the speed of taanga = 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 = 8 Km./hr.

7. In a 200 meters long race the runner A beats runner B by 3 seconds. If the speed difference between A and B is 1.5 m/s. So find the speed of A in meter per second.

(a) 10.778 (b) 10.5
(c) 8.728 (d) 9.728

RRB Group-D – 15/11/2018 (Shift-III)

Ans. : (a) Let the speed of B = x m/s
$\therefore$ Speed of A = (x + 1.5) m/s
According to question,

$$\frac{200}{x}-\frac{200}{(x+1.5)}=3$$

$$\frac{200x+300-200x}{x^2+1.5x}=3$$

$x^2 + 1.5x - 100 = 0$
$x^2 + 10.778x - 9.278x - 100 = 0$
$x(x + 10.778) - 9.278(x + 10.778) = 0$
$(x - 9.278)(x + 10.778) = 0$
x = 9.278 m/s
Hence, Speed of A = (9.278 + 1.5) = 10.778 m/s

8. A car in a fog crosses a person, who was walking in the same direction at a speed of 3 km/h. That person could see this car for 100 m up to 4 minutes. What was the speed of the car?

(a) 9/2 Km./hr. (b) 7/2 Km./hr.
(c) 5 Km./hr. (d) 5/2 Km./hr.

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (a) : Let the speed of train = x Km./hr.
According to question,

$$\left\{\text{Relative speed}=\frac{\text{Distance}}{\text{Time}}\right\}$$

$$\because \quad x-3=\frac{\frac{100}{1000}}{\frac{4}{60}} \qquad \left\{\because 100\,\text{m.}=\frac{100}{1000}\,\text{km and } 4\,\text{minute}=\frac{4}{60}\,\text{hr}\right\}$$

$$x-3=\frac{15}{10}$$

$$x=\frac{3}{2}+3$$

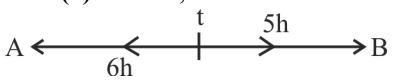
$$x=\frac{9}{2}\,\text{km/hr}$$

9. Two cars A and B starting at the same time meet each other in opposite direction after t hours and after arriving they reach their destination after 5 hours and 6 hours. If the speed of car A is 55 km/hr, what will be the speed of the car B?

(a) $66\sqrt{12}$ km/hr (b) $110\sqrt{3}$ km/hr
(c) $\frac{110}{\sqrt{6}}$ km/hr (d) $\frac{55}{6}\sqrt{30}$ km/hr

RRB Group-D – 05/11/2018 (Shift-I)

Ans. (d) : Given,



Time taken to reach destination after meeting (A) = 5 hr.
Time taken to reach destination after meeting (B) = 6 hr.
Speed of A = 55 Km./hr.
Let 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

10. Parvej belongs to town A and Gautam belongs to Town B. They start their journey to each other cities by the same route at the same time. They meet some where along the way and continue their journey. Parvej takes 12 hours to reach the destination after meeting Gautam, while Gautam takes another 3 hours to reach the city of parvej. If parvej travels at a speed of 60 km/hr, then find the speed of Gautam in km/hr.

(a) 120 (b) 105
(c) 90 (d) 125

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (a) :

$\frac{v_1}{v_2} = \sqrt{\frac{t_2}{t_1}}$

$\frac{60}{v_2} = \sqrt{\frac{3}{12}}$ $\{\because v_1 = 60$ Km./hr., $t_1 = 12, t_2 = 3\}$

$\frac{60}{v_2} = \sqrt{\frac{1}{4}}$

$v_2 = 120$ Km./hr.

11. Two people are cycling in the same direction a train traveling at a fixed speed passes from there. The train crosses the first in 8 seconds and the second in 8.4 seconds, the first person was cycling at a speed of 9 km/hr while the second person was cycling at a speed of 12 km/hr. What is the speed of the train in km/hr.

(a) 66 (b) 75
(c) 81 (d) 72

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (d) Let the speed of train is V Km./hr.
Train is going in the direction of both the people.
From rule of relative speed, distance = speed × time

(for the first person) distance $= (V-9) \times \frac{8}{3600}$

(for the second person) distance $= (V-12) \times \frac{8.4}{3600}$

$\because$ The distance travell by the train crossing both person will be 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

$V = \frac{288}{4} = 72 km/h$

12. Two cars travel from the same houses at a speed of 20 km/h at an interval of 10 minutes. At what speed does a woman come in the opposite direction towards the house. If she gets cars in 8 minutes interval.

(a) 5 (b) 6
(c) 7 (d) 4

RRB NTPC 17.01.2017 Shift-1

Ans : (a) Let the speed of woman is x Km./hr. and the woman's distance from the house is l km and at t time the woman gets the first car.
Then-
$x \times t + 20t = l$ …….. (i)

and $\left(t + \frac{8}{60}\right)x + \left(t + \frac{8-10}{60}\right) \times 20 = l$

$xt + \frac{8x}{60} + 20t - \frac{20 \times 2}{60} = xt + 20t$

$\frac{8x}{60} = \frac{40}{60}$

x = 5 Km./hr.

13. The speed of the car A is 80 km/h. If it covers a certain distance in 6 hours and B travels 60 km less than the car A in that time. What is the speed of car B?

(a) 50 Km./hr. (b) 70 Km./hr.
(c) 60 Km./hr. (d) 55 Km./hr.

RRB NTPC 31.03.2016 Shift : 1

Ans : (b) Distance traveled by car A = 80×6 = 480km.
Distance travelled by car B = 480 – 60 = 420 km.

$\therefore$ Speed of car B $= \frac{420}{6} = 70$ Km./hr.

14. The ratio between the speeds of two buses is 11:9. If the second bus runs 270 kms in 15 hours, then the speed of the first bus is?

(a) 23 Km./hr. (b) 11 Km./hr.
(c) 2 Km./hr. (d) 22 Km./hr.

RRB NTPC 18.04.2016 Shift : 1

Ans : (d) Given-
Speed of two buses is 11 x and 9x respectively.
Speed of second bus $=\frac{270}{15}=18\,km/h.$
$\Rightarrow$ 9x = 18 Km./hr.
$\Rightarrow$ x = 18/9
$\Rightarrow$ x = 2 Km./hr.
Hence speed of first bus = 11x = 11×2 = 22 Km./hr.

15. Two bicycles from a house started at a speed of 24 km/h with a interval of 15 minutes. How much more speed does a woman coming from the opposite direction of the house have to walk so that she meet a cycle at an interval of 10 minutes.
(a) 13 (b) 11
(c) 12 (d) 14

RRB NTPC 11.04.2016 Shift : 1

Ans : (c) Distance travelled by cycle in 15 minutes
$$=24\times\frac{15}{60}=6 \text{ km.}$$
Hence speed of women $=\frac{6}{\frac{10}{60}}=\frac{6\times60}{10}=36$ Km./hr.
$\therefore$ Intended speed = 36–24 = 12 Km./hr.

16. Two jeep runs from a house at a speed of 20 km/h at 10 minutes interval. How much speed will a woman coming from the opposite direction of the house have to walk so that she will meet the second jeep at a interval of 6 minutes.
(a) 13 (b) $13\frac{2}{3}$
(c) $13\frac{1}{3}$ (d) 13.5

RRB NTPC 11.04.2016 Shift : 3

Ans : (c) Let the speed of woman = x Km./hr.
According to question,
$$x\times\frac{6}{60}=20\times\frac{4}{60}$$
$$x=\frac{40}{3}=13\frac{1}{3} \text{ Km./hr.}$$

17. If Vinay would have run at a high speed of 2 km/h he would have taken 10 minutes less to cover 4 km, then find the speed of vinay.
(a) 7 Km./hr. (b) 5 Km./hr.
(c) 4 Km./hr. (d) 6 Km./hr.

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (d) Let the speed from starting = S Km./hr.
Increased speed = (S + 2) Km./hr.
Distance = 4 km
from use of formula -
$$\frac{\text{Product of speed}}{\text{Distance}}=\frac{\text{difference in speed}}{\text{difference in time}}$$
$$\frac{S(S+2)}{4}=\frac{2}{\frac{10}{60}}$$
$$\frac{S^2+2S}{4}=12$$
$$S^2+2S-48=0$$
$$S^2+8S-6S-48=0$$
$$S(S+8)-6(S+8)=0$$
$$(S+8)(S-6)=0$$
$$S+8=0 \Rightarrow S=-8$$
$$S-6=0 \Rightarrow S=6 km/hr$$
Since the speed is always positive therefore intended answer = 6 Km./hr.

18. Two mini buses run from a house at an interval of 10 minutes at a speed of 22 km/h. How much more speed (km/h) a person coming from the opposite direction of the house will have to walk so that they can settled at an interval of 6 minutes.
(a) 14 (b) $14\frac{1}{3}$ (c) $14\frac{2}{3}$ (d) 14.5

RRB NTPC 07.04.2016 Shift : 1

Ans : (c) Let the speed of person = x Km./hr.
According to question,
$$22+x=\frac{22\times10}{6} = 22+x=\frac{220}{6}$$
$$x=\frac{110}{3}-22$$
$$x=\frac{110-66}{3}=\frac{44}{3}$$
$$x=14\frac{2}{3}km/h$$

19. Two bicycles start from a house together at an interval of 10 minutes and run at a speed of 6 km/hr. What should be the speed of a woman coming from the opposite direction towards home so that she can cross both the bicycles at an interval of 8 minutes.
(a) 1.7 (b) 1.6
(c) 1.5 (d) 1.4

RRB NTPC 19.01.2017 Shift : 1

Ans : (c)
Distance covered by bicycle in 10 minutes
$$=6\times\frac{10}{60}=1km.$$
Let the speed of woman = x Km./hr.
Then Relative speed = (6+x) Km./hr.
$$6+x=\frac{1}{\frac{8}{60}}=\frac{60}{8}\Rightarrow x=\frac{60}{8}-6$$
$$x=\frac{60-48}{8}=\frac{12}{8}$$
$$x=\frac{3}{2}=1.5km/h$$

20. A car covers a distance of 240 km in 6 hours. How much should the speed of the car be increased to cover 1½ of a distance?

(a) 15 Km./hr. (b) 20 Km./hr.
(c) 25 Km./hr. (d) 30 Km./hr.

RRB NTPC 26.04.2016 Shift : 1

Ans : (b) Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{240}{6} = 40$ Km./hr.

New Distance = $240 \times 1\frac{1}{2} = 240 \times \frac{3}{2} = 360$ km.

Again Speed $= \frac{\text{distance}}{\text{time}} = \frac{360}{6} = 60$ Km./hr.

Speed Increase = 60 – 40 = 20 Km./hr.

21. Two vehicles from a house moved at a speed of 25 km/h. in a interval of 20 minutes. How much more speed a woman coming from the opposite direction of the house will have to walk so that she gets a vehicle at an interval of 18 minutes.

(a) 2 (b) $2\frac{5}{9}$
(c) $2\frac{7}{9}$ (d) $2\frac{8}{9}$

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) Distance covered by vehicle in 20 minutes

Distance = Speed × Time

$= 25 \times \frac{20}{60}$ km.

$= 25 \times \frac{1}{3} = \frac{25}{3}$ km.

Let the speed of women = x Km./hr.

∴ From Question,

$$\frac{\frac{25}{3}}{25+x} = \frac{18}{60}$$

$$\Rightarrow \frac{25}{3(25+x)} = \frac{18}{60}$$

$$\Rightarrow \frac{25}{75+3x} = \frac{18}{60}$$

$$\Rightarrow \frac{25}{75+3x} = \frac{3}{10}$$

$$\Rightarrow 250 - 225 = 9x$$

$$\Rightarrow 25 = 9x$$

$$\Rightarrow x = \frac{25}{9}$$

Hence speed of women = $2\frac{7}{9}$ Km./hr.

22. Two van from one house ran at a speed of 20 km/h at an interval of 16 minutes. What more speed a woman coming from the opposite direction of the house will have to walk go get the van at an interval of 12 minutes.

(a) 6 (b) $6\frac{1}{3}$
(c) $6\frac{2}{3}$ (d) 6.5

RRB NTPC 26.04.2016 Shift : 3

Ans : (c) Let the women walk x Km./hr. more,

from formula- Distance = speed × time

$$\frac{16}{60} \times 20 = (x+20) \times \frac{12}{60}$$

$$320 = 12x + 240$$

$$12x = 80$$

$$x = \frac{80}{12} = \frac{20}{3} = 6\frac{2}{3} \text{km/hr.}$$

23. A Thief drives his motor cycle 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 van of the policeman is 40 km/hr then find the speed of the thief's motorcycle in km/hr.

(a) 30 (b) 36
(c) 45 (d) 20

RRB NTPC 27.04.2016 Shift : 1

Ans : (d) The policeman catches the thief, so the distance covered by both will be the same.

x × 8 = 40 × 4

x = 20

∴ Speed of motorcycle of thief = 20 Km./hr.

24. A thief drives his motorcycle at a speed of x km/h. A police started chasing him with jeep after 6 hours and caught him after 4 hours. If the average speed of a police is 90 km/h, then find the speed of the thief's motorcycle in km/hr.

(a) 30 (b) 36
(c) 45 (d) 60

RRB NTPC 30.04.2016 Shift : 2

Ans : (b) Let the speed of motorcycle of thief is x Km./hr.

and distance = d km.

Speed of motorcycle of thief $x = \frac{d}{6+4} = \frac{d}{10}$

Speed of motorcycle of Policeman $90 = \frac{d}{4}$

i.e. Distance (d) = 90 × 4 = 360 km.

According to question,

Speed of motorcycle of thief $x = \frac{360}{10}$

x = 36 Km./hr.

25. The radius of a wheel is 0.35 meter. It rotates 450 round in 1 minute. Its speed in (km/hr) is :

(a) 59.40 (b) 59.04
(c) 48.05 (d) 56.40

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) Circumference of wheel $= 2\pi r = 2 \times \frac{22}{7} \times .35$

$= 2.2$ meter

Speed $= \frac{450 \times 2.2}{60} = \frac{450 \times 22}{60 \times 10} \times \frac{18}{5} \text{km/hr} = \frac{594}{10} = 59.4 \text{km/hr}$

26. Krishna cycled a distance of 90 km at a certain speed. If he cycled 3 km slower every hour, he would have taken 5 more hours to reach his destination. What is the speed in Km./hr. at which Kirshna actually cycled?

(a) 7.5 (b) 9
(c) 18 (d) 15

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (b) Let the actual speed = x Km./hr.
According to question,

$$\frac{90}{(x-3)} - \frac{90}{x} = 5$$

$$\Rightarrow \frac{90[x - x + 3]}{x^2 - 3x} = 5$$

$$\Rightarrow \frac{18 \times 3}{x^2 - 3x} = 1$$

$\Rightarrow 54 = x^2 - 3x$

$\Rightarrow x^2 - 3x - 54 = 0$

$\Rightarrow x^2 - 9x + 6x - 54 = 0$

$\Rightarrow x(x - 9) + 6(x - 9) = 0$

$\Rightarrow (x-9)(x+6) = 0$, $x = -6$ (invalid) $x = 9$ valid

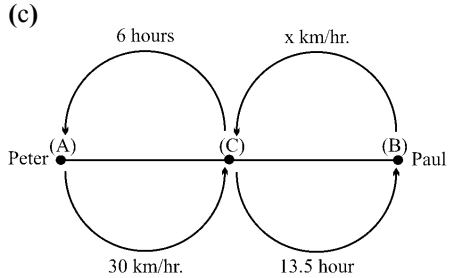
Hence actual speed = 9 Km./hr.

27. Peter belongs to Town A and Paul belongs to Town B. They start their journeys towards each other's towns following the same route at the same time. They meet somewhere on the way and continue with their journeys. After meeting Paul, Peter takes another 13.5 hours to reach his destination while Paul takes another 6 hours to reach Peter's town. If Peter travelled at the speed of 30 Km./hr., what was Paul's speed in Km./hr.?

(a) 42.5 (b) 40
(c) 45 (d) 47.5

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (c)



Let if,

Speed of Paul is x Km./hr. then,

It is clear from the above diagram that

$$\frac{405}{x} = \frac{6x}{30}$$

$\Rightarrow 6x^2 = 405 \times 30$

$\Rightarrow x^2 = 2025$ Km./hr. or x = 45 Km./hr.

28. Geeta travels 120 km by steamer, 450 km by train and 60 km by scooter from Hyderabad to IIT Roorkee. The total journey takes 13 hours and 30 minutes and the speed of the train is 3 times the transit of the scooter and 1½ times that of the same steamer. What is the speed of the train?

(a) 60 Km./hr. (b) 70 Km./hr.
(c) 65 Km./hr. (d) 54 Km./hr.

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (a) According to question,
Let the speed of train = x Km./hr.

speed of train = 3 × speed of scooter

x = 3 × speed of scooter

speed of scooter = x/3 Km./hr.

speed of train = 3/2 × speed of steamer

speed of steamer = 2x/3

$\because$ Speed = $\frac{\text{Distance}}{\text{Time}}$

from question–

$$\frac{120}{\frac{2x}{3}} + \frac{450}{x} + \frac{60}{\frac{x}{3}} = 13 \text{ hour } 30 \text{ minutes}$$

$$\frac{180}{x} + \frac{450}{x} + \frac{180}{x} = \frac{27}{2}$$

$$\frac{810}{x} = \frac{27}{2}$$

x = 30 × 2

x = 60 Km./hr.

Hence speed of train = 60 Km./hr.

Type - 2

29. Mark had to cover a distance of 260 km in 4.5 hours using a train traveling at a speed of 70 km/hr or a bus traveling at a speed of 48 km/hr or using both these modes of transport.

(a) 2 hours (b) 1 hour
(c) 1 hour 30 minute (d) 2 hours 30 minute

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

Ans : (d) Let the time taken by bus = t

The time taken by train = (4.5 – t)

According to question,

$260 = 48 \times t + 70 \times (4.5 - t)$

$260 = 48t + (70 \times 4.5 - 70t)$

$260 = 48t + 315 - 70t$

$22t = 55$

or $\boxed{t = 2.5}$

t = 2 hours 30 minutes

30. Raima covered some distance with a speed of 7 km/h on foot and some distance at a speed of 12 km on a bicycle. He had covered a distance of 64 km in 7 hours. How many hours did he travel on a bicycle?

(a) 2 (b) 3
(c) 5 (d) 4

RRB RPF SI – 11/01/2019 (Shift-I)

Ans. (b) Let Raima covered x_1 distance in t hour by bicycle.
Hence the distance covered by bicycle $(x_1) = 12 \times t$
and distance covered on foot $(x_2) = 7(7 - t)$
so, $x_1 + x_2 = 64$ km.
$12t + 49 - 7t = 64$
$5t = 64 - 49$
$5t = 15$
$t = 3$ hours

31. How long does it take to cross 132meter long bridge by a 110 meter long train running at a speed of 72 km?
(a) 14.3 second (b) 9.8 second
(c) 12.1 second (d) 12.42 second
RRB JE - 23/05/2019 (Shift-II)

Ans : (c)
Length of train (l) = 110 meter
Speed of train = 72 Km./hr. $= 72 \times \frac{5}{18} = 20$ m./sec.
Time = T = ?
$\therefore$ Speed of train $= \frac{\text{Distance}}{\text{Time}} = \frac{\ell + \text{length of bridge}}{T}$
$20 = \frac{110+132}{T}$
$T = \frac{242}{20} = \frac{121}{10} = 12.1$ second

32. In a 200 meters race P beats Q by 35 meters or 7 seconds. Find the time taken by P during the race.
(a) 36 second (b) 33 second
(c) 40 second (d) 47 second
RRB JE - 24/05/2019 (Shift-I)

Ans : (b) Time taken to cover 35 m. distance = 7 sec.
$\therefore$ Time taken to cover 200m distance $= \frac{7}{35} \times 200$
= 40 sec.
Hence time taken by Q cover 200 m distance = 40 sec.
Hence time taken by P to covers 200 m distance = 40–7
= 33 sec.

33. At 3/4 of a usual speed, a person reaches his work-place 15 minutes late. Normally how many minutes does it take to reach the work place?
(a) 42 minute (b) 30 minute
(c) 45 minute (d) 60 minute
RRB JE - 24/05/2019 (Shift-III)

Ans : (c) Let the time taken to cover d distance from v speed is t.
$v \xrightarrow{d} t$
$\frac{3}{4} v \xrightarrow{d} (t+15)$
$v \times t = \frac{3}{4} v(t+15)$
$4t = 3t + 45$
$4t - 3t = 45$
$t = 45$ minutes

34. In a 300 meter race, P beats Q by 22.5 meters or 6 seconds. Find the time taken by Q to complete the race.
(a) 86 second (b) 78 second
(c) 76 second (d) 80 second
RRB JE - 27/05/2019 (Shift-II)

Ans : (d) It is clear that Q runs 22.5 meters in 6 sec.
Time taken by Q to cover 300 m distance
$= \left(\frac{6}{22.5} \times 300\right) = \frac{6 \times 3000}{225}$
= 79.99 second = 80 second

35. P and Q run around a circular track of 240 meters at a speed of 15 m/min. and 20 m/min respectively. If they start running together then after how much time they will meet again at the starting point.
(a) 25 minute (b) 36 minute
(c) 30 minute (d) 48 minute
RRB JE - 29/05/2019 (Shift-I)

Ans : (d) The time taken by P to run around a 240 m long circular track. $= \frac{240}{15} =$ 16 minute
The time taken by Q to run around a 240 m long circular track $= \frac{240}{20} =$ 12 minute
Time of meeting at the starting point again = LCM of 16 and 12 = 48 minute
Hence they will be meet at the starting point again after 48 minutes.

36. A thief rides a bike at a speed of 100 km/h. by running away from the police. The police immediately started chasing at 75 km/h after 1 hour the engine of the police car broke down which took 30 minutes to repair, after this the speed of the car is incresed to 120 km/h, how long the thief was caught?
(a) 2 hours 45 minute (b) 3 hours 40 minute
(c) 5 hours 15 minute (d) 2 hours 30 minute
RRB JE - 02/06/2019 (Shift-I)

Ans : (c) Given-
Speed of thief = 100 Km./hr.
Distance covered by thief in 1 hour = 100 km.
Speed of police = 75 km./hr.
Distance covered by police in 1 hour = 75 km.
An hour later the distance between both = 25 km.
The time it took to recover after the car broke down
= 30 minute
Distance covered by thief in 30 min. = 50 km.
Now distance between both= 25+50 = 75 km.
The time taken by police to catch the thief at the speed of 120 Km./hr. $= \frac{75}{20(\text{Relative speed})}$
$= 3\frac{15}{20} =$ 3 hours. 45 minutes
Hence the total time to catch the thief =
3:45 + 1:30 = 5:15 hours

37. Two friends start walking towards the city P to Q and city Q to P respectively at the same time. After meeting at some point between P and Q, they reach their destination in 54 and 24 minutes respectively. In what time did that friend who went from Q to P finish their journey.

(a) 48 minute (b) 36 minute
(c) 72 minute (d) 60 minute

RRB JE - 26/06/2019 (Shift-III)

Ans : (d) $P\ \frac{24\,min}{24y}\ \bullet_{O}\ \frac{54\,min}{54x}\ Q$

Where x and y is the speed of two passenger.

$$\sqrt{\frac{t_2}{t_1}} = \frac{x}{y} = \sqrt{\frac{24}{54}}$$

$$\frac{x}{y} = \frac{2}{3}$$

$$x = \frac{2y}{3}$$

$$\text{time} = \frac{24y + 54x}{y} = \frac{24y + 54 \times \frac{2}{3}y}{y}$$

$$= \frac{60y}{y} = 60 \text{ min.}$$

38. Rahi had to travel 360 km in 8 hours. During the journey, he traveled at an average speed of 60 km/h but took two breaks in between, the long break doubled from the short time break, for how many minutes the short break was taken.

(a) 30 (b) 45
(c) 40 (d) 35

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (c) Let the short break was taken for x minutes during the considered journey.

Time taken while taking both breaks = x+2x
= 3x minute

Actual speed of Rahi = $\frac{360}{8} = 45 km/hr$

And Average speed = 60 Km./hr.

According to question,

$$\frac{360}{45} - \frac{360}{60} = \frac{3x}{60} \text{ hour}$$

$$\frac{60-45}{45 \times 60} = \frac{3x}{360 \times 60}$$

$$15 = \frac{3x}{8}$$

3x = 120 minute

x = 40 minute

Hence time taken while taking short break x = 40 minute

39. Nidhi takes 3 hours 45 minutes to walk from one place and return to the same place by bicycle, it takes 4 hours 20 minutes to walk. So how long will it take to get on the cycle.

(a) 3 hours 10 minute
(b) 3 hours 35 minute
(c) 3 hours 45 minute
(d) 3 hours 15 minute

RRB RPF SI – 12/01/2019 (Shift-III)

Ans : (a) Time taken by Nidhi for reaching one side on foot + another side by cycle = 3 hour 45 minutes

$$\Rightarrow 3 + \frac{45}{60} = 3 + \frac{3}{4} = \frac{15}{4}$$

Time taken by her to reach both sides

$$\Rightarrow 4 \text{ hours } 20 \text{ minutes} = 4 + \frac{20}{60} = \frac{13}{3}$$

Time taken to walk one side $= \frac{13}{3} \times \frac{1}{2} = \frac{13}{6}$

time taken to reach another side by cycle $= \frac{15}{4} - \frac{13}{6}$

$$= \frac{45-26}{12} = \frac{19}{12} \text{ hour}$$

time taken to travel both side by cycle $= \frac{19}{12} \times 2 = \frac{19}{6}$

$$3 \text{ hours } \frac{1}{6} \times 60 = 3 \text{ hours } 10 \text{ minutes}$$

40. Hema takes 9 hours 55 minutes to walk a certain distance and return by bicycle. She takes 12 hours and 30 minutes to walk and walk on the same distance, how long does it take to go from both sides by bicycel and return from bicycle.

(a) 7 hour 20 min (b) 7 hour 15 min
(c) 7 hour 35 min (d) 7 hour 45 min

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans :(a) The time taken to travel and reach certain distance on foot and cycle = 9 hour 55 min.

and total time taken in traveling to go and come
= 12 hours 30 minute

$\therefore$ time taken in traveling on foot = 6 hour 15 minute

Hence time taken to go and come by cycle

= (9.55–6.15)× 2 = 7 hours 20 minute

41. How long will it take for a student to take a round of 25 hectars field at the speed of 10 km/hr.

(a) 8 min (b) 16 min
(c) 10 min (d) 12 min

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (d) :

$\because$ 1 Hectare = 10,000 m^2

$\therefore$ 25 Hectare = 250,000 m^2

= (500 × 500) m^2

Hence the shape of field is square.

$\therefore$ a = 500 meter

Perimeter of field = 4a = 4 × 500 = 2000 meter

time take to complete one round up = $\frac{\text{Total distance}}{\text{speed}}$

$= \frac{2000\text{ m.}}{10\text{ km./hr.}} = \frac{2000\text{ m.}}{10 \times \frac{1000}{60}\text{ m./minute}}$ =12 minutes

42. I walk a certain distance and return from the vehicle. It takes a total of 13/2 hours., while both it takes 31/4 hours to travel, then how much time will it take to travel both side there.

(a) 6 hours 15 minute
(b) 5 hours 55 minute
(c) 4 hours 15 minute
(d) 5 hours 15 minute

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (d) The time taken by foot (P) and vehicle (w) in go and come = 13/2 hour

Time taken to travel on foot (P) on both sides $= \frac{31}{4}$ hour

Hence

$P + w = \frac{13}{2}, \qquad P + P = \frac{31}{4}$

$2P = \frac{31}{4}, \quad P = \frac{31}{8}$ hour

Putting the value of P-

$\frac{31}{8} + w = \frac{13}{2}$

$w = \frac{13}{2} - \frac{31}{8}$

$w = \frac{21}{8}$ hours

Hence time taken by going vehicle $= \frac{21}{8}$ hours

Time taken in returning by vehicle $= \frac{21}{8}$ hours

Time taken in going and coming both sides by vehicle-

$\frac{21}{8} + \frac{21}{8} = \frac{42}{8}$

$\Rightarrow 5\frac{2}{8}$ hours

or 5 hours 15 minutes

43. 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 the time travels at a speed of 55 km/h. How long did Kiran travel at high speed.

(a) 1 hour 10 minute
(b) 1 hour 25 minute
(c) 1 hour 15 minute
(d) 1 hour 35 minute

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c) Let t hour time is taken in travelling at the speed of 75 Km./hr.

75 × t + 55 × (5 – t) = 300

75t + 275 – 55t = 300

20t = 25

$t = \frac{25}{20} = \frac{5}{4}$

t = 1 hour 15 minute

Hence kiran traveled 1 hours 5 minute at maximum speed.

44. Two cars start at 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 positions of the cars is 86.4 km. When the two cars meet each other, the approximate time will be?

(a) 14.4 hours (b) 2.88 hours
(c) 1.6 hour (d) 3.6 hours

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (c) Given−

Total Distance = 86.4 km

Relative speed = 24 Km./hr. + 30 Km./hr.

= 54 Km./hr.

Time $= \frac{\text{Distance}}{\text{Speed}} = \frac{86.4\text{km}}{54\text{km/h}} = 1.6\text{h}$

Time = approximate 1.6 hours

45. Sabrina traveled 8 km/h on foot and 13 km/h on bicycle. She covered 84 km in 8 hours, for how many hours did she ride a cycle.

(a) 4 (b) 3
(c) 5 (d) 2

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a) Let Sabrina cycled till t time

According to question,

8 (8 – t) + 13t = 84

64 – 8t + 13t = 84

5t = 20

t = 4

Hence Sabrina cycled till 4 hour.

46. Rahman takes 10 hours to walk to a certain place and return by ride. However, if he had traveled on both sides by ride, he could have saved 5 hours. How long will it take to travel on both sides by walking?

(a) 15 hours (b) 10 hours
(c) 5 hours (d) 20 hours

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (a) Let time taken in walking on foot = tx

Ride has taken time in the travel = ty

According to question,-

tx + ty = 10 ____(i)

And, ty + ty = 5

2ty = 5

$ty = \frac{5}{2}$

from equation (i)

$$tx + \frac{5}{2} = 10$$

$$tx = \frac{15}{2}$$

Time to walk on foot both sides.

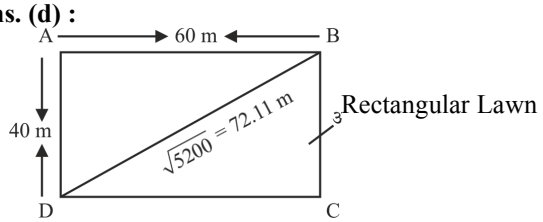
$$tx + tx = 2tx = 2 \times \frac{15}{2} = 15 \text{ hours}$$

47. A rectangular lawn is 60 meters long and 40 meters wide, approximately how long will it take for a person to cross its diagonal at a speed of 3 km/h.

(a) 92.8 second (b) 81.5 second
(c) 84.5 second (d) 86.5 second

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (d) :



Length of rectangular lawn (AB) = 60 m
breadth (AD) = 40 m
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 (Almost72)

Length of diagonal = 72 m
time = ?

$$\text{Speed} = 3\,\text{km/h} = 3 \times \frac{5}{18} = \frac{5}{6}\,\text{m/sec}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{72}{\frac{5}{6}} = \frac{72 \times 6}{5} = 86.4 \text{ (approximately 86.5) sec}$$

48. Ankit leads the church by bicycle and return to the starting point by car. He takes a total of 5 hours for this journey. Using the car on both sides will save him 3 hours in this journey, if he rides on both sides, how much time will it take him?

(a) 5 hours (b) 7 hours
(c) 8 hours (d) 9 hours

RRB Group-D – 26/11/2018 (Shift-III)

Ans. (c) Let the speed of cycle is x and speed of car = y

$$\frac{d}{x} + \frac{d}{y} = 5 \text{.....(i)}$$

$$\frac{2d}{y} = 2 \quad \text{(when traveling both sides by car)}$$

$$\frac{d}{y} = 1 \text{.....(ii)}$$

from equation (i)

$$\frac{d}{x} + 1 = 5$$

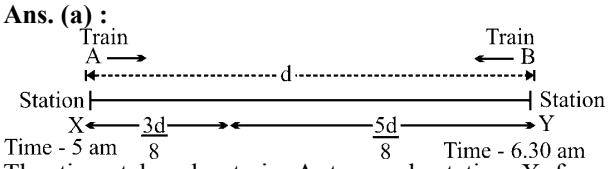
$$\frac{d}{x} = 4 \text{ hour}$$

If he rides a bicycle on both sides, it will take 8 hours.

49. Train A, 5 am. at station X departs and 9 am. arrives at station Y. Another train B 6.30 am. departs from station Y and arrives station X at 10 am. at what time trains meet each other.

(a) 7:40 a.m. (b) 7 a.m.
(c) 8 a.m. (d) 7:30 a.m.

Ans. (a) :



The time taken by train A to reach station X from station Y

= 9 – 5 = 4 hours

The time taken by train B to reach station Y from station X

$$= 10 - 6.30 = \frac{7}{2} \text{ hours}$$

Let the distance between the stations is d km.

Hence speed of train A $= \frac{d}{4}$ Km./hr.

and speed of train B $= \frac{d}{7/2} = \frac{2d}{7}$ Km./hr.

Distance traveled by train A in 3/2 $= \frac{d}{4} \times \frac{3}{2} = \frac{3d}{8}$ km.

Now again the distance between the station $= d - \frac{3d}{8} = \frac{5d}{8}$ km.

Relative speed of both trains $= \frac{d}{4} + \frac{2d}{7} = \frac{7d + 8d}{28}$

$$= \frac{15d}{28} \text{ Km./hr.}$$

$$\text{Relative time} = \frac{\text{Distance}}{\text{Relative Speed}} = \frac{5d \times 28}{8 \times 15d}$$

$$= \frac{28}{24} \text{ hours or 1hours 10 minute}$$

Hence Meeting time for both trains

= 6:30 + 1:10 = 7:40 am

50. Pallav cycling at a speed of 12 km/h and walking at a speed of 3.5 km/h, he takes 8 hours to cover a distance of 45 kilometers, how many hours did he cycle.

(a) 5 (b) 2
(c) 4 (d) 3

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (b) Let Pallav ride the cycle x hour
Distance = Speed × Time
Distance travelled by cycle = 12 × x
Time taken to travel on foot = 8-x
Hence distance travel on foot = $3.5\times(8-x)$
According to question,
$12x+3.5(8-x)=45$
$12x+28.0-3.5x=45$
$8.5x=45-28$
$8.5x=17$
or $85x=170$
$x=\frac{170}{85}=2$ hours

51. Mrs. Vijaya takes 9 hours and 50 minutes to walk from her starting place to a certain destination and return to her starting point by running again. It takes 12 hours and 20 minutes to walk from both the origin and the destination to the destination and again from the destination to the original place, both by running and in how much times she will complete.
(a) 7 hours 45 minute (b) 7 hours 20 minute
(c) 7 hour 15 minute (d) 7 hour 20 minute
RRB NTPC 19.01.2017 Shift : 3

Ans : (d) on foot + by running = 9 hours 50 minutes
on 2 foot = 12 hours 20 miutes
on foot = 6 hours 10 minutes
By running = 9 hour 50 minute – 6 hours 10 minute
By running = 3 hours 40 minute
So, time taken to cover the distance on both sides by running.
= 2 × (3 hours 40 minute)
= 6 hours 80 minute
Total time = 7 hours 20 minutes

52. Keerthana takes 9 hrs 20 minutes in walking a distance and riding back to same place where she started. She could walk both ways in 11 hrs. 15 minutes. The time taken by her to ride back both ways is.
(a) 7 hours 25 minute (b) 7 hours 35 minute
(c) 7 hours 45 minute (d) 7 hours 15 minute
RRB NTPC 11.04.2016 Shift : 2

Ans : (a) Let the time taken to going on foot = x
The time taken to come by riding = y
then x + y = 9.33 (1) (9 hr. 20 min. = 9.33 hr.)
and x + x = 11.25 (2) (time taken to go and come on foot)
2x = 11.25
x = 5.625
from equation (i),
5.625 + y = 9.33
y = 9.33 – 5.625
y = 3.705
Then time take to go and come 2y = 2 × 3.705 = 7.41
Intended time = 7 hours 25 minute

53. A trip from mumbai to pune takes 4 hours 30 minutes to run at a speed of 60 km/h. How much time will it take us to travel at the speed of 15 m/s.
(a) $3\frac{3}{4}$ hours (b) 5 hours
(c) $4\frac{2}{3}$ hours (d) 4 hours
RRB NTPC 18.01.2017 Shift : 2

Ans : (b) Let the distance = x km
Distance covered in 270 minute at a speed of 60 Km./hr.
$\Rightarrow 60\text{ (speed)} = \frac{x\text{ (distance)}}{\frac{270}{60}\text{(time)}} \Rightarrow 60=\frac{60x}{270}$
$\boxed{x=270\text{km}}$
$15\text{m/s}=15\times\frac{18}{5}=54\text{km/h}$
time taken to cover distance of 270 km at a speed of 54 Km./hr.
$\frac{270}{54}=5$ hours

54. Bhanu takes a total of 6 hours 50 minute to walk from one place to another and run back to the starting place. He walks on foot on both sides in 8 hours and 30 minutes. Time taken to run on both sides is?
(a) 5 hours 35 min (b) 5 hours 15 min
(c) 5 hours 10 min (d) 5 hours 45 min
RRB NTPC 17.01.2017 Shift-3

Ans : (c) Let the time taken to cover a distance by running = x
and time taken to cover a distance on foot = y
from question–
$x+y=6\frac{5}{6}h=\frac{41}{6}$.....(i)
$2y=8\frac{1}{2}\Rightarrow y=\frac{17}{4}$
From equation (i)–
$x+\frac{17}{4}=\frac{41}{6}\Rightarrow x=\frac{41}{6}-\frac{17}{4}$
$x=\frac{82-51}{12}=\frac{31}{12}$
∴ time taken to cover a distance both sides by running
$=2\times\frac{31}{12}=\frac{31}{6}=5$ hours 10 minute

55. The distance between two points A and B was covered at a speed of 50 km/h in 5½ hours. How much time can be saved if the speed is increased by 5 km/h.
(a) 5 minute (b) 15 minute
(c) 50 minute (d) 30 minute
RRB NTPC 03.04.2016 Shift : 1

Ans : (d) $S_1 = 50 km/h, \quad t_1 = 5\frac{1}{2} = \frac{11}{2}$ hours

$S_2 = (50+5) = 55 km/h, \; t_2 = ?$

from formula- $S_1t_1 = S_2t_2$ (distance = speed×time)

$$50 \times \frac{11}{2} = 55 \times t_2$$

$$t_2 = \frac{275}{55} = 5 \text{ hours}$$

saved time $= \left(\frac{11}{2} - 5\right) = \frac{1}{2}$ hours

= 30 minutes

56. Shavya takes 8 hours 20 minutes to walk from one place to the same place. She can both ways in 10 hours 15 minutes. It takes time to come back both ways.

(a) 6 hours 25 minute
(b) 6 hours 35 minute
(c) 6 hours 45 minute
(d) 6 hours 15 minute

RRB NTPC 07.04.2016 Shift : 1

Ans : (a) Time taken for shavya to walk from one place to the same place = 8 hour 20 minutes

$= 8 + \frac{20}{60} = 8 + \frac{1}{3} = \frac{25}{3}$ hours

time taken both ways = 10 hour 15 minutes $= 10 + \frac{15}{60}$

$= \left(10 + \frac{1}{4}\right)$ hour $= \frac{41}{4}$ hour

∴ The time taken to return both ways

$= \left(2 \times \frac{25}{3} - \frac{41}{4}\right)$ hour $= \frac{50}{3} - \frac{41}{4}$

$= \frac{200-123}{12} = \frac{77}{12} = 6\frac{5}{12}$ hour

6 hour $\frac{5}{12} \times 60$ minutes = 6 hour 25 minutes

57. Namrata takes 4 hours 15 minutes to walk from one place to the same place. She can cover both the routes in 5 hours 30 minutes. It takes time to come back from both the paths.

(a) 3 hours
(b) 3 hours 35 minute
(c) 3 hours 45 minute
(d) 3 hours 15 minute

RRB NTPC 07.04.2016 Shift : 3

Ans :(a) Let the time taken to going on foot = x hrs.

time taken to return by vehicle = y hrs.

Hence x + y = 4 hr 15 minutes

x + y = 4.25 hrs .....(1)

Time taken to go and come of foot

x + x = 5.50

2x = 5.50

x = 2.75

putting the value of x in equation (1)

2.75 + y = 4.25

y = 4.25 – 2.75

y = 1.50

Hence time taken to return by vehicle = 1.50 hrs

Then time taken to go and come = 1.50 × 2 = 3 hrs.

58. A bus runs at a speed of 80 km/hr. and reaches its destination with a delay of 10 minutes. If it had moved at a speed of 90 km/hr., it would have reached only 8 minutes late so time is right for completing for journey by bus.

(a) 8 minute (b) 10 minute
(c) 12 minute (d) 15 minute

RRB NTPC 22.04.2016 Shift : 1

Ans : (a) Given–

V_1 = 80 Km./hr. V_2 = 90 Km./hr.

t_1 = 10 minute t_2 = 8 minute

Distance covered by bus from origin to distination

$$= \frac{V_1.V_2}{V_1 \sim V_2} \frac{(t_1 \sim t_2)}{60}$$

$$= \frac{80 \times 90}{80 \sim 90} \times \left(\frac{10-8}{60}\right)$$

$$= \frac{80 \times 90}{10} \times \frac{2}{60} = 24 \text{ Km.}$$

Time taken by bus to complete the journey

$= \frac{24}{80} \times 60 - 10$ = 18 -10 = 8 minute

59. 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 long will they take to go 16 km from each other.

(a) 7 Hours (b) 8 Hours
(c) 10 Hours (d) 12 Hours

RRB NTPC 22.04.2016 Shift : 1

Ans : (b) Speed of Neelam = 7 Km./hr.

Speed of Manisha = 9 Km./hr.

Relative speed of neelam and Manisha = (9–7) Km./hr.

= 2 Km./hr.

Hence, Time taken to go 16 km away from each other

$= \frac{\text{Distance}}{\text{Speed}}$

$= \frac{16}{2}$ = 8 hours

60. Divya takes 4 hours 45 minutes to walk from one place to the same place and she can walk back in 5 hours and 55 minutes. How long will it take for both of them to come back riding.

(a) 3 Hours 35 minute
(b) 3 Hours 55 minute
(c) 3 Hours 45 minute
(d) 3 Hours 15 minute

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) The time taken by Divya to walk from one place and back to the same place by vehicle $= 4 + \frac{45}{60} = \frac{19}{4}$ hours

The time taken to walk from both sides

$$= 5 \text{ hour } 55 \text{ minute} = 5\frac{55}{60} = \frac{71}{12} \text{ hour}$$

The time taken to go on foot from one side

$$= \frac{71}{12} \times \frac{1}{2} = \frac{71}{24}$$

Time taken by both sides from vehicle $= \left(\frac{19}{4} - \frac{71}{24}\right) \times 2$

$$= \left(\frac{114 - 71}{24}\right) \times 2$$

$$= \frac{43}{24} \times 2 = \frac{43}{12} = 3 \text{ hour } 35 \text{ minute}$$

61. A man at 6:30 am starts walking and wants to travel 30 km. His initial speed is 6 km/h and after traveling 3/5 of distance he reduced his speed to 2 km/h. He will finish his journey:

(a) 11.00 am (b) 12.30 pm
(c) 11.30 pm (d) 12.00 pm

RRB NTPC 27.04.2016 Shift : 2

Ans : (b) Total Distance = 30 km.

Distance traveled at a speed of 6 Km./hr.

$$= \frac{3}{5} \text{ of total distance}$$

$$= 30 \times \frac{3}{5}$$

$$= 6 \times 3$$

$$= 18 \text{ km}$$

On 2 Km./hr. reduction in speed (6 – 2) = 4 Km./hr.

Hence the last 12 km distance will run at a speed of 4 Km./hr.

Hence time taken to cover the entire distnace of 30 km

$$= \frac{18}{6} + \frac{12}{4} = 3 + 3 = 6 \text{ hours}$$

Hence time of ending the journey = 6 : 30 + 6 hours
= 12:30 pm

62. The distance between two places can be covered in $3\frac{1}{2}$ hours at a speed of 62 Km./hr. If the speed is increased by 8 Km./hr., how much time would be saved?

(a) 24 minute (b) 20 minute
(c) 30 minute (d) 15 minute

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) Distance = Speed × Time

$$= 62 \times \frac{7}{2}$$

$$= 31 \times 7 = 217 \text{ km.}$$

Time taken to increase speed at 8 Km./hr.

$$\frac{217}{(62+8)} = \frac{217}{70} = \frac{31}{10} = 3\frac{1}{10}$$

Remainig time $= 3\frac{1}{2} - 3\frac{1}{10}$

$$= \frac{7}{2} - \frac{31}{10} = \frac{35 - 31}{10} = \frac{4}{10} = \frac{2}{5} \text{ hours}$$

$$= \left(\frac{2}{5} \times 60\right) \text{ minute}$$

= 24 minute

63. Raj takes $2\frac{1}{3}$ hours to complete a certain distance at a speed of 51 Km./hr. What time would Kiran take to complete the same distance at a speed of 68 Km./hr.?

(a) $1\frac{2}{3}$ hours (b) $1\frac{3}{4}$ hours
(c) 2 hours (d) $1\frac{1}{2}$ hours

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (b) The total distance covered by Rajan $= 51 \times \frac{7}{3} = 119$ km.

The time take to covered the distance of 119 km by Kiran

$$= \frac{119}{68} \text{ hours}$$

$$= \frac{7}{4} = 1\frac{3}{4} \text{ hours}$$

64. A Car can cover 350 km in 4 hours. If its speed is decreased by $12\frac{1}{2}$ Km./hr. how much time does the car take to cover a distance of 450 km.

(a) 7 hours (b) 4 hours
(c) 5 hours (d) 6 hours

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

Ans : (d) Initial speed of Car $= \frac{350}{4} = 87.5$ Km./hr.

Speed of Car $12\frac{1}{2}$ = by reducing 12.5 Km./hr.

=87.5–12.5=75 km.hr.

Hence the time taken by Car to covered distance of 450 km

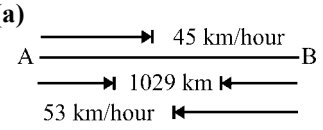
$$= \frac{450}{75} = 6 \text{ hours}$$

65. You are driving at a speed of 45 km/h from point A to B. Your friend is driving 53 km/h from point B to A. If the distance between the two points is 1029 km and you both start at the same time, then how many hours will it take you to cross each other?

(a) 10.5 (b) 9.5
(c) 10 (d) 11

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (a)



Time taken to cross each other

$$= \frac{\text{Distance}}{\text{Relative speed (Sum of speed)}}$$

$$= \frac{1029}{98} = 10.5 \text{ hours}$$

66. Mark had to travel 220 km in 4.5 hours. How long did he travel by bus, with a train running at a speed of 60 km/h or a bus traveling at a speed of 40 km/h or a combination of these two?

(a) 1 hour (b) 2 hour
(c) 1 hour 30 minute (d) 2 hour 30 minute

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (d) : Time taken by bus to travel = t hour
According to question,

$$60(4.5 - t) + 40t = 220$$
$$270 - 60t + 40t = 220$$
$$270 - 20t = 220$$
$$20t = 50$$
$$t = \frac{5}{2} = 2 \text{ hour } 30 \text{ minute}$$

67. Pritish, A train which travels at a speed of 60 km/h or a bus that travels at a speed of 40 km/h or both travels 420 km in 7.5 hr, for how long did he travel by bus.

(a) 1 Hour 30 minute
(b) 2 Hours
(c) 1 Hour
(d) 2 Hours 30 minute

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (a) Let the pritish traveled by bus for t hour
∵ Distance = speed × time
60 × (7.5–t) + 40 × t = 420
450 – 60t + 40 t = 420
30 = 20t

$$t = \frac{30}{20} = \frac{3}{2} \text{ hours}$$

t = 1 hour 30 minute

Type - 3

68. A thief runs by a car from a city located 400 km away at a speed of 60 km/h. Just 30 minutes later police starts chasing the thief at a speed of 80 km/h. How much distance covered by the police to catch the thief?

(a) 70 km. (b) 85 km.
(c) 90 km. (d) 120 km.

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

Ans : (d)

Distance covered by thief in 30 minutes $= 60 \times \frac{1}{2}$

= 30 km

Relative speed $= (80 - 60) = 20 \text{km/h}$

Total time to catch the thief $= \frac{30}{20}\text{h} = \frac{3}{2}\text{h}$

Distance covered by the police $= \left(80 \times \frac{3}{2}\right)\text{km}$

= 120 km

69. Two horses travel the same distance at the speed of 10 km/h and 15 km/h respectively. If the first horse takes 12 minutes longer than the second horse then the distance was travelled.

(a) 8 km (b) 6 km
(c) 4 km (d) 2 km

RRB RPF SI – 16/01/2019 (Shift-III)

Ans. (b) : The speeds of both horse are 10 Km./hr. and 15 Km./hr. respectively.

Let distance = x km
Time = Distance / Speed

Time taken by first horse $= \frac{\text{Distance}}{\text{Speed}} = \frac{x}{10}$

Time taken by second horse $= \frac{x}{15}$

According to question,

$$\frac{x}{10} - \frac{x}{15} = \frac{12}{60}$$
$$\frac{3x - 2x}{30} = \frac{12}{60}$$
$$\frac{x}{30} = \frac{12}{60}$$
$$x = 6 \text{ km}$$

70. Apoorva covers equal distance at different speeds of 10 km/h, 20 km/h and 6 km/h and it takes a total of 19 minutes to complete this journey. The total distance travelled by her.

(a) 3 (b) 1
(c) 2 (d) 4

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (a) Let the total Distance = 3D km
Time = 19 minutes
∴ According to question,

$$\frac{19}{60} = \frac{D}{10} + \frac{D}{20} + \frac{D}{6} \qquad \left\{ \text{Time} = \frac{\text{Distance}}{\text{Speed}} \right.$$

$$\frac{19}{60} = \frac{6D + 3D + 10D}{60}$$
$$19D = 19$$
$$D = 1\text{km.}$$

Hence Total Distance = 3D = 3 × 1 = 3 km.

71. Azhar can complete a journey in 10 hours. He covers half the journey at a speed of 21 km/h and the rest of the journey at the speed of 24 km/h. What distance (in km) is travelled?

(a) 234 (b) 225
(c) 224 (d) 232

RRB RPF SI – 12/01/2019 (Shift-II)

Ans. (c) Let the total distance covered by Azhar = x km.

From question-

$$\frac{x/2}{21}+\frac{x/2}{24}=10\left[\because \text{Time}=\frac{\text{Distance}}{\text{Speed}}\right]$$

$$\Rightarrow \frac{x}{21}+\frac{x}{24}=20$$

$$\Rightarrow \frac{x}{7}+\frac{x}{8}=20\times 3=60$$

$$\Rightarrow \frac{8x+7x}{56}=60$$

$$\Rightarrow 15x=60\times 56$$

$$x=\frac{60\times 56}{15}=4\times 56, \qquad x=224\,\text{km}.$$

72. Sindhu travels a distance of $20\frac{2}{3}$km. On foot in $7\frac{3}{4}$ hours. Then how many kilometers did he travel per hour.

(a) $\frac{2}{3}$km (b) $3\frac{2}{3}$km
(c) 4km (d) $2\frac{2}{3}$km

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (d)

Distance covered by Sindhu $=20\frac{2}{3}\text{km}=\frac{62}{3}\text{km}$

and time $=7\frac{3}{4}$ hour $=\frac{31}{4}$ hour

Formula- $\text{Speed}=\frac{\text{Distance}}{\text{Time}}$

$$\therefore \text{Speed}=\frac{\frac{62}{3}}{\frac{31}{4}} \Rightarrow =\frac{62}{3}\times\frac{4}{31}=\frac{8}{3}\text{km/hr}$$

$$=2\frac{2}{3}\text{km/hr}$$

73. The usual average speed of a car at a certain distance is 50 km/h on a particular day. The average speed was 1/10 less than the usual average speed, as a result it took 18 minutes longer to finish the journey, how much is this distance of the road in kilometers?

(a) 135 (b) 120
(c) 125 (d) 140

RRB RPF SI – 10/01/2019 (Shift-II)

Ans : (a) First condition-

Let the distance of road $= x$ km

Usual average speed of Car is 50 Km./hr.

Time $=\frac{x}{50}$h

Second condition–

Average speed of a particular day

$$=50-50\times\frac{1}{10}=45\text{ Km./hr.}$$

Time $=\frac{x}{45}$ hours

Now According to question,

$$\frac{x}{45}-\frac{x}{50}=\frac{18}{60}$$

$20x - 18x = 18 \times 15$

$2x = 18 \times 15$

$x = 9 \times 15$

Therefore Distance of road = 135 km

74. Mahima has to travel at a speed of 54 km/h insead of 45 km/h to reach the destination on time due to delay of 12 minutes from her usual time. Find the distance travelled.

(a) 75 km (b) 54 km
(c) 67.5 km (d) 90 km

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (b) : Let the distnace travelled by Mahima during the journey is x.

According to question,

Time = Distance/speed

Here the time is same in both cases-

$$\frac{x}{45}=\frac{x}{54}+\frac{12}{60}$$

or $\frac{x}{45}-\frac{x}{54}=\frac{12}{60}$

or $\frac{54x-45x}{45\times 54}=\frac{12}{60}$

or $\frac{9x}{45\times 54}=\frac{1}{5}$

or $\frac{x}{54}=1$

x = 54 km.

75. A person travels 480 km in 4 hours, some distance travels by airplane and some train. If he travels the entire journey by airplane then he saves 4/5th time than that of the train and he arrives at destination 2 hours before. Find the distance travelled by the train.

(a) 90 km (b) 120 km
(c) 80 km (d) 110 km

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (b) Total time = 4 hours

Total distance = 480 km.

Let the distance covered by train = x km.

and if the total distance covered by the train then the total time taken is = t hours

According to question,

If the total distance is covered by Airplane then the time taken

$$= t - \frac{4t}{5} = \frac{t}{5}$$

$$\frac{t}{5} = (4-2) = 2 \text{ hours}$$

$$\frac{t}{5} = 2$$

t = 10 hours

Hence speed of train $= \frac{480}{10} = 48 \text{km/hr}$

and speed of airplane $= \frac{480}{2} = 240 \text{km/hr}$

Distance covered by train = x km

So distance covered by airplane = (480–x) km.

Hence

$$\frac{x}{48} + \frac{(480-x)}{240} = 4$$

$$\frac{10x + 960 - 2x}{480} = 4$$

8x = 1920 – 960

$$\boxed{x = 120 \text{ km}}$$

76. A person reaches office driving at a speed of 42 Km/hr 2 minutes earlier. While he drives at a speed of 36 km/h. He reaches 5 minutes late. How much distance does he cover (in km)?

(a) 30.8 (b) 29.6

(c) 30.4 (d) 29.4

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (d) : Let the distance covered by the man is x km.

According to question,

$$\frac{x}{36} - \frac{x}{42} = \frac{7}{60}$$

$$\frac{x}{36} - \frac{x}{42} = \frac{7}{60}$$

$$\frac{42x - 36x}{36 \times 42} = \frac{7}{60}$$

$$\frac{6x}{36 \times 42} = \frac{7}{60}$$

$$x = \frac{7 \times 42 \times 6}{60}$$

$$x = \frac{7 \times 42}{10}$$

$$x = 29.4 \text{ km}$$

77. Sachin completes 360 km distance from Delhi to Hyderabad in 4 hours some by airplane and some by train. If he had travelled the entire journey by airplane he would have saved 4/5 of time than that of the train and reached the destination 2 hours earlier, find the distance travelled by the train.

(a) 45 km (b) 75 km

(c) 50 km (d) 90 km

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (d) Let the distance covered by train is x km and time taken by train is x hour

$$\frac{4x}{5} = 2$$

x = 2.5 hour

It takes less than 2 hours when he travels the entire journey by Airplane.

Hence taken time = 4 – 2 = 2 hours

Speed of Airplane $= \frac{360}{2} = 180$ Km./hr.

According to question,

$$\frac{360 - a}{180} + 2.5 = 4$$

$$\frac{360 - a}{180} = 1.5$$

360 – a = 270

Hence distance (a) = 90 km

78. A woman reaches the office driving at a speed of 40 km/h 4 minutes earlier while she arrives 5 minutes late if she drives at the speed of 32 km/h, what is the distance covered by him?

(a) 32 (b) 24

(c) 28 (d) 30

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (b) Let the actual time to reach the office = t hr

From {Distance = Speed × Time}-

$$40\left(t - \frac{4}{60}\right) = 32\left(t + \frac{5}{60}\right)$$

$$40\left(t - \frac{1}{15}\right) = 32\left(t + \frac{1}{12}\right)$$

$$40t - \frac{40}{15} = 32t + \frac{32}{12}$$

$$40t - 32t = \frac{32}{12} + \frac{40}{15}$$

$$8t = \frac{8}{3} + \frac{8}{3}$$

$$8t = \frac{16}{3}$$

$$t = \frac{2}{3}$$

Total distance $= 40\left(\frac{2}{3} - \frac{1}{15}\right) \Rightarrow 40 \times \frac{9}{15} = 24\text{km}$

79. Raghu goes to college at a speed of 4 km/h and returns at a speed of 3 km/h. If he takes 5.95 hrs then what is the distance betweed his home and college?

(a) 10 km (b) 10.5 km
(c) 20 km (d) 10.2 km

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (d) Let the distance between the college and home = x km.
According to question,
Time taken to go + Time taken to come = 5.95 hours

$$\frac{x}{4}+\frac{x}{3}=5.95$$
$$\frac{7x}{12}=5.95$$
$$x=0.85\times 12$$
$$\boxed{x=10.2\text{km}}$$

80. A person reaches his office 1 minute before at a speed of 42 km/h, while that person traveling at a speed of 36 km/h reaches the office with a delay of 3 minutes. How much distance does a person travel (in km)?

(a) 12.9 (b) 16.8
(c) 15.4 (d) 18.2

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (b) Let the time taken to reach the office = t hour
According to question,-

$$42\times\left(t-\frac{1}{60}\right)=36\times\left(t+\frac{3}{60}\right)$$
$$\Rightarrow 42t-\frac{42}{60}=36t+\frac{108}{60}$$
$$42t-36t=\frac{108}{60}+\frac{42}{60}$$
$$6t=\frac{15}{6}$$
$$6t=\frac{15}{6}$$
$$t=\frac{5}{12}$$

Distance = speed × time

$$=36\times\left(\frac{5}{12}+\frac{3}{60}\right)$$
$$=36\times\frac{28}{60}=\frac{6\times 28}{10}=\frac{168}{10}$$
$$\boxed{\text{Distance} = 16.8\text{ km}}$$

81. Chetna went from her home to the city at a speed of 8 km/h, but returned home at the speed of 5 km/h by the same route. It took him 19½ hours to travel on both direction. What is the distance of the city from the house of chetna?

(a) 45 km (b) 60 km
(c) 52.5 km (d) 37.5 km

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) Let the distance between Chetna's home and city = x km
According to question,

$$\frac{x}{8}+\frac{x}{5}=\frac{39}{2}$$
$$\frac{5x+8x}{40}=\frac{39}{2}$$
$$\frac{13x}{40}=\frac{39}{2}$$
$$x=\frac{39\times 20}{13}$$
$$x = 60\text{ km}$$

82. If Raj drives 10 km/h more than his usual speed, then he reaches his village 90 minutes before. If raj drives 10 km/h less than the usual speed then reaches his village 150 minutes late. Find the total distance travelled by him.

(a) 600 km (b) 500 km
(c) 400 km (d) 300 km

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (d) Let the usual speed of Raj = x Km./hr.
Both the given conditions are taken for a certain distance.
Hence from $v_1t_1 = v_2t_2$

$$\because \quad (x+10)\times\frac{90}{60}=(x-10)\times\frac{150}{60}$$
$$(x+10)\times\frac{3}{2}=(x-10)\times\frac{5}{2}$$
$$3x+30=5x-50$$
$$2x = 80 \Rightarrow x = 40\text{ Km./hr.}$$

Again let certain time = t hours then

$$(40+10)\left(t-\frac{90}{60}\right)=(40-10)\left(t+\frac{150}{60}\right)$$
$$50\frac{(2t-3)}{2}=30\frac{(2t+5)}{2}$$
$$100t-150=60t+150$$
$$40t=300\Rightarrow t=\frac{15}{2}\text{ hours}$$

Hence required distance $= 40\times\frac{15}{2}=300$ km.

83. A man travels by train and car to reach his office. If he travels 10 km by car and travels the rest by train then he reaches his office in t hours. If he does the exact opposite of it, he reaches office in (t+0.5) hours. If the speeds of the train and car are 50 km/h and 40 km/h respectively, then how much distance does he cover to reach his office?

(a) 100 km. (b) 80 km.
(c) 120 km. (d) 140 km.

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (c) : Let the Man covered D km. distance to reach the office.

According to question,

$$\frac{10}{40}+\frac{(D-10)}{50}=t \quad .....(i)$$

and

$$\frac{10}{50}+\frac{(D-10)}{40}=t+0.5 \quad .....(ii)$$

from equation (ii) - equation (i),

$$\frac{10}{50}+\frac{D-10}{40}-\frac{10}{40}-\frac{D-10}{50}=t+0.5-t$$

or $$\frac{1}{5}+\frac{D-10}{40}-\frac{1}{4}-\frac{D-10}{50}=0.5$$

$$\frac{40+5D-50-50-4D+40}{200}=0.5$$

$$D-20=100$$

$$\boxed{D=120\,Km}$$

84. Two men X and Y travel a distance of 21 km between P and Q at the speed of 3 km/h and 4 km/h respectively. Arriving at Q, Y immediately returns and meet X at R. What is the distance between P and R?

(a) 16 km (b) 17.5 km
(c) 17 km (d) 18 km

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : Let the distance between P and R = x km

∴ Time taken by both will be equal.

time taken by Y = time taken by X

$$\frac{21+21-x}{4}=\frac{x}{3}$$

(42-x)× 3 = 4x

126-3x = 4x

7x= 126

x = 18 ∴ PR = 18 km

85. A bus crosses two persons cycling in the same direction of the bus at a speed of 9.6 km/h and 12 km/h respectively, in 4.5 seconds and 9 seconds respectively. What is the length of the bus?

(a) 6 m (b) 8 m
(c) 7 m (d) 4 m

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) Let the length of bus = x meter.

$$\frac{x}{9.6\times\frac{5}{18}}+4.5=\frac{x}{12\times\frac{5}{18}}+9$$

$$\frac{18x}{48}+4.5=\frac{18x}{60}+9$$

$$\frac{18x}{48}-\frac{18x}{60}=9-4.5$$

$$\frac{1080x-864x}{2880}=4.5$$

$$216x=1296$$

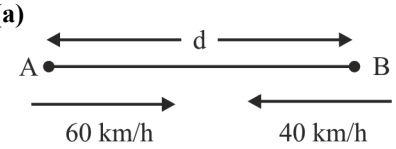
$$x=\frac{1296}{216}=6\,m$$

86. The distance between two points is travelled by the speed of 60 km/h while going and by 40 km/h during the return journey. If it took a total of 5 hours, then the distance between the two points on one side is:

(a) 120 km (b) 135 km
(c) 150 km (d) 180 km

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (a)



$$V_1=\frac{d}{t_1} \qquad V_2=\frac{d}{t_2}$$

$$t_1=\frac{d}{V_1} \text{ and } t_2=\frac{d}{V_2}$$

∵ Total time to come and go = $t_1 + t_2$ = 5h

$$\because\ 5=\frac{d}{V_1}+\frac{d}{V_2}$$

$$5=\frac{d}{V_1}+\frac{d}{V_2}$$

$$5=\frac{d}{60}+\frac{d}{40}$$

$$5=d\left(\frac{4+6}{240}\right)$$

$$5=d\times\frac{10}{240}$$

d = 5 × 24 = 120 km

∴ d = 120 km

87. Jatin covers 7.5 km more distance if he walks 9 km/h instead of 4 km/h. What is the total distance covered by him (in km)?

(a) 7 (b) 5
(c) 8 (d) 6

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (d) More distance covered after increasing speed from 4 Km./hr. to 9 Km./hr. = 7.5 km

∴ 9 Km./hr. – 4 Km./hr. = 7.5 km

or, 5 Km./hr. = 7.5 km

∴ Time $=\frac{7.5}{5}$hr

∴ Distance $=\frac{7.5}{5}\times 4$ (Distance = speed × time)

= 6 km

Hence total distance of journey = 6 km

88. A car travels a certain distance in 8 hrs. It travels half of the distance at a speed of 40 km/h and another half distance at a speed of 60 km/h. Find the total distance travelled.

(a) 384 kms (b) 368 kms
(c) 344 kms (d) 388 kms

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (a) Let the certain distance covered by the car in 8 hours = d km

$\because$ Covered distance at the speed of 40 Km./hr. $= \frac{d}{2}$ km

$\therefore$ time taken $= \frac{d}{40 \times 2} = \frac{d}{80}$ hr

$\because$ Covered distance at the speed of 60 Km./hr. $= \frac{d}{2}$ km

$\therefore$ time taken $= \frac{d}{60 \times 2} = \frac{d}{120}$ hr.

$\because$ Total time = 8 hr.

$\therefore \frac{d}{80} + \frac{d}{120} = 8$

$\therefore \frac{d}{8} + \frac{d}{12} = 80$

$\frac{3d + 2d}{24} = 80 \Rightarrow 5d = 80 \times 24$

$d = \frac{80 \times 24}{5} = 384$ km

89. The distance between two points is travelled by the speed of 72 km/h while going and by 54 km/h during the return journey. If it took a total of 7 hours, then the distance between the two points on one side is:

(a) 324 km (b) 180 km
(c) 189 km (d) 216 km

RRB Group-D – 22/10/2018 (Shift-II)

Ans. (d) Let the distance between the two points is x km.

According to question, $\frac{x}{72} + \frac{x}{54} = 7$

$\left(\because \text{ Time} = \frac{\text{Distance}}{\text{Speed}}\right)$

$\frac{3x + 4x}{216} = 7$

$7x = 7 \times 216$

x = 216 km

Hence the distance between the two points is 216 km.

90. Travelling at a speed of 57 km/h Manav reached the destination 3 minute earlier. If he travelled at the speed of 51 km/h then he reached 1 minute late. What is the distance travelled by Manav?

(a) 31.5 km (b) 32.3 km
(c) 31.9 km (d) 32.8 km

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (b)

Let the total distance is D km. and usual time is t.

Hence $\frac{D}{57} = t - \frac{3}{60}$.....(1)

and $\frac{D}{51} = t + \frac{1}{60}$.....(2)

By subtracting equation (1) from equation (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

91. A woman reaches the office 5 minutes earlier driving at a speed of 45 km/h, while she reaches 7 minutes late woman driving at a speed of 27 km/h. What distance did she travel?

(a) 18 (b) 16.5
(c) 15 (d) 13.5

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (d) : The distance travelled by the woman in both conditions will be the same {$\because$ t = time taken to arrive at the right time}

$v_1t_1 = v_2t_2$

$45 \times \left(t - \frac{5}{60}\right) = 27 \times \left(t + \frac{7}{60}\right)$

$\frac{5(60t - 5)}{60} = \frac{3(60t + 7)}{60}$

$5(60t - 5) = (60t + 7) \times 3$

300t–25 = 180t + 21

120 t = 46

$t = \frac{46}{120} = \frac{23}{60}$ hours.

Putting the value of t-

$\therefore$ Distance $= 45 \times \left(\frac{23}{60} - \frac{5}{60}\right)$

$= 45 \times \frac{18}{60}$

$= \frac{135}{10} = 13.5$km

92. Ram and Lakshman travel the same distance at a speed of 32 km/h and 40 km/h respectively. Ram takes one hour more than Lakshman to cover the distance. How much distance travelled by lakshman?

(a) 160 km (b) 200 km
(c) 120 km (d) 100 km

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (a) Let Distance = D km.

Speed of Ram = 21 Km./hr.

Speed of Laxman = 40 Km./hr.

According to question,

$\frac{D}{32} - \frac{D}{40} = 1$

$\frac{40D - 32D}{1280} = 1$

8D = 1280

D = 160 km.

93. Travelling at a speed of 66 Km/hr, Piyali reaches a place 5 minutes earlier. If she travels at the speed of 54 km/h, she is delayed by 3 minutes. How much distance did Piyali travel?

(a) 39.2 km (b) 40.2 km
(c) 39.6 km (d) 40.8 km

RRB Group-D – 15/10/2018 (Shift-II)

Ans : (c) Let the time taken by Piyali to cover the journey is t hours.

∴ Distance from first condition

$$= 66\times\left(t-\frac{5}{60}\right) \quad ....(i)$$

Distance from second condition

$$= 54\times\left(t+\frac{3}{60}\right) \quad ....(ii)$$

By solving equation (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 covered by Piyali $=66\left(\frac{41}{60}-\frac{5}{60}\right)$

$$=66\times\frac{36}{60}=\frac{11\times18}{5}=39.6\,\text{km}$$

94. Rahim started his journey with a delay of 15 minutes due to which he had to drive a car at a speed of 54 km/h instead of 45 km/h to reach his destination on time. Find the distance travelled during this journey.

(a) 75.5 km (b) 90 km
(c) 67.5 km (d) 13.5 km

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (c) Let the covered distance during the journey = d km

According to question,

$$\text{Speed}=\frac{\text{Distance}}{\text{Time}}$$

$$\frac{d}{45}-\frac{d}{54}=\frac{15}{60}$$

$$\Rightarrow \frac{6d-5d}{270}=\frac{1}{4}$$

$$d=\frac{270}{4}=67.5\text{km}$$

95. Vishnu covers the same distance at a speed of 10 km/h, 30 km/h and 8 km/h and takes a total of 15.5 minutes to complete journey, then find the total distance travelled by him.

(a) 1 (b) 3
(c) 4 (d) 2

RRB NTPC 17.01.2017 Shift-1

Ans : (b) Let Vishnu has travelled a total of x km distance of journey.

According to question,

$$\frac{\left(\frac{x}{3}\right)}{10}+\frac{\left(\frac{x}{3}\right)}{30}+\frac{\left(\frac{x}{3}\right)}{8}=\frac{15.5}{60}$$

$$\frac{x}{3}\left(\frac{1}{10}+\frac{1}{30}+\frac{1}{8}\right)=\frac{15.5}{60}$$

$$\frac{x}{3}\left(\frac{24+8+30}{240}\right)=\frac{15.5}{60}$$

$$\frac{x}{3}\left(\frac{62}{240}\right)=\frac{15.5}{60}$$

$$x=\frac{15.5\times240\times3}{60\times62}$$

$$x=\frac{186}{62}$$

x = 3 km.

96. P travels 70 hours. He travels half of his journey at 30 km/h and the remaining half travels at a speed of 40 km/h. Find the total distance of his journey.

(a) 2000 km. (b) 2400 km.
(c) 2720 km. (d) 2160 km.

RRB NTPC 04.04.2016 Shift : 3

Ans. (b) Let the total distance of travelled journey = x km

From question,

$$\frac{x/2}{30}+\frac{x/2}{40}=70$$

$$\Rightarrow \frac{x}{30}+\frac{x}{40}=70\times2=140$$

$$\Rightarrow \frac{4x+3x}{120}=140$$

$$\Rightarrow 7x=140\times120$$

$$\Rightarrow x=\frac{140\times120}{7}=2400\,\text{km.}$$

97. M and N cover the same distance at 160 km/h and 200 km/h respectively, if M takes 30 minutes more than N then the distance is travelled by each.

(a) 120 km. (b) 200 km.
(c) 320 km. (d) 400 km.

RRB NTPC 04.04.2016 Shift : 3

Ans : (d) Let the distance covered by M and N = x km.

$\therefore$ According to question,

$$\frac{x}{160}-\frac{x}{200}=\frac{30}{60}=\frac{1}{2}$$

$$\Rightarrow \frac{x}{20\times 8}-\frac{x}{20\times 10}=\frac{1}{2}$$

$$\Rightarrow \frac{x}{8}-\frac{x}{10}=\frac{1}{2}\times 20=10$$

$$\Rightarrow \frac{5x-4x}{40}=10$$

$$\Rightarrow x=10\times 40=400 \text{ km.}$$

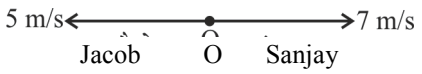
98. Sanjay and Jaicob start running in the opposite direction from the same point of 7 m/s and 5 m/s respectively. How far will they be from each other after 42 minutes?

(a) 30.24 km. (b) 504 km.
(c) 8.4 km. (d) 69.5 km.

RRB NTPC 03.04.2016 Shift : 1

Ans : (a) Distance covered by Jacob in 47 minutes = 5 m/sec × 42 minutes

= 5×42 × 60 m. = 12600 m.



Distance covered by Sanjay in 42 minutes

= 7 m./sec.×42 minute = 7 × 42 × 60 m.

= 17640 m.

Hence required distance between Sanjay and Jaicob after 42 minutes

= 17640 + 12600

= 30240 m. = 30.24 km.

99. A person walks at a speed of 3 km/h. He doubles his speed after reaching the halfway point. He walks for 5 hours. Find the total distance travelled by him.

(a) 18 km. (b) 15 km.
(c) 20 km. (d) 9 km.

RRB NTPC 30.03.2016 Shift : 1

Ans : (c) Let the total distance = x km.

$\because$ Time $=\frac{\text{Distance}}{\text{Speed}}$

$$\frac{\frac{x}{2}}{3}+\frac{\frac{x}{2}}{6}=5$$

$$\frac{x}{6}+\frac{x}{12}=5$$

$$\frac{2x+x}{12}=5$$

3x = 60

x = 20

Total distance = 20 km.

100. If Lalita leaves for her school from her home at a speed of 45 km/h by car then she takes 5 minutes more than driving at 60 km/h. What is the distance between home and school?

(a) 18km (b) 15km
(c) 14km (d) 10km

RRB NTPC 18.01.2017 Shift : 2

Ans : (b) Let the distance of school from home = x km.

then, the time taken to cover the distance of x km at the speed of 45 Km./hr. $=\frac{x}{45}$

time taken to cover the distance of x km at the speed of 60 Km./hr. $=\frac{x}{60}$

According to question,

$$\Rightarrow \frac{x}{45}-\frac{x}{60}=\frac{5}{60}$$

$$\Rightarrow \frac{4x-3x}{180}=\frac{1}{12}$$

$$\Rightarrow x=\frac{180}{12}=15$$

$$\boxed{x=15\text{km}}$$

Distance between School and home = 15 km

101. Ram completes the 4/9th part of the total journey by Bus, the 5/18th part by train and the remaining 10 km by walking. Find the total distance.

(a) 42 km. (b) 90 km.
(c) 36 km. (d) 18 km.

RRB NTPC 19.04.2016 Shift : 2

Ans : (c) Let the total distance is x km.

Distance travelled by bus $=\frac{4x}{9}$

Distance travelled by train $=\frac{5x}{18}$

According to question,

$$x-\left(\frac{4x}{9}+\frac{5x}{18}\right)=10$$

$$\Rightarrow x-\frac{13x}{18}=10$$

$$\Rightarrow \frac{5x}{18}=10$$

$$\Rightarrow 5x=10\times 18$$

$$\Rightarrow x=\frac{10\times 18}{5}=36 \text{ km.}$$

102. A runner covers a distance of 60 km in 3 hours and 45 minutes. How much should he increase the average speed to cover this distance 45 minutes before?

(a) 16 Km./hr. (b) 20 Km./hr.
(c) 6 Km./hr. (d) 4 Km./hr.

RRB NTPC 18.04.2016 Shift : 3

Ans : (d) Given−

Distance = 60 km, Time = 3 hours 45 minutes

$$= 3\frac{45}{60} \text{ hours}$$

$$= \frac{15}{4} \text{ hours}$$

$$\therefore \text{ Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{60}{(15/4)} = 60 \times \frac{4}{15} = 16 \text{ Km./hr.}$$

Let the averge speed be increased by x Km./hr.

time = 3 hours

Speed = (16+x) Km./hr.

According to question,

$$(16 + x) = \frac{60}{3}$$

$\Rightarrow$ 16+x = 20

$\Rightarrow$ x = 20–16

$\Rightarrow$ x = 4 Km./hr.

103. Mohan covers a certain distance from his car in 12 hours at a uniform speed. When the speed is increased by 5 km/h, then the same distance can be covered in 9 hours. What is the total distance?

(a) 108 km. (b) 90 km.
(c) 190 km. (d) 180 km.

RRB NTPC 18.04.2016 Shift : 3

Ans : (d) Let the total distance is d and the speed is 'V'-

According to first condition-

$$V = \frac{d}{12} \text{.....(i)}$$

According to second condition-

$$(V + 5) = \frac{d}{9} \text{.....(ii)}$$

from equation (i) and (ii)–

$$\frac{d}{12} + 5 = \frac{d}{9}$$

$$\frac{d + 60}{12} = \frac{d}{9}$$

$\Rightarrow$ 3d + 180 = 4d

$\Rightarrow$ d =180 km.

104. A bus is running at a speed of 90 km/h. How much distance will it cover in 20 seconds?

(a) 500 meter (b) 450 meter
(c) 180 meter (d) 600 meter

RRB NTPC 16.04.2016 Shift : 1

Ans : (a) Speed of bus = 90 Km./hr.

$$= 90 \times \frac{5}{18}$$

= 25 m./sec.

$\therefore$ Distance covered in 20 seconds = 20×25 = 500 m.

105. Chandan covers equal distances at the speed of 3 km/h, 4 km/h and 8 km/h respectively and takes a total time of 42.5 minutes. Find the total distance in km.

(a) 4 (b) 2
(c) 1 (d) 3

RRB NTPC 11.04.2016 Shift : 2

Ans : (d) Time (t) = 42.5 minute $= \frac{42.5}{60}$ hours.

Let distance = d, $d = d_1 + d_2 + d_3$

and $d_1 = d_2 = d_3 = x$

Average speed = V

V_1 = 3 Km./hr. V_2 = 4 km/ hr., V_3 = 8 Km./hr.

$$\text{Average speed} = (V) = \frac{d_1 + d_2 + d_3}{\frac{d_1}{v_1} + \frac{d_2}{v_2} + \frac{d_3}{v_3}}$$

$$V = \frac{x + x + x}{\frac{x}{3} + \frac{x}{4} + \frac{x}{8}}$$

$$V = \frac{3x}{\frac{8x + 6x + 3x}{24}}$$

$$V = \frac{3x}{\frac{17x}{24}}$$

$$V = \frac{3 \times 24}{17} \text{km/hr.}$$

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 = 3 km

106. P travels 35 hours. He travels half of the journey at 30 km/h and the rest at 45 km/h. Find the total distance.

(a) 1000 km. (b) 1200 km.
(c) 1360 km. (d) 1080 km.

RRB NTPC 10.04.2016 Shift : 3

Ans : (b) Let the total distance = d km.

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$\therefore$ According to question,

$$\frac{\frac{d}{2}}{30} + \frac{\frac{d}{2}}{40} = 35$$

$$\Rightarrow \frac{d}{60} + \frac{d}{80} = 35$$

$$\Rightarrow \frac{4d + 3d}{240} = 35$$

$\Rightarrow$ 7d = 240 × 35

d = 240 × 5 = 1200

107. Rajneesh covers the same distance with the speed of 6 km/h, 4 km/h and 8 km/h respectively and takes a total time of 32.5 minutes. Find the total distance in km.

(a) 4 (b) 2
(c) 1 (d) 3

RRB NTPC 07.04.2016 Shift : 3

Ans : (d) Rajneesh travels the same distance each time.
Let the distance travelled each time = x km

Then average speed $(v) = \dfrac{d_1+d_2+d_3}{\dfrac{d_1}{v_1}+\dfrac{d_2}{v_2}+\dfrac{d_3}{v_3}}$

$$= \frac{x+x+x}{\frac{x}{6}+\frac{x}{4}+\frac{x}{8}} = \frac{3x}{\frac{4x+6x+3x}{24}}$$

$$= \frac{72x}{13x} = \frac{72}{13} \text{ km/hr.}$$

Time = 32.5 minute $= \dfrac{32.5}{60}$ hours

Distance = speed × time $= \dfrac{72}{13} \times \dfrac{32.5}{60} = 3\text{km}$

108. Two buses X and Y travel from the same place in the same direction at a speed 20 km/h and 50 km/h respectively. But Y leaves 6 hours after the X leaves. At what distance will both buses meet from the starting point?

(a) 100 km. (b) 200 km.
(c) 150 km. (d) 300 km.

RRB NTPC 19.01.2017 Shift : 2

Ans : (b) Let y will catch x after t hours.
Distance covered by x in 6 hours = 120 km
According to question,
Relative speed = (50 – 20) = 30 Km./hr.

time taken to catch $= \dfrac{\text{Total distance}}{\text{Relative speed}} = \dfrac{120}{30} = 4$ hrs.

Then–
⇒ Distance covered by y in 4 hours = 4 × 50 = 200 km
⇒ Distance covered by x in 4 hours = 4 × 20 = 80 km
⇒ Total distance covered by x = 80 + 120 = 200 km
⇒ Then both buses will meet at a distance of 200 km. their starting point.

109. Monal Kumar travels the same distance at the speed of 3 km/h, 5 km/h and 8 km/h respectively and takes a total time of 395 minutes. Find the total distance in km.

(a) 40 (b) 20
(c) 10 (d) 30

RRB NTPC 22.04.2016 Shift : 2

Ans : (d) Let the total distance is 3d km.
According to question,

$$\frac{d}{3}+\frac{d}{5}+\frac{d}{8}=\frac{395}{60}$$

$$\frac{40d+24d+15d}{120}=\frac{395}{60}$$

$$\frac{79d}{120}=\frac{395}{60}$$

$$d = 10$$

Hence total distance = 3d = 3 × 10 = 30 km.

110. A car covers the journey from chennai to Coimbatore in 8 hours. The first half of distance of the journey is travelled by a speed of 73 km/h and the second half is travelled at a speed of 81 km/h. What is the distance from Chennai to Coimbatore?

(a) 614.34 km. (b) 600 km.
(c) 592 km. (d) 632.65 km.

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (a) Let the distance is d km.
According to question,

$$\frac{(d/2)}{73}+\frac{(d/2)}{81}=8$$

$$\Rightarrow \frac{d}{146}+\frac{d}{162}=8$$

$$\Rightarrow 308d = 8 \times 146 \times 162$$

$$\Rightarrow d = \frac{8\times146\times162}{308}$$

$$\Rightarrow d = 614.337$$

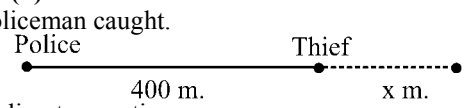
$$\Rightarrow d = 614.34 \text{ km.}$$

111. A thief is 400 meters ahead of a policeman. The thief runs away and policeman starts chasing together. Suppose the speed of the thief is 10 km/h and the speed of the police is 15 km/h. Calculate the distance the thief covered before the policeman caught.

(a) 750 meter (b) 800 meter
(c) 850 meter (d) 900 meter

RRB NTPC 29.04.2016 Shift : 2

Ans : (b) Let the thief covered a distance of x m before the policeman caught.



According to question,

$$\frac{x+400}{15\times\frac{5}{18}}=\frac{x}{10\times\frac{5}{18}}$$

$$\Rightarrow \frac{6x+2400}{25}=\frac{9x}{25}$$

$$\Rightarrow 3x = 2400$$

$$\Rightarrow x = 800\text{m}$$

112. Jai travels from his home to school at a speed of 10 km./hr and reaches late by 5 minutes. If he increases his speed by 3 km./hr, he reaches the school 4 minutes early. What is the distance between his home and the school?

(a) 2 km. (b) 6.5 km.
(c) 4.8 km. (d) 2.5 km.

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (b) Let the covered distance = d

$\because$ d= vt

According to question,

$$d = 10\times\left(t+\frac{5}{60}\right) \quad \text{..... (i)}$$

and $$d = 13\times\left(t-\frac{4}{60}\right) \quad \text{.....(ii)}$$

from equation (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)

$$d = 10\times\left(\frac{34}{60}+\frac{5}{60}\right)$$

$$d = 10\times\frac{39}{60} \Rightarrow d = 6.5 \text{ km.}$$

113. A mini van is going in the same direction in which direction two people are going at the speed of 4.8 km/h and 6 km/h. Mini van crosses both people in 4.5 seconds and 9 seconds respectively. What is the length of the mini van?

(a) 3.5m (b) 3 m.
(c) 4 m. (d) 2 m.

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

Ans : (b) Let the length of the Van is 'a' meter and speed of Van is x Km./hr.

According to question,

$$\frac{a}{(x-4.8)\times\frac{5}{18}} = 4.5$$

$$\frac{18a}{5} = 4.5x - 21.6 \quad \text{.....(i)}$$

$$\frac{a}{(x-6)\frac{5}{18}} = 9$$

$$\frac{18a}{5} = 9x - 54 \quad \text{.....(ii)}$$

from equation (i) and (ii),

x = 7.2 m./sec.

from equation (ii),

$$\frac{18a}{5} = 9\times 7.2 - 54$$

$$\Rightarrow \frac{18a}{5} = 10.8 \Rightarrow a = \frac{10.8\times 5}{18} = 3 \text{ meter}$$

114. A 150 m long train, travelling at the speed of 54 km./hr, crosses a platform in 42 seconds. What is the length of the platform?

(a) 540 m (b) 630 m
(c) 780 m (d) 480 m

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

Ans : (d) Let the length of Platform = x meter

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$54\times\frac{5}{18} = \frac{150+x}{42}$$

$\Rightarrow$ x+150 = 3×5×42

$\Rightarrow$ x+150 = 630

$\Rightarrow$ x= 630–150

x = 480

Hence length of platform = 480 m

Type - 4

115. A man walks from P to Q at a speed of 5 km/h and comes back at a speed of 3 km/h from Q to P. What is his average speed during the entire journey?

(a) 8 Km./hr. (b) 3.25 Km./hr.
(c) 3.75 Km./hr. (d) 3.5 Km./hr.

RRB JE - 22/05/2019 (Shift-III)

Ans : (c)

$$\text{Average speed} = \frac{2\times\text{product of speed}}{\text{sum of speed}}$$

$$= \frac{2\times 5\times 3}{5+3} = \frac{30}{8} = 3.75 \text{ Km./hr.}$$

116. A person travels at a speed of 50 km/h from P to Q in 30 minutes. Then he increases his speed to 60 km/h and reaches his destination in 20 minutes. Find the average speed during the entire journey.

(a) 55km. /Hour (b) 54Km./hr.
(c) 65Km./hr. (d) 70Km./hr.

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

Ans : (b) Average Speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{50\times\frac{30}{60}+60\times\frac{20}{60}}{\frac{30+20}{60}} \quad (\because \text{distance} = \text{speed}\times\text{time})$$

$$= \frac{25+20}{\frac{5}{6}} = \frac{45\times 6}{5} = 54\text{km/hr.}$$

117. A cart covers the first 10 km. with a speed of 4 km/h and the other 10 km covers at a speed of 2 km/h. Find the average speed of that car in km/h.

(a) 2.67 Km./hr. (b) 3.33 Km./hr.
(c) 2 Km./hr. (d) 5.54 Km./hr.

RRB RPF SI – 16/01/2019 (Shift-III)

Ans : (a) When someone travels a certain distance at the speed of x Km./hr.
and travels the same distance at the speed of y Km./hr., then the average speed in the entire journey

$$= \frac{2xy}{(x+y)} km/h = \frac{2\times4\times2}{4+2} km/h$$

$$= \frac{8}{3} = 2.67 \ km/h$$

118. An object travels 24 m in 3s and 15 m in 2s. What is the average speed of the object?
(a) $6.67ms^{-1}$ (b) $7.8ms^{-1}$
(c) $7.8S^{-1}$ (d) 8.0m

RRB RPF SI – 11/01/2019 (Shift-I)

Ans. (b) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{(24+15)}{(3+2)} = \frac{39}{5} = 7.8 m/sec = 7.8 \ ms^{-1}$$

119. An object travels 23m in 3s and 15m in 2s. What is the average speed of the object?
(a) $7.6 \ ms^{-1}$ (b) $7.6 \ s^{-1}$
(c) 7.6 m (d) $8.0 \ ms^{-1}$

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

Ans. (a) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{23+15}{3+2} = \frac{38}{5} = 7.6 ms^{-1}$$

120. Kiran swims in a 90 m long bridge. From one end to the other end then swims back to the same straight path and she covers total distance of 360 m. Find the average velocity of Kiran.
(a) $0 \ ms^{-1}$ (b) $3 \ ms^{-1}$
(c) $5 \ ms^{-1}$ (d) $4 \ ms^{-1}$

RRB RPF SI – 10/01/2019 (Shift-III)

Ans : (a) Since Kiran is coming back to the initial point. Therefore her displacement will be zero. Hence average velocity will be = 0 ms^{-1}

121. An object travels 10 m in 4s and then 14m in 2s. What is the average speed of the object?
(a) $4 \ s^{-1}$ (b) 4 m
(c) $4.5 \ ms^{-1}$ (d) $4 \ ms^{-1}$

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

Ans : (d)
Total distance travelled by the object
= 10m+14m = 24m
and total time taken to cover that distance
= 4sec + 2 sec = 6 sec
Average speed of object = ?

Average speed $= \frac{\text{Total Covered Distance}}{\text{Total Time taken}} = \frac{d_1+d_2}{t_1+t_2}$

$$= \frac{(10+14)m}{(4+2)sec} = \frac{24}{6} = 4ms^{-1}$$

Hence the average speed of object is 4 ms^{-1}

122. 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 travelled?
(a) 65 (b) 64
(c) 63 (d) 61

RRB NTPC 28.04.2016 Shift : 1

Ans : (b) Total distance covered by Car

$$= 62\times\frac{5}{2} + 68\times\frac{5}{4} \quad (\because \text{ Distance} = \text{Speed}\times \text{Time})$$

= 31 × 5 + 17 × 5
= 155 + 85 = 240 km.

Average speed of car $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{240}{5/2+5/4} \Rightarrow \frac{240\times4}{10+5}$$

$$= \frac{240\times4}{15} \Rightarrow 16\times4 = 64 \text{ Km./hr.}$$

123. 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 in the entire race?
(a) 6 Km./hr. (b) 12 Km./hr.
(c) 4 Km./hr. (d) 9 Km./hr.

RRB NTPC 22.04.2016 Shift : 3

Ans : (c) Time taken to run 18 km $= \frac{18}{9} = 2$ hours

According to question,

$$6 = \frac{18+x}{2+3}$$

x = 30–18 = 12 km.

$\therefore$ Speed $= \frac{12}{3} = 4$ Km./hr.

124. Rupa goes to her office at half of speed at which she returns from her office. The average speed during the entire journey is 24 km/h. What was her speed when Rupa was going to her office.
(a) 18 Km./hr. (b) 72 Km./hr.
(c) 9 Km./hr. (d) 24 Km./hr.

RRB NTPC 22.04.2016 Shift : 3

Ans : (a) Let the Actual Speed of Rupa = S Km./hr.

Average speed $= \frac{2V_1V_2}{V_1+V_2}$

$$\therefore 24 = \frac{2\times S\times\frac{S}{2}}{S+\frac{S}{2}}$$

$$\Rightarrow 12 = \frac{S^2}{3S}$$

$\therefore$ S = 36 Km./hr.
Hence speed at the time on coming to office

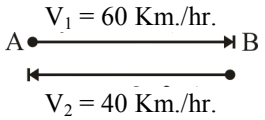
$$= \frac{36}{2} = 18km/h$$

125. 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 of the car (in km/h).

(a) 50 (b) 45
(c) 48 (d) 52

RRB NTPC 12.04.2016 Shift : 1

Ans : (c)



Average speed of Car $= \frac{2V_1V_2}{V_1+V_2}$

$= \frac{2\times60\times40}{60+40} = \frac{4800}{100} = 48$ Km./hr.

126. An object moves 15 m in 4s and next 16m in 2s. What is the average speed of that object?

(a) 6.17 ms^{-1} (b) 5.17 m
(c) 5.17 s^{-1} (d) 5.17 ms^{-1}

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (d) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$= \frac{15+16}{4+2} = \frac{31}{6} = 5.17\ ms^{-1}$

127. An object travels 18 m in first 4s and the another 16 m in 2s. What is the average speed of the object?

(a) 5.67 m (b) 5.67 s^{-1}
(c) 5.67 ms^{-1} (d) 6.67 ms^{-1}

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (c) : Distance covered in first 4 seconds = 18 m.
Distance covered in next 2 seconds = 16 m.
Total covered distance = 18+16 = 34 m.
Total time taken = 4+2= 6 seconds

Average speed of object = $= \frac{\text{Total Covered Distance}}{\text{Total Time Taken}}$

Average speed = $\frac{34}{6}$ = 5.67 m./sec.

128. A man covers the distance from point A to B at a speed of 40 km/h and returns from B to A at a speed of 60 km/h. What is his average speed during the entire journey?

(a) 48 Km./hr. (b) 55 Km./hr.
(c) 50 Km./hr. (d) 45 Km./hr.

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (a) Going speed from point A to B = 40 Km./hr.
Returning Speed from point B to A = 60 Km./hr.

From average speed $= \frac{2xy}{x+y}$,

$= \frac{2\times40\times60}{40+60}$

Average speed = 48 Km./hr.

129. An object travels first 25m in 4s and then next 15m in 2s. What is the average speed of the object?

(a) 6.67 m (b) 6.67 s^{-1}
(c) 6.67 ms^{-1} (d) 6.67 ms^{1}

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (c) Distance travelled in 4 seconds = 25 m.
Distance travelled in 2 seconds = 15 m.

Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$= \frac{25+15}{4+2} = \frac{40}{6} = 6.67\ ms^{-1}$

130. Ram swims in a 72 m long pond. He covers a distance of 144 m in 1 minute by swimming from one end to the other and coming back the same way. Find his average speed.

(a) 3.67 ms^{-1} (b) 2.60 ms^{-1}
(c) 2.04 ms^{-1} (d) 2.4 ms^{-1}

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}} = \frac{144}{60}$

$= \frac{12}{5} = 2.4\,ms^{-1}$

131. Ram swims in a 95 m long pond. He travels 190 m in 1 minute by swimming from one end to the other and coming back the same way. Find his average speed.

(a) 2.05 ms^{-1} (b) 3.17 ms^{-1}
(c) 2.00 ms^{-1} (d) 3.10 ms^{-1}

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}} = \frac{190\text{m}}{1\,\text{min}}$

$\Rightarrow \frac{190\text{m}}{60\text{Sec}} = \frac{19}{6} = 3.1666$

$= 3.17\ ms^{-1}$

132. Ram swims in 80 m long pond. He travels 160 m in 1 minute by swimming from one end to the other and coming back the same way. Find his average speed.

(a) 2.67 ms^{-1} (b) 2.07 ms^{-1}
(c) 3.67 ms^{-1} (d) 2.60 ms^{-1}

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) :

Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

Average speed = $\frac{160}{60} = \frac{8}{3} = 2.67\,m/s = 2.67\ ms^{-1}$

133. Eddie travels in 9 hours 1 km less than the distance travelled by Fred in 7 hours. In 5 hours Eddie covers 2 km less than the distance travelled by Fred in 4 hours. What is Eddie average speed in km/h?

(a) 10 (b) 12
(c) 9 (d) 11

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (a) Let the speed of Eddie $= V_1$
Speed of fred $= V_2$
According to question,-
$7V_2 - 9V_1 = 1$ ____(i)
$4V_2 - 5V_1 = 2$ ____ (ii)
equation (i) × 4 – equation (ii) × 7
$28V_2 - 36V_1 = 4$
$-28V_2 + 35V_1 = -14$
$-V_1 = -10$
$V_1 = 10$ Km./hr.
Average speed (V_1) of Eddie = 10Km./hr.

134. An Athlete runs a distance of 500 m in 25s. What is the average speed of an athlete?
(a) 20 ms^{-2} (b) 20 ms^{-1}
(c) 20 ms^{1} (d) 20 ms^{2}
RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) Distance = 500 m, Time = 25s
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$
$$\text{Speed} = \frac{500}{25} = 20 \text{ m/sec} = 20 \text{ ms}^{-1}$$

135. An object travels 25 m in 3s and then 15 m in 2s. What is the average speed of the object?
(a) 6.67 s^{-1} (b) 6.67 ms^{-1}
(c) 8.0 ms^{-1} (d) 8.0 m
RRB Group-D – 26/09/2018 (Shift-III)

Ans : (c)
$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$
$$= \frac{25+15}{3+2} = \frac{40}{5} = 8\text{m/s} = 8\text{ms}^{-1}$$

136. The object travels 14 m in 4s and then another 16 m in 2s. What is the average speed of the object?
(a) 6.17 ms^{-1} (b) 5.0 s^{-1}
(c) 5.0 ms^{-1} (d) 5.0 m
RRB Group-D – 27/09/2018 (Shift-III)

Ans : (c) Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$
$$\because \quad \text{Average speed} = \frac{(14+16)\text{m}}{(4+2)\text{s}}$$
$$= \frac{30}{6}\text{m/s} = 5 \text{ m/s}$$
Average speed = 5ms^{-1}

137. An object travels 18 m in 6s and then 18 m in 4s. What is the average speed of the object?
(a) 2.1 ms^{-1} (b) 2.6 ms^{-1}
(c) 3.6 ms^{-1} (d) 3.1 ms^{-1}
RRB Group-D – 27/09/2018 (Shift-III)

Ans : (c) Average speed $= \frac{18\text{m}+18\text{m}}{6\text{s}+4\text{s}}$
$$= \frac{36}{10}\text{m/s} = 3.6 \text{ ms}^{-1}$$

138. A person reaches his office in 2 hours from his home. He travels 1/4th of the total distance at a speed of 15 km/h by cycling, 1/2 of the total distance at a speed of 30 km/h by bus and the rest by walking at a speed of 5 km/h. What is the average speed of this person?
(a) 15 Km./hr. (b) 12 Km./hr.
(c) 10 Km./hr. (d) 14 Km./hr.
RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b) Let the total distance = x km
From question–
$$\frac{x}{4\times15} + \frac{x}{2\times30} + \frac{x}{4\times5} = 2$$
$$\frac{x+x+3x}{60} = 2$$
5x = 120
x = 24 km
$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$
$$= \frac{24\text{km}}{2\text{h}} = 12\text{km/h}$$

139. A cyclist covers the first 3 kilometers at an average speed of 8 km/h, the other 2 km at 3 km/h and the last 2 km at 2 km/h. What is the average speed of the entire journey (in km/h)?
(a) 2.4 (b) 3.43
(c) 3.8 (d) 3
RRB Group-D – 06/12/2018 (Shift-II)

Ans. (b) :
$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$
$$= \frac{7}{\frac{3}{8}+\frac{2}{3}+\frac{2}{2}} = \frac{7\times24}{49}$$
$$= \frac{168}{49} = 3.428 \text{ Km./hr.}$$
= 3.43 Km./hr.

140. An object covers a distance of 24 meters in the first 6 seconds and a distance of 16 meters in other 4 seconds. What is the average speed of the object?
(a) 4ms^{-1} (b) 6ms^{-1}
(c) 8ms^{-1} (d) 10ms^{-1}
RRB Group-D – 05/12/2018 (Shift-II)

Ans. (a) Let the total covered distance by object
(S) = 24 + 16 = 40 m.
and total time taken
(t) = 6 + 4 = 10 sec.
Average speed (V) of object = ?
$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$
$$= \frac{40}{10} = 4 \text{ m.s.}^{-1}$$
Hence the speed of object is 4 m.s.$^{-1}$

141. Aditi runs on a circular path of 800 meters and reaches the starting point in 50 seconds. Calculate the average velocity.

(a) $0\ ms^{-1}$ (b) $8.5\ ms^{-1}$

(c) $16\ ms^{-1}$ (d) $10ms^{-1}$

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (a)

$$\text{Velocity} = \frac{\text{Displacement}}{\text{Time}}$$

$$= \frac{\text{Displacement in one round of circumference of the circle}}{\text{Time}}$$

$$= \frac{0}{50} = 0ms^{-1}$$

142. An object covers a distance of 25 meters in 8 seconds and 29 meters in 10 seconds. What is the average speed of the object?

(a) $3\ ms^{-1}$ (b) $3ms^{1}$

(c) $4\ ms^{1}$ (d) $4ms^{-1}$

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (a)

$$\text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$= \frac{(25+29)\text{m}}{(10+8)\text{sec}} = \frac{54\text{m}}{18\text{sec}} = 3\ \text{m/sec}$$

143. The odometer of a car shows 3000 km at the beginning of the journey and 3400 km at the end of the journey. If the journey takes 8 hours. Then find the average speed of car (in m/s).

(a) $13.9\ ms^{-1}$ (b) $15.9\ ms^{-1}$

(c) $14.9\ ms^{-1}$ (d) 12.9 ms

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (a) : Total distance covered by Car

= 3400 – 3000 = 400 km

Time taken in travelling = 8 hours

$$\text{Average speed} = \frac{\text{Total Covered Distance}}{\text{Total Time}}$$

$$= \frac{400}{8} = 50\text{km/h}$$

$$= 50 \times \frac{5}{18}\text{m/s}$$

$$= \frac{250}{18} = 13.9\text{m/s}$$

144. The Odometer of a bus shows the reading of 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 what is the average speed of the bus?

(a) $75kmh^{-2}$ (b) $75kmh^{2}$

(c) $75kmh^{-1}$ (d) $75kmh^{1}$

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (c) Total distance travelled by bus

= 3600–3000 = 600 km

$$\therefore \text{Average speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

$$= \frac{600}{8} = 75\ \text{Km./hr.}$$

145. An object travels 20m in 6s and then another 30m in 4s. What is the average speed of the object?

(a) $5\ ms^{1}$ (b) $6\ ms^{-1}$

(c) $5\ ms^{-1}$ (d) $6\ ms^{1}$

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (c)

$$\text{Average speed (V)} = \frac{\text{Total Covered Distance (D)}}{\text{Total Time (t)}}$$

Total distance (D) = $D_1 + D_2$ = 20+30 = 50 m

Total time (t) = $t_1 + t_2$ = 6+4 = 10 Sec.

$$v = \frac{D}{t}$$

$$v = \frac{50}{10}$$

v = 5 m/s

146. The total distance between the two stations is 390 km, a train completes 182 km of this distance at a speed of 56 km/h and 108 km at a speed of 72 km/h. The remaining distance is completed by the train in 1¼ hours. Find the average speed of the train during the entire journey.

(a) 65 Km./hr. (b) 75 Km./hr.

(c) 60 Km./hr. (d) 70 Km./hr.

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (a) : Total distance = 390 km

First distance travelled by train = 182 km

Speed = 56 Km./hr.

Second distance travelled by train = 108 km

Speed = 72 Km./hr.

Remaining Distance = 390 – (182+108) = 100 km

Time $= \frac{5}{4}$ hours

Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{390}{\frac{182}{56}+\frac{108}{72}+\frac{5}{4}} = \frac{390}{\frac{13}{4}+\frac{6}{4}+\frac{5}{4}}$$

$$= \frac{390\times 4}{13+6+5} = \frac{390\times 4}{24}$$

$= 65\,\text{km/hr}$

147. P moves at a speed of 50 km/h in the first 1 hour and at a speed of 70 km/h in the next two hours. What is the average speed of P?

(a) 60 km/hr (b) 63.33 km/hr.

(c) 59.33 km/hr. (d) 62 km/hr.

RRB NTPC 02.04.2016 Shift : 1

Ans : (b) Distance covered by P in first hours = 50 km.

Distance covered by P in second hour = 70

Distance covered by P in third hour = 70 km.

$\therefore$ Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{50+70+70}{1+1+1} = \frac{190}{3} = 63.33 \text{ Km./hr.}$$

148. If P travels the first half of his journey at 40 km/h and the remaining distance at 50 km/h, then what will be the average speed of his total journey?

(a) 44.44 Km./hr. (b) 53.33 Km./hr.

(c) 45 Km./hr. (d) 60 Km./hr.

RRB NTPC 02.04.2016 Shift : 2

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./hr.

149. A car completes the first half of the distance at a speed of 50 km/h and the remaining half of the journey at 60 km/h. What is the average speed of the car during the entire journey?

(a) 54.54 Km./hr. (b) 36.36 Km./hr.

(c) 50.5 Km./hr. (d) 45.45 Km./hr.

RRB NTPC 02.04.2016 Shift : 3

Ans : (a) Average speed of car $= \frac{2V_1V_2}{V_1+V_2}$

$$= \frac{2\times 50\times 60}{50+60}$$

$$\frac{6000}{110} = 54.54 \text{ Km./hr.}$$

150. A cyclist travels a distance of 8 km at the speed of 15 km/h and a distance of 4 km at a speed of 20 km/h. Then what will be his average speed?

(a) 16.8 (b) 16.36

(c) 15.71 (d) 17.50

RRB NTPC 28.03.2016 Shift : 2

Ans :(b) If a person walks A km distance at a speed of x km./hr. and B km. distance at a speed of y km./hr. then

Average speed $= \frac{A+B}{\frac{A}{x}+\frac{B}{y}} = \frac{8+4}{\frac{8}{15}+\frac{4}{20}} = \frac{12}{\frac{8}{15}+\frac{1}{5}}$

$$= \frac{12}{\frac{8+3}{15}} = \frac{12\times 15}{11} = 16.36\,\text{km/hr}$$

151. A person covers the first 176 km at a speed of 16 km/h and the next 64 km at a speed of 32 km/h. What would be the approximate average speed for the first 240 km of the journey?

(a) 13 km./hr. (b) 27 km./hr.

(c) 18.5 km./hr. (d) 21 km./hr.

RRB NTPC 19.04.2016 Shift : 3

Ans : (c) Time taken to travelled 176 km. distance = $\frac{176}{16}$ = 11 hours

Time taken to travelled 64 km. distance $= \frac{64}{32} = 2$ hrs.

Average speed $= \frac{\text{Total Distance}}{\text{Total Time}}$

$$= \frac{176+64}{11+2} = \frac{240}{13}$$

= 18.5 Km./hr. (almost)

152. A car travels 30 km at speed of 60 km/h at the begining, the next 20 km travels at a speed of 80 km/h, find its average speed.

(a) 65.67 Km./hr. (b) 65.33 Km./hr.

(c) 66.33 Km./hr. (d) 66.67 Km./hr.

RRB NTPC 06.04.2016 Shift : 1

Ans : (d)

Average speed of car $= \frac{\text{Total Distance}}{\text{Total Time}}$

$= \frac{30+20}{\frac{30}{60}+\frac{20}{80}}$ $\left(\because \text{Time} = \frac{\text{distance}}{\text{speed}}\right)$

$= \frac{50}{\frac{1}{2}+\frac{1}{4}} = \frac{50}{\frac{2+1}{4}} = \frac{50\times 4}{3}$

$= \frac{200}{3} = 66.66 \approx 66.67(\text{km./hr.})$

153. Car P travels a certain distance in 11 hours at a speed of 66 km/h. Car Q travels a distance of 242 km more than Car P in the same time. Find the average speed of Car Q.

(a) 718 Km./hr. (b) 77 Km./hr.
(c) 88 Km./hr. (d) 83 Km./hr.

RRB NTPC 19.01.2017 Shift : 2

Ans : (c) Distance covered by P = 66×11 = 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./hr.

154. Arjun travelled a distance of 1000 km from pune to Goa at a speed of 4 km/h and the return journey at a speed of 3 km/h. What was his average speed during the entire journey?

(a) 3 Km./hr. (b) 3.43 Km./hr.
(c) 3.5 Km./hr. (d) 5.4 Km./hr.

RRB NTPC 28.04.2016 Shift : 2

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.

Type - 5

155. A certain distance is travelled at a certain speed. If half of the distance is travelled in double time. Find the ratio of both the moves.

(a) 2 : 1 (b) 1 : 3
(c) 4 : 1 (d) 3 : 2

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

Ans : (c) Let the certain distance = x km

According to question,

Time = t

Speed = V_1

$V_1 = \frac{x}{t}$ km/h.....(i)

According to second condition–

Distance = x/2 km

Time = 2t

Speed $V_2 = \frac{x/2}{2t} = \frac{x}{4t}$

$\frac{V_1}{V_2} = \frac{\frac{x}{t}}{\frac{x}{4t}} = \frac{4}{1}$

$\boxed{V_1 : V_2 = 4:1}$

156. The ratio of the speeds of two persons while travelling a certain distance is 18:12. Find the ratio of the time taken by them to travel the distance.

(a) 2: 1 (b) 2:5
(c) 2:3 (d) 3:

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

Ans : (c) Given-

Ratio of speed = 18 : 12

Ratio of time $= \frac{1}{18}:\frac{1}{12} = \frac{2}{36}:\frac{3}{36} = 2:3$

157. A motor cycle driver covers a distance of 192 km at a speed of 32 km/h. A car starts running from the same place after 2.5 hours the motorcyclist moves,but travels that distance 0.5 hours before. What is the ratio of the speed of the car and the motorcycle?

(a) 3:1 (b) 4:3
(c) 2:1 (d) 1:2

RRB JE - 28/05/2019 (Shift-I)

Ans : (c)

Time taken to cover the distance of 192 km by motorcycle $= \frac{192}{32} = 6\text{h}$

and time taken by car = 6 – (2.5 + .5) = 3 h

Hence Speed of car $= \frac{192}{3} = 64\text{km/hr}$

Hence speed of car : speed of motor cycle

= 64 : 32 = 2 : 1

158. Two motorists traveling in the opposite direction meet at some point in the middle. After this they take 9 and 16 hours respectively to reach their destination. What is the ratio of their speed?

(a) 4:7 (b) 4:3

(c) 5:3 (d) 5:4

RRB JE - 28/05/2019 (Shift-I)

Ans : (b) Let the speed is x and y

Ratio of speed $= \sqrt{\frac{t_2}{t_1}} = \frac{x}{y}$

$\frac{x}{y} = \sqrt{\frac{16}{9}}$

$\frac{x}{y} = \frac{4}{3}$

x : y = 4 : 3

159. Mary takes 30 minutes to make one round of a rectangular garden Sila takes 45 minutes to make one round of the same garden. At 9 am both of them started walking in the same direction from the same point. What time will the both meet again at the starting point?

(a) 10 : 45 am (b) 10 : 00 am

(c) 11 : 00 am (d) 10 : 30 am

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (d) Time taken to make a round of the rectangular garden by mary = 30 minutes.

Time taken to make a round of the rectangular garden by Sila = 45 minute

Time to start walking = 9 : 00 AM

meeting time at the starting point

= L.C.M. of 9 : 00 AM + 30 and 45

= 9 : 00 AM + 90 minutes

= 9 : 00 AM + $\frac{90}{60}$ hours

= 10 : 30 AM

160. Car I travels a certain distance in a certain time. Car II travels half of the distance in double the time. Find the ratio of their relative speeds.

(a) 1 : 2 (b) 1 : 4

(c) 2 : 1 (d) 4 : 1

RRB NTPC 17.01.2017 Shift-2

Ans : (d) Let the distance is d and time is t.

According to question,

Speed for car I $(S_1) = \frac{d}{t}$

Speed for car II $(S_2) = \frac{d/2}{2t} = \frac{d}{4t}$

$\therefore S_1 : S_2 = \frac{d}{t} : \frac{d}{4t} = 1 : \frac{1}{4} = 4 : 1$

161. A bus covers some distance at a certain speed. If a person covers one-third of that distance in thrice the time, then the speed of the person is the ratio of the speed of the bus.

(a) 1:3 (b) 3:1

(c) 1:9 (d) 9:1

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (c) Let the distance d is covered in time t by bus.

speed of bus $= \frac{d}{t}$

from question–

Speed of person $= \frac{d/3}{3t} = \frac{d}{9t}$

Required Ratio $= \frac{d}{9t} : \frac{d}{t} = 1 : 9$

162. Two stations Mumbai and Pune which have a distance of 300 km. Two buses run opposite directions from Mumbai and Pune respectively and cross each other at a distance of 220 km from a station. What is the ratio of their speeds?

(a) 13:9 (b) 10:3

(c) 11:4 (d) 14:5

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) Total distance = 300 km

Distance from first station = 220 km

Distance from second station = 300 – 220 = 80 km

Ratio of speed = 220 : 80 = 11 : 4

163. The ratio of the speeds of two persons while travelling a certain distance is 24:30. Find the ratio of the time taken by them to travel the distance.

(a) 2 : 1 (b) 3:5

(c) 5 : 4 (d) 3: 4

RRB NTPC 28.04.2016 (Shift : III)

Ans : (c) Given-

Ratio of speed = 24 : 30

Ratio of time $= \frac{1}{24} : \frac{1}{30} = 5 : 4$

19.

Train

Type - 1

1. On increasing the speed 5 km/hr of a train. It takes 2 hour less in covering a distance of 300 km find its general speed?

(a) 30 km/hr (b) 25 km/hr
(c) 20 km/hr (d) 35 km/hr

RRB JE - 01/06/2019 (Shift-III)

Ans. (b) Let the normal speed of train = x km/hr.
According to question,

$$\frac{300}{x}-\frac{300}{x+5}=2$$

$$\frac{300(x+5)-300x}{x(x+5)}=2$$

$300x + 1500 - 300x = 2x^2 + 10x$
$2x^2 + 10x - 1500 = 0$
$x^2 + 5x - 750 = 0$
$x^2 + 30x - 25x - 750 = 0$
$x(x+30) - 25(x+30) = 0$
$(x+30)(x-25) = 0$
$x - 25 = 0$
$x = 25$
Hence the normal speed of train is 25 km/hr.

2. A train runs at 72 km/hr. Total distance covered by it in 15 seconds?

(a) 150 metre (b) 300 metre
(c) 200 metre (d) 100 metre

RRB RPF SI – 05/01/2019 (Shift-I)

Ans : (b) Speed of train = 72 km./hr.

$= 72\times\frac{5}{18}$ m./sec. = 20 m./sec.

∴ Distance covered in 15 seconds = 20×15 = 300 m.

3. A bullet without stopping completes its journey in 12 hours. If it runs 30 km/hr faster then it can complete its journey in 10 hrs 40 minutes. What was the speed when it completed the journey in 12 hours?

(a) 320 km/hr (b) 180 km/hr
(c) 320 km/hr (d) 240 km/hr

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

Ans : (d) Let the speed of train is x km/hr.
According to question,

$$(x+30)\times 10+\frac{40}{60}=x\times 12$$

$$(x+30)\times\frac{32}{3}=12x$$

$32x + 960 = 36x$
$\Rightarrow 4x = 960$

$$x=\frac{960}{4}=240\text{ km./hr.}$$

4. A train on running at a speed of 48 km/hr completes its journey in 10 hours. If the same distance is to be covered in 8 hours then what should be the speed of train?

(a) 50 km/hr (b) 55 km/hr
(c) 45 km/hr (d) 60 km/hr

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (d) Speed of train = 48 km/hr
taken time = 10hr
then, Distance = speed × time
= 48 × 10 = 480 km
The speed required to cover a distance of 480 km. in 8 hours.

$=\frac{480}{8}$ = 60 km/hr

5. A train runs at a normal speed of 70 km/hr. How much distance will it cover in 24 minutes (in km)?

(a) 40 (b) 28
(c) 35 (d) 32

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (b) According to question,
Speed of train = 70 km/hr
How much distance will cover in 24 minutes = ?
∵ Distance covered by train in 60 minutes = 70 km.

∴ In 1 minute $=\frac{70}{60}$

∴ In 24 minutes $=\frac{70\times 24}{60}$

Hence distance = 28 km.

6. The distance between two points was covered by a train at 80 km/hr while going and 40 km/hr while returning. If in this journey total 6 hours were taken then what is the distance between the two points from oneside?

(a) 180 km (b) 140 km
(c) 160 km (d) 150 km

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (c) Let the total distance is x km.

$$\text{Time}=\frac{\text{Distance}}{\text{Speed}}$$

According to question,

$$\frac{x}{80}+\frac{x}{40}=6$$

$$\frac{x+2x}{80}=6$$

$3x = 6 \times 80$
$x = 160$ km.

7. If a train covers 152 km in 8/9 hours, then find the speed of the train?
(a) 170 km/h (b) 171 m/s
(c) 171 km/h (d) 170 m/s
RRB Group-D – 09/10/2018 (Shift-II)

Ans. (c) : Time $= \frac{8}{9}$ hours.

Distance = 152 km. $\left[\text{From Speed} = \frac{\text{Distance}}{\text{Time}}\right]$

$\therefore$ Speed of train $= \frac{152}{\left(\frac{8}{9}\right)} = 152 \times \frac{9}{8}$

$= 19 \times 9 = 171$ km./hr.

8. An express train moves with a speed of 144 km/hr. Calculate the distance covered by train in 15 minutes.
(a) 33 km (b) 32 km
(c) 36 km (d) 35 km
RRB Group-D – 23/09/2018 (Shift-II)

Ans : (c) Given in question,
Speed = 144 km/hour
Time = 15 minute = $\frac{15}{60}$ hours.
Distance = ?
Let the distance covered by train is D km.
Speed = $\frac{\text{Distance}}{\text{Time}}$
$144 = \frac{D}{\frac{15}{60}}$
$D = \frac{144 \times 15}{60}$
D = 36 km
Intended Distance = 36 km

9. A train covers a distance of 435 km in 2 hours 30 minutes. Find its speed in metre per second.
(a) 47.4 (b) 45.8
(c) 43.5 (d) 48.3
RRB NTPC 28.04.2016 Shift : 1

Ans : (d) From question,
Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{435}{2\frac{1}{2}}$ km/h
$= \frac{435 \times 2}{5} \times \frac{5}{18}$ m/s
$= \frac{435}{9} \Rightarrow 48.3$ m/s
Hence speed of train = 48.3 m/s

10. A bullet train covers a certain distance in 5 hours at a speed of 240 km/hr. To cover the same distance in 2 hours what should be its speed (km/hr)?
(a) 420 (b) 540
(c) 480 (d) 600
RRB NTPC 30.04.2016 Shift : 1

Ans : (d) Distance = Speed × Time
$= 240 \times 5 = 1200$ km.
Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{1200}{2} = 600$ km/hr.

11. A train moving with a uniform speed covers 338 m in 50 s. What is its speed?
(a) 6.76 m/s (b) 7.76 m/s
(c) 5.76 m/s (d) 4.76 m/s
RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (a) From Question
Distance = 338 m.
Time = 50 seconds
Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{338}{50}$ =6.76 m./sec.

Type - 2

12. A train is running with a speed of 160 km/hr and its length is 180 metres. Find the time taken by the train to cross a pole?
(a) 4.05 second (b) 5 second
(c) 8.2 second (d) 10 second
RRB RPF Constable – 19/01/2019 (Shift-I)

Ans : (a) Speed of train = 160 km/h $= 160 \times \frac{5}{18}$ m./sec.
Intended Time $= \frac{\text{Length of train}}{\text{Speed of train}}$
$= \frac{180}{160 \times \frac{5}{18}} = \frac{180 \times 18}{160 \times 5} = 4.05$ sec.

13. A 110 meter long train takes 12 seconds to cross any pole. Find the speed of the train in km/hr.
(a) 33 km/hr (b) 27 km/hr
(c) 30 km/hr (d) 49 km/hr
RRB JE - 25/05/2019 (Shift-I)

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./hr.

14. A train whose speed is 60 km/hr crosses a pole in 9 second what is the length of the train?
(a) 120 metre (b) 180 metre
(c) 150 metre (d) 324 metre
RRB JE - 25/05/2019 (Shift-II)

Ans : (c) Let the length of train = l metre
$60 \times \frac{5}{18} = \frac{l}{9}$
$30 \times 5 = l$
$l = 150$ metre

15. A train crosses a 100 metre long platform at a speed of 45 km/hr in 60 seconds. Find the time taken by the train to cross the electric pole.

(a) 2 minute (b) 8 second
(c) 1 minute (d) 52 second

RRB JE - 27/06/2019 (Shift-I)

Ans : (d) Let the length of train = x
According to question,

$$\frac{100+x}{45\times\frac{5}{18}}=60$$

2(100+x) = 60 × 25
200 + 2x = 1500
2x = 1300
x = 650

The time taken to cross the electric pole =

$$\frac{650}{45\times\frac{5}{18}}=\frac{650\times18}{45\times5}=52 \text{ seconds}$$

16. A 110 m long train, whose speed is 36 km/hr takes 53 second to cross a pole to the end of the train. Find the distance of the pole from the front end.

(a) 640 metre (b) 420 metre
(c) 530 metre (d) 1798 metre

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (b) Let the distance of the pole from the front end of the train = x metre

Distance = Speed × Time

$$(110+x)=36\times\frac{5}{18}\times53$$

110 + x = 530
x = 420 metre

17. A 200 metre long train, whose speed is 60 km/hr, will take how much time to cross a signal post?

(a) 1 minute (b) 30 seccond
(c) 14 second (d) 12 seccond

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (d) Length of train = 200 metre

Speed = 60 km/hr.

$$=60\times\frac{5}{18}\text{m/s}=10\times\frac{5}{3}=\frac{50}{3}\text{m/s}$$

$$\text{Speed}=\frac{\text{Distance}}{\text{Time}}$$

Hence the time taken to cross a signal Post

$$=\frac{\text{Distance}}{\text{Speed}}=\frac{200}{\frac{50}{3}}$$

$$=200\times\frac{3}{50}=4\times3=12 \text{ second}$$

18. A train takes 10 seconds to cross a fixed object. If the speed of the train is 25 m/sec, then what is the length of the train?

(a) 300 metre (b) 250 metre
(c) 320 metre (d) 200 metre

RRB NTPC 02.04.2016 Shift : 3

Ans : (b) Let the length of train = x metre.

∴ From question -

$$\left[\text{Formula}\rightarrow\text{Speed}=\frac{\text{Distance}}{\text{Time}}\right]$$

$$\frac{x}{25}=10\Rightarrow x=250 \text{ m.}$$

Note- For a train to cross on object or particle or man etc, the train has to travel a distance of its own length.

19. A 150 metre long train is moving with a speed of 54 km/hr. Find the time taken by the train to cross a pole?

(a) 8 second (b) 10 second
(c) 12 second (d) 15 second

RRB NTPC 31.03.2016 Shift : 3

Ans : (b) Speed of train = 54km/h

$$=54\times\frac{5}{18}=15 \text{ m./sec.}$$

Time taken to cross the pole by train

$$=\frac{\text{Length of train}}{\text{Speed of train}}=\frac{150}{15}=10 \text{ sec.}$$

20. A train is running with a speed of 80 km/hr. If the length of the train is 400 metre, then what time will it take to cross an electric pole?

(a) 10 second (b) 6 second
(c) 18 second (d) 15 second

RRB NTPC 28.03.2016 Shift : 2

Ans :(c) Speed of train = 80 km/hr.

$$=80\times\frac{5}{18}=\frac{400}{18}\text{m./sec}$$

Length of train = 400 metre

$$\text{Time taken to cross the pole}=\frac{400}{\frac{400}{18}}=\frac{400}{400}\times\frac{18}{1}=18 \text{ sec.}$$

21. A train moving with a speed of 120 km/hr crosses a pole in 9 second. What is the length of the train?

(a) 240 metre (b) 300 metre
(c) 360 metre (d) 600 metre

RRB NTPC 18.01.2017 Shift : 3

Ans : (b) 120 km/h $=120\times\frac{5}{18}\text{m/s}$

Length of train $=120\times\frac{5}{18}\times9$

(Distance = speed×time)

⇒ 60 × 5 = 300 m.
Length of Train = 300 m.

22. A train whose speed is 60 km/hr crosses pole in 30 second. Find the length of the train?

(a) 250 metre (b) 750 metre
(c) 500 metre (d) 450 metre

RRB NTPC 06.04.2016 Shift : 2

Ans : (c) Speed of train = 60 km/hr

$$= 60\times\frac{5}{18}\text{m/sec} = \frac{50}{3}\text{m/Sec}$$

Hence length of the train = $\frac{50}{3}\times 30$ = 500 m.

Type - 3

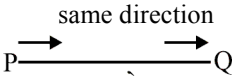
23. Train P and Q are moving on a parallel track in the same direction. Train P crosses train Q completely in 60 seconds and a passenger present in train P crosses train Q in 40 seconds. If the speed of the train is in the 2:1 ratio, then calculate the ratio of their lengths?

(a) 3:4 (b) 1:2
(c) 3:1 (d) 3:2

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

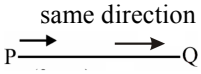
Ans : (b) Let the speed of trains is 2x and x.
and the length of trains is l_1 and l_2

same direction



(2x–x) Relative speed

same direction



(2x–x) Relative speed

From first condition-

$$60 = \frac{l_1 + l_2}{2x - x}$$

$60x = l_1 + l_2$ ...(i)

From second condition-

$$40 = \frac{l_2}{2x - x}$$

$40x = l_2$ ....(ii)

$l_1 = 60x - l_2$
$= 60x - 40x$
$= 20x$

$l_1 : l_2 = 20x : 40x$

$l_1 : l_2 = 1 : 2$

24. A train crosses a pole in 20 seconds and it crosses a cycling man whose speed is 5 km/hr coming from the opposite direction in 18 seconds. Find the speed of the train?

(a) 40 km/hr (b) 62 km/hr
(c) 45 km/hr (d) 65 km/hr

RRB JE - 31/05/2019 (Shift-II)

Ans : (c) Let the speed of train = x km./hr.
Distance covered to cross the pole in 20 seconds

$$= \frac{x\times 20}{3600}\text{km.}$$

Speed of cycle = 5 km./hr.
Cycle + Speed of train = (x + 5) km./hr.

Distance covered to cross the cycle = $\frac{(x+5)\times 18}{3600}$ km.

$$\frac{(x+5)\times 18}{3600} = \frac{x}{180}$$

18x + 90 = 20x
2x = 90
x = 45 km/hr.

25. A 110 metre long train is running with a speed of 60 km/hr. How much time will it take to cross a man running from opposite direction with a speed of 6 km/hr.

(a) 5 second (b) 6 second
(c) 10 second (d) 7 second

RRB RPF SI – 06/01/2019 (Shift-II)

Ans. (b) Relative Speed = (60 + 6) km./hr.

$$66\times\frac{5}{18} = \frac{55}{3}\text{m/s}$$

$$\text{Time} = \frac{110\text{m}}{\frac{55}{3}\text{m/s}}$$

$$\frac{110\times 3}{55} = 6 \text{ seconds}$$

26. A 125 metre long train passes a person, who is going 5 km/hr in the directin of the train and in 10 seconds. How much is the speed of the train?

(a) 50 km/hr (b) 55 km/hr
(c) 54 km/hr (d) 45 km/hr

RRB JE - 01/06/2019 (Shift-I)

Ans : (a) Let the speed of train = x km/hr.
Relative speed of person of train = (x–5) km./hr.

$$= (x-5)\times\frac{5}{18}\text{ m./sec.}$$

$$\therefore \frac{125}{(x-5)\times\frac{5}{18}} = 10$$

$$\frac{125\times 18}{5x-25} = 10$$

5x = 225 + 25
5x = 250
x =50 km/hr.

27. A train over takes two people who are moving with speed 2 and 4 km/hr. of the train moving in the same direction and the train passes them in 9 and 10 second respectively. Find the length and speed of the train.

(a) 22 km/hr, 50 metre (b) 22 km/hr, 80 metre
(c) 32 km/hr, 50 metre (d) 32 km/hr, 80 metre

RRB Group-D – 31/10/2018 (Shift-II)

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 train relative to first person $= \left(y - \frac{5}{9}\right)$ m./s.

Speed of train relative to second person

$= \left(y - \frac{10}{9}\right)$ m./s.

$y - \frac{5}{9} = \frac{x}{9}$, $\quad y - \frac{10}{9} = \frac{x}{10}$

$y = \frac{x+5}{9}$ -----(i)

$y = \frac{x}{10} + \frac{10}{9} = \frac{9x+100}{90}$ ----- (ii)

$\frac{x+5}{9} = \frac{9x+100}{90}$ (from (i) & (ii))

–10 x + 50 = 9x + 100

x = 50 m.

and speed $= \frac{50+5}{9} = \frac{55}{9}$ m./sec.

$= \frac{55}{9} \times \frac{18}{5} = 22$ km./hr.

28. A train running at a uniform speed crosses two people moving in the same direction in 6 seconds and 6.4 seconds respectively. First person speed was 4.5 km/hr and the second person speed was 6.3 km/hr. What was the speed of train km/hr?

(a) 32.6 (b) 33.3
(c) 35.6 (d) 36

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (b) Let the speed of train is V km/hr. and length is d. The speed of the train relative to the velocity of both the people (V–4.5) and (V–6.3) km/hr respectively.

Now $V = \frac{d}{t}$

Crosses the first person in 6 seconds.

$= \left(\frac{6}{60 \times 60}\right) = \frac{6}{3600}$ hours

$V - 4.5 = \frac{3600d}{6}$

6V – 27 = 3600d .....(i)

Similarly, crosses the second person in 6.4 sec

$= \frac{6.4}{60 \times 60} = \frac{6.4}{3600}$ hr.

Hence, $V - 6.3 = \frac{3600d}{6.4}$

6. 4V – 40.32 = 3600d .....(ii)

By equating both the equations–

6V – 27 = 6.4V – 40.32

6.4V–6V = 40.32–27

0.4V = 13.32

$V = \frac{13.32}{0.4}$

V = 33.3 km./hr.

Type - 4

29. A 120 metre long train crosses a plateform of 100 metres in 10 seconds. Find its speed?

(a) 79.2 km/hr (b) 80 km/hr
(c) 72 km/hr (d) 100 km/hr

RRB RPF SI – 16/01/2019 (Shift-I)

Ans : (a)

From $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$,

$\text{Speed} = \frac{\text{Length of train} + \text{Length of platform}}{\text{Time}}$

$= \frac{120+100}{10}$

$= \frac{22 \times 18}{5}$ km/hr.

$= \frac{396}{5} = 79.2$ km./hr.

30. A cargo train runs with a speed of 72 km/hr and crosses a 250 metre long platform in 26 seconds then find the length of the cargo train?

(a) 230 metre (b) 270 metre
(c) 260 metre (d) 240 metre

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

Ans : (b) Let the length of cargo train = x metre

From question–

$72 \times \frac{5}{18} = \frac{250+x}{26}$

20 × 26 = 250 + x

520 = 250 + x

x = 520 – 250

x = 270 metre

Hence the length of cargo train 270 metre.

31. A train running with a speed of 78 km/hr crosses a platform of 455 metre long in 27 second. What is the length of the train?

(a) 110 metre (b) 130 metre
(c) 120 metre (d) 100 metre

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

Ans. (b) : Let the length of train is x m.

$\because \text{Time} = \frac{\text{Distance}}{\text{Speed}}$

$\therefore 27 = \frac{455+x}{78 \times \frac{5}{18}}$

585 = 455 + x

x = 130 metre

32. A train moving with a speed of 66 km/hr crosses a 410 metre long platform in 30 second. Find the lengh of the train?

(a) 160 metre (b) 140 metre
(c) 240 metre (d) 180 metre

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (b) Let the length of train is x m.

Speed $= 66 \times \frac{5}{18} = \frac{55}{3}$ m/sec

From Speed $= \frac{\text{Distance}}{\text{Time}}$

$= \frac{55}{3} = \frac{x+410}{30}$

1650 = 3x + 1230

3x = 1650 – 1230

3x = 420

x = 140 metre

Hence length of the train will be 140 m.

33. A 162 metre long train moving at a speed of 54 km/hr crosses a platform in 44 second. What will be the length of platform?

(a) 660 metre (b) 540 metre

(c) 822 metre (d) 498 metre

RRB Group-D – 25/09/2018 (Shift-II)

Ans : (d) Let the length of platform is x m.

then, $\frac{162+x}{54 \times \frac{5}{18}} = 44$

$\frac{162+x}{15} = 44$

162 + x = 44 × 15

x = 660 – 162

x = 498 m

34. A train moving with a speed of 78 km/hr crosses a platform of 450 metre long in 27 seconds. What is the length of the train?

(a) 120 metre (b) 135 metre

(c) 130 metre (d) 125 metre

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (b) : Let the length of train $= \ell$

$\left[\text{Formula Speed} = \frac{\text{Distance}}{\text{Time}}\right]$

$\therefore 78 \times \frac{5}{18} = \frac{450+\ell}{27}$

$\frac{65}{3} = \frac{450+\ell}{27}$

$65 \times 27 = 1350 + 3\ell$

$1755 - 1350 = 3\ell$

$\ell = \frac{405}{3} = 135$ metre

Hence length of the train = 135 metre

35. A 153 metre long train crosses a 747 metre long bridge in 40.5 second. What is the speed of train?

(a) 75 km/hr (b) 85 km/hr

(c) 70 km/hr (d) 80 km/hr

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) $\because$ Speed $= \frac{\text{Distance}}{\text{Time}}$

Speed of train= $\frac{\text{Length of train} + \text{Length of Bridge}}{\text{Total Time taken}}$

$= \frac{153+747}{40.5} = \frac{900}{40.5} = \frac{9000}{405}$ m./sec.

$\because$ On changing the speed of train in km/hr.–

$= \frac{9000}{405} \times \frac{18}{5}$

$= \frac{1800 \times 18}{81 \times 5}$

$= \frac{200 \times 18}{9 \times 5} = \frac{200 \times 2}{5} = 80$ km./hr.

36. A train moving with a speed of 66 km/hr crosses a 465 metre long bridge in 33 seconds. What was the length of the train?

(a) 240 metre (b) 180 metre

(c) 140 metre (d) 160 metre

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) : Speed $= \frac{\text{Distance}}{\text{Time}}$

length of train + length of Bridge = Speed × Time

length of train + 465 $= 66 \times \frac{5}{18} \times 33$

length of train + 465 = 11 × 5 × 11

length of train = 55 × 11 – 465 = 605 – 465 = 140 m

37. A train crosses 130 metre long platform in 14.5 seconds and 245 metre long platform in 20.25 seconds. What is the speed of the train?

(a) 69 km/hr (b) 75 km/hr

(c) 66 km/hr (d) 72 km/hr

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (d) : Let the length of train = x metre

Speed of train in first condition $= \frac{130+x}{14.5}$.....(i)

Speed of train in second condition $= \frac{245+x}{20.25}$.....(ii)

from equation (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 + 14.5x

5.75x = 920

x = 160

Hence Speed $= \frac{130+160}{14.5}$

$= \frac{290}{14.5} = 20$ m./sec.

$= 20 \times \frac{18}{5} = 72$ km./hr.

38. A train moving with a speed of 65 km/hr crosses a 815 metre long bridge in 54 seconds. What was the length of the train?

(a) 150 metre (b) 170 metre
(c) 160 metre (d) 155 metre

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (c) Let the length of train is x m.

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} \qquad \left\{\begin{matrix} 65\text{km/hr} \\ = 65 \times \frac{5}{18}\text{m/s} \end{matrix}\right\}$$

$$54 = \frac{(815 + x)}{65 \times \frac{5}{18}}$$

975 = 815 + x
x = 975 – 815
x = 160
Hence the length of train is = 160 m.

39. A train moves at an uniform speed and crosses a 350 metre long platform in 15 second and one more station of 430 metre long in 23 second. What is the speed of train in km/hr?

(a) 18.70 (b) 23.30
(c) 40 (d) 36

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (d) Let the length of train is x m.
Speed of train =

$$\frac{\text{Length of second station - Length of first station}}{\text{Time difference}}$$

$$= \frac{(430 - 350)}{(23 - 15)} = \frac{80}{8} = 10 \text{ m/s}$$

$$= 10 \times \frac{18}{5} = 36 \text{ km./hr.}$$

40. A train moving with a speed of 78 km/hr crosses a 445 metre long platform in 27 second. What is the length of the train?

(a) 120 metre (b) 140 metre
(c) 130 metre (d) 110 metre

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (b) Let the length of platform is x m.

Speed = 78 km/h = $78 \times \frac{5}{18}$ m/s = $\frac{65}{3}$ m/s

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\frac{65}{3} = \frac{445 + x}{27}$$

65 × 9 = 445 + x
585 – 445 = x
x = 140 m
Hence the length of train = 140 m.

41. A train crosses 520 metre long platform in 36 seconds. Till how many kilometres was the train moving with 70 km/hr?

(a) 150 metre (b) 140 metre
(c) 180 metre (d) 160 metre

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (c) : Time = 36 second
Let the lenth of train = x m.
The total distance covered by the train = (520 + x) m.

$$\text{Speed} = 70 \times \frac{5}{18} \text{ m./sec.}$$

$$\left[\text{From Speed} = \frac{\text{Distance}}{\text{Time}}\right]$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$36 = \frac{(520 + x) \times 18}{70 \times 5}$$

$$\frac{36}{18} = \frac{520 + x}{350}$$

700 = 520 + x
x = 700 – 520 = 180 metre.

42. A 165 metre long train crosses a 755 metre bridge in 46 seconds. What is the speed of train?

(a) 80 km/h (b) 78 km/h
(c) 75 km/h (d) 72 km/h

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (d) :
Total distance = length of train + Length of bridge
= 165 + 755
= 920 m

$$\text{Hence Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{920}{46} = 20 \text{ m/s} = 20 \times \frac{18}{5} = 72 \text{ km/h}$$

43. A train moving with a speed of 48 km/hr crosses a 200 metere long platform in 27 second. What is the length of the train?

(a) 180 metre (b) 160 metre
(c) 240 metre (d) 140 metre

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (b) Let the length of train = L metre

$$\text{From Time} = \frac{\text{Distance}}{\text{Speed}},$$

$$27 = \frac{L + 200}{48 \times \frac{5}{18}} \qquad [\because \text{km./hr.} \times \frac{5}{18} = \text{m/s.}]$$

$$27 \times \frac{40}{3} = L + 200$$

360 = L + 200
L = 360 – 200 = 160 metre

44. A train of 152.5 metre long. Which is moving with a speed of 57 km/hr crosses a platform in 39 second. What is the length of the platform?

(a) 617.5 metre (b) 480 metre
(c) 590 metre (d) 465 metre

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (d) : Let the length of platform = x m.

$$\text{Speed } = 57 \times \frac{5}{18} \text{ m/sec}$$

total distance = 152.5 + x m., time = 39 second

$$\because \text{ Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\frac{57 \times 5}{18} = \frac{152.5 + x}{39}$$

$$\frac{285 \times 39}{18} = 152.5 + x$$

$$x = 617.5 - 152.5$$

$$\boxed{x = 465\text{m}}$$

45. A train crossed a 110 m long platform in 13.5 seconds and a 205 m long platform in 18.25 seconds. What was the speed of the train?

(a) 75 km/h (b) 72 km/h
(c) 69 km/h (d) 66 km/h

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (b) : Let the length of train = x m.
According to question-

$$\frac{(110 + x)10}{135} = \frac{(205 + x) \times 100}{1825}$$

$$\frac{(110 + x)}{135} = \frac{(205 + x) \times 2}{365}$$

$$\frac{(110 + x)}{27} = \frac{(205 + x) \times 2}{73}$$

8030 + 73x = 11070 + 54 x
73x–54x = 11070 – 8030
19x = 3040
$\boxed{x = 160}$

$$\text{Speed of train} = \frac{(110 + 160) \times 10}{135} = \frac{270 \times 10}{135}$$

$$= 20 \text{ m/s} = \frac{20 \times 18}{5} = 72 \text{ km./hr.}$$

46. A train having a length of 500 m passes through a tunnel of 1000 m in 1 minute. What is the speed of the train in km./hr

(a) 75 km/hr. (b) 90 km/hr.
(c) 87 km/hr. (d) 96 km/hr.

RRB NTPC 03.04.2016 Shift : 2

Ans : (b) Let the speed of train = x km./hr.
from question –

Distance = (500+1000)m = 1.5 km
Time = 1 minute = 60 second

$$\frac{1.5 \text{ km}}{x} = \frac{1}{60} \text{h}$$

x = 90 km./hr.

47. A 250 metre long train crosses an electric pole in 8 second. If it takes 20 second to cross a platform then what is the length of platform?

(a) 375 metre (b) 625 metre
(c) 500 metre (d) 675 metre

RRB NTPC 29.03.2016 Shift : 2

Ans : (a) Let the length of platform = x m.
and speed of train = y m/s.
from question–

$$\frac{250}{8} = y \text{.....(i)}$$

Again from question-

$$\frac{250 + x}{20} = y \text{.....(ii)}$$

from equation (i) and (ii)-

$$\frac{250}{8} = \frac{250 + x}{20}$$

5000 = 2000 + 8x
8x = 3000 ⇒ x = 375 m.
Hence length of platform = 375 m.

48. A 125 metre long metro train crosses a 75 metre long platform in 10 seconds. What is the speed of the train?

(a) 72 km/hr (b) 36 km/hr
(c) 18 km/hr (d) 90 km/hr

RRB NTPC 16.04.2016 Shift : 2

Ans : (a)
Distance covered by train = 125+75 = 200 m.
Time = 10 second

$$\text{Speed of train} = \frac{200}{10} = 20 \text{ m./sec.}$$

$$= 20 \times \frac{18}{5} \text{ km/hr.} = 72 \text{ Km/hr.}$$

49. A 145 m long train crosses a 655 m long bridge in 36 seconds. What is the speed of the train?

(a) 60 km/hr. (b) 70 km/hr.
(c) 80 km/hr. (d) 75 km/hr.

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (c) Let the speed of train is x m/sec.
According to question,

$$\frac{145 + 655}{x} = 36$$

$$x = \frac{800}{36} \text{ m./sec.}$$

$$x = \frac{800}{36} \times \frac{18}{5} \text{ km./hr.}$$

x = 80 km/hr.

50. A train crosses a 550m long platform in 36 seconds. How long was the train if it was travelling at the speed of 70 km/h?

(a) 525 metre (b) 160 metre
(c) 140 metre (d) 150 metre

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (d) : Let the length of train = x m.

$$\text{Speed} = 70 \text{ km/h} = 70 \times \frac{5}{18} \text{ m/sec}$$

$$\text{Then, } 70 \times \frac{5}{18} = \frac{550 + x}{36}$$

70 × 5 × 2 = 550 + x
700 = 550 + x
x = 150 m.

Hence length of train = 150 m.

51. A train moving with a speed of 66 km/hr crosses a 300 metre long platform in 24 seconds. How long was the train?

(a) 140 metre (b) 160 metre
(c) 180 metre (d) 240 metre

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (a) Let the length of train = x m.
Total covered distance = (x + 300) m.
Time = 24 second

Speed = 66 km/h $= 66\times\frac{5}{18}$ m/sec

Now $66\times\frac{5}{18} = \frac{x+300}{24}$

$\frac{11\times5}{3} = \frac{x+300}{24}$

$11 \times 5 \times 8 = x + 300$

$x = 440 - 300$, $x = 140$ m.

52. A train crossed a 140 m long platform in 15 seconds and a 180 m long platform in 17 seconds. The speed of the train was :

(a) 75 km/hr (b) 72 km/hr
(c) 66 km/hr (d) 69 km/hr

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

Ans : (b) Distance difference = 180 –140 = 40 m.
Time difference = 17–15 = 2 second

Speed of train = $\frac{\text{Distance}}{\text{Time}} = \frac{40}{2}$

= 20 m./sec. $\Rightarrow 20\times\frac{18}{5} = 72$ km./hr.

53. A train travelling at 76 km/h crosses a 450 m long platform in 27 seconds. What is the length of the train?

(a) 110 metre (b) 120 metre
(c) 130 metre (d) 100 metre

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (b) Let the length of train = x m.
Speed of train = 76 km/h

$= 76\times\frac{5}{18}$ m/s

According to question–

$\frac{x+450}{76\times\frac{5}{18}} = 27$ $\left[\text{Time} = \frac{\text{Distance}}{\text{Speed}}\right]$

$x + 450 = 27\times76\times\frac{5}{18} = 570$

$x = 570 - 450$

$\boxed{x = 120 \text{ m}}$

54. A train takes 10 seconds to cross a bridge of length 100m in travelling at 90 km/hr. Find the length of the train in metres.

(a) 130 (b) 120
(c) 140 (d) 150

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (d) Let the length of train = x m.
According to question,

$\Rightarrow 90\times\frac{5}{18} = \frac{100+x}{10}$

$\Rightarrow 25 \times 10 = 100 + x$

x = 150 metre

Hence the length of train is 150 m.

Type - 5

55. A 300 metre long train crosses a platform in 39 seconds while crosses a pole in 18 second. What is the length of the platform?

(a) 680 metre (b) 350 metre
(c) 320 metre (d) 650 metre

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

Ans : (b) Let the length of platform = x m.
from question -

$\frac{300}{18} = \frac{300+x}{39}$

$\frac{300}{6} = \frac{300+x}{13}$

3900 = 1800 + 6x
2100 = 6x
x = 350 m.
Hence length of platform is 350 m.

56. A train crosses a platform in 36 seconds and a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr then what is the length of the platform?

(a) 300 metre (b) 120 metre
(c) 360 metre (d) 240 metre

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

Ans : (d) Let the length of platform = xm.
Speed of train = 54 km./hr.

$= 54\times\frac{5}{18} = 15$ m./sec.

Length of train (x) = 20 × 15 = 300 m
Again Given–
Time = 36 second, distance = (300 +x),
speed = 15 m/sec

$15 = \frac{300+x}{36} \Leftrightarrow 540 = 300 + x$

$\boxed{x = 240\text{m}}$

57. A train moving with a speed of 54 km/hr crosses a platform and a man standing at the platform in 36 seconds and 20 seconds respectively. Find the lengths of the platform?

(a) 240 metre (b) 180 metre
(c) 270 metre (d) 300 metre

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

Ans : (a) Let the length of platform = x m.

Length of train= l $\because$ [distnace/ speed = t]

Total distance = x + l

$x + l = 54 \times \frac{5}{18} \times 36$

x + l = 540 ..... (i)

According to question,

Again Distance = Speed × Time

$l = 54 \times \frac{5}{18} \times 20$

l = 300 ..... (ii)

By subtracting equation (ii) from equation (i)

x + l – l = 540 – 300

Length of Platform $\boxed{x = 240m}$

58. A man is standing on a 70 metre long platform a train croses the platform in 5.5 seconds but it crosses that man in 2 seconds. What is the length of the train?

(a) 80 metre (b) 45 metre
(c) 60 metre (d) 40 metre

RRB JE - 27/05/2019 (Shift-I)

Ans : (d) Let the length of train = 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.

59. A train A moving with a speed of 36 km/hr crosses a platform in 80 seconds. The same train takes 24 seconds to cross a man moving in the apposite direction with a speed of 18 km/hr. Find the length of the platform.

(a) 120 metre (b) 440 metre
(c) 300 metre (d) 240 metre

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (b) Let the length of the train = x m

Length of platform = y m

According to question,

$\frac{36 \times 5}{18} = \frac{x+y}{80}$

x + y = 800m .... (i)

Relative speed = 36 + 18 = 54 km./hr.

IInd condition-

$\frac{54 \times 5}{18} = \frac{x}{24}$

$15 \times 24 = x$

x = 360 m

length of platform (y) = 800 – x

= 800 – 360 = 440 m.

60. A 200 metre long train crosses a 300 metre long bridge in 30 seconds what time will it take to cross a man standing in the middle of 150 metre long platform? In both the cases the speed is same.

(a) 9 second (b) 11 second
(c) 12 second (d) 10 second

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (c)

Speed = $\frac{200+300}{30} = \frac{500}{30} = \frac{50}{3}$ m/s

Time taken to cross a person = $\frac{\text{Distance}}{\text{Speed}}$

$= \frac{200}{\frac{50}{3}} = 12$ second

61. A train passes by a stationary man standing on a platform in 5 seconds and passes by the platform completely in 25 seconds. If the length of the platform is 300 metres, what is the length of the train.

(a) 150 metre (b) 75 metre
(c) 110 metre (d) 115 metre

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : Let the length of train is x m.

According to question,

$\frac{x}{5} = \frac{x+300}{25}$

5x = x +300

4x = 300

x = 75 m

Hence the length of the train is 75 m.

62. A train crosses a pole in 15 second and a 100 metre long platform in 25 seconds. Find the length of the train in metres.

(a) 149 metre (b) 145 metre
(c) 150 metre (d) 155 metre

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (c) : Let the length of the train = x m.

Speed of train while crossing the pole = $\frac{x}{15}$ m./sec.

Again speed of train while crossing 100 metre 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 the length of train = 150 m

63. What is the time taken by a 180 m long train running at 54 km/h to cross a man standing on a platform?

(a) 10 second (b) 12 second
(c) 11 second (d) 13 second

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

Ans. (b) Given–

$$54 \text{ km./hr.} = 54 \times \frac{5}{18} \text{ m./sec.} = 15 \text{ m./sec.}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{180}{15} = 12 \text{ second}$$

Hence the train will cross the man in 12 second.

Type - 6

64. 200 metre long train and 150 metre long train whose speed is 40 km/hr and 45 km/hr respectively are moving on a parallel track. If they are moving in the same direction, then in what time they will cross each other?

(a) 72 second (b) 132 second
(c) 192 second (d) 252 second

RRB RPF SI – 12/01/2019 (Shift-I)

Ans : (d) Relative speed = 45 – 40 = 5 km./hr.

$$= 5 \times \frac{5}{18} \text{ m./sec.}$$

$$\text{Intended time} = \frac{200+150}{5 \times \frac{5}{18}} = \frac{350 \times 18}{25}$$

= 14 × 18 = 252 second

65. A train runs from a station at a speed of 40 km/hr. After two hours another trains laves from the same station at a certain speed in the same direction. If the second train catches the first train in 4 hours, then what is the speed of second train?

(a) 60 km/hr (b) 65 km/hr
(c) 50 km/hr (d) 55 km/hr

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (a) Speed of first train = 40 km/hr.
Speed of second train = ?
The second train runs 2 hours after the first train and gets caught after 4 hours of running.
i.e the first train will run for (4 + 2) = 6 hours.
Hence distance traveled by first train = 40 × 6 = 240 km
Hence Total distance traveled = 240 km
The second train will also run 240 km in 4 hours

$$\text{Hence speed of second train} = \frac{240}{4} = 60 \text{ km/hr}$$

66. A train departs from a station at a speed. Form the same station, in the same direction of the first train a second train whose speed is 70 km/hr departs after two hours and after 5 hours it comes equal to the first train. Tell the speed of first train in km/hr.

(a) 50 km/hr (b) 40 km/hr
(c) 55 km/hr (d) 45 km/hr

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) Let the speed of first train = x km/hr.
Speed of second train = 70 km./hr.
Distance traveled by second train in 5 hours
= 70 × 5 = 350 km.
The first train started running 2 hours before the second train
∴ Distance traveled by first train in 7 hours = 350 km.

$$\text{Hence speed of first train} = \frac{350}{7} = 50 \text{ km./hr.}$$

67. A 250 metre long cargo trains speed is 33 km/hr. A 200 metre long mail train is moving on a parallel track in the same direction with a speed of 60 km/hr which chases the cargo train and leaves back the cargo train after some time. In how much time, minute the mail train left back the cargo train completely?

(a) 1 minute
(b) 1.5 minute
(c) 3 minute
(d) 2 minute

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (a) Speed of cargo train = 33 km/h.
Speed of mail train = 60 km/h
Relative speed is getting.

$$\therefore \quad (60-33) \times \frac{5}{18} = \frac{250+200}{T}$$

$$27 \times \frac{5}{18} = \frac{450}{T}$$

$$\frac{9 \times 5}{6} = \frac{450}{T}$$

$$\frac{45}{6} = \frac{450}{T}$$

T = 60 second
= 1 minute

68. Two trains of speed 110 km/hr and 90 km/hr respectively are moving in the same direction. The fast moving train crosses a man of slow moving train in 18 second. Tell the length of fast moving train?

(a) 200 metre (b) 250 metre
(c) 100 metre (d) 150 metre

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (c) Relative speed of train
= (110–90) km/hr = 20 km/hr

$$= 20 \times \frac{5}{18} \text{ m/sec.}$$

Time = 18 second
Distance = Speed × Time

$$= 20 \times \frac{5}{18} \times 18 = 100 \text{ m.}$$

Type - 7

69. Two trains of same length takes 10 second and 15 second respectively to cross a telegraph post. If each trains length is 120 metre then what time will be taken by them to cross each other moving in opposite direction?

(a) 12 second (b) 15 second
(c) 10 second (d) 20 second

RRB JE - 27/05/2019 (Shift-II)

Ans : (a) According to question,

Speed of first train $= \frac{120}{10} = 12$ m./sec.

Speed of second train $= \frac{120}{15} = 8$ m./sec.

$\therefore$ Relative speed of both trains (x+y) m/s. $= \frac{\text{Distance}}{\text{Time}}$

Time taken to cross both trains in opposite direction

$= \frac{\text{Length of first train} + \text{Length of second train}}{\text{Speed of first train} + \text{Speed of second train}}$

$\Rightarrow \frac{120+120}{12+8} = \frac{240}{20} = 12$ second

70. 100 metre and 120 metre long trains of speed 18 metre/second and 15 metre/second respectively are moving towards each other. In how much time will they pass each other?

(a) 6.7 second (b) 10 second
(c) 7.2 second (d) 8 second

RRB JE - 30/05/2019 (Shift-I)

Ans : (a)

$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

$\text{Time} = \frac{\text{Length of first train} + \text{Length of second train}}{\text{Speed of first train} + \text{Speed of second train}}$

$= \frac{100+120}{18+15} = \frac{220}{33} = 6.67$ seconds

71. Two train of same speed are moving in opposite direction. If each trains length is 120 metre and they crosses each other in 12 seconds. Then find the speed of each train?

(a) 72km/hr (b) 10 km/hr
(c) 18 km/hr (d) 36 km/hr

RRB JE - 28/06/2019 (Shift-III)

Ans. (d) Let the length of train is l_1 and l_2

$\because$ $l_1 = l_2 = 120$ metre

According to question it is given that–

$V_1 = V_2 = V$

$\therefore$ $V_1 + V_2 = \frac{l_1 + l_2}{T}$

$V + V = \frac{120+120}{12} = \frac{240}{12} = 20$

$2V = 20$

$V = 10$m/s

$V = 10 \times \frac{18}{5} = 36$ km/h

72. Two trains whose length is 220 metre and 270 metre, starts moving towards each other with a speed of 135 km/hr and 117 km/hr respectively. They cross each other at a point. In what time will they cross each other?

(a) 5 second (b) 7 second
(c) 11 second (d) 24 second

RRB RPF SI – 10/01/2019 (Shift-III)

Ans : (b) Relative Speed of train = (135+117) km./hr.

$= 252 \times \frac{5}{18}$ m/sec

$= 14 \times 5 = 70$m/sec

Train took time to cross each other

$= \frac{220+270}{70} = \frac{490}{70} = 7$ sec

73. Two trains at the same time starts at 80 km/hr and 95 km/hr respectively for the first station P to Q and the second station Q to P. If they meet after 12 hours, find the difference of the distance travelled by them?

(a) 200 km (b) 15 km
(c) 2100 km (d) 180 km

RRB JE - 28/06/2019 (Shift-III)

Ans. (d) Let the speed of first train is V_1 and second train is V_2.

$V_1 = \frac{D_1}{T} \Rightarrow D_1 = 80 \times 12 = 960$ km

$V_2 = \frac{D_2}{T} \Rightarrow D_2 = 95 \times 12 = 1140$ km

According to question,

$D_2 - D_1 = 1140 - 960 = 180$ km

74. 120 metre long train A is running with speed of 20 m/second and 130 metre long train B is running with a speed of 30 m/s in opposite direction. The time taken by train B to cross train A is?

(a) 5 second (b) 25 second
(c) 10 second (d) 50 second

RRB RPF Constable – 19/01/2019 (Shift-III)

Ans : (a) Speed of train A = 20 m/s
Length of train A = 120 m
Speed of train B = 30 m/s
Length of train B = 130 m

$\because$ $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$

$20 + 30 = \frac{120+130}{\text{time}}$

$50 = \frac{250}{\text{time}}$

$\text{Time} = \frac{250}{50} = 5$ second

Hence time taken by train B to cross train A = 5 second.

75. Two trains of lengths 152.5 metre and 157.5 metre are coming from opposite directions respectively cross each other in 9.3 seconds, then combined speed of both train per hour will be.

(a) 120 km/hr (b) 125 km/hr
(c) 130 km/hr (d) 115 km/hr

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (a) Length of both train = 152.5+157.5 = 310 m.
time = 9.3 sec

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{310}{9.3} = \frac{100}{3} \text{m/sec}$$

On changing in km per hour $= \frac{100}{3} \times \frac{18}{5} = 120$ km./h.

76. Two trains of 132 metre long and 108 metre long are moving with speed of 32 km/hr and 40 km/hr respectively in apposite direction. After meeting what time will be taken by them to cross each other?

(a) 12 second (b) 20 second
(c) 15 second (d) 32 second

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a) Total length of train = 132 +108 = 240 m

Total speed of train = 32 + 40 = 72 × $\frac{5}{18}$ = 20 m/s

$$\text{Hence Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time} = \frac{240}{20} = 12 \text{ sec}$$

77. When two trains of speed of 40 km/hr and 32 km/hr respectively are moving in opposite directions, then the fast moving train crosses a person sitting in the slow moving train in 15 second. What is the length of fast moving train?

(a) 200 m (b) 300 m
(c) 120 m (d) 100 m

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 direction,
Relative Speed = 40 + 32 = 72 km/hr.

$$= 72 \times \frac{5}{18} = 20 \text{ m/s}$$

Hence the length of train = 20 × 15 = 300 m.

78. Two train, one 153 metre long and second 127 metre long coming from the opposite directions crossed each other in 7.2 seconds. What will be the combined speed of both the trains in km/hr?

(a) 70 km/hr (b) 140 km/hr
(c) 105 km/hr (d) 280 km/hr

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (b) Total traveled distance = 153 + 127 = 280 m
time taken by trains in which they cross each other = 7.2 seconds

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{280}{7.2} = \frac{2800}{72} \text{ m./sec.}$$

But asked speed in km/hour then-

$$= \frac{2800}{72} \times \frac{18}{5} = 140 \text{ km/hr.}$$

79. The distance between two stations is 380 km from these stations two trains run together on the parallel track to cross each other. In these one train speed is 7 km/hr is more than the other. If the distance between the train is 126 km after 2 hours from starting then what is the speed of each train?

(a) 75 km/hr, 82 km/hr
(b) 55 km/hr, 62 km/hr
(c) 58 km/hr, 65 km/hr
(d) 67 km/hr, 60 km/hr

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (d) Let the speed of first train is x km/hr.
∴ Speed of second train = (x + 7) km./hr.
Distance traveled by both trains in 2 hours
= 380 – 126 = 254
⇒ 2x + 2 (x + 7) = 254
⇒ 2x + 2x + 14 = 254
⇒ 4x = 240
⇒ x = 60 km./hr.
Hence speed of first train = x = 60 km/hr.
Speed of second train = (x + 7) km/hr.
= (60 + 7) = 67 km/hr.

80. Two trains, one whose length is 210 metre and second whose lengths is 250 metre are moving with speed of 130 km/hr and 110 km/hr on the parallel tracks respectively. If they are moving in opposite direction, then how much time will be taken by them to cross each other completely?

(a) 6.9 second (b) 6.3 second
(c) 6.6 second (d) 6.1 second

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (a)
Sum of length of both trains = 210 + 250 = 460 m
If both move in opposite direction, then the sum of their speed = 130 + 110 = 240 km/hr

or $240 \times \frac{5}{18} \text{m/s} = \frac{200}{3} \text{m/s}$

$$\text{Time taken to cross each other} = \frac{\text{Distance}}{\text{Speed}}$$

$$= \frac{460}{200} \times 3$$

= 2.3 × 3 = 6.9 sec

81. Two trains one of 144.5 metre long and other of 165.5 metre long coming from opposite direction takes 9.3 second to cross each other. Per hour the combined speed of the trains will be.

(a) 120 km (b) 130 km
(c) 115 km (d) 125 km

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (a)

Distance = length of first train + length of second train

= 144.5 + 165.5 = 310.0 m.

Time = 9.3 second

Intended 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

82. A 350 metre long train is moving with speed of 54 km/hr. How much time will be taken to cross a man running from the opposite direction of the train with a speed of 9 km/hr.

(a) 20 second (b) 6 second
(c) 12 second (d) 15.6 second

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (a) : Note– 1. When train and person move in the same direction, the speed of the train relative to the person.

= speed of train − speed of person

2. When train and person move in the opposite direction, the speed of the train relative to the person = speed of train + speed of person

According to question,

Speed in opposite direction = (54 + 9) km/hr.

$= \left[63 \times \frac{5}{18}\right] = \frac{35}{2}$ m./sec.

Time taken to cover 350 m. distance at the speed of $\frac{35}{2}$ m./sec.

$= \frac{350}{\frac{35}{2}} = \frac{350 \times 2}{35} = 20$ second.

83. A train departs at 5 am from Patna and arrives Bhopal at 9 am second train departs at 6:30 am from Bhopal and arrives at 10:00 am at Patna. Both train meet at what time?

(a) 7:55 pm. (b) 7:55 am.
(c) 7:40 am. (d) 7:40 pm.

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (c) Let the total distance = x km.

Speed of train running from Patna $= \frac{x}{4}$ km/h

Distance traveled 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 distance–

Relative speed $= \frac{2x}{7} + \frac{x}{4} = \frac{15x}{28}$ km/hr

Time to meet $= \frac{\frac{5x}{8}}{\frac{15x}{28}} = \frac{5 \times 28}{15 \times 8} = \frac{7}{6}$ hours

Hence time to meet = 6:30 + 1: 10 = 7: 40 am

84. The distance between two station Delhi and Amritsar is 450 km. A train departs at 4:00 pm from Delhi and moves towards Amritsar with its average speed of 60 km/hr second train starts 3:20 pm from Amritsar and move towards Delhi with its average speed of 80 km/hr. How far from Delhi and at what time they will meet each other?

(a) 170 km, 4:50 p.m.
(b) 110 km, 6:50 p.m.
(c) 150 km, 6:50 p.m.
(d) 170 km, 6:50 p.m.

RRB Group-D – 15/11/2018 (Shift-III)

Ans. (d) : Difference in running time of both trains

= (4:00 – 3:20) = 40 minute $= \frac{2}{3}$ hour

Let the distance traveled by the first train at a speed of 60 km/h in $\left(t - \frac{2}{3}\right)$ hours is $60 \times \left(t - \frac{2}{3}\right)$

$= 60 \times \left(\frac{3t-2}{3}\right) = (60t - 40)$ km

Distance traveled by the second train at a speed of 80 km/h in t hour = 80t km.

$\Rightarrow$ 80t + 60t – 40 = 450

140t = 490

$t = \frac{490}{140} = \frac{7}{2}$ hours = 3 hour 30 minute

Hence time to meet of both trains = 3: 20 + 3:30

= 6:50 pm

Distance traveled by first train between (6:50 – 4:00) pm

Distance = 60 × 2 hours 50 minute

$= 60 \times 2\frac{50}{60} = 60 \times \frac{17}{6} = 170$ km

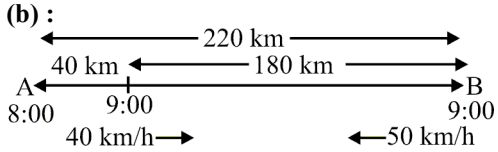
Hence Both trains will be at a distance of 170 km at 6:50 pm.

85. At 8 am, a train starts its journey from station A to B at a speed of 40 km/hr 1 hour later another train sarts from station B towards station A at a speed of 50 km/hr. If both stations are at a distance of 220 km, then at what time will they cross each other?

(a) 10:30 am (b) 11:00 am
(c) 10:00 am (d) 11:30 am

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) :



Relative Speed = 40 + 50 = 90 km/hr

The time taken for both trains to meet $= \frac{180}{90} = 2$ hours

∴ Both will cross each other = (9:00+2:00) AM
= 11:00 AM

86. Two trains, one 150 m long and the other 130 m long, coming from opposite directions crossed each other in 7.2 seconds. The sum of speed of the two trains par hour would then be:

(a) 105 km/h (b) 70 km/h
(c) 280 km/h (d) 140 km/h

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (d) Let the sum of speed of both trains = x km/hr.
According to question,
Sum of speed of both trains

$$= \frac{\text{Sum of length of both trains}}{\text{taken time to cross}}$$

$$x \times \frac{5}{18} = \frac{150+130}{7.2}$$

$$5x = \frac{2800}{4}$$

$$x = \frac{2800}{20}$$

x = 140 km/hr

Type - 8

87. The uninterrupted average speed of a train is 45 km/hr and the interrupted average speed is 36 km/hr. Find the average speed of the train of its stoppages?

(a) 9 (b) 15
(c) 12 (d) 10

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (c) From question,

Average time to stop the train $= \frac{45-36}{45} \times 60$

$= \frac{9}{45} \times 60 = 12$ minute

88. A train completes a journey in 8 hours, the first half of the journey is completed at 45 km/hr and the second half of the journey is completed at 55 km/hr. What was the total distance of the journey?

(a) 395 km (b) 296 km
(c) 396 km (d) 391 km

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (c) From Average Speed $= \frac{2a.b}{a+b}$,

$$= \frac{2 \times 45 \times 55}{45+55} = 49.5 \text{ km/hr}$$

total taken time = 8 horus
Total Distance = Time × Speed
= 8 × 49.5 = 396 km

89. The distance between two stations is 100 km. A train covers the distance at 80 km/hr going and while returning it covers the distance at 3/4 speed of previous speed. What is the average speed of the train?

(a) 68.5 km/h (b) 68.6 km/h
(c) 70.3 km/h (d) 70.4 km/h

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (b) From average speed of train $= \frac{2ab}{a+b}$,

$a = 80 \text{km/hr}$ $b = 80 \times \frac{3}{4} = 60 \text{km/hr}$ (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/hr

90. A train crosses a 155 metre long platform in 16 second and a 195 metre long platform in 18 second. What is the average speed of train?

(a) 66 km/h (b) 72 km/h
(c) 75 km/h (d) 69 km/h

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (b) :
Let the length of train is l metre and speed of train = x m./sec.
l + 155 = x × 16 ..... (i)
l + 195 = x × 18 ..... (ii)
from equation (i) ÷ equation (ii)

$$\frac{l+155}{l+195} = \frac{16x}{18x}$$

$$\frac{l+155}{l+195} = \frac{8}{9}$$

9l + 1395 = 8l +1560
l = 165 metre
from equation (i),

$$x = \frac{l+155}{16} = \frac{165+155}{16} = 20 \text{ metre/ second}$$

$$= 20 \times \frac{18}{5} = 72 \text{ km/hr.}$$

91. A train moves 1 km an uniform speed of 240 km/hr and next 1 km at 80 km/hr. What is the average speed of train?

(a) 160 km/hr (b) 180 km/hr
(c) 120 km/hr (d) 200 km/hr

RRB NTPC 03.04.2016 Shift : 3

Ans : (c) Average speed of train $= \frac{2ab}{a+b}$

$= \frac{2\times240\times80}{240+80} = \frac{2\times240\times80}{320}$

= 120 km./hr.

92. A distance is covered by Delhi metro by an average speed of 48 km/hr in 40 minutes. If it has to cover the total distance in 32 minutes, then what should be the speed of the train?

(a) 60 km/hr (b) 50 km/hr
(c) 70 km/hr (d) 80 km/hr

RRB NTPC 19.04.2016 Shift : 1

Ans : (a) Traveled distance $= 48\times\frac{40}{60} = 32$ km.

It time = 32 minute $= \frac{32}{60} = \frac{8}{15}$ hours

$\therefore$ Speed of train $= \frac{32}{8}\times15 = 60$ km/hr.

93. A train covers first 40 km of distance at 80 km/hr and second 30 km of distance in 60 km/hr. Then find its average speed?

(a) 62 km/hr (b) 64 km/hr
(c) 65 km/hr (d) 70 km/hr

RRB NTPC 27.04.2016 Shift : 2

Ans : (d)

$$\left[\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}\right]$$

Average speed = $\frac{40+30}{\frac{40}{80}+\frac{30}{60}} = \frac{70}{\frac{1}{2}+\frac{1}{2}} = \frac{70}{1}$

Average Speed = 70 km/hr.

Type - 9

94. The ratio of the speed of two trains is 3:4. If the second train covers a distance of 300 km in 3 hours then what will be the speed of first train?

(a) 100 km/hr (b) 50 km/hr
(c) 70 km/hr (d) 75 km/hr

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (d) Let the speed of trains is 3x and 4x km/hr respectively.

$\therefore \quad 4x = \frac{300}{3}$

4x = 100

x = 25

$\therefore$ Speed of first train = 3×25 = 75 km./hr.

95. Prithvi is going to Delhi by Rajdhani express, which is running late by six minutes. The driver increased its speed by 4 km/hr. The train reaches the next staton which is 36 km far at the correct time. What is the original speed of the train?

(a) 20 km/hr (b) 36 km/hr
(c) 30 km/hr (d) 26 km/hr

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (b) According to question,
Let the real speed of train is x km/hr.

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

96. After an accident a train moves with 4/5 of its speed due to which it reaches 30 minute late. Find the original time after the accident region?

(a) 120 minute (b) 90 minute
(c) 150 minute (d) 60 minute

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (a) Let the speed of train is 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 hours or 120 minute

97. Ratio of the speeds of two trains is 4:5. If the second train covers 800 km in 8 hours then what is the speed of the first train?

(a) 95 km/hr (b) 85 km/hr
(c) 75 km/hr (d) 80 km/hr

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) Let the speed of first and second train is 4x, 5x respectively.

from Speed = $\frac{\text{Distance}}{\text{Time}}$

$5x = \frac{800}{8}$

5x = 100

x = 20

Hence speed of first train = 4x = 4×20 = 80 km/h

20.

Boat & Stream

Type - 1

1. The speed of a man in still water is 28/3 km/h. He takes three times the time taken in the upstream, as in the downstream. What is the velocity of the current or the stream.

(a) 16/3 km./hr. (b) 20/3 km./hr.
(c) 6 km./hr. (d) 14/3 km./hr.

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (d) Let the velocity of stream = R km/h
Man's movement in still water = (28/3) km/h
According to question,
Time taken in the upstream
= 3× time taken in the down stream

$$\frac{d}{\frac{28}{3}-R}=3\times\frac{d}{\frac{28}{3}+R} \qquad \left\{t=\frac{d}{v}\right\}$$

$$\frac{28}{3}+R=3\times\left(\frac{28}{3}-R\right)$$

$$\frac{28}{3}+R=28-3R$$

$$4R=28-\frac{28}{3}$$

$$4R=\frac{56}{3}$$

$$R=\frac{14}{3}\text{km/h}$$

2. A sailar travels a distance of 24 km the upstream and 36 km in the down stream and takes 6 hours each time. Find the speed of the stream.

(a) 2 km./hr. (b) 4 km./hr.
(c) 1 km./hr. (d) 3 km./hr.

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

Ans : (c)
Speed of Boat = B km/hr
Speed of Stream = W km/hr
Speed of boat in the down stream = (B+W) km/hr
Speed of boat in the upstream = (B–W) km/hr

Speed of boat (B+W) in down stream $=\frac{36}{6}$

B + W = 6 km/h ..... (i)
Speed of boat in upstream

$$B-W=\frac{24}{6}$$

B – W = 4 km/h ..... (ii)

on adding equation (i) and (ii)
B + W = 6
B – W = 4
2B = 10
Speed of Boat B = 5 km/h
B + W = 6
5 + W = 6
Speed of stream W = 1 km/h

3. A boat takes 2 hours to travel 16 km in the down stream and 4 hours to cover the same distance in the upstream. Find the speed of the current.

(a) 12 km./hr. (b) 2 km./hr.
(c) 4 km./hr. (d) 6 km./hr.

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

Ans : (b) Let speed of stream = R km/hr
Speed of Boat = B km/hr
In down stream–

$$B+R=\frac{16}{2}=8\text{km/hr} \qquad .....(i)$$

In upstream–

$$B-R=\frac{16}{4}=4\text{km/hr} \qquad .....(ii)$$

from equation (i) and (ii)–
B – R + B – R = 8 + 4
$2B=12$
B = 6 km/h
Putting value of B in eq^n (i)
$6+R=8$
∴ R = 2 km/hr

4. Ram goes from place A to B cycling at a uniform speed of 12 km/hr. 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/hr and speed of stream is 4 km/hr. who will return to position A first?

(a) Gopi
(b) Ram
(c) Both reach which at the same time
(d) Can not be determined

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

Ans : (b) Let distance AB = 84 km (L.C.M. of 12, 14)
The time taken by Ram go to from A to B at a speed of 12 km/h = The time taken by Ram to return to A again at a Speed of 12 km/hour $=\frac{84}{12}=7\text{h}$
Total time taken by Ram to travel = 7 + 7 = 14 h

The time taken by Gopi to go from A to B at a speed of (10+4) km/h. $= \frac{84}{14} = 6\,h$

The time taken by Gopi to return to A again at a speed of (10-4) km/h $= \frac{84}{6} = 14$ h

Total time take by gopi to travel = 14 + 6 = 20 h

Hence It is clear that Ram takes less time in traveling so Ram will come back to place A first.

5. A man's speed in the down stream in 15 km/hr. and the speed of the stream is 2.5 km/hr. Find his speed upstream.

(a) 10 km./hr. (b) 9 km./hr.
(c) 12.5 km./hr. (d) 8.5 km./hr.

RRB JE - 26/06/2019 (Shift-I)

Ans : (a) Let the speed of Man is x km/hr and speed of stream is y km/hr.

Speed of Man in the down stream = (x + y) = 15 km/h

Speed of stream (y) = 2.5 km/h

x + y = 15

x + 2.5 = 15

x = 12.5 km/h

Speed in the upstream = x–y = 12.5 – 2.5 = 10 km/h

6. A man takes time t_1 and t_2 respectively to travel a certain distance in the upstream and in the down stream. If the speed of the stream is 'y' km/h. Find the speed in still water.

(a) $\left[\frac{(t_1+t_2)2y}{(t_1-t_2)}\right]$ km./hr.

(b) $\left[\left(\frac{t_1-t_2}{t_1+t_2}\right)y\right]$ km./hr.

(c) $\left(\frac{t_1^2-t_2^2}{2y}\right)$ km./hr.

(d) $\left[\frac{(t_1+t_2)}{(t_1-t_2)}y\right]$ km./hr.

RRB JE - 31/05/2019 (Shift-I)

Ans : (d) Let Speed in still water = x km/hr & covered distance = d

Speed of stream = y km/hr

Distance = d km/hr

$\frac{d}{t_1} = (x-y) \Rightarrow = (x-y)t_1$ .....(i)

$\frac{d}{t_2} = (x+y) \Rightarrow = (x+y)t_2$ .....(ii)

from equation (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

7. It takes 12 hours for a boat to travel a certain distance in the down stream and it takes 24 hours to return 24 hours to return. How long will it take for the Boat to cover the same distance in still water?

(a) 15 Hours (b) 10 Hours
(c) 18 Hours (d) 16 Hours

RRB JE - 02/06/2019 (Shift-III)

Ans : (d) Let the total distance = x km

Time taken to cover the same distance in still water = t hour

from Speed = $\frac{\text{Distance}}{\text{Time}}$

Speed of boat in still water =

$\frac{1}{2}$ (Speed of boat in the down stream + speed of boat in the upstream)

$\frac{x}{t} = \frac{1}{2}\left[\frac{x}{12} + \frac{x}{24}\right]$

$\frac{x}{t} = \frac{1}{2}\left[\frac{2x+x}{24}\right]$

$\frac{x}{t} = \frac{1}{2} \times \frac{3x}{24}$

$\frac{1}{t} = \frac{1}{16}$

t = 16 hours

8. A boat, whose speed in still water is 15 km/hr. goes 30 km in the down stream in 4.5 hours and returns in the upstream. Find the speed of the stream.

(a) 4 km./hr. (b) 5 km./hr.
(c) 10 km./hr. (d) 6 km./hr.

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (b) Let the speed of stream = x km/hr.

Speed of boat in the down stream = (15+x) km/hr.

Speed of boat in the upstream = (15 –x) km/hr.

According 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/hr.

9. It takes 8 hours for a rower to cover a distance of 60 km upstream of a river while it takes 5 hours to cover the same distance down stream. What will be the speed of the rower in stagnant water.

(a) 9.25 km/h (b) 9.80 km/h
(c) 9.75 km/h (d) 9.5 km/h

RRB RPF SI – 05/01/2019 (Shift-III)

Ans.(c) Speed of rower in upstream $= \frac{60}{8} = 7.5$ km/hr

Speed of rower in down stream $= \frac{60}{5} = 12$ km/hr

Speed of rower in still water $= \frac{12+7.5}{2} = 9.75$ km/hr

10. Arjun takes 5 hours to swim 40 km in the down stream, where as he only takes 2 hours to swim 24 km in the upstream. Tell his speed of swimming in still water.
(a) 12 km/hr (b) 10 km/hr
(c) 9 km/hr (d) 15 km/hr

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

Ans : (b) Speed of arjun in the down stream $= \frac{40}{5} = 8$ km/hr

Speed of arjun in the upstream

$= \frac{24}{2} = 12$ km/hr

∴ Speed of Arjun in still water

$= \frac{12+8}{2} = 10$ km/hr

11. A boat's speed in still water is 20 km/hr. If the boat covers a distance of 20 km in the upstream in 4 hours, find the speed of the current.
(a) 20 km/hr (b) 15 km/hr
(c) 25 km/hr (d) 30 km/hr

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (b) Speed of boat in still water (a) = 20 km/hr

Speed of boat in the upstream $= \frac{20}{4} = 5$ km/hr

Let the speed of stream is b km/hr.
According to question,
Speed of boat in the upstream = (a-b) km/hr
Hence 5 = 20 – b
b = 20 – 5
b = 15
Hence speed of stream = 15 km/hr

12. 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.
(a) 3 (b) 2.5
(c) 3.17 (d) 6.5

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (b) Let the speed of stream = x km/hr,
Speed of boat in still water = 12 km/hr
Then speed in upstream = (12–x) km/hr

Speed in upstream $= \frac{38}{4} = 9.5$ km/hr

Hence
9.5 = 12 – x
so x = 12 – 9.5
x = 2.5
Hence speed of stream = 2.5 km/hr

13. 15 hours is taken by a boat to reach its destination in still water and return to its starting point from there. The same journey requires 16 hours if the river flows. The difference between the speed of boat and the river is 15 km/hr. Find the speed of the flow of river.
(a) 10 km./hr.
(b) 6 km./hr.
(c) 4 km./hr.
(d) 5 km./hr.

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (d) : Let the distance between both places = D km
And speed of stream = x km/hr
∴ Speed of boat = (15 + x) km/hr
According to question,
The time it took to come and go from the boat in still water = 15 hours

$$\frac{2D}{x+15} = 15 \quad .....(i)$$

and the time it took to come and go when the water flowed = 16 hours

$$\frac{D}{x+15+x} + \frac{D}{x+15-x} = 16$$

$$\frac{D}{15+2x} + \frac{D}{15} = 16 \quad .....(ii)$$

On solving equation (i) and (ii)
D = 150 km
and x = 5 km/h

14. A rower takes 16 hours to rowed 100 km upstream, while it takes only 10 hours to travel the same distance with the flow of the stream. What is the speed of the stream.
(a) 6.625 km/h
(b) 1.875 km/h
(c) 6.25 km/h
(d) 8.125 km/h

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (b) Let the speed of boat = x km/h
and speed of stream = y km/h
According to question,

$$x - y = \frac{100}{16} = \frac{25}{4} \quad .....(i)$$

$$x + y = \frac{100}{10} = 10 \quad .....(ii)$$

By solving equation (i) and (ii)
x = 8.125
y = 1.875
Hence speed of stream = 1.875 km/h

15. In stagnant water the speed of a boat is 20 km/hr. The boat travels 364 kilometers down the stream and then travels in the opposite direction to its begining point. Time taken by the journey is 40 hours. What is the speed of the current?

(a) 10 km/hr (b) 8 km/hr
(c) 4 km/hr (d) 6 km/hr

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (d) Let the speed of stream = x km/hr
Speed in the down stream = (20 + x) km/hr
Speed in the upstream = (20 – x) km/hr
According 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 = 6 km/h

16. Every 5 hours a person swims 4 km. upstream and 16 km in the down stream. Find the speed of stream.

(a) 2.2 km/h (b) 3.2 km/h
(c) 1.2 km/h (d) 1.5 km/h

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (c)

Speed in the down stream (a) = $\frac{16}{5}$ km/h

Speed in the upstream (b) = $\frac{4}{5}$ km/h

Speed of stream = $\frac{a-b}{2}=\frac{\frac{16}{5}-\frac{4}{5}}{2}$

$=\frac{\frac{12}{5}}{2}=\frac{12}{10}=1.2$ km/h

17. A swimmer swimming in stagnant water at a speed of 9 km/hour and given that the time taken by him to cover a certain distance in the direction of the flow is half the time taken to cover the same distance in the direction opposite the flow of water. Find the speed of water.

(a) 10 km/hr (b) 3 km/hr
(c) 5 km/hr (d) 8 km/hr

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (b) Let the speed of water is x km/hr and the distance traveled by 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,
$D = (9 – x) \times t$ .....(i)

$D=(9+x)\times\frac{t}{2}$ .....(ii)

from equation (i) and (ii)

$\Rightarrow (9-x)t=(9+x)\frac{t}{2}$

$18 – 2x = 9 + x$
$3x = 9, x = 3$ km/hr

18. It takes 12 hours for a sailor to cover a distance of 75 km in upstream while it takes only 7.5 hours to cover that distance in the down stream. What is the speed of the stream?

(a) 6.625 km./hr. (b) 6.25 km./hr.
(c) 8.125 km./hr. (d) 1.875 km./hr.

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (d) : Let the speed of boat = x km/hr
Speed of stream = y km/hr
Total distance = 75 km
In the upstream,

$\frac{75}{x-y}=12$

$x-y=\frac{75}{12}=6.25$ .....(i)

In the down stream,

$\frac{75}{x+y}=7.5$

$x+y=10$ .....(ii)

On adding equation (i) & equation (ii)

$2x=16.25$
$x=8.125$

Hence from equation (i)

$x-y=6.25$
$8.125-y=6.25$
$y=8.125-6.25$
$y=1.875\,km/hr$

19. Ramu can ride a boat at 9 km/hr. speed in still water. It take twice the time to go in the opposite direction of the stream than going in the direction of the stream. Find the speed of the stream.

(a) 16 km./hr. (b) 8 km./hr.
(c) 3 km./hr. (d) 9 km./hr.

RRB NTPC 16.04.2016 Shift : 1

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 the down stream = (9+x) km/hr.
Speed of boat in the upstream (9 – x) km/hr.

From Time = $\frac{\text{Distance}}{\text{Speed}}$

$\Rightarrow \frac{d}{9+x}\times 2=\frac{d}{9-x}$
$\Rightarrow 18 – 2x = 9 + x$
$= 3x = 9$
$x = 3$
Hence speed of stream = 3 km/hr.

20. A man can ride a boat at a speed of 4 km/hr. He founds that the time taken to travel in the opposite direction of the stream is double the time it takes to travel in the direction of the flow of the stream. Find the speed of the stream.

(a) 1.5 (b) 1.3
(c) 2 (d) 1

RRB NTPC 27.04.2016 Shift : 1

Ans : (b) Let the speed of stream = x km/hr.
Speed of boat in the down stream = (4+x) km/hr.
Speed of boat in the upstream = (4-x) km/hr.

From Time = $\frac{\text{Distance}}{\text{Speed}}$

$$\frac{d}{4-x} = \frac{2d}{4+x}$$
$$4+x = 8-2x$$
$$3x = 4$$
$$x = 1.3 \text{ km/hr.}$$

21. The speed of a boat in the opposite direction of the flow is 40 km/hr. and in stagnant water 55 km/hr. What will be the speed of boat in the flow direction of the stream.

(a) 75 km./hr. (b) 70 km./hr.
(c) 60 km./hr. (d) 65 km./hr.

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) Let the speed of boat in the down stream = x km/hr

Speed of boat in still water $= \frac{1}{2}$ (speed in the down stream + speed in the upstrem)

$$55 = \frac{1}{2}(x+40)$$
$$110 = x + 40$$
$$x = 110 - 40$$
$$x = 70$$

Hence speed of boat in the down stream = 70 km/hr.

22. A person travels a distance of 16 km in two hours in the down stream. If he travels half the distance in the upstream in the same time, then find the speed of the stream.

(a) 4 km./hr. (b) 2 km./hr.
(c) 3 km./hr. (d) 1 km./hr.

RRB NTPC 27.04.2016 Shift : 3

Ans : (b) Let the speed of stream is x km/hr. and speed of Man is y km/hr.
Speed of man in the down stream = (x+y) km/h
Speed in the upstream = (y–x) km/h
According to question,

$$x + y = \frac{16}{2} \quad \Rightarrow x + y = 8 \text{.....(i)}$$
$$y - x = \frac{8}{2} \quad \Rightarrow y - x = 4 \text{.....(ii)}$$

On subtracting equation (ii) from equation (i)

$$2x = 4 \Rightarrow x = 2 \text{ km/h}$$

23. A boat covers a distance of 35 km in the direction of the stream in 5 hours and returns in 7 hours. Find the speed of the boat in still water.

(a) 6 km/hr (b) 5.5 km/hr
(c) 10.5 km/hr (d) 7.5 km/hr

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a)

Speed of boat in the down stream $= \frac{35}{5} = 7$ km/hr

Speed of boat in the upstream

$= \frac{35}{7} = 5$ km/hr

Hence speed of boat in still water $= \frac{7+5}{2} = 6$ km/hr

Type - 2

24. In stagnant water the speed of a boat is 13 km/hr. speed of stream is 4 km/hr. What time will be taken to cover a distance of 68 km in the upstream.

(a) 7 Hours (b) 4 Hours
(c) 8 Hours (d) 7 Hours 33 minute

RRB JE - 22/05/2019 (Shift-I)

Ans : (d)
Speed of boat in the stagnant water = 13 km/hr.
Speed of stream = 4 km/hr.
∴ Speed in the upstream
= 13 – 4 = 9 km/hr.

Time taken to travel the distance of 68 km. $= \frac{68}{9}$

= 7 hours 33 minute

25. A sailor covers 2 km in the upstream in 1 hour and a distance of 1 km in the down stream in 10 minutes. Find the speed in still water.

(a) 4 km./hr. (b) 2.5 km./hr.
(c) 3 km./hr. (d) 4.5 km./hr.

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (a) Speed of boat = B km/hr
Speed of stream = R km/hr
Let the speed of boat in the upstream = (B–R) km/hr
Speed of boat in the down stream = (B+R) km/hr
According to question,

$$B - R = \frac{2}{1} \quad \text{.....(i)}$$
$$B + R = \frac{1}{\frac{10}{60}} = 6 \quad \text{.....(ii)}$$

on adding equation (i) and equation (ii)
2 B = 8
B = 4
Hence Speed of boat in still ater is 4 km/hr.

Type - 3

26. The speed of a sailor in still water is x km/hr. and the speed of stream is y km/hr. If a person moves 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.

(a) $\frac{x^2+y^2}{xy}$ km./hr. (b) $\frac{x^2-y^2}{2xy}$ km./hr.

(c) $\frac{x^2+y^2}{x}$ km./hr. (d) $\frac{x^2-y^2}{x}$ km./hr.

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

Ans : (d) Speed of Sailor = x km/hr.
Speed of stream = y km/hr.
Speed of boat in the down stream (V_1) = (x+y) km/hr.
Speed of boat in the upstream (V_2) = (x-y) km/hr.

$\therefore$ from Average Speed $= \frac{2v_1v_2}{v_1+v_2}$,

$$= \frac{2(x+y)(x-y)}{x+y+x-y} = \frac{2\left(x^2-y^2\right)}{2x}$$

$$= \frac{x^2-y^2}{x} \text{ km/hr.}$$

27. A boat covers a distance of 12 km. The distance of first 4 km in the down stream is covered in 15 minutes. The next 8 km is travelled in upstream. The speed of the boat in the down stream is twice the speed of the boat in the upstream. Find the average speed of journey.

(a) 11.6 km./hr. (b) 9.6 km./hr.
(c) 10 km./hr. (d) 10.4 km./hr.

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) The distance of 4 km by boat in the down stream is covered in 15 minutes.

$\therefore$ Speed $= \frac{4}{\frac{15}{60}} = 16 \text{ km/hr}$

According to question,
Speed of boat in the upstream

$$= \frac{16}{2} = 8 \text{ km/hr}$$

Remaining distance = 12 – 4 = 8 km
Time taken to travel the distance of 8 km at the speed of 8 km/hr $= \frac{8}{8} = 1$ hr.

$\because$ Average Speed $= \frac{\text{Total distance}}{\text{Total time}}$

Average Speed $= \frac{12}{\frac{15}{60}+1} = \frac{12\times 60}{75}$

$$= \frac{48}{5} = 9.6 \text{ km/hr}$$

28. A boat moves in the upstream from city P to city Q and then it returns in the down stream from city Q to city P. If in stagnant water the speed of the boat is 35 km/hr. and the stream speed is 5 km/hr. then in total journey what is the Average speed of boat?

(a) 36.28 km./hr. (b) 34.28 km./hr.
(c) 35 km./hr. (d) 33.33 km./hr.

RRB NTPC 03.04.2016 Shift : 3

Ans : (b) Speed in the upstream
= 35 – 5 = 30 km./hr.
Speed in the down stream = 35+5 = 40 km./hr.

Average speed of boat $= \frac{2ab}{a+b}$

$$= \frac{2\times 40\times 30}{40+30}$$

$$= \frac{2\times 40\times 30}{70} = 34.28 \text{ km/hr.}$$

29. A boat moves from the city x to city 'y' to the upstream and then returns from city 'y' to city 'x' in the down stream. If in still water the speed is 40 km/hr. and the speed of stream is 10 km/hr. then what is the average speed of the total journey?

(a) 36.5 km./hr. (b) 34.5 km./hr.
(c) 37.5 km./hr. (d) 33.33 km./hr.

RRB NTPC 02.04.2016 Shift : 1

Ans : (c) Speed of boat in the down stream
= B + R = 40 + 10 = 50 km/hr.
Speed of boat in the upstream
= B – R = 40 – 10 = 30 km/hr.

$\therefore$ Average boat speed over the entire journey

$$= \frac{2ab}{a+b}$$

$$= \frac{2\times 50\times 30}{50+30}$$

$$= \frac{2\times 1500}{80}$$

= 37.5 km/hr.

Type - 4

30. A boat moving in the upstream takes 8 hours 48 minutes to cover a distance, while it takes 4 hours to return to the starting point in the down stream. Find the ratio of the speed of the boat to the stream in still water.

(a) 3 : 2 (b) 8 : 3
(c) 4 : 3 (d) 2 : 1

RRB JE - 24/05/2019 (Shift-II)

Ans : (b)
Speed of boat in the upstream
= (B – R) km/hr
and speed of boat in the down stream
= (B + R) km/hr

from question–

{∵ distance = spped×time}

$$(B-R)\times 8\frac{48}{60} = (B+R)4$$

$$(B-R)\times\frac{44}{5} = (B+R)4$$

44B – 44R = 20B + 20R

24B = 64R

$$\frac{B}{R} = \frac{64}{24} = \frac{8}{3}$$

B : R = 8 : 3

31. The ratio for the time taken by the boat in the upstream and the time taken in the down stream to cover a certain distance is 4:1. Find the ratio of the speed of the boat in the down stream and in the upstream.

(a) 4 : 1 (b) 3 : 5
(c) 1 : 4 (d) 5 : 3

RRB JE - 25/05/2019 (Shift-I)

Ans : (a) Let the certain distance = d

Speed of boat in the upstream

$$= V_A = \frac{d}{4t}$$

Speed of boat in the direction of stream

$$= V_B = \frac{d}{t}$$

∴ According to question–

$$\frac{V_B}{V_A} = \frac{\frac{d}{t}}{\frac{d}{4t}} = \frac{4}{1}$$

∴ $V_B : V_A = 4 : 1$

32. If the time taken in the upstream is equal to 'n' time taken in the down stream and the speed in the still water is 'x' and the speed of stream is 'y' then find the value of x : y.

(a) n/2 (b) (n + 1)/(n - 1)
(c) (n - 1)/(n + 1) (d) n/(n - 1)

RRB RPF SI – 11/01/2019 (Shift-II)

Ans : (b) Let the speed of boat and stream is x km/hr and y km/hr respectively

According to question,

$$\frac{D}{(x-y)} = n\times\frac{D}{(x+y)}$$

$$\frac{x+y}{x-y} = n$$

x + y = n(x-y)

x + y = nx - ny

y(n+1) = x(n-1)

$$\frac{x}{y} = \frac{n+1}{n-1}$$

33. A boat covers a certain distance in the down 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?

(a) 1:5 (b) 1:4
(c) 5:1 (d) 4:3

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

Ans : (a) Let the speed of stream = R km/hr

Speed of boat = B km/hr

from question–

(B+R) 4 = (B – R)6

4B + 4R = 6B – 6R

10R = 2B

$$\frac{R}{B} = \frac{2}{10}$$

R : B = 1 : 5

34. A man take twice the time to ride the boat in upstream as compared to ride the boat in the down stream. Find the ratio of the boat to the stream in current water.

(a) 3 : 2 (b) 4 : 1
(c) 2 : 1 (d) 3 : 1

RRB JE - 28/05/2019 (Shift-II)

Ans : (d) Speed of boat in the down stream

= (x+y) km/h

Then speed of boat in the upstream

= (x – y) km/h

from Distance = speed × time

(x+y) t = (x – y)2t

x + y = 2x – 2y

x = 3y

Required Ratio = $\frac{x}{y} : \frac{3}{1}$ = 3 : 1

Type - 5

35. Suresh covers a distance of 34 km in the direction of a river in 4 hours 15 minutes by a luxury boat and 19 kilometers in the opposite direction of a river in 3 hours 10 minutes. As present what is the speed of the flow of river?

(a) 3 km./hr. (b) 2 km./hr.
(c) 1 km./hr. (d) 5 km./hr.

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (c) Let the speed of luxury boat is x km/hr. and speed of stream is y km/hr.

$$x + y = \frac{34}{4\frac{15}{60}} = \frac{34\times 4}{17}$$

⇒ x + y = 8 .....(i)

$$x - y = \frac{19}{3\frac{10}{60}} = \frac{19\times 6}{19}$$

⇒ x – y = 6 .....(ii)

from equation (i) & equation (ii)

2y = 2 ⇒ y = 1

Hence River flow speed is 1 km/hr.

36. The speed of a boat is x km/hr in still water. and a speed of stream is 'y' km/hr. If the time taken to cover a distance upstream is t hour more than the time taken to cover the same distance in the down stream, find the distance covered.

(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.

RRB JE - 30/05/2019 (Shift-III)

Ans : (b) Let the traveled distance = z km/hr

Speed of boat in still water = x + y km/hr.

Speed of boat in the upstream = x – y km/hr.

According to question,

$$\frac{z}{x-y}-\frac{z}{x+y}=t$$

$$z\left[\frac{x+y-x+y}{(x-y)(x+y)}\right]=t$$

$$z\left[\frac{2y}{x^2-y^2}\right]=t$$

$$z=\frac{(x^2-y^2)t}{2y} \text{ km.}$$

37. In still water the speed of a boat is 11 km/hr. If the speed covers 19 km in 2 hours in the upstream. Find the speed of the stream.

(a) 20.5 km/hr.

(b) 11.5 km/hr.

(c) 1.5 km/hr.

(d) 3 km/hr.

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) Speed of boat in still water = 11 km./hr.

Distance traveled by boat in the 2 hours an upstream = 19 km.

Speed of boat in the upstream = $\frac{19}{2}$ km/hr.

Speed of stream $=11-\frac{19}{2}=\frac{22-19}{2}$

$=\frac{3}{2}$=1.5 km/hr.

38. The speed of a boat in still water is 12 km/hr. and the speed of stream is 3 km/hr. A person goes 135 km in the upstream by boat and returns to the starting point by walking in the down stream. Find the time taken to cover the total journey in hours.

(a) 24 (b) 48

(c) 36 (d) 30

RRB NTPC 18.01.2017 Shift : 1

Ans : (a) Let the total time taken is t hour.

$t=\frac{d}{B+R}+\frac{d}{B-R}$ (B→ boat, R→ stream)

$$t=\frac{135}{12+3}+\frac{135}{12-3}$$

$$t=\frac{135}{15}+\frac{135}{9}$$

t = 9 + 15

t = 24 hours

39. If in still water, the speed of the boat is x km/hr. and speed of stream is 'y' km/hr. and the time taken to reach a place and to return from there is 't' hour, find the distance travelled in one direction.

(a) $\left[\left(\frac{x^2+y^2}{2xy}\right)t\right]$ km.

(b) $\left[\frac{t(x^2-y^2)}{2x}\right]$ km.

(c) $\left[\frac{t(x^2+y^2}{2x}\right]$ km.

(d) $\left[\frac{t(x^2-y^2)}{xy}\right]$ km.

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (b) Let the total distance = d km

Speed in the down stream = (x + y) km/h

Speed in the upstream = (x –y) km/h

According to question,

$$\frac{d}{(x+y)}+\frac{d}{(x-y)}=t$$

$$d\left[\frac{d}{(x+y)}+\frac{d}{(x-y)}\right]=t$$

$$d\left[\frac{x-y+x+y}{x^2-y^2}\right]=t$$

$$d\times\left(\frac{2x}{x^2-y^2}\right)=t$$

$$d=\frac{(x^2-y^2)}{2x}\times t$$

$$=\left[\frac{t(x^2-y^2)}{2x}\right] \text{km.}$$

21.

(Mensuration)

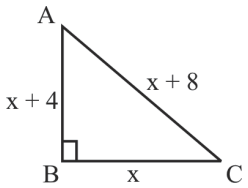
Type - 1

1. In a right angle triangle, the perpendicular is 4 cm larger than the base and the hypotenuse is 4 cm larger than the perpendicular. Calculate the length of the hypotenuse.

(a) 12 cm (b) 10 cm
(c) 20 cm (d) 8 cm

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (c)



Pythagoras theorem

Hypotenuse^2 = perpendicular^2 + base^2

$(x + 8)^2 = (x + 4)^2 + x^2$

$x^2 + 64 + 16x = x^2 + 16 + 8x + x^2$

$x^2 - 8x - 48 = 0$

$x^2 - 12x + 4x - 48 = 0$

$x(x - 12) + 4(x - 12) = 0$

$(x - 12)(x + 4) = 0$

It is $x = 12,\ x = -4$

So $x = 12, x = -4$ not possible

$\therefore$ Hypotenuse $= 12 + 8 = 20$ cm

2. The perimeter of an isosceles triangle is 32 cm. Its base is $\frac{6}{5}$ times of equal sides. Find the area of triangle.

(a) 39 cm^2 (b) 64 cm^2
(c) 48 cm^2 (d) 57 cm^2

RRB JE - 22/05/2019 (Shift-III)

Ans : (c) Let the side of isosceles triangle is X.

According to question-

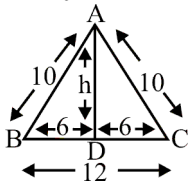
$$x + x + \frac{6x}{5} = 32$$

$$\Rightarrow \quad 2x + \frac{6x}{5} = 32$$

$$\Rightarrow \quad 10x + 6x = 32 \times 5$$

$$\Rightarrow \quad x = \frac{32 \times 5}{16}$$

$x = 10$



Sides of isosceles triangle are 10, 10 and 12 cm respectively.

$AD^2 = AB^2 - BD^2$

$= 10^2 - 6^2$

$AD = \sqrt{64} = 8$ cm.

Hence, height = 8 cm.

Area of isosceles triangle $= \frac{1}{2} \times$ base $\times$ height

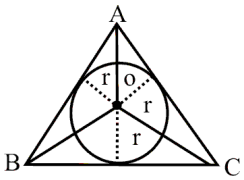
$= \frac{1}{2} \times 12 \times 8 = 6 \times 8 = 48$ cm^2

3. If the perimeter of a triangle is 28 cm. Its internal radius is 3.5 cm. Find the area of triangle.

(a) 49 cm^2 (b) 28 cm^2
(c) 35 cm^2 (d) 42 cm^2

RRB JE - 22/05/2019 (Shift-III)

Ans : (a)



Area of ΔABC = Area of ΔOBC + Area of ΔOAC + Area of ΔOAB

$$= \frac{1}{2} \times r \times BC + \frac{1}{2} \times r \times AC + \frac{1}{2} \times r \times AB$$

$$= \frac{1}{2} \times r \times (BC + AC + AB)$$

$$= \frac{1}{2} \times 3.5 \times 28 = 49 \text{ cm}^2$$

4. The ratio of their corresponding sides of two similar triangles is 1:3 and the area of the larger triangle is 72 cm^2. Find the area of smaller triangle.

(a) 18 cm^2 (b) 8 cm^2
(c) 14 cm^2 (d) 9 cm^2

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

Ans : (b) According to rule of similar triangle -

$$\frac{(\text{Area})_1}{(\text{Area})_2} = \frac{(\text{Side})_1^2}{(\text{Side})_2^2}$$

$$\frac{(\text{Area})_1}{72} = \frac{1}{9}$$

$(\text{Area})_1 = 8$ cm^2

So area of small Δ will be 8 cm^2.

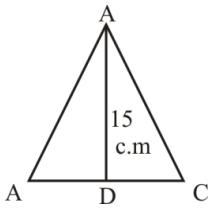
5. The altitude of an equilateral triangle is 15 cm. Find the area of this triangle.

(a) 60 cm^2 (b) $75\sqrt{3}$ cm^2

(c) 90 cm^2 (d) $60\sqrt{3}$ cm^2

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (b) Let the equilateral Triangle is ABC which altitude AD = 15 cm



$\because$ Height of equilateral triangle $(h) = \frac{\sqrt{3}}{2}a$

[where AD = h = 15 cm]

$$15 = \frac{\sqrt{3}}{2}a$$

$$a = \frac{30}{\sqrt{3}}$$

$\therefore$ Area of triangle $= \frac{\sqrt{3}}{4}a^2$ $\left[\text{where } a = \frac{30}{\sqrt{3}},\ a^2 = 300\right]$

$$= \frac{\sqrt{3}}{4} \times 300 = 75\sqrt{3}\,cm^2$$

6. The ratio of their corresponding sides of two similar triangles is 2:3 then find the ratio of their corresponding heights.

(a) 2 : 3 (b) 3 : 2

(c) 4 : 9 (d) 16 : 81

RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (a) Let the height of similar triangle is h_1 and h_2.

Formula – $\frac{(Side)_1}{(Side)_2} = \frac{h_1}{h_2}$

$$\frac{2}{3} = \frac{h_1}{h_2}$$

$h_1 : h_2 = 2 : 3$

7. In a right angle triangle, the length of the hypotenuse is 2 meter less than twice the length of the shortest side. If the third side is 2 meters larger than the shortest side, what is the length of the hypotenuse of the triangle?

(a) 10 m (b) 13 m

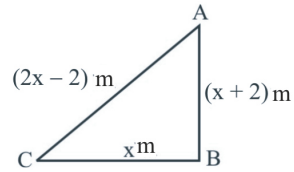
(c) 12 m (d) 7 m

RRB RPF SI – 05/01/2019 (Shift-I)

Ans :(a) Let the smallest side of right angle triangle = x m

According to Pythagoras theorem in right angle ΔABC

$$AC^2 = AB^2 + BC^2$$



$$\Rightarrow (2x-2)^2 = (x+2)^2 + x^2$$

$$\Rightarrow 4x^2 + 4 - 8x = x^2 + 4 + 4x + x^2$$

$$\Rightarrow 2x^2 - 12x = 4 - 4$$

$$\Rightarrow 2x(x-6) = 0$$

if $x - 6 = 0 \Rightarrow x = 6$

length of hypotenuse $= 2x - 2 = 2 \times 6 - 2 = 10$ m.

8. An equilateral triangle is formed by folding a rectangle whose dimensions are 4 cm and 5 cm. What will be the area of equilateral triangle so formed?

(a) $9\sqrt{3}$ cm^2 (b) $3\sqrt{3}$ cm^2

(c) $6\sqrt{3}$ cm^2 (d) $\frac{9}{4}\sqrt{3}$ cm^2

RRB RPF Constable – 18/01/2019 (Shift-I)

Ans : (a) Perimeter of rectangle = 2(length + breadth)

Perimeter of rectangle

= 2(5 + 4) = 18cm

and perimeter of equilateral triangle = 3 × side = 3a cm

According to question

Perimeter of rectangle = Perimeter of equilateral triangle

18 = 3 × side = 3a

$\therefore$ a = 6

So area of equilateral triangle $= \frac{\sqrt{3}}{4} \times 6 \times 6 = 9\sqrt{3}$ cm^2

9. An equilateral triangle is formed by folding a rectangle whose dimensions are 4 cm and 2 cm. What will be the area of equilateral triangle so formed?

(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

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (a) Let the length of rectangle = 4 cm and breadth = 2 cm

Perimeter of rectangle = 2(4 + 2) = 12 cm

$\because$ Perimeter of equilateral triangle = 3 × Side

$\because$ Perimeter of equilateral triangle

= Perimeter of rectangle

$\therefore$ Perimeter of equilateral triangle = 12 cm

$\therefore$ Side of equilateral triangle = 4 cm

Area of equilateral triangle $= \frac{\sqrt{3}}{4}$ $(Side)^2$

$$= \frac{\sqrt{3}}{4} \times (4)^2 = \frac{\sqrt{3}}{4} \times 16 = 4\sqrt{3}\,cm^2$$

10. Three sides of a triangle are 5 cm, 12 cm and 13 cm. A smaller triangle is formed by joining the midpoints of these three sides of this triangle. What is the area of the smaller triangle?

(a) 15 (b) 30
(c) 7.5 (d) 32.5

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (c) : Biggest side of triangle = 13 cm.

Other sides are − 5 cm and 12 cm

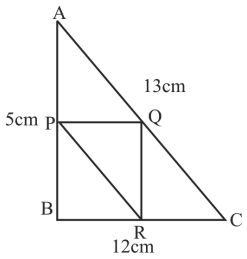
$\because (13)^2 = (12)^2 + (5)^2$

$169 = 169$

So it will be a right angle triangle

Area of ΔPQR joining the midpoint of three side of triangle

$= \frac{\Delta ABC}{4}$



Area of ΔPQR = $\frac{\frac{1}{2}\times 5\times 12}{4} = \frac{30}{4} = 7.5\ cm^2$

11. What is the cost of leveling a triangular region of land at the rate of 20 paise per square meter whose sides are 72 m, 30 m and 78 m respectively?

(a) Rs. 200 (b) Rs. 210
(c) Rs. 216 (d) Rs. 220

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) formula- $s = \frac{a+b+c}{2}$

(where a=72, b=30, c=78)

$= \frac{72+30+78}{2} = 90$ m

Area of triangle $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{90(90-72)(90-30)(90-78)}$

$= \sqrt{90\times 18\times 60\times 12}$

$= \sqrt{1166400} = 1080$

20 Paise $= Rs.\frac{20}{100} = Rs.\frac{1}{5}$

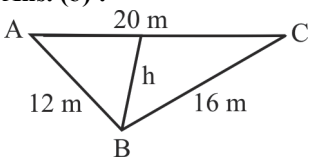
$\therefore$ Cost price $= 1080\times\frac{1}{5} = Rs.\ 216$

12. The sides of a triangle are 16 m, 12 m and 20 m. Find altitude of the triangle.

(a) 9.2 m (b) 9.6 m
(c) 9.4 m (d) 9.8 m

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (b) :



Area of the 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 $= \sqrt{24(24-16)(24-12)(24-20)}$

$= \sqrt{24\times 8\times 12\times 4}$

$= 96\,m^2$

$\therefore$ The altitude $(h) = \frac{2\times \text{area}}{\text{base}}$

$= \frac{2\times 96}{20}$

$= \frac{96}{10} = 9.6\,m$

13. Find the area of a triangle if its two dimensions and circumference are 9 cm, 11 cm and 34 cm respectively.

(a) $17\sqrt{12}$sq.cm (b) $12\sqrt{15}$ sq.cm
(c) $12\sqrt{17}$ sq.cm (d) $15\sqrt{17}$ sq.cm

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (c) Let the side of triangle are a, b, c

Then, a = 9 cm, b = 11 cm, a + b + c = 34 cm

9 + 11 + c = 34, c = 14 cm, $s = \frac{a+b+c}{2} = \frac{34}{2} = 17$

$\Delta = \sqrt{s(s-a)(s-b)(s-c)}$

$\Delta = \sqrt{17(17-9)(17-11)(17-14)}$

$\Delta = \sqrt{17\times 8\times 6\times 3} = \sqrt{17\times 144}$

$= 12\sqrt{17}cm^2$

So area of triangle $= 12\sqrt{17}\ cm^2$

14. Find the area of a triangle whose sides are 7.8 cm, 5 cm and 11.2 cm.

(a) 18 cm^2 (b) 16.8 cm^2
(c) 17.4 cm^2 (d) 12 cm^2

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (b) Half perimeter (s) $= \frac{7.8+5+11.2}{2} = \frac{24}{2} = 12$

Area of Triangle $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{12(12-7.8)(12-5)(12-11.2)}$

$= \sqrt{12\times 4.2\times 7\times .8}$

$= \sqrt{282.24}$

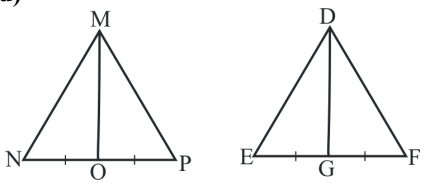
$= 16.8\ cm^2$

15. ΔMNP is similar to ΔDEF. Area of ΔMNP is 1024 cm^2 and area of ΔDEF is 144 cm^2. If the longest side of ΔMNP is 64 cm then what is the longest side of ΔDEF?

(a) 32 cm (b) 28 cm
(c) 20 cm (d) 24 cm

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (d)



Δ MNP $\sim$ Δ DEF By the law of similarity

$$\frac{\text{Area of } \Delta\text{MNP}}{\text{Area of } \Delta\text{DEF}} = \frac{(\text{long side of } \Delta\text{MNP})^2}{(\text{long side of } \Delta\text{DEF})^2}$$

$$\Rightarrow \sqrt{\frac{1024}{144}} = \left(\frac{64}{\text{long side of } \Delta\text{DEF}}\right)$$

$$\Rightarrow \frac{32}{12} = \frac{64}{\text{long side of } \Delta\text{DEF}}$$

$$\Rightarrow \text{long side of } \Delta\text{DEF} = \frac{64 \times 12}{32}$$

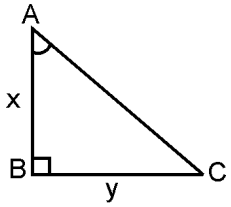
$$= 2 \times 12 = 24 \text{ cm}$$

16. Difference between the height and the base of a right angle triangle is 7 cm and the area of that triangle is 30 sq. cm. The perimeter of the triangle is:

(a) 13 cm (b) 12 cm
(c) 30 cm (d) 25 cm

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (c) given



Difference between height and base of triangle = 7

x – y = 7 ..... (i)

Area of Triangle = 30 cm^2

So, area of right angle triangle

$$= \frac{1}{2} \times \text{base} \times \text{height}$$

$$30 = \frac{1}{2}xy \Rightarrow xy = 60 \quad \text{..... (ii)}$$

$$x + y = \sqrt{(x-y)^2 + 4xy}$$

$$= \sqrt{49 + 240}$$

$$= \sqrt{289}$$

x + y = 17 ..... (iii)

From the equation (i) and (iii)

x = 12 cm.

y = 5 cm.

According to 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 cm.

So, perimeter of triangle = 13 + 12 + 5 = 30 cm.

17. The numerical value of the area of an equilateral triangle is two times the numerical value of its perimeter. Find the area of the above triangle.

(a) 48 cm^2 (b) $24\sqrt{3}$ cm^2
(c) $48\sqrt{3}$ cm^2 (d) $36\sqrt{3}$ cm^2

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (c) Let the side of equilateral triangle is a cm.

According to question

Area of equilateral Δ = 2 × perimeter of Δ

$$\frac{\sqrt{3}a^2}{4} = (3a) \times 2$$

$$\frac{\sqrt{3}a}{4} = 6$$

$$a = \frac{24\sqrt{3}}{3}$$

$$a = 8\sqrt{3} \text{ cm}$$

$\because$ 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

18. The areas of two similar triangles are 169 cm^2 and 121 cm^2. If the longest side of the larger triangle is 26 cm then the longest side of the smaller triangle is :

(a) 26 cm. (b) 18 cm.
(c) 28 cm. (d) 22 cm.

RRB NTPC 17.01.2017 Shift-2

Ans : (d)

$$\frac{\text{Largest side of large triangle}}{\text{Largest side of small triangle}} = \sqrt{\frac{169}{121}}$$

$$\Rightarrow \frac{26}{\text{Largest side of small triangle}} = \frac{13}{11}$$

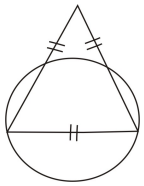
$$\Rightarrow \text{Largest side of small triangle} = \frac{11 \times 26}{13} = 22 \text{ cm.}$$

19. 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 64π cm^2, then what will be the side of the triangle?

(a) 16 (b) 8
(c) $16\sqrt{3}$ (d) $8\sqrt{3}$

RRB NTPC 04.04.2016 Shift : 3

Ans : (a)



Area of circle = 64π

$\pi r^2 = 64\pi$

$r^2 = 64 \quad \Rightarrow r = 8$ cm.

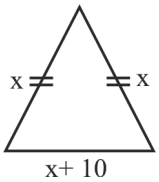
length of equilateral triangle sides = the diameter of the circle = 2 × 8 = 16 cm

20. The perimeter of a triangle is 100 cm. If its two sides are equal and the third side is 10 cm more than the equal sides. What is the length of the third side?

(a) 30 (b) 25
(c) 40 (d) 36

RRB NTPC 03.04.2016 Shift : 3

Ans :(c) ∵ Two sides of a triangle are equal
∴ Triangle will be isosceles



Perimeter of Triangle = 100 cm
x + x + x + 10 = 100
3x + 10 = 100
3x = 90 $\boxed{x = 30}$
So length of third side = x + 10 = 30 + 10 = 40 cm.

21. The area of a right angled triangle is 30 m^2. If the height is 7 m more than the base, then find the base.

(a) 5 m (b) 12 m
(c) 7 m (d) 9 m

RRB NTPC 02.04.2016 Shift : 1

Ans : (a) Let the base = x m.
height = (x + 7) m
∴ Area of right angle triangle = 30 square meter
1/2× base × height =30

$\frac{1}{2} \times x \times (x+7) = 30$

$x^2 + 7x = 60$
$x^2 + 7x - 60 = 0$
$x^2 + 12x - 5x - 60 = 0$
$x(x+12) - 5(x + 12) = 0$
$(x + 12)(x-5) = 0$
∴ x= 5
so base= 5 m.

22. 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, what will be the length of the third side?

(a) 60 (b) 50
(c) 80 (d) 70

RRB NTPC 02.04.2016 Shift : 2

Ans : (c) Let the first side = x
second side = x
Third side = x + 20
Then, x + x + x + 20 = 200
3x + 20 = 200
3x = 180
x = 60
third side = 60 + 20 = 80 cm.

23. If side of an equilateral triangle is 4 unit, then area of that triangle is :

(a) $16/\sqrt{3}$ square unit (b) $4\sqrt{3}$ square unit
(c) $2/\sqrt{3}$ square unit (d) $\sqrt{3}$ square unit

RRB NTPC 30.03.2016 Shift : 2

Ans : (b)

Area of equilateral triangle $= \frac{\sqrt{3}}{4} \times (\text{side})^2$

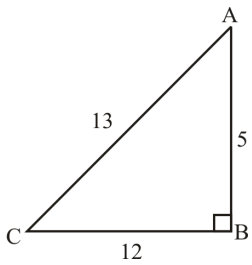
$= \frac{\sqrt{3}}{4} \times 16 = 4\sqrt{3}$ square unit

24. Find the area of the triangle whose sides are 5 cm, 12 cm and 13 cm.

(a) 46 cm^2 (b) 42 cm^2
(c) 30 cm^2 (d) 38 cm^2

RRB NTPC 18.01.2017 Shift : 1

Ans : (c)



Sides = 5, 12, 13
$5^2+12^2=13^2$
25 + 144 = 169
169 = 169
So this triangle will be right angle triangle

So area of Δ ABC $= \frac{1}{2}$ height × base

$= \frac{1}{2} \times 5 \times 12 = 30$ square cm.

25. The area of a triangle is 456 cm^2 and its height is 24 cm. Then the length of its base is:

(a) 32 (b) 36
(c) 34 (d) 38

RRB NTPC 06.04.2016 Shift : 2

Ans : (d) Area of triangle = 456 cm^2

height = 24 cm

base=?

Area of triangle $= \frac{1}{2} \times$ base $\times$ height

$456 = \frac{1}{2} \times 24 \times$ base

base $= \frac{456}{12}$, base = 38 cm.

26. The area of two similar triangles are 121 m^2 and 64 m2. If the median of the first triangle is 12.1 m then the median of the second triangle is:

(a) 6.4 m (b) 8.4 m
(c) 8.8 m (d) 9.2 m

RRB NTPC 19.01.2017 Shift : 2

Ans : (c)

$\frac{M_1}{M_2} = \sqrt{\frac{A_1}{A_2}}$ $\frac{12.1}{M_2} = \sqrt{\frac{(121)}{(64)}}$

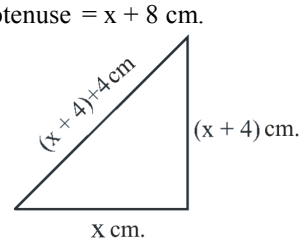
$\frac{12.1}{M_2} = \frac{11}{8}$, $\boxed{M_2 = 8.8 \text{ m.}}$

27. In a right angle triangle, the hypotenuse is 4 cm more than the perpendicular which is 4 cm more than the base. Find the length of the perpendicular.

(a) 12 cm (b) 16 cm
(c) 20 cm (d) 8 cm

RRB NTPC 27.04.2016 Shift : 3

Ans : (b) Let the base of right angle triangle = x cm.
then, perpendicular = (x + 4) cm
hypotenuse = x + 8 cm.



According to pythagoras theorem

hypotenuse^2 = perpendicular^2 + base^2

$(x + 8)^2 = (x + 4)^2 + x^2$

$\Rightarrow x^2 + 64 + 16x = x^2 + 16 + 8x + x^2$

$\Rightarrow x^2 + 16x - x^2 - x^2 - 8x = 16 - 64$

$\Rightarrow -x^2 + 8x = -48$

$\Rightarrow x^2 - 8x = 48$

$\Rightarrow x^2 - 8x - 48 = 0$

$\Rightarrow x^2 - 12x + 4x - 48 = 0$

$\Rightarrow x(x - 12) + 4(x - 12) = 0$

$\Rightarrow (x + 4)(x - 12) = 0$

$\Rightarrow x + 4 = 0$, $x - 12 = 0$

$\Rightarrow x = -4$ (invalid)

and $x - 12 = 0$ (Valid) $\boxed{x = 12}$

perpendicular = (x+4) cm. =12 + 4 = 16 cm.

28. Find the area of the triangle whose sides are 11 cm, 7 cm and 14 cm.

(a) $7\sqrt{22}$ (b) $11\sqrt{8}$
(c) $12\sqrt{10}$ (d) $13\sqrt{3}$

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) a = 11 cm., b = 7 cm., c = 14 cm.

half perimeter (s) $= \frac{a+b+c}{2} = \frac{11+7+14}{2} = \frac{32}{2}$

s = 16

Area of triangle $= \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{16(16-11)(16-7)(16-14)}$

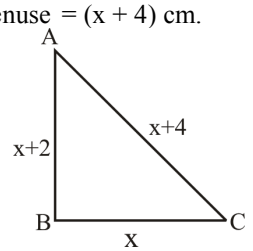
$= \sqrt{16(5)(9)(2)} = 12\sqrt{10}\ cm^2$

29. In a right angle 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.

(a) 6 cm. (b) 9 cm.
(c) 10 cm. (d) 8 cm.

RRB NTPC 29.04.2016 Shift : 2

Ans :(a) Let the length of base is x cm.
According to question
length of perpendicular = (x+2) cm.
length of hypotenuse = (x + 4) cm.



According to pythagoras theorem, In right angle ΔABC.

hypotenuse^2 = (perpendicular)^2 + (base)^2

$(x + 4)^2 = (x+2)^2 + x^2$

$x^2 + 16 + 8x = x^2 + 4 + 4x + x^2$

$\Rightarrow x^2 - 4x - 12 = 0$

$\Rightarrow x^2 - 6x + 2x - 12 = 0$

$\Rightarrow x(x-6) + 2(x-6) = 0$

$\Rightarrow (x-6) = 0$, $x + 2 = 0$

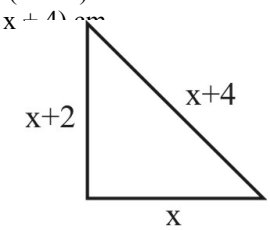
$\boxed{x = 6}$ $x \neq -2$ (It is not possible)

30. In a right angle 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 perpendicular.

(a) 6 cm (b) 9 cm
(c) 10 cm (d) 8 cm

RRB NTPC 29.04.2016 Shift : 3

Ans. (d) : Let the base of right angle triangle, = x cm.
∴ perpendicular = (x + 2) cm.
hypotenuse = (x + 4) cm



$\because$ hypotenuse^2 = perpendicular^2 + base^2

$(x + 4)^2 = (x + 2)^2 + x^2$

$\Rightarrow$ $x^2 + 16 + 8x = x^2 + 4 + 4x + x^2$

$\Rightarrow$ $x^2 - 4x - 12 = 0$

$\Rightarrow$ $x^2 - 6x + 2x - 12 = 0$

$\Rightarrow$ $x(x-6) + 2(x-6) = 0$

$\Rightarrow$ $(x - 6)(x + 2) = 0$

So, $x = 6$

$\therefore$ Length of perpendicular $(x + 2) = 6 + 2 = 8$ cm.

31. What is the ratio of inner radius and the circum radius of an equilateral triangle with area of $16\sqrt{3}$ sq. unit?

(a) 1/2 (b) 1/4

(c) 1/3 (d) 2/3

RRB NTPC 30.04.2016 Shift : 2

Ans : (a) $\because$ Area of equilateral $\Delta = \frac{\sqrt{3}}{4}a^2$

$\therefore$ $\frac{\sqrt{3}}{4}a^2 = 16\sqrt{3}$

$a^2 = 16\sqrt{3} \times \frac{4}{\sqrt{3}}$

$a^2 = 64 \Rightarrow a = 8$

Radius of circle in equilateral $\Delta = \frac{a}{2\sqrt{3}} = \frac{8}{2\sqrt{3}}$

Radius of circumcircle of equilateral $\Delta = \frac{a}{\sqrt{3}} = \frac{8}{\sqrt{3}}$

Intended ratio $= \frac{\frac{8}{2\sqrt{3}}}{\frac{8}{\sqrt{3}}} = \frac{1}{2}$

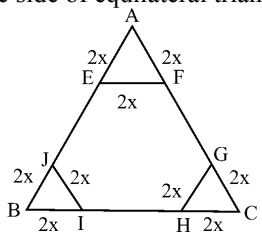
32. Three triangles are marked out of a large triangle at the three vertices such that each side of each of the small triangles is one-fourth as long as each corresponding side of the large triangle. The ratio of the area of the three small triangles taken together to that of the rest of the large triangle is:

(a) 3 : 13 (b) 1 : 5

(c) 3 : 16 (d) 4 : 15

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) Let the side of 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 small equilateral triangle

$= 3 \times \frac{\sqrt{3}}{4} \times (2x)^2 = 3\sqrt{3}x^2$

$\therefore$ Area of Remainder equilateral triangle

$= 16\sqrt{3}x^2 - 3\sqrt{3}x^2 = 13\sqrt{3}x^2$

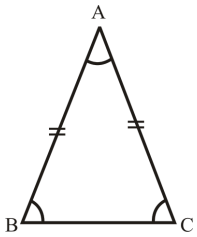
$\therefore$ Intended Ratio $= 3\sqrt{3}x^2 : 13\sqrt{3}x^2 = 3 : 13$

33. If each of the two equal angles of an isosceles triangle is twice the third angle, the measure of the third angle is:

(a) 90^0 (b) 72^0

(c) 45^0 (d) 36^0

Ans : (d)



Let the third angle $\angle A = x$

then $\angle B = \angle C = 2x$

$\because$ total of three angles of the triangle $= 180^0$

$\angle A + \angle B + \angle C = 180^0$

$x + 2x + 2x = 180^0$

$5x = 180^0$

$x = 36^0$

$\therefore$ third angle $x = 36^0$

34. Three triangles are marked out of a large triangle at the three vertices such that each side of each of the small triangles is one–third as long as each corresponding side of the large triangle. The ratio of the area of the three small triangles taken together to that of the rest of the large triangle is :

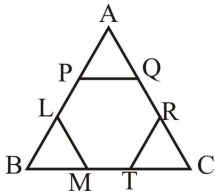
(a) 3 : 1 (b) 1 : 3

(c) 1 : 9 (d) 1 : 2

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (b) Let the side of large triangle ABC is x cm.

Area will be equal of Δ APQ, ΔBLM and ΔCRT.



Side of each small triangle $= \frac{1}{3}$ side of large triangle

$= \frac{x}{3}$ cm.

According to the question-

$$\text{Ratio} = 3 \times \frac{\sqrt{3}}{4}\left(\frac{x}{3}\right)^2 : \frac{\sqrt{3}}{4}(x)^2 = \frac{x^2}{3} : x^2 = 1:3$$

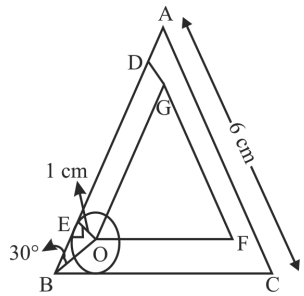
35. ABC is an equilateral triangle of side 6cm. If a circle of radius 1 cm is formed inside and along the sides of the triangle, the locus of the centre of the circle is an equilateral triangle of side is :

(a) 4 cm (b) $\left(6-2\sqrt{3}\right)$ cm

(c) 5 cm (d) $\left(3+\sqrt{3}\right)$ cm

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

Ans : (b)



From ΔOEB

$\tan 30° = \frac{OE}{EB}$

$\frac{1}{\sqrt{3}} = \frac{1}{EB}$

$EB = \sqrt{3}$ cm

So, side of equilateral triangle formed from the locus center in circle

= AB – (EB + DA) = AB – 2 EB = $\left(6-2\sqrt{3}\right)$ cm

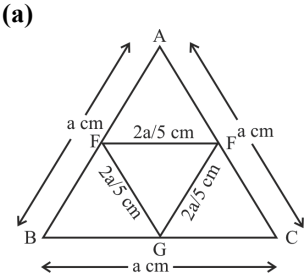
36. Three small triangles are so formed from the three corners of a large triangle in such a way that each side of the small triangle is equal to $\frac{2}{5}$ times of the corresponding side of the large triangle. What is the ratio between the total areas of the three small triangle and the remaining area of the large triangle?

(a) 12 : 13 (b) 1 : 5

(c) 12 : 25 (d) 4 : 25

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (a)



Area of equilateral triangle ABC = $\frac{\sqrt{3}}{4}a^2$ cm

Area of Small equilateral ΔAEF, ΔBEG and ΔCFG

$= \frac{\sqrt{3}}{4}\left\{\left(\frac{2a}{5}\right)^2+\left(\frac{2a}{5}\right)^2+\left(\frac{2a}{5}\right)^2\right\}$

$= \frac{3\sqrt{3}}{4}\times\frac{4a^2}{25} = \frac{3\sqrt{3}}{25}a^2$ cm

$\frac{\text{Area of } \Delta ABC}{\text{Area of small three triangles}} = \frac{\sqrt{3}/4a^2}{3\sqrt{3}/25a^2}$

$\frac{\text{Area of } \Delta ABC}{\text{Area of small three triangles}} - 1 = \frac{25}{12} - 1$

$\frac{\text{Area of } \Delta ABC - \text{Area of } \Delta \text{ small three triangles}}{\text{Area of small three triangles}}$

$= \frac{25-12}{12}$

$= \frac{\text{Area of remainced triangle}}{\text{Area of small three triangles}} = \frac{13}{12}$

$= \frac{\text{Area of small three triangles}}{\text{Area of remained triangle}} = \frac{12}{13}$

Type - 2

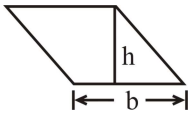
37. The base of a parallelogram is twice its height. If the area is 392 sq.m. What is its height?

(a) 14 m (b) 28 m

(c) 12 m (d) 24 m

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (a) ∵ b = 2h



Area of Parallelogram = b×h

392 = 2h×h

196 = h^2

h= 14 m

38. The area of a field of trapezoidal shape is 1440 sqm. The perpendicular distance between parallel sides is 24m. The ratio of the parallel sides is 5:3. Find the length of the largest parallel side.

(a) 30 m (b) 60 m

(c) 45 m (d) 75 m

RRB JE - 30/05/2019 (Shift-III)

Ans : (d) Let the parallel sides of trapezium is 5x meter and 3x meter

area of trapezoid = $\frac{1}{2}$(total of parallel sides) × distance between them

$1440 = \frac{1}{2}\left(5x+3x\right)\times 24$

$\frac{1440\times 2}{24} = 8x$

8x = 120

x = 15

length of largest parallel sides of trapezoid = 5x m

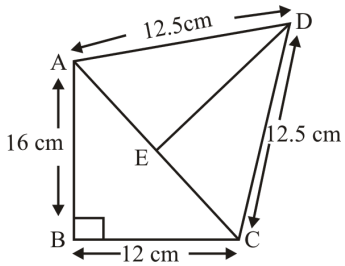
= 5 × 15 = 75 m

39. A quadrilateral has two sides 16 cm and 12 cm. and the angle between them is 90º. Its other two sides are $\frac{25}{2}$ cm each. The other three angles of the quadrilateral are not the right angles. Find the area of the quadrilateral.

(a) 202 cm^2 (b) 151 cm^2
(c) 193 cm^2 (d) 171 cm^2

RRB RPF SI – 10/01/2019 (Shift-III)

Ans. (d)



From ΔABC

$AC = \sqrt{16^2 + 12^2}$

$= \sqrt{256 + 144}$

$= \sqrt{400} = 20cm$

ΔADC in

$ED = \sqrt{\left(\frac{25}{2}\right)^2 - 10^2}$

$= \sqrt{\frac{625-400}{4}} = \sqrt{\frac{225}{4}} = \frac{15}{2}$

Area of □ ABCD = Area of Δ ABC + Area of Δ ACD

$= \frac{1}{2}\left(16 \times 12 + \frac{15}{2} \times 20\right)$

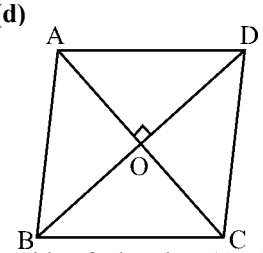
= 16 × 6 + 15 × 5 = 96 + 75 = 171 cm^2

40. If one side of a rhombus and one diagonal are 16 cm each, then the area in cm^2 of the rhombus is:

(a) $64\sqrt{3}$ (b) $256\sqrt{3}$
(c) 128 (d) $128\sqrt{3}$

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (d)



Side of Rhombus (ABCD) = 16 cm

and a diagonal BD = 16 cm = d_1

in ΔAOB —

$AO = \sqrt{(AB)^2 - (BO)^2}$

$= \sqrt{(16)^2 - (8)^2} = \sqrt{256 - 64}$

$AO = \sqrt{192}$

$AO = 8\sqrt{3}$ cm

Second diagonal $(d_2) = 8\sqrt{3} + 8\sqrt{3} = 16\sqrt{3}$ cm

Area of Rhombus $= \frac{1}{2}(d_1 \times d_2)$

$= \frac{1}{2}\left(16 \times 16\sqrt{3}\right)$

$= 128\sqrt{3}\ cm^2$

41. Area of a rhombus is 216 cm^2 and the length of its one diagonal is 24 cm. What is the length of each side of the rhombus?

(a) 14 cm (b) 13 cm
(c) 15 cm (d) 12 cm

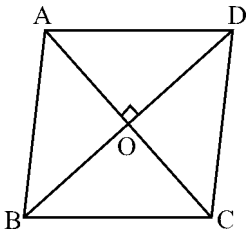
RRB Group-D – 20/09/2018 (Shift-II)

Ans : (c) Given-

Length of diagonal of Rhombus is (d_1) = 24 cm, d_2 = ?

According to question,

Area of Rhombus $= \frac{1}{2} \times d_1 \times d_2$



AO = 12 cm

DO = 9 cm

$216 = \frac{1}{2} \times 24 \times d_2$

d_2 = 18 cm

in ΔAOD

According to pythagoras theorem,

$AD^2 = 12^2 + 9^2$ {Diagonal of rhombus

$AD^2 = 144 + 81$ intersect at the angle of 90°

$AD^2 = 225$ each other}

AD = 15 cm.

So length of rhombus each side will 15 cm.

42. What is the area of a piece of metal that is in the form of a parallelogram with a base of 20 m and a height of 5.4 m?

(a) 108 sq.m. (b) 801 sq.m.
(c) 180 sq.m. (d) 810 sq.m.

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (a) Area of parallelogram = (base × height)

= 20 × 5.4 m^2

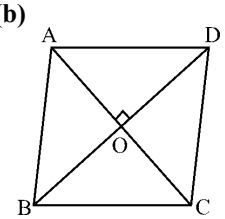
Area = 108 m^2

43. The length of each side of a rhombus is 5 m and the length of one of its diagonal is 2.8 m. Find the area of this rhombus.

(a) 6.72 m^2 (b) 13.44 m^2
(c) 14 m^2 (d) 7 m^2

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (b)



Diagonal $= d_1 = 2.8$m
Each side $= 5$m.
ΔAOD in,
$AO = \frac{2.8}{2} = 1.4$m,
AD = 5m.
Diagonal of rhombus intersect at the angle of 90° to each other
According to Pythagoras theorem
$OD^2 = (5)^2 - (1.4)^2$
$OD^2 = 23.04$
OD = 4.8 m
So diagonal $(d_2) = 4.8 \times 2 = 9.6$ m.
So 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^2

44. The side of a rhombus is 37 cm and its area is 840 cm^2. Find the sum of the length of its diagonals.
(a) 84 cm (b) 94 cm
(c) 42 cm (d) 47 cm

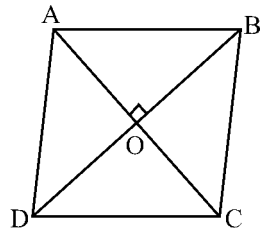
RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) Area of rhombus $= \frac{1}{2} d_1 d_2$
$\Rightarrow \frac{1}{2} d_1 d_2 = 840$
$d_1 d_2 = 1680$ --------(i)
$d_1^2 + d_2^2 = (\text{side})^2 \times 4$
$d_1^2 + d_2^2 = 37 \times 37 \times 4$
$d_1^2 + d_2^2 = 5476$ ----(ii)
$\because \quad (d_1 + d_2)^2 = d_1^2 + d_2^2 + 2d_1 d_2$
from the equation (i) and (ii) -
$\Rightarrow (d_1 + d_2)^2 = 5476 + 2 \times 1680$
$\Rightarrow (d_1 + d_2)^2 = 5476 + 3360$
$\Rightarrow (d_1 + d_2)^2 = 8836$
$\Rightarrow (d_1 + d_2)^2 = (94)^2$
$\Rightarrow \boxed{d_1 + d_2 = 94 \text{ cm}}$

45. The perimeter of a rhombus is 56 cm and the length of one of its diagonals is 26 cm. Find the length of the other diagonal of the rhombus.
(a) $6\sqrt{7}$ cm (b) $6\sqrt{2}$ cm
(c) $6\sqrt{3}$ cm (d) $6\sqrt{5}$ cm

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c)

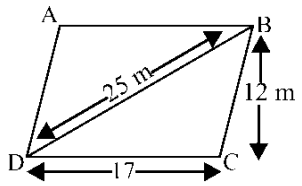


OD = 13 cm
Perimeter of rhombus = 56 cm
4a = 56
Side (a) = 14 cm
According to Pythagoras theorem
$(AO)^2 = (AD)^2 - (DO)^2$
$(AO)^2 = (14)^2 - (13)^2$
$(AO)^2 = 196 - 169$
$(AO)^2 = 27$
$AO = \sqrt{27}$
Diagonal (AC) = 2 × AO
Diagonal (AC) = $2 \times \sqrt{27}$
(AC) = $6\sqrt{3}$ cm

46. The sides of a parallelogram are 12 m and 17 m. If the length of one diagonal is 25m, then find the area of the parallelogram:
(a) 190 m^2 (b) 150 m^2
(c) 160 m^2 (d) 180 m^2

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (d)

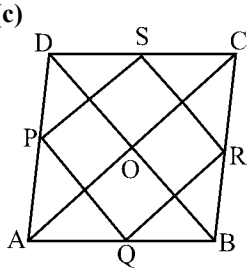


Half perimeter of ΔBCD (s) $= \frac{12 + 25 + 17}{2} = \frac{54}{2} = 27$
Area of ΔBCD $= \sqrt{s(s-a)(s-b)(s-c)}$
$= \sqrt{27(27-12)(27-25)(27-17)}$
$= \sqrt{27 \times 15 \times 2 \times 10}$
$= \sqrt{3 \times 9 \times 3 \times 5 \times 2 \times 2 \times 5}$
$= 9 \times 5 \times 2 = 90$
Area of parallelogram ABCD $= 2 \times \Delta$BCD
$= 90 \times 2 = 180$ m^2

47. The diagonals of a rhombus are 12 cm and 16 cm. The area of shape formed by joining the midpoints of all the sides of the rhombus is:
(a) 192 cm^2 (b) 64 cm^2
(c) 48 cm^2 (d) 96 cm^2

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (c)



Area of rhombus $= \frac{1}{2} \times d_1 \times d_2$

Area $= \frac{1}{2} \times 12 \times 16$

Area $= 96\ cm^2$

A rhombus is formed by joining the midpoints of all the sides of the large rhombus and the area of this small rhombus is area $= \frac{\text{Area of larger rhombus}}{2}$

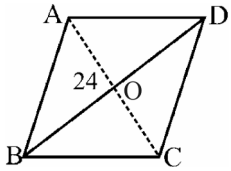
Area $= \frac{96}{2} = 48\ cm^2$

48. The area of a rhombus is 216 m^2 and the length of one of its diagonal is 25m. What is the length of each side of the rhombus?

(a) 12 m (b) 18 m
(c) 15 m (d) 30 m

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (c) :



AC = 18 m
BD = 24 m

Area of rhombus $= \frac{1}{2} \times AC \times BD$

$216 = \frac{1}{2} \times AC \times BD$

$\frac{1}{2} \times AC \times 24 = 216$

$AC = 18\,cm$

Length of each side of rhombus $= \sqrt{(OC)^2 + (OB)^2}$

$= \sqrt{9^2 + 12^2}$

$= \sqrt{81 + 144}$

$= \sqrt{225} = 15$ Meter

49. Find the distance between two parallel sides of a non- parallelogram. If the area of the non-parallelogram is 150 sqm and the length of the two parallel sides are 10 m and 15 m respectively.

(a) 12 m (b) 14 m
(c) 10 m (d) 15 m

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a) Area of a parallelogram or trapezoid =

$= \frac{1}{2}$ (sum of parallel side × distance)

$= \frac{1}{2}(10 + 15) \times$ Distance

$150 = \frac{1}{2} \times 25 \times$ Distance

Distance $= \frac{300}{25} = 12$ meter

50. The area of a rhombus is 324 cm^2 and the length of one of its diagonal is 36 cm. What is the length of each side of this rhombus?

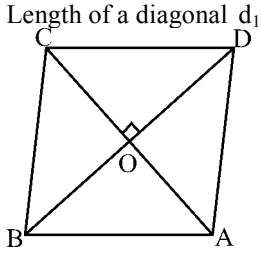
(a) 10cm (b) $18\sqrt{5}$ cm
(c) $9\sqrt{5}$ cm (d) $8\sqrt{6}$ cm

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (c)

Area of rhombus = $324 cm^2$

Length of a diagonal d_1= 36cm



Area of rhombus $= \frac{1}{2} \times d_1 \times d_2$

$324 = \frac{1}{2} \times 36 \times d_2$

$d_2 = 18$ cm.

According to figure $(AB)^2 = (OA)^2 + (OB)^2$

$= 9^2 + 18^2$

$= 81 + 324$

$(AB)^2 = 405$

$AB = 9\sqrt{5}$ cm.

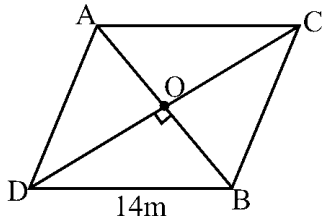
So length of each side of rhombus is $9\sqrt{5}$ cm .

51. The side of the rhombus and one diagonals are 14 cm each. Find the area of the rhombus.

(a) $49\sqrt{3}$ (b) $196\sqrt{3}$
(c) $98\sqrt{3}$ (d) 98

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (c) : The diagonals of a rhombus intersect each other at 90º angle.



$OB = OA = \frac{14}{2}$ cm = 7cm

$\therefore$ According to Pythagoras theorem-

$DB^2 = OB^2 + OD^2$

$196 = 49 + OD^2$

$OD^2 = 147$

$OD = \sqrt{3 \times 7 \times 7}$

$= 7\sqrt{3}$

$DC = 2 \times 7\sqrt{3} = 14\sqrt{3}$

Area of rhombus $= \frac{1}{2} \times AB \times CD$

$= \frac{1}{2} \times 14 \times 14\sqrt{3} = 98\sqrt{3}\,cm^2$

52. The height of an equilateral triangle is equal to the diagonal of a square. Find the ratio of the areas of the triangle and the square.

(a) $\sqrt{3} : 2$ (b) $2 : \sqrt{3}$

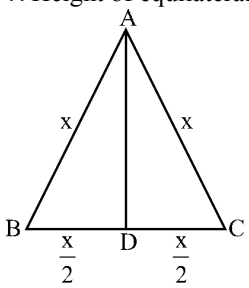
(c) 3 : 4 (d) $\sqrt{3} : \sqrt{2}$

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (b) : Let the side of square= a

$\therefore$ Diagonal of square $= a\sqrt{2}$

$\therefore$ Height of equilateral triangle (h) = $a\sqrt{2}$



In equilateral ΔABC,

Let the side of Δ = x

$AD = a\sqrt{2}$

$AD^2 = AC^2 - DC^2$

$2a^2 = x^2 - \frac{x^2}{4}$

$2a^2 = \frac{3x^2}{4}$

$x^2 = \frac{8}{3}a^2$

Area of equilateral $\Delta = \frac{\sqrt{3}}{4} \times x^2$

$= \frac{\sqrt{3}}{4} \times \frac{8}{3}a^2$

$= \frac{2}{\sqrt{3}}a^2$

Area of square $= a^2$

Area of equilateral Δ : area of square $= \frac{2}{\sqrt{3}}a^2 : a^2$

$= 2 : \sqrt{3}$

53. A rhombus was formed from a rectangle with sides 12 cm and 8 cm, whose perimeter was equal to that of the rectangle and one of its angle was 120º. Find the area of the rhombus.

(a) $25\sqrt{3}\,cm^2$ (b) $50\sqrt{3}\,cm^2$

(c) $40\sqrt{3}\,cm^2$ (d) $\frac{100\sqrt{3}}{3}cm^2$

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (b) :

Perimeter of rectangle = 2 (Length + breadth)

= 2 (12 + 8)

= 40 cm.

Given that

Perimeter of rhombus = Perimeter of rectangles ..... (I)

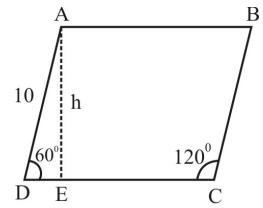
Let the side of rhombus is a cm

From equation (I),

4a = 40

a = 10

In Δ ADE,



$\sin 60^0 = \frac{h}{10}$

$\Rightarrow \frac{\sqrt{3}}{2} = \frac{h}{10}$

Height $(h) = 5\sqrt{3}$ cm

Area of rhombus = Base × Height

$= 10 \times 5\sqrt{3}$

$= 50\sqrt{3}\,cm^2$

54. If the diagonals of a rhombus are in the ratio 5:4, then find the ratio of the area of the rhombus and the product of its diagonals.

(a) 4:1 (b) 2:1

(c) 1:2 (d) 1:4

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) Let the diagonal of rhombus = 5x, 4x

Area of rhombus $= \frac{1}{2}$ product of diagonal

$\frac{1}{2} \times 5x \times 4x = 10x^2$

$\therefore \frac{\text{Area of rhombus}}{\text{Product of rhombus diagonal}} = \frac{10x^2}{20x^2} = 1 : 2$

55. The height and the area of a parallelogram are 7 cm and 161 cm². Find the length of its base.

(a) 25 cm (b) 23 cm

(c) 21 cm (d) 19 cm

RRB NTPC 05.04.2016 Shift : 2

Ans : (b) $\because$ Area of parallelogram = Base × Height

161 = Base × 7

$\therefore$ Base= 23 cm

56. The area of the trapezium is 18 sq. cm. Its height and base are 3 cm and 5 cm respectively. Find the length of the side parallel to base.

(a) 4 cm (b) 6 cm
(c) 8 cm (d) 7 cm

RRB NTPC 06.04.2016 Shift : 2

Ans : (d) Let the length of side parallel base = x cm.

height = 3 cm

length of base = 5 cm

area= 18 cm.

Area of trapezium $= \frac{1}{2} \times$ height × sum of parallel sides

$18 = \frac{1}{2} \times 3 \times (5 + x)$

36 = 15 + 3x

3x = 36 – 15

3x = 21

x = 7

57. The length of one side of a rhombus is 17cm and one of the diagonals is 16 cm. Find the length of the other diagonal.

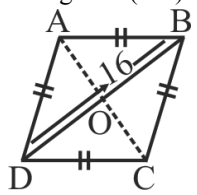
(a) 30 cm (b) 20 cm
(c) 32 cm (d) 16 cm

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (a) : In ABCD Rhombus

AB = BC = CD = DA = 17 cm

BD = 16 cm diagonal (AC) = ?



so $OB = \frac{1}{2} BD = \frac{1}{2} \times 16 = 8$ cm

In right angle ΔAOB,

$(AB)^2 = (AO)^2 + (OB)^2$

$(17)^2 = (AO)^2 + 8^2$

$(AO)^2 = 289 - 64$

$AO = \sqrt{225} = 15$ cm

Then diagonal AC = 2 × AO

AC = 2 × 15 = 30 cm.

58. The length of one side of a rhombus is 61 cm and its area is 1320 cm^2. Find the sum of the lengths of its diagonals.

(a) 120 cm (b) 122 cm
(c) 142 cm (d) 71 cm

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (c) If side of rhombus is 'a' and diagonal d_1 and d_2

So,

a = 61 cm and A = 1320 cm^2

so, $1320 = \frac{d_1 \times d_2}{2}$

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 $d_1^2 + d_2^2 = 14884$

$(d_1 + d_2)^2 = 14884 + 2 \times 2640$

$(d_1 + d_2)^2 = 20164$

$(d_1 + d_2)^2 = (142)^2$

$\boxed{d_1 + d_2 = 142 \text{ cm}}$

59. A rectangle having 10 cm and 6 cm as its dimensions was reconstructed to make a rhombus having the same perimeter as that of the rectangle and 60° as one of its angles. The area of the rhombus, in cm^2, is:

(a) $24\sqrt{3}$ (b) $8\sqrt{3}$
(c) $16\sqrt{3}$ (d) $32\sqrt{3}$

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (d) In following question–

Perimeter of rectangle = 2 × (length × breadth)

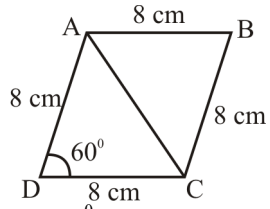
= 2 × (10 + 6) = 32 cm

here perimeter of rectangle

= Perimeter of rhombus= 32 cm

Perimeter of rhombus = 4 × side = 32 cm

or length of each side of rhombus = 8 cm.



$\because$ here is $\angle D = 60^0$ so Triangle 'ADC' will be equilateral triangle.

Area of ΔADC $= \left(\frac{\sqrt{3}}{4} a^2\right)$

$= \frac{\sqrt{3}}{4} \times 8^2 \Rightarrow \frac{64\sqrt{3}}{4} \Rightarrow 16\sqrt{3} \text{cm}^2$

Now area of rhombus will be

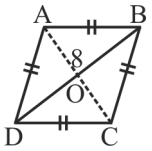
$\Rightarrow 2 \times 16\sqrt{3} = 32\sqrt{3} \text{cm}^2$

60. The area of a rhombus is 24 m^2 and the length of one of its diagonals is 8m. The length of each side of the rhombus will be:

(a) 5 m (b) 10 m
(c) 4 m (d) 6m

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (a) In rhombus ABCD
diagonal AC = x meter
BD = 8 meter



$$\text{area} = \frac{1}{2} \times \text{product of diagonal}$$

$$24 = \frac{1}{2} \times 8 \times x$$

x = 6 m.

$AO = \frac{1}{2}AC$ $\quad$ $BO = \frac{1}{2}BD$

$AO = \frac{1}{2} \times 6 = 3$ m $\quad$ $BO = \frac{1}{2} \times 8 = 4$ m

in right angle ΔAOB

$(AB)^2 = (OA)^2 + (OB)^2$

$(AB)^2 = 3^2 + 4^2$

$AB = \sqrt{25}$

AB = 5 m

side of rhombus AB = 5 m.

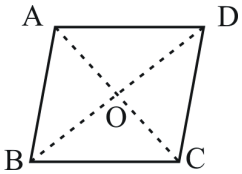
61. Find the length of one side of a rhombus whose area is 24 cm^2 and the sum of the length of its diagonals is 14 cm.

(a) 3 cm (b) 6 cm
(c) 4 cm (d) 5 cm

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (d) Let the length of diagonal AC = x cm.

$\therefore$ length of diagonal BD = (14 – x)



$$\text{area of rhombus} = \frac{1}{2} \times AC \times BD$$

$$24 = \frac{1}{2} \times x \times (14 - x)$$

$$48 = 14x - x^2$$

$$\Rightarrow x^2 - 14x + 48 = 0$$

$$x^2 - 8x - 6x + 48 = 0$$

$$(x-8)(x-6) = 0 \Rightarrow x = 8, 6$$

In right angle ΔBOC— $BC^2 = BO^2 + CO^2$

$$BC^2 = \left(\frac{BD}{2}\right)^2 + \left(\frac{AC}{2}\right)^2$$

$$BC^2 = \left(\frac{8}{2}\right)^2 + \left(\frac{6}{2}\right)^2 = 16 + 9 = 25$$

BC = 5 cm.

so length of side of rhombus = 5 cm

62. The length of each side of a rhombus is 25 m and the length of one of its diagonals is 14 m. Find the area of the rhombus

(a) 175 m^2 (b) 336 m^2
(c) 168 m^2 (d) 350 m^2

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

Ans : (b) length of side of rhombus

$$= \frac{1}{2}\sqrt{d_1^2 + d_2^2}$$

where d_1, d_2 is diagonal

$$\therefore \quad 25 = \frac{1}{2}\sqrt{14^2 + d_2^2}$$

$$\therefore \quad 50 \times 50 = 14^2 + d_2^2$$

$$d_2^2 = 2500 - 196$$

$$d_2^2 = 2304$$

$$\therefore \quad d_2 = 48 \text{ m}$$

So area of rhombus $= \frac{1}{2} d_1 \times d_2 = \frac{1}{2} \times 14 \times 48$

= 336 Square meter

63. The length of one side of a rhombus is 41 cm and its area is 720 cm^2. What is the sum of the lengths of its diagonals ?

(a) 82 cm (b) 90 cm
(c) 98 cm (d) 80 cm

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (c) Area of rhombus $= \frac{\text{Product of diagonal}}{2}$

product of diagonal $(d_1 \times d_2) = 2 \times 720 = 1440 \text{ cm}^2$

$$\because \text{side } (a) = \sqrt{\left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$$

$$\Rightarrow (41)^2 = \left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2$$

$$\Rightarrow 41 \times 41 \times 4 = d_1^2 + d_2^2$$

$$d_1^2 + d_2^2 = 6724$$

$$(d_1 + d_2)^2 = d_1^2 + d_2^2 + 2d_1 \times d_2$$

$$(d_1 + d_2)^2 = 6724 + 2 \times 1440 \Rightarrow 9604 \text{ cm}^2$$

or $\boxed{d_1 + d_2 = 98 \text{ cm}}$

64. The length of one side of a rhombus is 13 cm and one of the diagonals is 10 cm. What is the length of the other diagonal ?

(a) 24 cm (b) 23 cm
(c) 25 cm (d) 22 cm

RRB ALP & Tec. (13-08-18 Shift-I)

Ans : (a) Side of rhombus (a) = 13 cm
First diagonal (d_1)=10 cm
Second diagonal (d_2)=?

$$\text{Side of rhombus}(a) = \sqrt{\left(\frac{d_1}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$$

$$\Rightarrow 13 = \sqrt{\left(\frac{10}{2}\right)^2 + \left(\frac{d_2}{2}\right)^2}$$

$$\Rightarrow 169 = 25 + \frac{d_2^2}{4}$$

$$\Rightarrow 144 \times 4 = d_2^2$$

$$\Rightarrow \boxed{d_2 = 24 \text{ cm}}$$

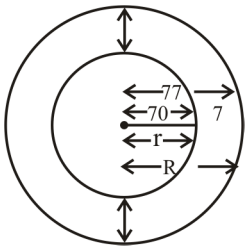
Type - 3

65. The area of a circle is 616 sq.m. Find its diameter. (π = 22/7)
(a) 7 m (b) 14 m
(c) 28 m (d) 56 m
RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (c) $\because$ Area of circle = 616 sq.m.
$\pi r^2 = 616$
$r^2 = \frac{616 \times 7}{22}$, $r^2 = 196$
r = 14m
diameter = 2×14
diameter = 28m.

66. Find the area of the circular path, which is formed around a circle of circumference 440 m and whose width is 7 m.
(a) 3856 sq.m. (b) 3234 sq.m.
(c) 3900 sq.m. (d) 3204 sq.m.
RRB JE - 27/05/2019 (Shift-II)

Ans : (b) Circumference of a 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 r is the radius of the circle and the radius of the circle with circular Path is R.



area of circular track $= \pi\left(R^2 - r^2\right)$
$= \pi\left[(77)^2 - (70)^2\right]$
$= \pi[5929 - 4900]$
$= \pi \times 1029$
$= \frac{22}{7} \times 1029$
= 3234 Square meter

67. What is the circumference of a semicircle which diameter is 28 cm?
(a) 36 cm. (b) 144 cm.
(c) 72 cm. (d) 44 cm.
RRB RPF Constable – 24/01/2019 (Shift-I)

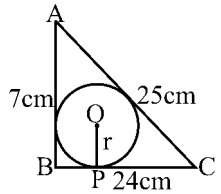
Ans : (c) diameter = 28 cm,
radius = $\frac{\text{diameter}}{2} = \frac{28}{2} = 14$ cm
circumference of a semi circle = $\pi r + 2r = r(2+\pi)$
$= 14\left(2 + \frac{22}{7}\right) = 14 \times \frac{36}{7} = 72$ cm.

68. The radius of a circle is increased by 5%. Find the percentage increase in its area.
(a) 10.25% (b) 21.5%
(c) 10.5% (d) 25%
RRB JE - 28/05/2019 (Shift-I)

Ans : (a) Let the radius of circle = x
increase % in area of the circle
$= \left(2x + \frac{x^2}{100}\right)\%$
$= \left(2 \times 5 + \frac{(5)^2}{100}\right)\%$
$= (10 + .25)\%$
$= 10.25\%$

69. What will be the radius of inner circle of triangle whose sides are 7 cm, 24 cm and 25 cm?
(a) 4 cm (b) 2.5 cm
(c) 3.5 cm (d) 3 cm
RRB RPF SI – 12/01/2019 (Shift-I)

Ans : (d) The sides of the given triangle form a right angle triangle.
Then,



area of Triangle $(\Delta) = \frac{1}{2} \times 24 \times 7 = 84$ cm^2
semi perimeter (s) $= \frac{1}{2}[24 + 25 + 7] = 28$
Hence radius of inner circle (r) $= \frac{\Delta}{s} = \frac{84}{28} = 3$ cm

70. The cost of installing a paved floor in a circular room is 1540 Rs. at the rate of 10 Rs. per square meter. What is the cost of fencing at the rate of 6 Rs. per meter?

(a) Rs. 260 (b) Rs. 264
(c) Rs. 250 (d) Rs. 265

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (b)
Area of the circle = πr^2
$\because$ 10 Rs. per square meter cost = Rs. 1540
$\therefore$ Area of circle $= \frac{1540}{10} = 154$

$\pi r^2 = 154$

$r^2 = \frac{154 \times 7}{22}$

$r^2 = 49$

r = 7 m

Perimeter of circle $= 2\pi r = 2 \times \frac{22}{7} \times 7 = 44$ m

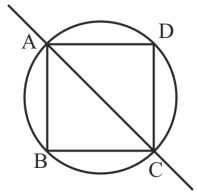
Cost of fencing at the rate of Rs. 6 per meter
= 6×44 = Rs. 264

71. ABCD is a quadrilateral inscribed in a circle (radius r). The bisectors of ∠DAB and ∠BCD intersect the circle at X and Y respectively. What is the length of the straight line X Y?

(a) 2r (b) (r +2)
(c) $\frac{\pi r^2}{2}$ (d) πr^2

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (a)



In a cyclic quadrilateral, the bisector of the opposite angle will pass through the center.
XY = AC
and AC is the diameter of the circle
$\boxed{XY = 2r}$

72. The circumference of a circle is 15 m more then its diameter. Find the radius of the circle.

(a) 7 cm (b) 3.5 cm
(c) 4 cm (d) 8 cm

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b) According to question-

$2\pi r - 2r = 15$

$2r(\pi - 1) = 15$

$2r\left(\frac{22}{7} - 1\right) = 15$

$2r\left(\frac{15}{7}\right) = 15$

$2r = 7$

$\boxed{r = 3.5 \text{ m.}}$

73. The inner and outer circumference of the circular ring is 22 cm and 44 cm respectively. Find the thickness of the ring.

(a) 5.5 cm (b) 1.5 cm
(c) 3.5 cm (d) 2.5 cm

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (c) Let internal radius of ring $= r_1$
and outer radius $= r_2$
as per questions –

$2\pi r_1 = 22, \quad 2\pi r_2 = 44$

$2 \times \frac{22}{7} \times r_1 = 22, \quad 2 \times \frac{22}{7} r_2 = 44$

$r_1 = \frac{7}{2}$cm, $\quad r_2 = 7$cm

thickness of ring $= r_2 - r_1$

$= 7 - \frac{7}{2} = \frac{7}{2}$cm = 3.5 cm

74. An outer circular path is built around a circular garden. If the outer and the inner perimeter of the path are 220 m and 44 m respectively. Find the area of the path.

(a) 3960 m^2 (b) 3696 m^2
(c) 3069 m^2 (d) 3096 m^2

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) Let the outer radius $= r_1$
internal radius $= r_2$
given,
circumference of circle $\Rightarrow 2\pi r_1 = 220, \quad 2\pi r_2 = 44$

$r_1 = 35$m, $\quad r_2 = 7$m

Area of the garden with the path $= 2\pi r_1^2$

$= \frac{22}{7} \times 35 \times 35 = 3850$ m^2

Area of garden $= 2\pi r_2^2 = \frac{22}{7} \times 7 \times 7 = 154$ m^2

area of path = 3850 – 154 = 3696 m^2

75. The area of an equilateral triangle inscribed in a circle is $9\sqrt{3}$ cm^2. What is the area of the circle?

(a) 16π (b) $12\sqrt{3}\pi$
(c) $15\sqrt{3}\pi$ (d) 12π

RRB Group-D – 05/12/2018 (Shift-I)

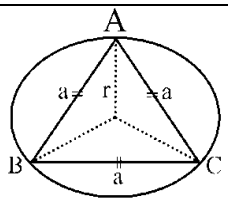
Ans : (d)

Area of equilateral $\Delta = \frac{\sqrt{3}}{4}a^2$ where a = side of Δ

$\frac{\sqrt{3}}{4} \times a^2 = 9\sqrt{3}$

$a^2 = 36$

$a = 6$



Note- radius of circumcircle of equilateral triangle with the side a $= \frac{a}{\sqrt{3}} = \frac{6}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$= 2\sqrt{3}$

area of circle $= \pi r^2$

$= \pi \times 2\sqrt{3} \times 2\sqrt{3}$

Hence area of circle $= 12\pi$

76. A race ground is in the form of a ring. Its inner and outer circumference are 88 m and 154 m respectively. What is the width of the race ground?

(a) 12m (b) 15m
(c) 16.5 m (d) 10.5 m

RRB Group-D – 03/12/2018 (Shift-II)

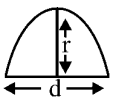
Ans : (d) Let the outer radius of the field = R
Internal radius of the field = r
Outer circumference of the field = $2\pi R$
$2\pi R = 154$
$\pi R = 77$
$R = 49/2$
Internal circumference of the field = $2\pi r$
$2\pi r = 88$
$\pi r = 44$
$r = 14$
Width of the field $= R - r = \frac{49}{2} - 14$
$= \frac{49-28}{2} = \frac{21}{2} = 10.5\text{m}$

77. If the diameter of a semicircle is 14 m. What will be the perimeter of the semicircle?

(a) 44 m (b) 22 m
(c) 36 m (d) 58 m

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (c) :



$\because$ Diameter of semicircle = 14 m
$2r = 14$
$r = 7$ m
Perimeter of semicircle $= \pi r + 2r$
$= \frac{22}{7} \times 7 + 14$
$= 22 + 14 = 36$ m

78. If the diameter of the wheel of a car is 56 cm, then how many times will the wheel of the car rotate during the journey of 88 km?

(a) 500 (b) 50,000
(c) 5,000 (d) 5,00,000

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) : Diameter of wheel = 56 cm.
$d = 56$ cm
$\therefore \; r = \frac{d}{2}$
$r = \frac{56}{2} = 28$ cm
Let the wheel will rotate n time in the distance of 88 km
$n \times 2\pi r = 88$ km [1 km = 100000 cm]
$n = \frac{88 \times 100000}{2 \times \frac{22}{7} \times 28}$
$n = \frac{88 \times 100000}{2 \times 88}$
$n = 50000$

79. A circular land of radius 7 m has 3.5 m wide path around it. Find the area of the path. $\left(\pi = \frac{22}{7}\right)$

(a) 202 sq. m. (b) 154 sq. m.
(c) 192.5 sq. m. (d) 346.5 sq. m.

RRB NTPC 17.01.2017 Shift-2

Ans : (c) Area of path = area with land of path – area of land.
$= \pi(7+3.5)^2 - \pi(7)^2$
$= \frac{22}{7}\left[(10.5-7)(10.5+7)\right]$
$= \frac{22}{7} \times 17.5 \times 3.5 = 192.5 \text{ m}^2$

80. If the circumference of a circle is 18π cm, then the area of the circle is:

(a) 18π sq. cm. (b) $18\pi^2$ sq. cm.
(c) 81π sq. cm. (d) 9π sq. cm.

RRB NTPC 05.04.2016 Shift-1

Ans : (c) Given-
Circumference of a circle $= 18\pi$
$2\pi r = 18\pi$
$r = \frac{18}{2}$
$r = 9$ cm
$\therefore$ area of circle $= \pi r^2$
$= \pi \times (9)^2 = 81\pi$ square cm

81. If the diameter of a circle is 7 cm then find its area.

(a) 49 cm^2 (b) 38.5 cm^2
(c) 154 cm^2 (d) 98 cm^2

RRB NTPC 04.04.2016 Shift : 2

Ans : (b) Radius of the circle (r) $= = \frac{\text{diameter}}{2}$

$= \frac{7}{2}$ cm

area of circle $= \pi r^2$

$= \frac{22}{7} \times \left(\frac{7}{2}\right)^2 = \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = \frac{77}{2} = 38.5 \text{ cm}^2$

82. If the circumference of a circle is 22 cm, find the area of the semicircle.

(a) 38.5 sq.cm. (b) 19.25 sq.cm.
(c) 44 sq.cm. (d) 77 sq.cm.

RRB NTPC 03.04.2016 Shift : 2

Ans :(b) Circumference of the 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 semicircle $= \frac{\pi r^2}{2} = \frac{22 \times 7 \times 7}{2 \times 7 \times 2 \times 2}$

$= \frac{11 \times 7}{4} = \frac{77}{4} = 19.25$ square cm.

83. When a square is made by bending a wire then the area of the square is 484 cm^2. If the same wire is bent as a circle then its area will be:

(a) 264 sq. cm. (b) 616 sq. cm.
(c) 488 sq. cm. (d) 492 sq. cm.

RRB NTPC 02.04.2016 Shift : 3

Ans : (b) Area of square = 484 square cm.

$(\text{side})^2 = 484 = (22)^2$

side = 22 cm

Perimeter of square = 4 × side = 4 × 22

= 88cm

Perimeter of circle = Perimeter of square

= 88cm

$\therefore 2\pi r = 88 \Rightarrow 2 \times \frac{22}{7} \times r = 88$

$\Rightarrow r = \frac{4 \times 7}{2} = 14$ cm

area of circle = πr^2

$= \frac{22}{7} \times (14)^2 = \frac{22}{7} \times 14 \times 14$

$= 22 \times 2 \times 14 = 616 \text{ cm}^2$

84. The largest chord of a circle measures 10 cm and the shortest chord measures 4 cm. Find the radius of the circle.

(a) 20 cm. (b) 5 cm.
(c) 8 cm. (d) 2 cm.

RRB NTPC 29.03.2016 Shift : 2

Ans : (b) diameter of circle = length of the largest chord of the circle = 10 cm

$\therefore$ radius of circle = $\frac{10}{2}$ = 5cm

85. Find the area of a circular region whose circumference is 22 cm.

(a) 22 sq. cm. (b) 11 sq. cm.
(c) 44 sq. cm. (d) 38.5 sq. cm.

RRB NTPC 29.03.2016 Shift : 2

Ans : (d) Circumference of a circle = $2\pi r$

From the 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 circle = πr^2

$= \frac{22}{7} \times \left(\frac{7}{2}\right)^2$

$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$

$= \frac{77}{2} = 38.5$ Square cm.

86. Find the increase in the circumference of the circle of radius 14 cm, if the radius is increased by 7cm. $\left(\pi = \frac{22}{7}\right)$

(a) 44 cm (b) 22 cm
(c) 66 cm (d) 88 cm

RRB NTPC 18.01.2017 Shift : 1

Ans : (a) Circumference of a circle of radius of 14 cm = $2\pi r$

$= 2 \times \frac{22}{7} \times 14 = 88$ cm

When increase 7 cm. in radius

Then radius = 14 + 7 = 21

Perimeter $= 2 \times \frac{22}{7} \times 21 = 132$ cm.

intended increase = 132 – 88= 44 cm

87. A piece of wire is folded and shaped into a square with a side of 44cm. Again the square is shaped into a circle. What is the radius of this circle?

(a) 108 cm. (b) 56 cm.
(c) 14 cm. (d) 28 cm.

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) From the question,

side of square = 44 cm

Perimeter = 4 × side = 4 × 44 $\Rightarrow$ 176 cm

Perimeter of square = Circumference of a circle = 176 cm

$\because 2\pi r = 176\text{cm}$ $\left(\because \pi = \frac{22}{7}\right)$

Radius (r) = $\frac{176 \times 7}{22 \times 2} = 28$ cm

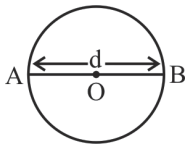
88. If the circumference of a circle is πd then what is the area of the circle?

(a) $\pi d^2/4$ (b) $2\pi d$
(c) $\pi d^2/2$ (d) πd^2

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) Circumference of a circle $= \pi d$

$$2\pi r = \pi d \qquad r = \frac{d}{2}$$



$\therefore$ Area $= \pi\left(\frac{d}{2}\right)^2 = \pi\frac{d^2}{4}$

89. A cycle wheel completes 5000 revolution in 44 km. What is the radius of the wheel?

(a) 140 cm (b) 270 cm
(c) 70 cm (d) 120 cm

RRB NTPC 09.04.2016 Shift : 3

Ans : (a) Distance travelled = 44 km = 44000 m
= 4400000 cm.
revolution = 5000
distance travelled in a revolution by wheel = $2\pi r$
Hence $2\pi r \times 5000 = 4400000$

$$2 \times \frac{22}{7} \times r \times 5000 = 4400000$$

$$r = \frac{4400000 \times 7}{2 \times 22 \times 5000}, \qquad r = 140\,\text{cm}.$$

90. What is the cost of the levelling a circular ground of 28 meters diameter at the rate of 125 Rs. per square meter? $(\pi = 22/7)$

(a) Rs. 76,000 (b) Rs. 76,400
(c) Rs. 76,800 (d) Rs. 77,000

RRB NTPC 06.04.2016 Shift : 1

Ans : (d) Radius of circular field $(r) = \frac{28}{2} = 14\,\text{m}.$

$$\text{area} = \pi r^2 = \frac{22}{7} \times 14 \times 14 = 616\,\text{m}^2$$

cost on 1 m^2 = Rs.125
cost on 616 m^2 = 125×616 = Rs. 77,000

91. The diameter of a wheel is 84 cm. How many rounds will it take to cover a distance of 792 meters? (π = 22/7)

(a) 298 (b) 300
(c) 312 (d) 256

RRB NTPC 19.01.2017 Shift : 2

Ans (b) diameter = 84 cm.
r = 42 cm.

circumference of circle $= 2\pi r = 2 \times \frac{22}{7} \times 42 = 264\,\text{cm}$

distance travelled by in 1 round = 264 cm.
Number of revolution in distance of 729 m.

$$\Rightarrow \frac{79200}{264} = 300$$

92. If the radius (r) of a circle is increased by x units, how many units will increase in its circumference?

(a) π (b) 2 π
(c) 2 π r (d) 2 π x

RRB NTPC 27.04.2016 Shift : 2

Ans : (d)
radius of circle = r
increases radius of circle = r + x
increase in circumference of circle
$= 2\pi(r + x) - 2\pi r$
increase in circumference $= 2\pi(r + x - r) = 2\pi x$

93. A square with a side of 120π cm is made from a piece of a wire. If a circle is made by bending the same wire, what will be the radius of the circle?

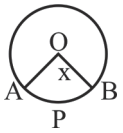
(a) 30 cm (b) 120 cm
(c) 240 cm (d) 60 cm

RRB NTPC 28.04.2016 Shift : 3

Ans :(c) Side of square = 120 π cm
Perimeter of square = 4 × 120π = 480π cm
∵ A circle made by folding wire
Hence it will be equal as perimeter of square and circumference of circle.
$\Rightarrow 480\pi = 2\pi r$ {r = radius of circle}

$$\Rightarrow r = \frac{480}{2} \quad r = 240 \text{ cm}$$

94. In figure 'O' is the centre of a circle. The area of sector OAPB is $\frac{5}{18}$ of the area of the circle. Find x.



(a) 120 degrees (b) 100 degrees
(c) 125 degrees (d) 115 degrees

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (b) According to question $\frac{\pi r^2 x}{360^\circ} = \pi r^2 \times \frac{5}{18}$

$$\frac{x}{20^\circ} = 5$$

$$x = 100^\circ$$

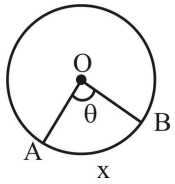
95. The length of the arc is $\frac{2}{9}$ times of the circumference of the circle. What is the measure of the angle (in degrees) subtended by the arc at the centre of the circle :

(a) 50 (b) 80
(c) 60 (d) 30

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (b) Let the arc in circle is = A×B

or Arc $(A \times B) = \frac{2\pi r\theta}{360^0}$



According to question $\frac{2\pi r\theta}{360^0} = 2\pi r \times \frac{2}{9}$

($\because$ 2πr = Circumference of Circle)

$\frac{\theta}{360^0} = \frac{2}{9}$ $\theta = 80^0$

At the centre of circle the angle made by Arc

$(\theta) = \angle AOB = 80^0$

96. A copper wire when bent in the form of a square encloses an area of 121 cm^2. If the same wire is bent into the form of a circle, find the area of the circle: (Use $\pi = \frac{22}{7}$)

(a) 154 cm^2 (b) 153 cm^2

(c) 155 cm^2 (d) 150 cm^2

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (a) area of square = a^2

According to the question,

a^2 = 121 cm^2

$\therefore$ a = 11 cm

$\because$ circumference of square = 4a = length of wire

$\therefore$ length of wire = 11 × 4 = 44 cm

circumference of circle = 2πr

circumference of circle = perimeter of square

$\therefore$ 2πr = 44

$\therefore$ r = 7 cm

$\therefore$ Area of circle = $\pi r^2 = \frac{22}{7} \times (7)^2$ = 154 cm^2

Type - 4

97. The sum of the lengths of the edges of a cube is equal to four times the perimeter of a square. If one-fourth 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:

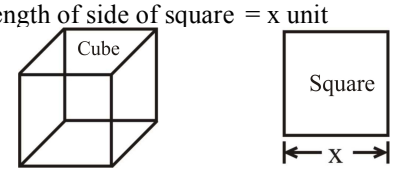
(a) 27 unit (b) 10.5 unit

(c) $\frac{9}{4}$ unit (d) $\frac{27}{16}$ unit

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

Ans : (d) Let the length of the edge of cube = y unit

Let the length of side of square = x unit



The first condition –

Sum of length of the edge of cube

= 4 (Perimeter of square)

12y = 4(4x) $\left[\begin{array}{l}\because \text{ edges of cube} = 12 \\ \text{Perimeter of square} = 4x\end{array}\right]$

12y = 16x

3y = 4x

$\boxed{y = \frac{4}{3}x}$ ..... (1)

second condition –

$\frac{\text{numerical value of volume of cube}}{4}$ = area of square

$\frac{y^3}{4} = x^2$

$y^3 = 4x^2$ ..... (2)

Putting the value of y from equation (1) in 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 side of square $= \frac{27}{16}$ unit

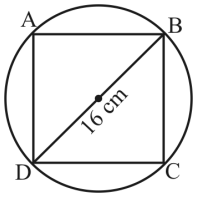
98. Find the area of a square made by touching its circumference inside a circle of radius 8cm.

(a) 144 cm^2 (b) 128 cm^2

(c) 64 cm^2 (d) 136 cm^2

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

Ans : (b)



radius of circle = 8 cm, (given)

diameter of circle = diagonal of square (According to question)

$8 \times 2 = \text{side}\left(\sqrt{2}\right)$

$\text{side} = 8\sqrt{2}$

Area of square = (side)^2

Area of square $= \left(8\sqrt{2}\right)^2 = 128$ cm^2

99. Find the embodied area between a circle and a square with side 'a' inscribed in it.

(a) $(a^2/2)(\pi - 2)$ sq. unit
(b) $2a^2(\pi - 2)$ sq. unit
(c) $a^2(2 - \pi)$ sq. unit
(d) $a^2(2\pi - 1)$ sq. unit

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

Ans : (a) Area of 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)$^2 = (a^2) = a^2$

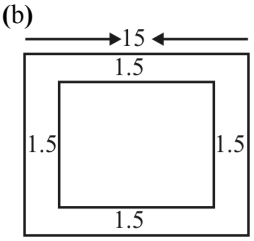
$\therefore$ Contiguous area $= \frac{\pi a^2}{2} - a^2 = \frac{a^2}{2}(\pi - 2)$

100. 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. What is the cost of the mat at the rate of Rs. 3.50 per square feet?

(a) Rs. 630 (b) Rs. 378
(c) Rs. 472.50 (d) Rs. 496

RRB JE - 30/05/2019 (Shift-II)

Ans : (b)



According to the figure left at 1.5 feet
length $= 15 - (2 \times 1.5) = 12$ feet
breadth $= 12 - (2 \times 1.5) = 9$ feet
$\therefore$ Area of room $= 12 \times 9$
$= 108$ Square feet
$\because$ Cost of 1 square feet $=$ Rs. 3.50
$\therefore$ Cost of 108 square feet $= 3.50 \times 108$
$=$ Rs. 378

101. The area of a square field is 24200 sqm. How long time will it take for a person walking at a speed of 4.4 km/hr to cross it diagonally?

(a) 3 minute (b) 4 minute
(c) 2.5 minute (d) 2 minute

RRB JE - 01/06/2019 (Shift-I)

Ans : (a) As per question,
Area of square $= 24200\ m^2$
$a^2 = 24200\ m^2$
$a = 110\sqrt{2}$ m
distance travelled diagonally by person
$= a\sqrt{2} = 110\sqrt{2} \times \sqrt{2} = 220$ m

$\because$ Speed $= 4.4$ km/hour $= \frac{4.4 \times 1000}{60}$ m/minute
$= \frac{220}{3}$ m/minute

So time $= \frac{\text{distance}}{\text{Speed}} = \frac{220}{220/3} = 3$ minute

102. The difference between the areas of the two squares is 32cm^2. If the difference of their sides is 4cm. Find the value of the sides of both squares.

(a) 6 cm., 2 cm. (b) 12 cm., 8 cm.
(c) 4 cm., 4 cm. (d) 4 cm., 2 cm.

RRB JE - 01/06/2019 (Shift-III)

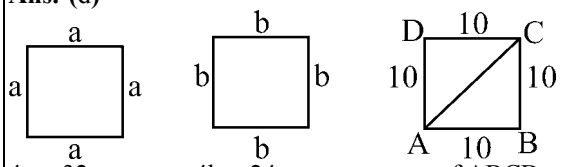
Ans. (a) Let sides of squares is x, y
area of first square $= x^2$
area of second square $= y^2$
$x^2 - y^2 = 32$ ..... (i)
$x - y = 4$ ..... (ii)
from equation (i)–
$(x-y)(x+y) = 32$
$4(x+y) = 32$
$x + y = 8$ ..... (iii)
from equation (ii) and (iii)–
$x + y = 8$
$x - y = 4$
$2x = 12$
$x = 6$
putting the value of x in equation (ii)
$x - y = 4$
$6 - y = 4$
$y = 2$
So, sides of squares is 6 cm and 2cm.

103. The perimeter of a square is 32m and the other is 24m. Find the diagonal of the square whose area is equal to the area of these two squares.

(a) $2\sqrt{10}$m (b) 20m
(c) $10\sqrt{4}$m (d) $10\sqrt{2}$m

RRB RPF SI – 16/01/2019 (Shift-I)

Ans. (d)



$4a = 32$ m
$a = 8$ m
$a^2 = 64$,

$4b = 24$
$b = 6$ m
$b^2 = 36$,

area of ABCD
Square $= 64 + 36$
$AB \times AB = 100\ m^2$
$AB = \sqrt{100}$
$AB = 10$ m
$\{\because AB = AC\}$

length of diagonal (AC) $= \sqrt{2}a$
$= \sqrt{2} \times 10 = 10\sqrt{2}$ m

104. The sum of the lengths of the cores of the cube is the $\frac{3}{5}$th 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 find the perimeter of the square.

(a) 500 unit (b) 360 unit
(c) 480 unit (d) 300 unit

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) : If length of each core of cube = a unit

$\therefore$ Sum of length core's in cube = 12 a unit

If each side of square = b, then perimeter = 4b unit

In first condition,

$$12a = \frac{3}{5} \times 4b$$

$$\text{or } a = \frac{b}{5}$$

then According to second condition, $a^3 = b^2$

$$\text{or } \left(\frac{b}{5}\right)^3 = b^2$$

$$\text{or } \frac{b^3}{125} = b^2$$

or, $\boxed{b = 125}$

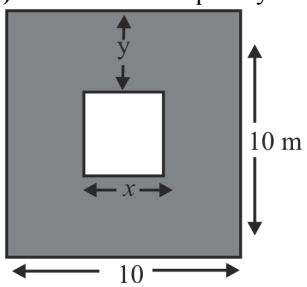
Now perimeter of square $= 4b = 4 \times 125 = 500$ unit

105. The middle 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 carpet and the oil cloth are priced at Rs. 15 and Rs. 6.5 respectively, and their total price is Rs. 1338.50. What will be the width of the oil cloth border?

(a) 2 m (b) 5 m
(c) 1 m (d) $\frac{1}{2}$ m

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (d) Let the side of squarely tank = x m.



$\therefore$ Area of square shape tank (which cover with carpet) $= x^2$

Area of oil cloth's = $10 \times 10 - x^2$
$= 100 - x^2$

$\therefore$ $15x^2 + 6.50\,(100 - x^2) = 1338.50$
$15x^2 + 650 - 6.5\,x^2 = 1338.50$
$8.5\,x^2 = 688.50$

$$x^2 = \frac{688.5}{8.5}$$

$x^2 = 81$
$x = 9$

$\therefore$ Breadth of oil cloth's border $= \frac{10 - x}{2}$

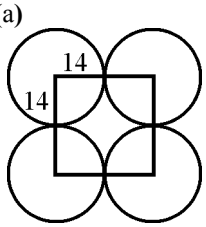
$$= \frac{10 - 9}{2} = \frac{1}{2} \text{ m}$$

106. Four equal circles are formed on the four vertices 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 middle of the square. If the length of each side of the square is 28 cm?

(a) 168 cm^2 (b) 40 cm^2
(c) 42 cm^2 (d) 32 cm^2

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a)



Area of square = 28^2 = 784 cm^2

So area of Four radius section

$$= 4 \times \frac{\theta}{360} \pi r^2$$

$$= 4 \times \frac{90}{360} \times \frac{22}{7} \times 14 \times 14$$

= 616

perimeter of middle of square = area of square – area of radius section

= 784 - 616 = 168 cm

107. The area of the square field is 31684 m^2 on which the wire has to be tied at 1, 2, 3 and 4 m above the ground. If the length required for each wire is 5% more than the circumference of the field, then what length of the wire is required?

(a) 2090 m (b) 2099 m
(c) 2909 m (d) 2990.4 m

RRB Group-D – 22/09/2018 (Shift-III)

Ans. (d) : Let the side of square = a m

area of square (a^2) = 31684 m^2

a = 178 m

Circumference of square = 4a

= 4 × 178 = 712 m

as per question-

$$\text{Length of 1 wire} = 712 \times \frac{105}{100} = 747.60$$

Total length of four wire = 747.60 × 4

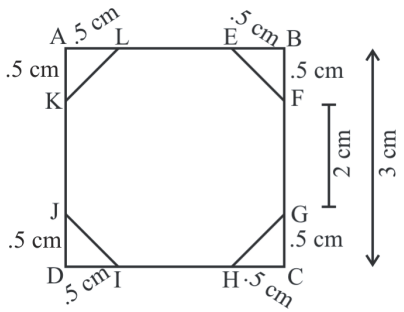
= 2990.40 m

108. A 0.5 cm line segment was cut from each corner of a square with an edge of 3 cm, the cut section has a vertex. What is the area of the octagon so formed?

(a) $10\sqrt{2}$cm and 8 cm^2
(b) 8 cm and 8 cm^2
(c) $8\sqrt{2}$cm and 8 cm^2
(d) $\left(8+2\sqrt{2}\right)$cm and 8.5 cm^2

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (d)



$$EF = GH = IJ = KL = \sqrt{\left(\frac{1}{2}\right)^2+\left(\frac{1}{2}\right)^2}$$

$$=\frac{1}{\sqrt{2}}$$

Perimeter of octagon= LE+EF+FG+GH+HI+IJ+JK+KL

$$=2+\frac{1}{\sqrt{2}}+2+\frac{1}{\sqrt{2}}+2+\frac{1}{\sqrt{2}}+2+\frac{1}{\sqrt{2}}$$

$$=8+\frac{4}{\sqrt{2}}$$

$$=\left(8+2\sqrt{2}\right)\text{cm}$$

Area of octagon = area of square − 4 × are of triangular Part

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

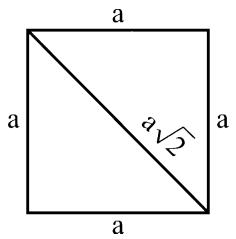
$= 8.5\ cm^2$

109. 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?

(a) 1 (b) $\sqrt{2}$
(c) 2 (d) $\frac{\sqrt{2}}{2}$

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (a)



As per question,
Area of square = half of the diagonal of square

$$a^2 = a\sqrt{2}\times\frac{1}{2}$$

$$a=\frac{1}{\sqrt{2}}$$

diagonal of square $= a\sqrt{2}$

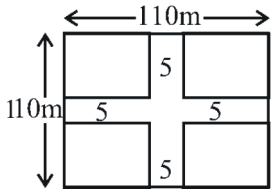
$$=\frac{1}{\sqrt{2}}\times\sqrt{2}=1$$

110. The side of a square field is 110 m. Two routes 5 m wide pass through the middle of the square field parallel to the sides, intersects each other. Find the area of the routes.

(a) 1000 m^2 (b) 1100 m^2
(c) 1075 m^2 (d) 975 m^2

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (c)



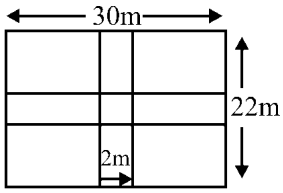
Area of square shape = 110 × 110 = 12100 m^2
Remaining area of after road = 105 × 105 = 11025 m^2
So area of road = 12100 – 11025 = 1075 m^2

111. A rectangular park measuring 30 m × 22 m has two footpath 2m wide. One from north to south and the other from east to west and they both intersect 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 to the road.

(a) Rs. 1545 (b) Rs. 1560
(c) Rs. 1490 (d) Rs. 1500

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (d)



area of path = 30 × 2 + 22 × 2 – 2 × 2 = 100 square meter
total cost of 1 square meter = Rs. 15
100 square meter = 15 × 100 = Rs. 1500

112. The sum of the length of the cores 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 what is the area of the square?

(a) 10.5 unit (b) 27 unit
(c) 13.5 unit (d) 12.5 unit

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) Let the length of core of cube = a unit
and length of side of square = b unit
∵ Number of core of cube = 12

As per question,

$12a = (4b) \times 2$

$12a = 8b$

$a = \frac{2}{3}b$ unit

Volume of cube = area of square

$a^3 = b^2$

$\left(\frac{2}{3} \times b\right)^3 = b^2$

$\therefore b = \frac{27}{8}$ unit

So perimeter of square = 4× side = 4 × $b = 4 \times \frac{27}{8} = 13.5$ unit

113. What will be the edge of the cube formed by melting the cubes with edges of 4 cm, 8 cm and 10 cm?

(a) 13 (b) 11

(c) 12 (d) 14

RRB NTPC 04.04.2016 Shift : 3

Ans : (c) $\because$ Volume of cube $= a^3$

Volume of three cubes $= (6)^3 + (8)^3 + (10)^3$

$= 216 + 512 + 1000 = 1728 \text{ cm}^3$

side of new cube $= (1728)^{1/3} = (12^3)^{1/3} = 12$ cm

114. A wire is in the shape of a rectangle. Its length and width are 42.7 m and 21.8 m respectively. If this wire is bent again into a square shape, then what will be the measure of the side of the square?

(a) 16.125 (b) 32.25

(c) 11.35 (d) 22.70

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) Perimeter of square = Perimeter of rectangle

side × 4 = 2 (length + breadth)

side $= \frac{2}{4}(42.7 + 21.8) = \frac{1}{2}(64.5)$

Side of square = 32.25 m

115. If the length of the diagonal of a square is $13\sqrt{2}$ unit then what will be its area?

(a) 104 sq. unit (b) 169 sq. unit

(c) 338 sq. unit (d) 676 sq. unit

RRB NTPC 29.03.2016 Shift : 3

Ans : (b) Length of diagonal $= 13\sqrt{2}$ unit

$a\sqrt{2} = 13\sqrt{2}$ $a = 13$

$\therefore$ Area of square $= a^2 = (13)^2 = 169$ Square unit.

116. The length of the diagonal of a square is 26 cm, find the side (in cm) of the square.

(a) $13\sqrt{2}$ (b) $\pm 13\sqrt{2}$

(c) 13 (d) $26\sqrt{2}$

RRB NTPC 11.04.2016 Shift : 3

Ans : (a) Length of 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.

117. The length of the diagonal of a square is 24 cm, find the side in cm of the square

(a) $12\sqrt{2}$ (b) $\pm 12\sqrt{2}$

(c) 12 (d) $24\sqrt{2}$

RRB NTPC 07.04.2016 Shift : 1

Ans : (a) Length of diagonal of square = side $\times \sqrt{2} = 24$

side $= \frac{24}{\sqrt{2}}$

side $= 12\sqrt{2}$

118. The order of a rotational symmetry of a square is:

(a) 2 (b) 6

(c) 4 (d) 8

RRB NTPC 07.04.2016 Shift : 3

Ans : (c) The four sides of the square are equal and each angle is 90°. Hence is rational symmetry will be 4 in order.

119. Find the area of a square whose diagonal is half of 12 cm.

(a) 18 sq.cm. (b) 64 sq.cm.

(c) 36 sq.cm. (d) 72 sq.cm.

RRB NTPC 19.01.2017 Shift : 2

Ans : (a) Diagonal of square $= a\sqrt{2}$ (where a = side)

as per question −

$\frac{12}{2} = a\sqrt{2}$

$a = \frac{6}{\sqrt{2}}$

$a = \frac{6\sqrt{2}}{2}$ $\boxed{a = 3\sqrt{2}}$

area of square $= a^2$

$= \left(3\sqrt{2}\right)^2 = 18$ square cm

120. Find the area of a square which is inscribed in a circle of radius of 13 cm.

(a) 169 sq.cm. (b) 338 sq.cm.

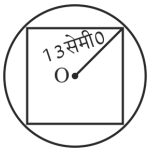
(c) 507 sq.cm. (d) 676 sq.cm.

RRB NTPC 26.04.2016 Shift : 1

Ans : (b) diagonal of square = 2 × radius

= 2 × 13 = 26 cm

$\therefore$ side of square $= \frac{\text{diagonal of square}}{\sqrt{2}}$



$= \frac{26}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = 13\sqrt{2}$ cm.

Area of square $= \left(13\sqrt{2}\right)^2 = 169 \times 2 = 338 \text{ cm}^2$

121. The area of a square field is 313600 m^2. How long will it take for a woman to cross the field diagonally at the rate of $4\sqrt{2}$ m/s.?

(a) 3 minute (b) 2 minute 20 sec.
(c) 2 minute 40 sec. (d) 3 minute 10 sec.

RRB NTPC 28.04.2016 Shift : 3

Ans : (b) Given−
Area of square field = 313600 square meter
$(\text{side})^2 = 313600$
$\text{side} = \sqrt{313600} = 560$ meter
$\therefore$ diagonal $= \text{side} \times \sqrt{2} = 560\sqrt{2}$ meter (distance)
Speed $= 4\sqrt{2}$ meter/second
Hence time taken to cross the diagonal field = distance/speed
$= \frac{560\sqrt{2}}{4\sqrt{2}} = 140$ second = 2 minute 20 second

122. The sum of the lengths of the core of a cube is equal to half the perimeter of a square. If the numerical value of the volume of the cube is equal to one-sixth of the numerical value of the area of the square, then the length of one side of the square is :

(a) 18 units (b) 36 units
(c) 31.5 units (d) 27 units

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (b) : Let the core of cube = y
and side of square = x
as per question-

$$12y = \frac{4x}{2}$$

$$y = \frac{1}{6}x \quad \text{.....(i)}$$

as per second condition-

$$y^3 = \frac{1}{6}x^2$$

$$\left(\frac{1}{6}x\right)^3 = \frac{1}{6}x^2 \text{ from equation (i)}$$

$$\frac{1}{216}x^3 = \frac{1}{6}x^2$$

$$x = \frac{216}{6}$$

$$x = 36$$

side of square (x) = 36 unit

123. The sum of the lengths of the core of a cube is equal to half 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 length of one side of the square is:

(a) 108 units (b) 36 units
(c) 216 units (d) 288 units

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (c) If length of each core of cube = a_1
and length of each side of square is = a_2 then −

$$\text{Sum of core's length of cube} = \frac{\text{Perimeter of square}}{2}$$

$$12a_1 = \frac{4a_2}{2}$$

$$\text{or } 12a_1 = 2a_2$$

$$\boxed{a_1 = \frac{a_2}{6}}$$

$$\text{Now volume of cube} = (a_1)^3 = \left(\frac{a_2}{6}\right)^3 = \frac{a_2^3}{216}$$

$$\text{Hence as per question, } \frac{a_2^3}{216} = a_2^2$$

$$\text{or, } \boxed{a_2 = 216 \text{ unit}}$$

Hence length of intended side = 216 unit

124. The area of the square field is 196 sq.m. Its each side is:

(a) 16 m (b) 17 m
(c) 14 m (d) 13 m

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

Ans : (c)
area of the square field = $(\text{side})^2$
$196 = (\text{side})^2$
Side $= \sqrt{196} = \sqrt{14 \times 14}$
Side = 14 m

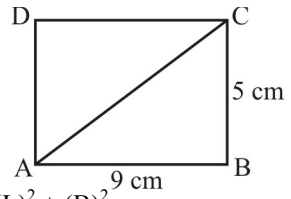
Type - 5

125. Find the length of the diagonal (in cm) of a rectangle whose length and breadth are 9 cm and 5 cm respectively.

(a) $\sqrt{106}$ (b) $\pm\sqrt{106}$
(c) $2\sqrt{14}$ (d) $\pm 2\sqrt{14}$

RRB RPF SI – 10/01/2019 (Shift-II)

Ans : (a)



$(\text{diagonal})^2 = (L)^2 + (B)^2$
$(AC)^2 = 9^2 + 5^2$
$(AC)^2 = 81 + 25$
$(AC)^2 = 106$ $AC = \sqrt{106}$ cm

126. The difference between the length and breadth of a rectangle is 6 m. If its perimeter is 64 m, then its area is:

(a) 256 sq. m. (b) 247 sq. m.
(c) 264 sq. m. (d) 238 sq. m.

RRB RPF Constable – 19/01/2019 (Shift-III)

Ans : (b) Let the length of rectangle = x m

Breadth = (x –6) m

∵ Perimeter = 64 m

2(x + x – 6) = 64

2x – 6 = 32

2x = 38

x = 19

∴ area of rectangle = x × (x -6)

= 19 × (19 – 6)

= 19 ×13 = 247 Square meter

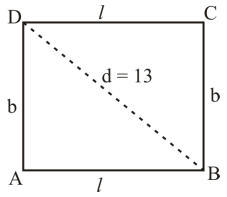
127. Suresh took 15 seconds to cross a rectangular ground diagonally at a speed of 52 m/min. and Rajesh took the same time to cross the same ground by its sides at a speed of 68 m/min. Find the area of the ground.

(a) 30 square m (b) 40 square m

(c) 50 square m (d) 60 square m

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

Ans : (d)



Distance $= 52 \times \frac{15}{60}$

$\boxed{d = 13}$

as per question,

$\ell + b = 68 \times \frac{15}{60}$

$\boxed{\ell + b = 17}$.....(i)

diagonal of rectangle (d) $= \sqrt{\ell^2 + b^2}$

$13 = \sqrt{\ell^2 + b^2}$

take both side of square

$169 = \ell^2 + b^2$

square on equation (i)

$(l+b)^2 = (17)^2$

$l^2 + b^2 + 2lb = 289$ $\quad \because [l^2 + b^2 = 169]$

169 + 2*l*b = 289

2*l*b = 289 – 169

2*l*b = 120

area of field $\boxed{\ell b = 60 \text{ square meter}}$

128. The perimeter of a rectangle is two times the perimeter of a square whose side is 18 units. If the breadth of the rectangle is 45 m then find its area.

(a) 1360 square unit

(b) 1050 square unit

(c) 1215 square unit

(d) 1152 square unit

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

Ans : (c) given— side of square = 18 unit

Breadth of rectangle = 45 m

Perimeter of rectangle = 2 × perimeter of square

2 (Length + breadth) = 2 × 18 × 4

2 (Length + 45) = 2 × 72

L = 72 – 45 = 27

Area = Length × breadth = 27 × 45

Area = 1215 square unit

129. What will be the cost of gardening at the rate of Rs. 10 per square meter in a 1 m wide space around a rectangular plot whose perimeter is 340 m?

(a) can not be determined

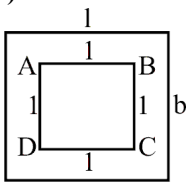
(b) 3440

(c) 3400

(d) 1700

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

Ans : (b) Given-



Perimeter of rectangular plot = 340 m

2 (*l* + b) = 340

(*l* + b) = 170 m

New perimeter = 2 (*l* + 1 + b +1)

= 2 (*l* + b + 2)

= 2 (170 + 2)

= 2 (172)

= 344 m

cost of gardening = 344 × 10 = ₹ 3440

130. The diagonal of the floor of a rectangular room is 7.5 feet. The smaller side of the room is 4.5 feet. Find the area (in sq. feet) of the room.

(a) 27 foot^2 (b) 13.5 foot^2

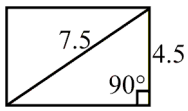
(c) 37 foot^2 (d) 5.25 foot^2

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (a) Diagonal floor of rectangular room= 7.5 foot

Small side of rectangular room (breadth)

= 4.5 foot



∴ Large of rectangular room (length)

$= \sqrt{(7.5)^2 - (4.5)^2}$

$= \sqrt{36} = 6$ foot

∴ Area of the room = $\ell \times b = 6 \times 4.5 = 27$ foot^2

131. The length of a rectangular plot is three times of its width. If the area of rectangular plot is 867 m^2, then what is the length of rectangular plot?

(a) 34 m (b) 17 m
(c) 51 m (d) 68 m

RRB JE - 25/05/2019 (Shift-II)

Ans : (c) Let the breadth of rectangular Plot (b) = x meter

Length of rectangular Plot (l) = 3x meter
area of rectangular plot = l.b
867 = 3x × x
867 = $3x^2$
289 = x^2
x = 17
length of rectangular plot (l) = 3x = 3 × 17
= 51 m

132. The area of a rectangular carpet is 120 m^2 and its perimeter is 46 m. Find the length of its diagonal.

(a) 15 m (b) 16 m
(c) 20 m (d) 17 m

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

Ans : (d) Area of rectangle = $\ell \times b$

$\ell \times b = 120$ ..... (i)

Perimeter of rectangle = 2 (ℓ + b)

$(\ell + b) = 23$ ..... (ii)

diagonal of rectangle $= \sqrt{l^2 + b^2}$

from equation (i) and (ii)–

$(\ell + b)^2 = \ell^2 + b^2 + 2\ell \times b$

$(23)^2 = \ell^2 + b^2 + 2 \times 120$

$529 - 240 = \ell^2 + b^2$

$289 = \ell^2 + b^2$

$\ell^2 + b^2 = 289$

diagonal = 17 m

133. A circular wire of radius 7 cm is folded to form a rectangle whose sides are in the ratio of 4:7. Find the area of the rectangle so formed.

(a) 56 cm^2 (b) 60 cm^2
(c) 112 cm^2 (d) 84 cm^2

RRB JE - 31/05/2019 (Shift-I)

Ans : (c) $2\pi r = 2\,(l + b)$

$2 \times \frac{22}{7} \times 7 = 2\,(7x + 4x)$

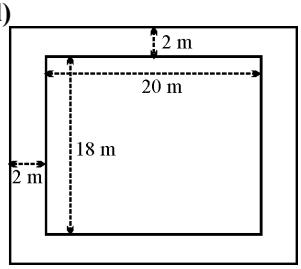
22 = 11x
x = 2
Area of rectangle = 7x ×4x
Area of rectangle = $28x^2$ = 28 × 4 = 112 cm^2

134. Find the area of the jogging track which has a width of 2m and is built around a rectangle with dimension 20m × 18m.

(a) 200 m^2 (b) 140 m^2
(c) 136 m^2 (d) 168 m^2

RRB JE - 31/05/2019 (Shift-III)

Ans. (d)



Area of rectangle = 20 × 18 = 360 Square meter
Area of rectangle with jogging track =24 × 22 = 528 m^2
Area of jogging track = 528 – 360 = 168 m^2

135. Find the length (in cm) of the diagonal of a rectangle whose length and breadth are 5 cm and 6 cm respectively.

(a) $\sqrt{61}$ (b) $\pm\sqrt{61}$
(c) $\sqrt{11}$ (d) $\pm\sqrt{11}$

RRB RPF Constable – 24/01/2019 (Shift-III)

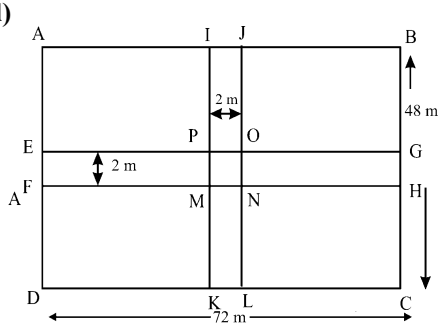
Ans : (a) diagonal of rectangle $= \sqrt{l^2 + b^2}$
$= \sqrt{5^2 + 6^2} = \sqrt{25 + 36} = \sqrt{61}$

136. In a rectangular park of 72 m × 48 m, 2m wide paths Nehru Road and Zoo Park Road intersect each other at right angles in the centre of the park. Each path is parallel to one of the dimensions of the park. What will be the cost of constructing the road at the rate of Rs. 150 per square meter?

(a) Rs. 35, 300 (b) Rs. 35, 350
(c) Rs. 35, 395 (d) Rs. 35, 400

RRB RPF SI – 12/01/2019 (Shift-I)

Ans. (d)



Area of path
= area of EFHG + Area of IJKL - Area of MNOP
= 72×2+2×48-2×2
= 2 (72+48)-4 = 2×120-4 = 236
Hence cost of path= 236×150
= ₹ 35,400

137. Shrinesh wants to upgrade his office floor, which is made of 2800 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 square meter.

(a) Rs. 100 (b) Rs. 115
(c) Rs. 125 (d) Rs. 105

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (d) : Length of each tile = 3 cm.
and breadth = 5 cm.
So tile is a rectangle.
area of tiles = $3\times5cm^2 = 15cm^2$
$15cm^2 = \frac{15}{100\times100}m^2$
area of floor = $\frac{15}{100\times100}\times2800m^2$
$= 4.2m^2$
cost of polishing floor at the rate of Rs. 25 per square meter. = 4.2 × 25 = Rs.105

138. The sides of a rectangular plot of a land are given 35 m and 25 m in the nearest integer. What is the maximum value of the perimeter of a rectangular plot?
(a) 60 m (b) 122 m
(c) 120 m (d) 61 m
RRB Group-D – 29/10/2018 (Shift-III)

Ans : (b) Taking minimum integer of side of rectangular plot-
length = 35.5 m, b = 25.5 m
maximum value of perimeter of plot
= 2 (length + breadth)
$= 2(35.5+25.5)$
$= 2\times61$
= 122 m

139. The area of a rectangle is 12.46 m^2. If the length of the rectangle is 3.5 m then find the breadth (in m) of the rectangle.
(a) 3.56 (b) 3.58
(c) 3.62 (d) 3.54
RRB Group-D – 10/10/2018 (Shift-I)

Ans : (a) Given−
area of rectangle = 12.46 m^2
length (l) = 3.5 m
breadth $= \frac{12.46}{3.5m} = 3.56m$
$\boxed{b = 3.56m}$

140. The dimensions of a rectangular plot is given to 28 m and 22 m to the nearest integer. What is the minimum possible perimeter of a rectangular plot?
(a) 49 m (b) 100 m
(c) 50 m (d) 98 m
RRB Group-D – 11/10/2018 (Shift-III)

Ans : (d) Perimeter of rectangular plot = 2 (l + b)
length and breadth of rectangular plot is minimum 28 m and 22 m
Then perimeter = 2 (28 + 22)
= 2 × 50 = 100 m
minimum Perimeter will be 98 m of rectangular plot which is predecessor of 100 m.

141. The ratio of length and breadth of a rectangular field is 4:3. If the area of the field is 1452 m^2, then find the cost of making the boundary of the field at the rate of Rs. 12 per meter.
(a) Rs. 1,858 (b) Rs. 1,848
(c) Rs. 1,845 (d) Rs. 1,868
RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) Given-
length and breadth of rectangular field is 4x m and 3x m
As per question- 4x × 3x = 1452
$\Rightarrow 12x^2 = 1452$
$\Rightarrow x^2 = 121$
$\Rightarrow x = 11$ m
So, length = 4x
= 4 × 11 = 44 m
breadth = 3x = 3 × 11 = 33 m
Perimeter of rectangular field = 2 (ℓ + b)
= 2 (44 + 33)
= 2 × (77)
= 154 m
Hence cost of making boundary of rectangular field
= 154 × 12
= Rs. 1848

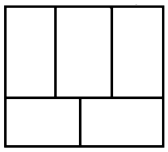
142. A farmer has a rectangular field 250 m long and 380.5 m wide. He expects to sow different types of rice which will yield 30 quintals per hectare and he will sell it in the market at Rs. 620 per quintal. Calculate his expected income.
(a) Rs. 716932.5 (b) Rs. 179632.5
(c) Rs. 176923.5 (d) Rs. 176932.5
RRB Group-D – 30/10/2018 (Shift-III)

Ans. (d) 1 hectare = 10000 square meter
income = area of field ×30 quintal × 620 quintal
$= \frac{250\times380.5\times30\times620}{10,000}$
= ₹ 176932.5

143. The side of a square flower garden is 1 m 80 cm long. It is extended by digging a 20 cm wide border from all side. Find the area of extended flower garden.
(a) 4.81 m^2 (b) 4.82 m^2
(c) 4.84 m^2 (d) 4.8 m^2
RRB Group-D – 30/10/2018 (Shift-III)

Ans. (c) It is extended by digging 20cm width from each side
Then 20 + 20 = 40 cm
Total increased part = (180 + 40) cm = 220 cm
area of square = $(side)^2$
$= (220)^2$
= 48400 cm^2
= 4.84 m^2

144. In the following figure, five congruent rectangles are given, each of which has a largest side x m. If the total area of the figure is 6000 sq.m, then find the value of x.

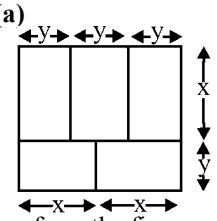


(a) $30\sqrt{2}$ (b) $40\sqrt{3}$

(c) 40 (d) $\frac{40\sqrt{2}}{3}$

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (a)



It is clear from the figure

$2x = 3y$

as per question

$5xy = 6000$

$5x\frac{2x}{3} = 6000$

$x^2 = 1800 = 30\sqrt{2}$

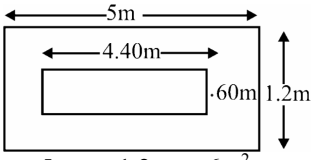
145. A carpet is 5 m long and 1.2 m wide. It has a 30 cm wide printed border on all flour sides. What will be the cost of printing the border at the rate of Rs. 225 per square meter?

(a) Rs. 854 (b) Rs. 1,027

(c) Rs. 756 (d) Rs. 902

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (c)



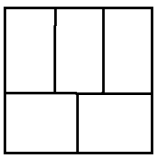
area of carpet = 5 m × 1.2 m = $6m^2$

area of remain carpet left of border = 4.40 m × 0.60 m = 2.64 m^2

area of border = 6 − 2.64 = 3.36

cost of borders print = 3.36 × 225 = Rs. 756

146.



The above rectangle has five congruent rectangles. Each of which has a largest side x m. If the total area of the figure is 7500 m^2, then find the value of x.

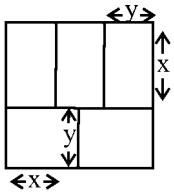
(a) $15\sqrt{10}$ (b) $10\sqrt{10}$

(c) $10\sqrt{15}$ (d) $\frac{10\sqrt{15}}{3}$

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (a) : Let the small side = y m

area of large rectangle = area of five congruent rectangle



$2x \times (x + y) = 5xy$

$2x + 2y = 5y$

$2x = 3y$

$\therefore y = \frac{2}{3}x$

but

$5xy = 7500$

$5x \times \frac{2}{3}x = 7500$

$x^2 = 2250$

$x = 15\sqrt{10}$ m

147. The area of a rectangle is $2x^2 + 3x + 1$ and its length is 2x +1. Find its breadth.

(a) 2x +2 (b) x +1

(c) x – 2 (d) x – 1

Ans. (b) : area of rectangle = length × breadth

$2x^2 + 3x + 1 = (2x+1) \times b$

$\Rightarrow (2x^2 + 3x + 1) = (2x + 1) \times b$

$\Rightarrow (2x^2 + 2x + x + 1) = (2x + 1) \times b$

$\Rightarrow 2x(x + 1) + 1(x + 1) = (2x + 1) \times b$

$\Rightarrow (2x + 1) \times b = (x + 1)(2x + 1)$

$b = (x + 1)$

148. 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?

(a) Rs. 3,280 (b) Rs. 2,280

(c) Rs. 2,880 (d) Rs. 2,480

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (c) As per question,

length of hall = 20 m

breadth of hall = 18 m

area of hall = 20 × 18 [150cm = 1.5m]

= 360 m^2

breadth of carpert = 1.5 m

cost = Rs. 12 per meter

cost of carpet = $\frac{360}{1.50} \times 12$

= Rs. 2880

149. The breath of a rectangular field is 60% of its length. If the perimeter of the field is 800 m, then find the area of the field.

(a) 18750 m^2 (b) 37500 m^2
(c) 40000 m^2 (d) 48000 m^2

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans. (b) Let the length of rectangular field = x

breadth of rectangular field $= x \times \frac{60}{100} = \frac{3x}{5}$

perimeter of field = 800

$2\left(x + \frac{3x}{5}\right) = 800$

$2\left(\frac{5x + 3x}{5}\right) = 800$

8x = 400 × 5

x = 250 m

length of field x = 250

breadth of field $= \frac{3x}{5} = \frac{3 \times 250}{5} = 150\,m$

area of field = 250 × 150 = 37500 m^2

150. A square of the side 2 m inside a rectangle of length 5 m and breadth 2 m is shaded. What is the ratio of the area of the shaded square and the area of the unshaded region of the rectangle?

(a) 3 : 2 (b) 2 : 3
(c) 5 : 2 (d) 2 : 5

RRB NTPC 17.01.2017 Shift-2

Ans : (b) area of rectangle = 5 × 2 = 10m^2
area of shade square = 2 × 2 = 4m^2
area of unshaded square = 10 – 4 = 6m^2

Intended ratio = area of square : area of unshaded rectangle

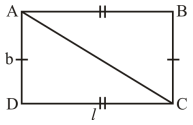
Intended ratio = 4 : 6 = 2 : 3

151. The length of the diagonal of a rectangle and its perimeter are 11 cm and 13 cm respectively. Find the area of the rectangle.

(a) 12 square cm. (b) 48 square cm.
(c) 36 square cm. (d) 24 square cm.

RRB NTPC 05.04.2016 Shift-1

Ans : (d)



Given—

Semi perimeter $(l + b) = 13$ cm. ..... (i)

diagonal of rectangle $\left(\sqrt{l^2 + b^2}\right) = 11cm$

$\Rightarrow l^2 + b^2 = 121\,cm$ $l =$ length, b = breadth

$\Rightarrow (l + b)^2 - 2lb = 121$ from equation (i)

$\Rightarrow (13)^2 - 2lb = 121$

$\Rightarrow 2lb = 169 - 121 = 48$

$\Rightarrow l.b = 48/2$

$\Rightarrow l.b = 24$ Square cm.

area of rectangle = 24 Square cm.

152. The perimeter of a rectangle is 28 cm. If its one side is 4 cm then find other side of the rectangle.

(a) 24 cm (b) 7 cm
(c) 10 cm (d) 8 cm

RRB NTPC 04.04.2016 Shift : 1

Ans : (c) Let be length of second side = x cm

∵ perimeter of rectangle = 28

2 × (x + 4) = 28

x + 4 = 14 x = 10 cm.

153. The area of a rectangle is 42 sq. cm and its length is 7 cm. Find its perimeter.

(a) 14 cm. (b) 21 cm.
(c) 26 cm. (d) 24 cm.

RRB NTPC 03.04.2016 Shift : 2

Ans :(c) Area of rectangle = $\ell \times b = 42$

$7 \times b = 42$

$b = 6$ cm.

Perimeter of rectangle $= 2\ (\ell + b)$

$= 2\ (7 + 6) = 2 \times 13 = 26$ cm.

154. The length of a rectangle is 6 times its breadth. If the perimeter of a rectangle is 56 cm then find the area of the rectangle.

(a) 48 square cm. (b) 96 square cm.
(c) 144 square cm. (d) 64 square cm.

RRB NTPC 03.04.2016 Shift : 3

Ans : (b) Let be breadth of rectangle = x cm

Then length of rectangle = 6x cm

∵ Perimeter of rectangle = 2 ($\ell \times b$)

56 = 2 (x + 6x) 28 = 7x $\boxed{x = 4}$ cm

So area of rectangle = $\ell \times b = 6x \times x$

$= 6x^2 = 6\ (4)^2 = 6 \times 16 = 96$ square cm

155. The perimeter of a rectangle and its diagonal are 34 cm and 13 cm respectively. Find its area

(a) 987 square cm. (b) 240 square cm.
(c) 120 square cm. (d) 60 square cm.

RRB NTPC 31.03.2016 Shift : 1

Ans : (d) If length and breadth of volume will be ℓ cm and b cm then.....

diagonal of rectangle = 13 cm

$\sqrt{\ell^2 + b^2} = 13$

$l^2 + b^2 = 169$ ……. (1)

∵ Perimeter of rectangle = 34 cm

$2(l+b) = 34$

$l + b = 17$……. (2)

∵ $(l+b)^2 = l^2 + b^2 + 2lb$

$(17)^2 = 169 + 2lb$

$289–169=2lb$

$2lb=120$

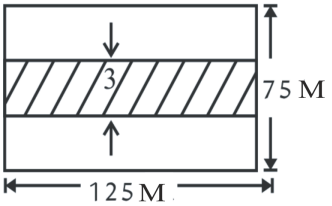
∴ area of rectangle = 60cm.

156. The length of a rectangular field is 125 m and breadth is 75 m. There is a 3 m wide footpath in the middle of the field. What is the area of the field without the footpath?

(a) 9375 square m. (b) 9000 square m.
(c) 9750 square m. (d) 8625 square m.

RRB NTPC 31.03.2016 Shift : 2

Ans : (b)



area of field without foot path
= 125 × 75 – 125 × 3
= 125 × (75–3)
= 125 × 72
= 9000 square m.

157. What is the length of diagonal, if area of a rectangle is 168cm^2 and breadth is 7cm?

(a) 24 cm (b) 15 cm
(c) 17 cm (d) 25cm

RRB NTPC 30.03.2016 Shift : 1

Ans : (d) ∵ Area of rectangle = 168 Square cm
∴ length × breadth = 168
as per question
7 × length = 168

$$\text{length} = \frac{168}{7} = 24 \text{ cm}$$

$$\therefore \text{ length of diagonal} = \sqrt{l^2 + b^2}$$
$$= \sqrt{(24)^2 + (7)^2}$$
$$= \sqrt{576 + 49} = \sqrt{625} = 25 \text{ cm.}$$

158. The perimeter of a rectangle is 28 cm. If the length is $\frac{5}{2}$ times of the breadth, then find the length and breadth of the rectangle.

(a) 90 and 5 (b) 10 and 4
(c) 6 and 7 (d) 11 and 3

RRB NTPC 29.03.2016 Shift : 1

Ans : (b) As per question

$$\text{length of rectangle} = \frac{5}{2} \times \text{ Breadth}$$

Perimeter of rectangle = 28
2(L + B) = 28

$$(\frac{5}{2}B + B) = \frac{28}{2} = 14$$

$$\frac{7}{2}B = 14 \quad \Rightarrow \quad B = 4 \text{ cm}$$

$$\therefore L = \frac{5}{2} \times 4 = 10 \text{ cm}$$

So length and breadth of rectangle is 10 cm and 4 cm.

159. If the perimeter of a rectangle is 24 cm and the length is twice of the breadth, then find its area.

(a) 24 square cm. (b) 32 square cm.
(c) 28 square cm. (d) 36 square cm.

RRB NTPC 28.03.2016 Shift : 2

Ans : (b) Perimeter of rectangle = 24 cm
Let be length = 2x breadth = x
Perimeter of rectangle = 2(l + b)
2(2x + x) = 24

$$2 \times 3x = 24 \Rightarrow \quad x = \frac{24}{6} = 4$$

L= 2x = 2 × 4 = 8cm
B = x = 4cm
Area of rectangle = $\ell \times$ b
= 8 × 4 = 32 cm^2

160. Ankita stands at the corner of a rectangular field of 40 m length and 30 m breadth. If Ankita runs only along then diagonal and returns to the starting point, then what is the total distance covered by Ankita?

(a) 100 m (b) 80 m
(c) 140 m (d) 120 m

RRB NTPC 28.03.2016 Shift : 3

Ans : (a) Length of rectangle's diagonal

$$= \sqrt{(40)^2 + (30)^2}$$
$$= \sqrt{1600 + 900} = \sqrt{2500} = 50 \text{ m}$$

∴ Total distance covered by Ankita
= 2 × 50 = 100 m

161. The length of a rectangular board is 4 times its breadth, if the area of the board is 256 sq. m, then find its length?

(a) 8 m (b) 16 m
(c) 24 m (d) 32 m

RRB NTPC 18.01.2017 Shift : 1

Ans : (d) Let be breadth = b
ℓ = 4b, Area = 256
∴4b × b = 256
b^2 = 64, b = 8
∴ L = 4b = 4 × 8 = 32m

162. The order of the rotational symmetry of a rectangle is:

(a) 1 (b) 4
(c) 2 (d) 0

RRB NTPC 11.04.2016 Shift : 1

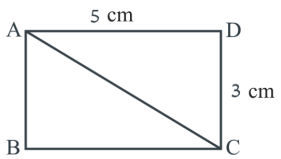
Ans : (c) The order of the rotational symmetry of the rectangle is 2.

163. Find the length of the diagonal of a rectangle whose length and breadth are 5 cm and 3 cm respectively.

(a) $\sqrt{34}$ (b) $\pm\sqrt{34}$
(c) 4 (d) ±4

RRB NTPC 11.04.2016 Shift : 1

Ans : (a)



Length of diagonal (AC) $= \sqrt{(5)^2 + (3)^2}$

$= \sqrt{25+9} = \sqrt{34}$ cm

164. The length of a rectangle is 24 cm more than its breadth. If the perimeter of a rectangle is 112 cm then find its length.

(a) 40 cm (b) 16 cm
(c) 24 cm (d) 32 cm

RRB NTPC 10.04.2016 Shift : 3

Ans : (a) Let be breadth of rectangle = x cm

∴ length = (24 + x) cm

Now perimeter of rectangle = 2 (length + breadth)

112 = 2 (x + 24 + x)
112 = 2 (2x + 24)
112 = 4x + 48
4x = 112–48
4x = 64, x = 16

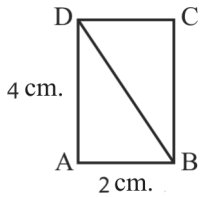
hence length of rectangle = (24 + x) = 24 + 16 = 40 cm

165. Find the length (in cm) of the diagonal of a rectangle whose length is 2 cm and breadth is 4 cm respectively.

(a) $2\sqrt{5}$ (b) $\pm 2\sqrt{5}$
(c) $2\sqrt{3}$ (d) $\pm 2\sqrt{3}$

RRB NTPC 07.04.2016 Shift : 2

Ans : (a) According to the question-



length of diagonal (BD) $= \sqrt{AD^2 + AB^2}$

$= \sqrt{(4)^2 + (2)^2}$

$= \sqrt{16+4} = \sqrt{20}$

$= 2\sqrt{5}$

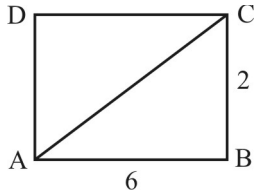
Hence the length of diagonal of rectangle $= 2\sqrt{5}$ cm

166. Find the length of the diagonal of rectangle whose length is 6 cm and breadth is 2 cm.

(a) $2\sqrt{10}$ (b) $\pm 2\sqrt{10}$
(c) $4\sqrt{2}$ (d) $\pm 4\sqrt{2}$

RRB NTPC 07.04.2016 Shift : 3

Ans : (a)



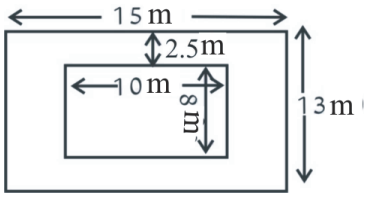
Length = 6 cm
breadth = 2 cm
$(\text{diagonal})^2 = (\text{length})^2 + (\text{breadth})^2$
$(\text{diagonal})^2 = (6)^2 + (2)^2$
$(\text{diagonal})^2 = 36+4$
diagonal $= \sqrt{40} = 2\sqrt{10}$

167. A footpath of 2.5 m breadth is built around a rectangular garden having a length of 10 m and breadth of 8 m. Find the area of the garden which includes the footpath.

(a) 130.25 square m. (b) 131.25 square m.
(c) 195.00 square m. (d) 162.50 square m.

RRB NTPC 06.04.2016 Shift : 1

Ans : (c)



Area of the garden includes the footpaths =15×13 =195 Square meter

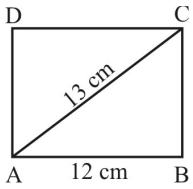
168. The one side of a rectangle is 12 m and its diagonal is 13 m, then find its area.

(a) 60 square m. (b) 55 square m.
(c) 50 square m. (d) 45 square m.

RRB NTPC 06.04.2016 Shift : 2

Ans : (a) Triangle ABC in $AC^2 = AB^2 + BC^2$

$(13)^2 = (12)^2 + BC^2$
$BC^2 = 169 - 144$
$BC = \sqrt{25}$
BC = 5 cm.



Area of rectangle = AB × BC = 12 × 5= 60 square cm.

169. Find the length of the diagonal of a rectangle whose length and breadth are 9 cm and 6 cm respectively.

(a) $3\sqrt{13}$ (b) $\pm 3\sqrt{13}$
(c) $3\sqrt{5}$ (d) $\pm 3\sqrt{5}$

RRB NTPC 22.04.2016 Shift : 2

Ans : (a) Length of rectangle = 9 cm

b = 6 cm

diagonal $= \sqrt{l^2 + b^2}$

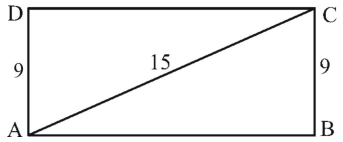
$= \sqrt{(9)^2 + (6)^2} = \sqrt{81+36} = \sqrt{117} = 3\sqrt{13}$

170. Find the area of a rectangle whose diagonal and breadth are 15 m and 9 m respectively.

(a) 42 square m. (b) 144 square m.
(c) 108 square m. (d) 225 square m.

RRB NTPC 26.04.2016 Shift : 1

Ans : (c) diagonal of rectangle AC = 15 m. and BC = 9 m.



in a ABC,

$$AB = \sqrt{AC^2 - BC^2} \Rightarrow \sqrt{15^2 - 9^2}$$
$$= \sqrt{225 - 81}$$
$$= \sqrt{144}$$

AB = 12 m

length of rectangle = 12m

area of rectangle = length × breadth

$= 9 \times 12 = 108\ m^2$

171. Find the length of the diagonal of a rectangle whose length and breadth are 6 cm and 6 cm respectively.

(a) $6\sqrt{2}$ (b) $\pm 6\sqrt{2}$
(c) 0 (d) $\sqrt{2}$

RRB NTPC 26.04.2016 Shift : 3

Ans : (a)

$$\text{diagonal of rectangle} = \sqrt{(\text{length})^2 + (\text{breadth})^2}$$
$$= \sqrt{(6)^2 + (6)^2} = \sqrt{36 + 36} = \sqrt{6 \times 6 \times 2} = 6\sqrt{2}$$

172. The area of a rectangle is 448 sq. m. If its length is 12% more than its breadth, then find its breadth.

(a) 14m (b) 16m
(c) 18m (d) 20m

RRB NTPC 27.04.2016 Shift : 2

Ans : (d)

Let the breadth = x

$$\text{length} = \frac{x \times 112}{100} = \frac{112x}{100}$$

area of rectangle = length × breadth

As per question $448 = \frac{x \times 112x}{100}$

$$\Rightarrow \quad x^2 = \frac{448 \times 100}{112}$$
$$x^2 = 400$$
$$x = 20$$

So breadth = 20 m

173. Find the maximum area of a rectangular field which is surrounded by a rope of 400 m

(a) 5000 m^2 (b) 6250m^2
(c) 4000m^2 (d) 10000m^2

RRB NTPC 27.04.2016 Shift : 3

Ans : (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(L + B) = 400 (∵ L = B)

$$\text{length} = \frac{400}{4} = 100\ m$$

area = length × breadth

$= 100 \times 100 = 10{,}000\ m^2$

174. Find the maximum area of a rectangular field enclosed by a 40 m long rope?

(a) 160 m^2 (b) 180 m^2
(c) 200 m^2 (d) 100 m^2

RRB NTPC 30.04.2016 Shift : 2

Ans : (d) Let be length = a

breadth = b

According to question,

2 (a + b) = 40

a + b = 20

∵ ab = maximum

∴ a = 10, b = 10

so maximum area of field = ab = 10 ×10 = 100 m^2

Type - 6

175. If the surface area of a cube is 3750 cm^2, then find its volume?

(a) 14255 cm (b) 16625 cm
(c) 12225 cm (d) 15625 cm

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

Ans : (d) Surface area of the cube = $6a^2$

As per question

$6a^2 = 3750$

$\Rightarrow a^2 = 625$

a = 25

Volume of cube = $(\text{side})^3$

$= 25 \times 25 \times 25$

$= 15625\ cm^3$

176. The sum of all the sides of a cube is 48 cm. Find its volume?

(a) 27 cm^3 (b) 216 cm^3
(c) 64 cm^3 (d) 36 cm^3

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

Ans : (c) Let each side of cube = a cm

As per question

12 a = 48

a = 4

Volume of cube = $(a)^3 = (4)^2 = 64cm^3$

177. Numerical values of surface area and volume of a cube are equal. Find the volume of the cube?

(a) 512 cube unit (b) 276 cube unit
(c) 216 cube unit (d) 162 cube unit

RRB JE - 25/05/2019 (Shift-I)

Ans : (c) Surface area of the cube $= 6a^2$
volume of cube $= a^3$
As per question
$6a^3 = a^3$
$a = 6$
Hence volume of cube $= a^3 = 6^3$
$= 216$ cube unit

178. If the length of each side of a cube is increased by 3 times, then how much of its volume will be the actual volume?
(a) 9 times (b) 2 times
(c) 3 times (d) 27 times
RRB RPF SI – 11/01/2019 (Shift-I)

Ans. (d) Let side of first cube = a
Volume of first cube $= a^3$
Side of second cube = 3a
Volume of second cube $= (3a)^3 = 27\,a^3$
The volume of the first cube will be 27 times the volume of the second cube.

179. The sum of the sides of a cube is equal to one-eight of the perimeter of a square. If the numerical values of the volume of the cube and the area of the square are equals then what will be the length of the cube core?
(a) 288 units (b) 366 units
(c) 432 units (d) 576 units
RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) Let the length of cube's core = a unit
length of squares side = b unit
As per first condition
$12a = \frac{4b}{8} \Rightarrow \quad b = 24a$ _____(i)
As per second condition- $a^3 = b^2 \Rightarrow a^3 = 24 \times 24 \times a^2$
$\boxed{a = 576 \text{ unit}}$
hence length of cube's core = 576 unit

180. If the sides of a cube are doubled then its volume increased by how many times of its actual volume?
(a) 3 (b) 4
(c) 8 (d) 6
RRB Group-D – 10/10/2018 (Shift-II)

Ans : (c) Let side of cube = a unit
volume of cube $= a^3$ cubic unit
doubling the cube side $= 2a$
New volume $= (2a)^3 = 8a^3$ cubic unit
So its volume will increase by 8 times its actual volume.

181. 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, then what will be the total area of the surface of the cube which is not painted?
(a) 8,200.14 cm^2 (b) 8,528.57 cm^2
(c) 8,228.57 cm^2 (d) 8,127.14 cm^2
RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (c) Given
$r = \frac{80}{2} = 40\text{cm}, \quad r = 80 \text{ cm}$
area of not painted layer $= 6a^2 - \{6 \times (\pi r^2)\}$
$= 6 \times (80)^2 - \{6 \times \frac{22}{7} \times (40)^2\}$
$= 38400 - \{6 \times 5028.57\}$
$= 38400 - 30171.42$
$= 8228.58 \text{ cm}^2 \approx 8228.57 \text{ cm}^2$

182. The length, breadth and height of a rightangled parallel hexagon are 3.6 m, 2.5 m and 1.8 m respectively, many cubes are made by melting this metal, measurement of each side is 0.3 m of each cube. How many such cubes are made?
(a) 60 (b) 6000
(c) 600 (d) 60,000
RRB Group-D – 11/12/2018 (Shift-III)

Ans : (c) Let the number of new cubes is n
$n = \frac{\text{right angled parallel hexagon metal volume}}{\text{melting volume of cube}}$
$= \frac{3.6 \times 2.5 \times 1.8}{0.3 \times 0.3 \times 0.3}$
$= 12 \times 50 = 600$

183. How many times the volume of a cube is reduced by halving its sides?
(a) $\frac{1}{4}$ (b) $\frac{1}{8}$
(c) $\frac{1}{3}$ (d) $\frac{1}{2}$
RRB Group-D – 11/10/2018 (Shift-I)

Ans : (b) Volume of cube with sides 'a' = a × a × a = a^3
Volume of cube with sides $\frac{a}{2} = \left(\frac{a}{2}\right)^3 = a^3 \times \frac{1}{8}$
so by halving the sides of the cube, Its volume will be reduced by $\frac{1}{8}$ times.

184. If one side of a cube is extended by 1 cm, the volume will increase by 169 cm^3. Find the each side of the cube?
(a) 8cm (b) 7cm
(c) 6cm (d) 9cm
RRB Group-D – 05/10/2018 (Shift-III)

Ans. (b) Let edge of cube = a cm
So, volume of cube = a^3
As per question,
$(a + 1)^3 - a^3 = 169$
$a^3 + 1 + 3a(a + 1) - a^3 = 169$
$3a^2 + 3a - 168 = 0$
$a^2 + a - 56 = 0$
$a^2 + 8a - 7a - 56 = 0$
$a(a + 8) - 7(a + 8) = 0$
$(a + 8)(a - 7) = 0$
$\therefore \quad a = 7$ cm $\quad a = -8$ (invalid)

185. The sum of the lengths of the edges of a cube is equal to 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 length of one side of the square is:

(a) 30 units (b) 9 units
(c) 27 units (d) 12 units

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (c) Let side of cube = y unit and side of square = x unit

As per question

$12y = 4x,\ y = \frac{x}{3}$ .....(i)

and $y^3 = x^2$

From equation (i)

$\left(\frac{x}{3}\right)^3 = x^2$

$x = 27$

Side of square x = 27 unit

186. If the edge of a cube is increased by 3 cm, the volume will increases by 657 cm^3. Then what is the original length of each edge of the cube?

(a) 7 cm (b) 8 cm
(c) 6 cm (d) 9 cm

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

Ans : (a) Let length of the edge of cube = a

so volume = a^3

As per question length increase in 3 cm

So length of new cube's edges = a + 3

So new volume = $(a+3)^3$

As per question $(a+3)^3 - a^3 = 657$

$a^3 + 27 + 9a(a+3) - a^3 = 657$

$27 + 9a^2 + 27a = 657$

$9a^2 + 27a = 657 - 27 = 630$

$9a^2 + 27a = 630$

$a^2 + 3a = \frac{630}{9} = 70$

$a^2 + 3a - 70 = 0$

$a^2 + 10a - 7a - 70 = 0$

$a(a + 10) - 7(a + 10) = 0$

$\Rightarrow (a + 10)(a - 7) = 0$

So intended length of a cube's edge = 7 cm

Type - 7

187. The sides of a cuboid are in the ratio of 1:2:3. If its surface area is 88 cm^2, find its volume.

(a) 48 cm^3 (b) 120 cm^3
(c) 64 cm^3 (d) 24 cm^3

RRB JE - 25/05/2019 (Shift-II)

Ans : (a) Let the length of cuboide = (l)

breadth (b) and height (h) is x, 2x and 3x

area of cuboid surface = 88 cm^2

$2(l.b + b.h + h.l) = 88\ cm^2$

$2(x.\ 2x + 2x.\ 3x + 3x.\ x) = 88cm^2$

$2(2x^2 + 6x^2 + 3x^2) = 88$

$22x^2 = 88$

$x^2 = 4$

$\boxed{x = 2}$

length of cuboid (l) = x = 2cm

breadth of cuboid (b) = 2x = 2 × 2 = 4cm

height of cuboid (h) = 3x = 3 × 2 = 6 cm

Volume of cuboid = ℓ.b.h

= 2 × 4 × 6

= $\boxed{48cm^3}$

188. Find the volume of the cuboid whose length, breadth and height are 24 cm, 18 cm and 16 cm.?

(a) 7142 cm^3 (b) 5184 cm^3
(c) 7089 cm^3 (d) 6912 cm^3

RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (d) length = 24 cm, breadth = 18 cm, height = 16

∴ Volume of cuboid = length × height × breadth

= 24 × 16 × 18

= 6912 cm^3

189. Cuboid of dimensions l × b × h is cut into the form of the frames of dimensions l × 0.5 b × 0.4 h. Find the number of frames.

(a) 4 (b) 5
(c) 20 (d) 10

RRB JE - 27/05/2019 (Shift-II)

Ans : (b)

number of getting seats = $\frac{\text{Volume of large cuboid}}{\text{Volume of small cuboide}}$

$= \frac{\ell \times b \times h}{\ell \times 0.5b \times 0.4h}$

$= \frac{1}{0.5 \times 0.4}$

$= \frac{1}{0.20} = \frac{100}{20} = 5$

190. Find the area of the cardboard required to make a box of 10 cm × 8 cm × 4 cm.

(a) 388 cm^2 (b) 412 cm^2
(c) 488 cm^2 (d) 304 cm^2

RRB JE - 28/05/2019 (Shift-I)

Ans : (d) Area of 10 cm × 8 cm × 4 cm =

$= 2(lb + bh + hl)$

$= 2(10\times8+8\times4+4\times10)$

$= 2(80+32+40)$

$= 2\times152 = 304\ cm^2$.

191. A wooden box measures 20 cm × 12 cm × 10 cm. The thickness of the wood is 1 cm. Find the volume of the wood used to make the box.

(a) 1120 cm^3 (b) 2400 cm^3
(c) 519 cm^3 (d) 960 cm^3

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

Ans : (d)
Wooden box measurement $= 20 \text{ cm} \times 12 \text{ cm} \times 10 \text{ cm}$
$= 2400 \text{ cm}^3$
$\because$ wood thickness is 1 cm
$\therefore$ internal measurement of wooden box
$= (20 - 1 \times 2) \times (12 - 1 \times 2) \times (10 - 1 \times 2)$
$= 18 \times 10 \times 8 = 1440 \text{ cm}^3$
$\therefore$ volume of wood used for making box
$= 2400 - 1440 = 960 \text{ cm}^3$

192. The length, breadth and height of the box of each rectangular panel are 12 cm, 8 cm and 10 cm respectively. Find the total surface area of the box.?
(a) 592 Square cm. (b) 376 Square cm.
(c) 524 Square cm. (d) 482 Square cm.
RRB JE - 30/05/2019 (Shift-III)

Ans : (a) Given
$l = 12$ cm
b = 8 cm
h = 10 cm
Total surface area of rectangular panel
$= 2(lb + bh + hl)$
$= 2(12 \times 8 + 8 \times 10 + 12 \times 10)$
$= 2(96 + 80 + 120)$
$= 2 \times 296$
= 592 square centimeter

193. The dimensions of a luggage box are 80 cm, 60 cm and 40 cm. How many square cm of fabric will be required to cover the box?
(a) 10400 Square cm. (b) 20800 Square cm.
(c) 20400 Square cm. (d) 10200 Square cm.
RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (b) Need quatity of cloth = All surface of box
$= 2(80 \times 60 + 60 \times 40 + 40 \times 80)$
$= 2(4800 + 2400 + 3200) = 2 \times 10400$
= 20800 Square cm.

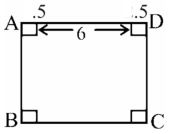
194. The surface area of a cuboid is 1372 sq. cm. Its dimensions are in the ratio of 4:2:1. Find the length?
(a) 24 cm (b) 7 cm
(c) 28 cm (d) 12 cm
RRB JE - 30/05/2019 (Shift-III)

Ans : (c) Let cuboid dimensions 4x, 2x, x cm.
Surface area of cuboid $= 2[lb + bh + hl)$
$1372 = 2[4x \times 2x + 2x \times x + 4x \times x]$
$1372 = 2[8x^2 + 2x^2 + 4x^2]$
$1372 = 2[14x^2]$
$x^2 = \frac{1372}{28}$
$x^2 = 49$
$x = 7$
length of cuboid $= 4x$
$= 4 \times 7 = 28$ cm.

195. The ratio of the length, breadth and height of a room is 3:3:4. If the length is two times, width is two-third and the height is halved then by what percentage will the cost of painting the four walls of the room be reduced?
(a) $30\frac{3}{4}$ (b) $33\frac{1}{3}$
(c) 32 (d) $28\frac{1}{4}$
RRB Group-D – 12/11/2018 (Shift-I)

Ans. (b) : Let length of room = 3x
breadth = 3x
height = 4x
area of room $= 2(L + B) \times h$
$= 2(3x + 3x) \times 4x$
$= 48x^2$
When the length is doubled, breadth is two-thirds and height is halved, then the new area obtained
$= 2\left(3x \times 2 + 3x \times \frac{2}{3}\right) \times \frac{4x}{2}$
$= 2(6x + 2x) \times 2x$
$= 16x \times 2x = 32x^2$
Decrease $= 48x^2 - 32x^2 = 16x^2$
Decrease % $= \frac{16x^2}{48x^2} \times 100 = \frac{100}{3} = 33\frac{1}{3}\%$

196. 0.25 cm^2 square is cut from each corner of a square plate of each side 7 cm. The remaining part is made with cut to form a cuboid. What will be the volume of this cuboid with its top open?
(a) 20 (b) 16
(c) 21 (d) 18
RRB Group-D – 03/10/2018 (Shift-I)

Ans : (d)


Side of square $= \sqrt{.25} \text{ cm}^2$
= 0.5 cm
So
height of cuboid = 0.5 cm
length of cuboid = 6 cm
breadth of cuboid = 6 cm
Volume of cuboid $= lbh$
$= 0.5 \times 6 \times 6$
$= 18 \text{ cm}^3$

197. The measurement of a rectangular box is in the ratio of 2:3:5. If the total surface area is 6200 cm^2, find the dimensions of the cuboid.
(a) 20cm × 40cm × 50cm
(b) 20cm × 30cm × 40cm
(c) 30cm × 40 cm × 50cm
(d) 20cm × 30cm × 50cm
RRB Group-D – 03/10/2018 (Shift-III)

Ans : (d) Let sides is 2x cm. 3x cm., and 5x cm then total surface of area or all surface of cuboid

$= 2(lb + bh + hl)$

$2(lb + bh + hl) = 6200$

$2(2x \times 3x + 5x \times 3x + 5x \times 2x) = 6200$

$2(6x^2 + 15x^2 + 10x^2) = 6200$

$31x^2 = 3100$

$x^2 = 100 \Rightarrow \boxed{x = 10 \text{ cm}}$

So dimension or sides of cuboid—

$2x = 2 \times 10 = 20\text{cm}$

$3x = 3 \times 10 = 30$ cm

$5x = 5 \times 10 = 50$ cm

198. Two cubes of 343 cm^3 volume are added at their edges. The total floor area of the cuboid so formed is?

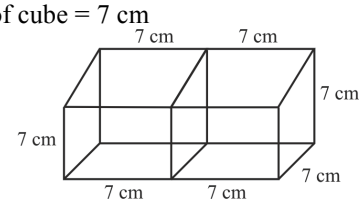
(a) 436 square cm (b) 466 square cm

(c) 346 square cm (d) 490 square cm

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (d) Area of cube $= 343\ cm^3$

then side of cube = 7 cm



area of cuboid $= 2\ (lb + bh + hl)$

as per question

l= 7+7=14, b= 7,h=7

$\therefore$ area of cuboid

$= 2\,(14\times7+7\times7+7\times14) = 490$ square cm

199. A water tank is 5 m long, 3 m wide and 1 m deep. How much litre of water can be filled in it?

(a) 810 L (b) 15, 000 L

(c) 729 L (d) 720 L

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (b)

Volume of water tank $= l \times b \times h$

$= 5 \times 3 \times 1 = 15\ m^3$

$= 15 \times 1000$L (1 cubic m = 1000 L)

$= 15000$L

200. The area of the three faces of a cube including the top is 25 m^2, 32 m^2 and 32 m^2. What is the volume of the cube?

(a) 184 m^3 (b) $\sqrt{3024}m^3$

(c) 92 m^3 (d) $160m^3$

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (d) Area of cuboid's first panel(lb) $= l \times b$

$= 25\ m^2$

area of cuboid's second panel (bh) $= b \times h = 32\ m^2$

area of cuboid's third panel (hl) $= h \times l = 32\ m^2$

Now,

Volume of cuboid $= \sqrt{lb \times bh \times lh}$

$= \sqrt{25\times32\times32}$

$= \sqrt{5\times5\times16\times2\times16\times2}$

$= 5 \times 4 \times 4 \times 2 = 160$

Hence volume of cuboid $= 160\ m^3$

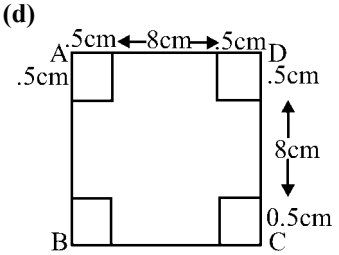
201. The pieces of 0.25 cm^2 square have been cut from a square plate of each side of 4 cm and the remaining plate is joined with cut edges from an open cuboid. What will be the volume of this open cuboid?

(a) 34 (b) 30

(c) 36 (d) 32

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (d)



Side of cut square $= \sqrt{.25} = .5$cm

$\therefore$ Volume of open top cuboid $= 8 \times 8 \times 0.5 = 32\ cm^3$

202. Two cubes each volume 216 cm^2 are joined end to end. The total surface area of the resulting cuboids is?

(a) 360 cm^2 (b) 380 cm^2

(c) 330 cm^2 (d) 340 cm^2

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (a)

Let side of cube a cm

Volume of cube $= (\text{side})^3$

$216 = a^3$

$a = \sqrt[3]{216}$

a = 6 cm

related both cube−

$l = 12$, b = 6, h = 6

Surface area of cuboid $= 2(lb + bh + hl)$

$= 2\ (12\times6 + 6\times6 + 6\times12)$

$= 2\ (72 + 36 + 72)$

$= 2\ (180) = 360\ cm^2$

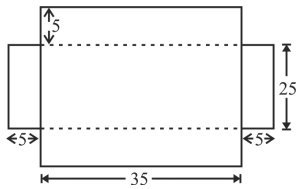
203. Four squares of 5 cm side are cut from the corners of a 45 cm long and 35 cm wide rectangular sheet and an open box is made from the remaining sheet. Find the volume of the box?

(a) 1200 $cm.^3$ (b) 875 $cm.^3$

(c) 1325 $cm.^3$ (d) 4375 $cm.^3$

RRB NTPC 02.04.2016 Shift : 1

Ans : (d)



for open box

$l = 35$ cm. b = 25 cm. h = 5 cm.

$\therefore$ volume of open box $= 35 \times 25 \times 5 = 4375\ cm^3$

204. A rectangular reservoir has 4200 litres of water. Find the depth of water in reservoir if the measure of the base of this reservoir is 6m × 3.5 m.

(a) 1m (b) 2.5 m
(c) 3 m (d) 2 m

RRB NTPC 18.01.2017 Shift : 2

Ans : (d) Given,
length of reservoir 6 m
breadth of reservoir = 3.5 m
let height or depth is (h)
As per question,

Volume of rectangular reservoir = 42000 ℓ

$l \times b \times h = 42000\ l$

$\Rightarrow \quad 6 \times 3.5 \times h = \frac{42000}{1000}$ m (1m = 1000 ℓ)

$\Rightarrow \quad h = \frac{42}{21}$

$\Rightarrow \quad h = 2$ m

205. The ratio of the length, breadth and height of a room is 3:2:1. If its volume is 3072 m^3, then find its width?

(a) 18 m (b) 16 m
(c) 24 m (d) 12 m

RRB NTPC 09.04.2016 Shift : 3

Ans : (b) Ratio = 3 : 2 : 1
Let length of room = 3x
b = 2x
h = x
volume of cuboid = $l \times b \times h = 3072$
$3x \times 2x \times x = 3072$
$6x^3 = 3072 \quad \Rightarrow \quad x^3 = 512$
$x = \sqrt[3]{512}$
$x = 8$
hence, b = 2x = 2×8 = 16 m

206. The surface areas of three faces of a cuboid sharing a vertex are 20 m^2, 32 m^2 and 40 m^2. What is the volume of the cuboid?

(a) 92 m^3
(b) $\sqrt{3024}$ m^3
(c) 160 m^3
(d) 184 m^3

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (c) Let length, breadth and height of cuboid is ℓ, b and h.

$\ell b \times bh \times \ell h = 40 \times 20 \times 32$

$(\ell bh)^2 = 25600$

$\ell bh = 160\ m^3$

Hence the value of the volume of the cuboid (ℓbh) will be 160 cuboic meter.

Type - 8

207. Find the ratio of the volume of a cylinder of radius r and sphere of radius r and height 2r?

(a) 2:3 (b) 3:2
(c) 5:4 (d) 3:5

RRB JE - 22/05/2019 (Shift-I)

Ans : (a) Circle radius = r
Cylinder radius = r
height of cylinder = 2r

So $\frac{\text{Volume of circle}}{\text{Volume of cylinder}} = \frac{\frac{4}{3}\pi r^3}{\pi r^2 h}$

$= \frac{\frac{4}{3}\pi r^3}{\pi r^2 \times 2r} = \frac{2}{3}$

$\therefore$ volume of circle : volume of cylinder = 2 : 3

208. What will be the total surface area of that solid cylinder? whose radius is half of the radius of the circle having an area of 154 square meters and the height is equal to its radius?

(a) 231 m^2 (b) 123 m^2
(c) 312 m^2 (d) 132 m^2

RRB JE - 25/05/2019 (Shift-I)

Ans : (a) Area of circle = 154 m^2
$\pi r^2 = 154$
$r^2 = 154 \times \frac{7}{22} = 7 \times 7$
$r = 7$
As per question,
height of cylinder = 7 m
radius of cylinder = $\frac{7}{2}$ m
Curve surface area = $2\pi r\ (h + r)$

$= 2 \times \frac{22}{7} \times \frac{7}{2}\left(7 + \frac{7}{2}\right)$

$= 22 \times \frac{21}{2}$

$= 231\ m^2$

209. The ratio of the radius of two cylinders is 2 : 3. The ratio of their heights is 5 : 3. If the volume of one cylinder is 160 cube, find the volume of the other cylinder?

(a) 216 cubic unit (b) 400 cubic unit
(c) 240 cubic unit (d) 243 cubic unit

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

Ans : (a) Let radius of first cylinder $(r_1) = 2r$
and radius of second cylinder $(r_2) = 3r$
Similarly, height of first cylinder $(h_1) = 5h$
and height of second cylinder $(h_2) = 3h$
As per question,
volume of first cylinder = 160 cubic unit

Volume of cylinder $= \pi r^2 h$

$\pi r_1^2 h = 160$

$\pi \times 2r \times 2r \times 5h = 160$

$\pi \times 20r^2 h = 160$

$r^2 h = \frac{160}{\pi \times 20}$

$r^2 h = \frac{8}{\pi}$ _____ (i)

Volume of second cylinder $= \pi r_2^2 h_2$

$= \pi \times 3r \times 3r \times 3h$

$= \pi\, 27r^2 h$

$= \pi \times 27 \times 8 \times \frac{1}{\pi}$ {equation from (i)}

$= 27 \times 8 = 216$

So volume of second cylinder = 216 cubic unit

210. A wire made by melting a metal sphere with radius of 6 cm., The length of the wire whose radius of the transverse section is 8 cm?

(a) 4 cm (b) 3.5 cm
(c) 5 cm (d) 4.5 cm

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

Ans : (d) Let length of wire is l cm

As per question-

$\therefore$ Volume of sphere = Volume (cylinder) of wire

$\frac{4}{3}\pi \times 6 \times 6 \times 6 = \pi \times 8 \times 8 \times \ell$

$\ell = \frac{4 \times 6 \times 6 \times 6}{3 \times 8 \times 8} = 4.5$ cm.

211. Find the area of the outer curve surface of a metal pipe of radius 21 cm. and length 90 cm.?

(a) 11480 Square cm. (b) 10880 Square cm.
(c) 12880 Square cm. (d) 11880 Square cm.

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

Ans : (d) radius (r) = 21 cm

height (h) = 90 cm

area of external curved of pipe = $2\pi rh$

$= 2 \times \frac{22}{7} \times 21 \times 90$

$= 2 \times 22 \times 3 \times 90 = 11880$ Square cm.

212. Find the total surface area of semi sphere mounted on a cylinder while both have the same radius, and the height of the cylinder is twice its radius?

(a) $8\pi r^2$ (b) $4\pi r^2$
(c) $7\pi r^2$ (d) $(2\pi rh + 2\pi r^2)$

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

Ans : (c) Radius of semicircle = radius of cylinder

height of cylinder (h) = 2r

$\therefore$ Total curve surface area = curve surface area of cylinder + curve surface area of semi sphere + area of base of cylinder = $2\pi rh + 2\pi r^2 + \pi r^2$

$= 2\pi r \times 2r + 3\pi r^2$

$= 4\pi r^2 + 3\pi r^2 = 7\pi r^2$

213. Find the radius of the cylinder whose volume is 3850 cm and height is 25 cm.?

(a) 7 cm (b) 14 cm
(c) 3.5 cm (d) 10.5 cm

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (a) volume of cylinder (V) = 3850 cm^3

h = 25 cm

r = ?

$V = \pi r^2 h$

$3850 = \frac{22}{7} \times r^2 \times 25$

$r^2 = \frac{3850 \times 7}{22 \times 25} = 49$

r = 7 cm

214. the capacity of a cylindrical tank is 3080 cubic meters. The radius of its base is 7 meters. So find the depth of the tank?

(a) 10 m (b) 25 m
(c) 15 m (d) 20 m

RRB JE - 02/06/2019 (Shift-III)

Ans : (d) base radius (r) = 7 m

capacity or volume of cylinder and tank =3080 cubic 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

215. If the height 'H' of a cylinder is equal to the circumference of its base. Find the area of its curved surface in terms of H?

(a) h^3 (b) 2h/3
(c) $3h^2$ (d) h^2

RRB JE - 02/06/2019 (Shift-I)

Ans : (d) circumference $(2\pi r) = h$

curved surface of cylinder = $2\pi rh$ $[2\pi r = h]$

$= h \times h = h^2$

216. The length of a rectangular seat equal to twice its breadth. If the volume of the cylinder is V_1, V_2 when the seat is folded relative to its length and breadth, Find the ratio of V_1 and V_2 ?

(a) 1 : 1 (b) 1 : 3
(c) 2 : 1 (d) 2 : 3

RRB JE - 27/06/2019 (Shift-I)

Ans : (c)

On related to length –

Circumference of first cylinder $(2\pi r_1) = 2$, $h_1 = 1$

$r_1 = \frac{1}{\pi}$

On related to width –

Circumference of second cylinder $(2\pi r_2) = 1$, $h_2 = 2$

$$r_2 = \frac{1}{2\pi}$$

$$\frac{V_1}{V_2} = \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2} = \frac{\pi \times \frac{1}{\pi^2} \times 1}{\pi \times \frac{1}{4\pi^2} \times 2} = 2:1$$

217. The total surface area of a solid cylinder is 462 cm^2. Its curve surface is one third of the entire surface area. Find its volume?

(a) 964 cm^3 (b) 810 cm^3
(c) 539 cm^3 (d) 1024 cm^3

RRB JE - 27/06/2019 (Shift-III)

Ans : (c) Given

Total Surface area of cylinder = 462 cm^2

$2\pi r\,(h+r) = 462$ ----(i)

Curved surface area of cylinder $= 462 \times \frac{1}{3}$

$2\pi rh = 154$ cm ----(ii)

from equation (i) and (ii)-

$$\frac{2\pi r(h+r)}{2\pi rh} = \frac{462}{154}$$

$$\frac{(h+r)}{h} = 3$$

h + r = 3h

r = 2h ----(iii)

from equation (ii)−

$2\pi rh = 154$

$$2 \times \frac{22}{7} \times 2h \times h = 154$$

$$4 \times \frac{22}{7} \times h^2 = 154$$

$$h^2 = \frac{49}{4}$$

$$h = \frac{7}{2}$$

from equation (iii)−

r = 2h

$$r = 2 \times \frac{7}{2} = 7 \text{ cm}$$

Volume of cylinder $(\pi r^2 h)$ =

$$\frac{22}{7} \times 7 \times 7 \times \frac{7}{2} = 11 \times 49 = 539 \text{ cm}^3$$

218. 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?

(a) 3246 cm^3 (b) 3562 cm^3
(c) 2156 cm^3 (d) 2584 cm^3

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans. (c) Area of circle = πR^2

$\therefore \pi R^2 = 1386$

$$\frac{22}{7} R^2 = 1386$$

$$R^2 = \frac{1386 \times 7}{22} = 63 \times 7$$

$$R = \sqrt{63 \times 7} = 3 \times 7$$

R = 21 cm

As per question,

Radius of cylinder = $21 \times \frac{1}{3} = 7$ cm

height of cylinder = 7 × 2 = 14 cm

Volume of cylinder = $\pi r^2 h$

$$= \frac{22}{7} \times 7 \times 7 \times 14 = 2156 \text{ cm}^3$$

219. A solid cylindrical metal with a diameter of 14 cm and a height of 15 cm is melted to form a solid wire whose length is 60 meters. Find the diameter of the wire.

(a) 7 mm (b) 14 mm
(c) 3.5 mm (d) 35 mm

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

Ans. (a) Diameter of cylindrical metal = 14cm

2r = 14cm

r = 7cm

The length of the wire shape

= 60m

Cylinder is melted to form of a wire, so the length of the wire.

h = 60m = 6000cm

Volume of solid cylinder = Volume of wire

$\pi r_1^2 h_1 = \pi r_2^2 h_2$

$7 \times 7 \times 15 = r^2 \times 6000$

$$r = \sqrt{\frac{7 \times 7}{400}} = \frac{7}{20} \text{cm}$$

$$r = \frac{7}{20} \times 10\text{mm}$$ $\boxed{1\text{cm} = 10\text{mm}}$

So diameter $= 2r = \frac{7}{2} \times 2 = 7$mm

220. To measure the volume of an irregular shaped stone, peter place the stone in a 5 cm semi-diameter container filled with water. If the water level of the box increases from 10 cm to 17 cm, then what is the volume of the stone.

(a) 500 cm^3 (b) 450 cm^3
(c) 550 cm^3 (d) 400 cm^3

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (c) $\because$ Semi diameter of box (r) = 5 सेमी.

Water level in the compartment 10 cm Greater than 17 cm.

hence height = 17-10 = 7 cm

Thus the box will be in the form of cylinder

Thus, the volume of cylinder = $\pi r^2 h$

$$= \frac{22}{7} \times (5)^2 \times 7 = 22 \times 25 = 550 \text{ cm}^3$$

221. 42 cm diameter solid metal sphere is melted and made then a wire which has a diameter 7mm find the length of the wire.

(a) 1008 m (b) 1008 cm
(c) 2016 cm (d) 2016 m

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (a) diameter of circle = 42 cm

Radius $= \frac{42}{2} = 21\text{cm} = 21 \times 10^{-2}$ m

diameter of wire (cylinder) = 7 mm

Radius (r) $= \frac{7}{2}\text{mm} = \frac{7}{2} \times 10^{-3}$

Volume of circle = Volume of cylinder (wire)

$$\frac{4}{3}\pi R^3 = \pi r^2 h$$

$$\frac{4}{3} \times (21 \times 10^{-2})^3 = \left(\frac{7}{2} \times 10^{-3}\right)^2 \times h$$

$$\frac{4}{3} \times 21 \times 21 \times 21 \times 10^{-6} = \frac{7}{2} \times \frac{7}{2} \times 10^{-6} \times h$$

$$h = \frac{4}{3} \times \frac{21 \times 21 \times 21 \times 4}{7 \times 7}$$

h = 16×3×21

h = 1008 m.

So, length of wire (h) = 1008 m

222. The diameter of the hemisphere connected to both ends of a cylinder with a diameter of 10 cm is a height of 7 cm. Find the surface area of this solid shape.

(a) 374 cm^2 (b) 1056 cm^2
(c) 594 cm^2 (d) 836 cm^2

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (a) Surface are of solid shape =

Surface area of cylinder + area of circle (on both side)

$$= 2\pi r(h + r) + 2\pi r^2$$

$$= 2\pi r[(h + r) + r]$$

$$= 2 \times \frac{22}{7} \times \frac{7}{2}\left[\left(10 + \frac{7}{2}\right) + \frac{7}{2}\right]$$

$$= 22\left[\frac{27}{2} + \frac{7}{2}\right]$$

= 11 × 34

= 374 cm^2

223. The length of a hollow cylinder is 84 cm and its outer diameter is 72 cm and the inner diameter is 24 cm. If the of substance is 10 grams/cm^3, what will be the weight of the hollow cylinder?

(a) 295680 kg (b) 329680 kg
(c) 295.68 kg (d) 329.68 kg

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (c) 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

Density of substance of cylinder = 10 gr/cm^3

Density substance of cylinder $= \frac{10}{1000} = \frac{1}{100}$ kg/cm^3

Volume of hollow cylinder = $\pi h (R^2 - r^2)$

$$= \frac{22}{7} \times 84\left\{(16)^2 - (12)^2\right\}$$

= 22 × 12 × 28 × 4

= 88 × 12 × 28

= 29568 cm^3

Hence weight substance of hollow cylinder = volume × density $= \frac{29568}{100} = 295.68$ kg.

224. The outer and inner diameters of a hollow sphere are 12 cm and 8 cm respectively. It is melted to give the shape of a cylinder whose base diameter is 10 cm. what will be the height of the cylinder?

(a) 3.33 cm (b) 4.33 cm
(c) 3.17 cm (d) 4.17 cm

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (c) given-

∵ External and internal diameter of hollow circle is 12cm and 8cm.

∴ External radius of hollow circle (R) = 6 cm

and internal radius (r_1) = 4 cm

diameter of cylinder (2r) = 16 cm

$$r_2 = \frac{16}{2} = 8 \text{ cm}$$

As per question-

Volume of hollow sphere = volume of cylinder

$$\frac{4}{3}\pi\left(R^3 - r_1^3\right) = \pi r_2^2 h$$

$$\frac{4}{3}\pi\left[(6)^3 - (4)^3\right] = \pi(8)^2 \times h$$

$$\frac{4}{3}\pi[216 - 64] = 64\pi h$$

$$\frac{1}{3}[152] = 16h$$

$$\Rightarrow 50.667 = 16h \quad \Rightarrow h = 3.17 \text{ cm}$$

225. The capacitance of a cylindrical tank is 20790 m^3. If its radius is 10.5 m, find its depth.

(a) 60 m (b) 120 m
(c) 30 m (d) 75 m

RRB Group-D – 03/12/2018 (Shift-III)

Ans. (a) : Capacitance of cylindrical tank = 20790 m^3

So, $\pi r^2 h = 20790$

$$\frac{22}{7} \times (10.5)^2 \times h = 20790$$

$$\frac{22}{7} \times 10.5 \times 10.5 \times h = 20790$$

$$\frac{22}{7} \times \frac{105}{10} \times \frac{105}{10} \times h = 20790$$

$$\frac{22 \times 21 \times 21}{7 \times 2 \times 2} \times h = 20790$$

$$\frac{11\times 63}{2}\times h = 20790$$

$$h = \frac{20790\times 2}{11\times 63}$$

h = 60 m

So depth = 60 m

226. The radius of a sphere is three times the radius of the base of a cylinder. The height of a cylinder is 9 times the radius of its base. It the total surface area of the cylinder and the numerical value of the volume of the sphere are equal, so what is the height of the cylinder.

(a) 3 unit (b) 4.5 unit
(c) 5 unit (d) 2.25 unit

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) : let radius of cylinder = r

then radius of circle $(r_2) = 3r$

height of cylinder (h) = 9r

as per question

Volume of circle = 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

So height of cylinder = 5 unit

227. A rectangular Aluminium sheet with dimensions 22m × 10m is rolled into a cylinder so that the smaller side becomes the height of the cylinder. What is the volume of the cylinder formed

(a) 385 m^3 (b) 370 m^3
(c) 380 m^3 (d) 375 m^3

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (a) When the rectangular aluminum sheet is folded into a cylindrical form, the width (smaller side) will change as the height of the cylinder and the length will become the circumference of the base.

∴ height of cylinder (h) = 10 m

circumference's base of cylinder = 2πr = 22m.

$$\Rightarrow \quad 2\times\frac{22}{7}\times r = 22$$

$$r = \frac{7}{2}\text{m}$$

∵ Volume of cylinder (V) = $\pi r^2 h$

$$\therefore \quad V = \frac{22}{7}\times\frac{7}{2}\times\frac{7}{2}\times 10$$

V = 11 × 7 × 5 = 385 m^3

228. What will be the volume of an perpendicular cylinder of radius 1 cm and height 2 cm. in cubic cm (cm^3).

$\left(\textbf{Take } \pi = \frac{22}{7}\right)$

(a) $\frac{22}{7}$ (b) 22
(c) 44 (d) $\frac{44}{7}$

RRB NTPC 17.01.2017 Shift-1

Ans : (d) Volume of perpendicular cylinder = $\pi r^2 h$

$$= \frac{22}{7}\times(1)^2\times 2$$

$$= \frac{22}{7}\times 2 = \frac{44}{7}\text{ cm}^3$$

229. A perpendicular cylinder whose radius is 7 cm and height is 2 cm. Their volume will be in cm^3.

$\left(\textbf{Take } \pi = \frac{22}{7}\right)$

(a) 308 (b) 308/21
(c) 308/7 (d) 310

RRB NTPC 17.01.2017 Shift-3

Ans : (a) Radius of cylinder (r) = 7 cm, height (h) = 2 cm then

Volume of cylinder= $\pi r^2 h$

$$= \frac{22}{7}\times 7^2\times 2$$

= 22 × 7 × 2 = 308 cm^3

230 . What will be the volume of an perpendicular cylinder if its radius is 2.5 cm and height is 2 cm.

(a) 275 (b) 275/21
(c) 275/2 (d) 275/7

RRB NTPC 19.01.2017 Shift : 1

Ans : (d) volume of cylinder = $\pi r^2 h$

$$= \frac{22}{7}\times(2.5)^2\times 2$$

$$= \frac{275}{7}\text{cm}^3$$

231. What is the volume of a perpendicular cylinder whose radius is 2 cm and height is 2 cm.

$\left(\pi = \frac{22}{7}\right)$

(a) 175/7 (b) 176/21
(c) 176/7 (d) 176

RRB NTPC 19.01.2017 Shift : 3

Ans : (c) Volume of cylinder = $\pi r^2 h = \frac{22}{7}\times 2\times 2\times 2$

$$= \frac{22}{7}\times 8 = \boxed{\frac{176}{7}\text{cm}^3}$$

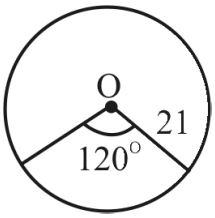
Type - 9

232. A circle sector with radius 21 cm and center is turned into a cone by turning 120º. Find the radius of the cone thus formed.

(a) 42 cm (b) 21 cm
(c) 7 cm (d) 7.5 cm

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

Ans : (c) Let radius of cone = R cm



Radius of sector = 21cm

Angle = 120^0

from, Angle $= \frac{\text{Arc}}{\text{radius}}$, $\left[\because \text{where angle will be in radian}\right]$

$120° \times \frac{\pi}{180°} = \frac{\text{Arc}}{21}$

$\frac{2\pi}{3} \times 21 = \text{arc}$

Circumference of cone base circle = length of arc.

$2\pi R = \frac{2\pi}{3} \times 21$

$\boxed{R = 7 \text{ cm}}$

233. A solid semi-sphere of metal is melted and is formed into the same radius of 'R' as a cone if the height of the cone is 'H' then.

(a) H = R (b) H = R/2
(c) H = 2R (d) H = R/3

RRB JE - 27/05/2019 (Shift-I)

Ans : (c) We know that

volume of semi circle $= \frac{2}{3}\pi r^3$

volume of come $= \frac{1}{3}\pi r^2 h$

As per question,

$\frac{2}{3}\pi r^3 = \frac{1}{3}\pi r^2 h$ (r = R) (h=H)

$\frac{2}{3}\pi R^3 = \frac{1}{3}\pi R^2 H$

$\boxed{H = 2R}$

234. There are two cones that have a ratio of volume to 1 : 10 and a ratio of height to 2 : 5. Find the ratio of their base radius.

(a) 2:1 (b) 5:2
(c) 7:25 (d) 1:2

RRB JE - 28/05/2019 (Shift-I)

Ans : (d)

$V_1 : V_2 = 1 : 10$

$h_1 : h_2 = 2 : 5$

$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi r_1^2 h}{\frac{1}{3}\pi r_2^2 h}$

$\frac{1}{10} = \frac{r_1^2 \times 2}{r_2^2 \times 5}$

$\frac{1}{2} = \frac{r_1^2 \times 2}{r_2^2 \times 1}$

$\boxed{r_1 : r_2 = 1 : 2}$

235. The size of a solid is like a hemispherical with the same radius mounted on a cone of radius 2 cm and the height of the cone is equal to its radius. Find the volume of this solid.

(a) 2π cm^3 (b) 6π cm^3
(c) 8π cm^3 (d) 4π cm^3

RRB JE - 30/05/2019 (Shift-I)

Ans : (c)

$\because$ height of cone is equal to radius of cone

$\therefore$ total volume = Volume of semicircle + volume of cone

$= \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h$ [h = r]

$= \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^3 = \frac{3\pi r^3}{3}$

$= \pi \times (2)^3$ [r = 2 cm]

$= 8\pi$ cm^3

236. Find the total surface area of the cone with oblique height 2 *l* and radius r/2.

(a) $2\pi r l$ (b) $\pi r\,[l + (r/4)]$
(c) $2\pi r\,(l + r)$ (d) $\pi r\,(l + r)$

RRB RPF SI – 11/01/2019 (Shift-II)

Ans : (b) Total surface area of cone = $\pi r\,(l + r)$

where r = radius of cone

l = oblique height of cone

As per question

Total surface area $= \pi \times \frac{r}{2}\left(2l + \frac{r}{2}\right)$

$= \frac{\pi r}{2}.2\left[l + \left(\frac{r}{4}\right)\right]$

$= \pi r\left[l + \left(\frac{r}{4}\right)\right]$

237. Numerical values of the volume and surface area of a cone are equal. If 'h' and 'r' represent the height and base radius of the cone, find the value of $(1/h^2) + (1/r^2)$

(a) 2/9 (b) 1/9
(c) 1/3 (d) 3

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Volume of cone = surface area of cone

$\frac{1}{3}\pi r^2 h = \pi r l$, where, l = oblique height of cone

$\frac{1}{3}rh = l$ r – Radius, h – height

$\frac{r}{3l} = \frac{1}{h}$

Square on both side,

$\frac{1}{h^2} = \frac{r^2}{9l^2}$ .....(i)

and $\frac{1}{r^2} = \frac{h^2}{9l^2}$ .....(ii)

on equation (i + ii)

$\frac{1}{h^2} + \frac{1}{r^2} = \frac{r^2}{9l^2} + \frac{h^2}{9l^2}$

$\frac{1}{h^2} + \frac{1}{r^2} = \frac{h^2 + r^2}{9l^2}$

$\frac{1}{h^2} + \frac{1}{r^2} = \frac{l^2}{9l^2}$ $\left(\because l^2 = h^2 + r^2\right)$

$\frac{1}{h^2} + \frac{1}{r^2} = \frac{1}{9}$

238. The ratio of the area of the curved surface of two cones is 2 : 1. Their oblique height is in the ratio of 1 : 2. Find the ratio of their radius.

(a) 1 : 1 (b) 1 : 3
(c) 1 : 4 (d) 4 : 1

RRB JE - 01/06/2019 (Shift-I)

Ans : (d)

$\frac{\text{Curve surface area of first cone}}{\text{curve surface area of second cone}}$

$\frac{\pi r_1 \ell_1}{\pi r_2 \ell_2} = \frac{2}{1}$

given- ratio of oblique height $\left(\ell_1 : \ell_2\right) = 1:2$

$\frac{r_1 \times 1}{r_2 \times 2} = \frac{2}{1}$

$r_1 = 4r_2$

$\frac{r_1}{r_2} = \frac{4}{1}$

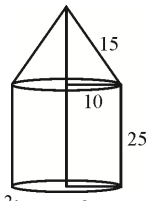
Ratio of radius $(r_1 : r_2) = 4 : 1$

239. A tent is in the shape of a cylinder and a cone has been established above it, the radius and height of the cylindrical part are 10 meters and 25 meters respectively. The radius is 10 meters of conical portion and the oblique height is 15 meters. calculate the amount of canvas required for the construction of this tent, taking an additional canvas of 20 percent for sealing, etc.

(a) 3783.26 m^2 (b) 4714.43 m^2
(c) 3772.14 m^2 (d) 2451.40 m^2

RRB JE - 26/06/2019 (Shift-III)

Ans : (d)



Area of tent = $\pi r^2 h + \pi r l$

area of tent = $\pi\times10\times10\times15 + \pi\times10\times15 = 500\pi + 150\pi$

= 650π m^2

increased area = $650\times\frac{120}{100}\times\frac{22}{7}$

= $\frac{780\times22}{7} = \frac{17160}{7} = 2451.40$ m^2

240. Some circular cone shaped chocolates were made from a circular solid chocolates of radius 6 cm. Both the radius and height of this cone are 2 cm. The chocolate is kept in a 12 × 9 configuration in a square box. The height of the box is 2 cm. The box were filled with honey to keep the chocolate edible for a long time. The volume of honey in the box is what percentage of the total volume.

(a) 73.81 (b) 75.46
(c) 70.45 (d) 71.23

RRB RPF SI – 13/01/2019 (Shift-III)

Ans. (a) Given—

length of box = 4 × 12 = 48 cm

breadth of box = 4 × 9 = 36 cm

Number of cone = 12 × 9 = 108

Volume of honey = Volume of box − Number of cone × Volume of one cone

$= 48\times36\times2 - 108\times\frac{1}{3}\times\frac{22}{7}\times2^2\times2$

= 3456 – 905.14

= 2550.87

Honey's percentage = $\frac{2550.857}{3456}\times100$

= 73.809%

= 73.81%

241. The height and oblique height of a perpendicular circular cone are 24 cm and 25 cm respectively. Find the curved surface area of the cone, assuming the value of π is 22/7.

(a) 572 cm^2 (b) 528 cm^2
(c) 539 cm^2 (d) 550 cm^2

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (d) According to the question, the height of the perpendicular cone is 24 cm and the oblique height is 25cm.

formula- $l^2 = h^2 + r^2$ $\begin{cases} h = 24\,\text{cm} \\ l = 25\,\text{cm} \end{cases}$

$(25)^2 = (24)^2 + r^2$

$625 = 576 + r^2$

$49 = r^2$

$\therefore$ $\boxed{r = 7 \text{ cm}}$

Curve surface area of cone $= \pi r l$

$= \frac{22}{7} \times 7 \times 25$

$= 22 \times 25$

$= 550 \text{ cm}^2$

242. The diameter and slant height of a conical tent are 16 meters and 5.6 meters respectively. If the width is to be maintained at 4 meters, how much cloth will be required for the construction of the tent.

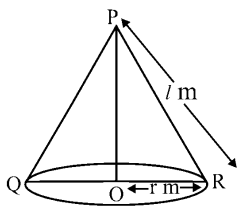
(a) 35m (b) 32m

(c) 32.5 m (d) 35.2 m

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (d) Given- diameter of tent(d) = 16 m

breadth = 4 m



$\therefore$ Radius (OR = OQ) = 8 m $\left(\because r = \frac{d}{2}\right)$

Slant height of cone (l) = 5.6 m

curve surface of cone $= \pi r l$

$= \frac{22}{7} \times 8 \times 5.6 = 0.8 \times 8 \times 22 = 140.8 \text{ m}^2$

So require quantity of cloths for making tent

$= \frac{\text{Curve page of cone}}{\text{breadth}}$

$= \frac{140.8}{4} = 35.2 \text{ m}$

243. Curve surface of cone X is 5 times that of Curve surface of cone Y. Slant height of cone Y is 5 times slant height of cone X. what will be the ratio of the area of the base of the cone X and the cone Y.

(a) 5 : 1 (b) 125 : 1

(c) 625 : 1 (d) 25 : 1

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (c) Curve surface area of cone $= \pi r l$

Curve surface of X cone = Curve surface of y cone $\times 5$

$\pi r_1 l_1 = \pi r_2 l_2 \times 5$

$r_1 l_1 = r_2 l_2 \times 5$.....(1)

$5\times$ oblique height of cone x = oblique height of cone y

$\boxed{5l_1 = l_2}$

on keeping l_2 value in equation (1)

$r_1 l_1 = r_2 \times 5 l_1 \times 5$

$\frac{r_1}{r_2} = \frac{25}{1}$

Ratio of base area of cone X and cone Y =

$\frac{\pi r_1^2}{\pi r_2^2} = \frac{(25)^2}{(1)^2} = 625 : 1$

244. The oblique height and diameter of a cone are 15 cm and 28 cm respectively. The volume of the cone is. (π = 22/7)

(a) $\frac{616}{3}\sqrt{29}\text{cm}^3$ (b) $\frac{308}{3}\sqrt{43}\text{cm}^3$

(c) $\frac{616}{3}\sqrt{43}\text{cm}^3$ (d) $\frac{308}{3}\sqrt{29}\text{cm}^3$

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (a) As per question,

Slant height (ℓ) = 15cm

diameter of cone = 28cm

2r = 28cm

r = 14cm

$h = \sqrt{\ell^2 - r^2}$

$h = \sqrt{(15)^2 - (14)^2}$

$h = \sqrt{225 - 196}$

$h = \sqrt{29}$

then volume of cone $= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times 14 \times 14 \times \sqrt{29}$

$= \frac{22 \times 2 \times 7 \times 14 \times \sqrt{29}}{3 \times 7}$

$= \frac{44 \times 14}{3}\sqrt{29}$

$= \frac{616}{3}\sqrt{29}\text{cm}^3$

245. A solid round metal ball of 36 cm diameter is melted and small solid cones 12 cm in diameter and 12 cm high are made from it. Describe the number of cones made using this molten metal.

(a) 52 cone (b) 60 cone

(c) 48 cone (d) 54 cone

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (d) diameter of solid sphere ball = 36 cm

radius of solid sphere ball (R) = 18 cm

diameter of cone = 12 cm

radius of cone (r) = 6 cm

height of cone (h) = 12cm

Suppose the number of cones formed by melting the solid sphere ball is n, then

$$n = \frac{\text{the volume of the solid sphere ball}}{\text{volume of cone}}$$

$$n = \frac{\frac{4}{3}\pi R^3}{\frac{1}{3}\pi r^2 h}$$

$$n = \frac{4\times18\times18\times18}{6\times6\times12}$$

n= 54 cone

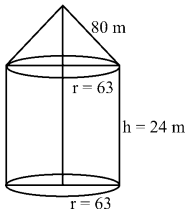
So the number of cone's of melted metal = 54 cone

246. A tent as such that its lower part is like a cylinder of 24 m height having 126 m diameter. Its apex is cone shaped 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 canvas required to construct the tent.

(a) 3296 m (b) 3020 m
(c) 3168 m (d) 3190 m

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) We know that $r = \frac{D}{2} = \frac{126}{2} = 63\text{m}.$



curve surface of tent = $2\pi rh + \pi rl$

$= \pi r(2h + l)$

$= \frac{22}{7}\times63(2\times24+80)$

= 198 (48 + 80)

= 198 (128)

= 25344 m^2

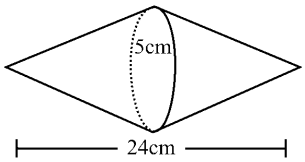
area of canvas = (l × b) = 25344

$l \times 8 = 25344$

$\therefore l = \frac{25344}{8}$

length of require canvas = 3168 m

247. The following structure is formed by connecting two perpendicular cones with their bases. The radius of each base is 5 cm. And the total length of this structure is 24 cm the total volume of this structure will be in cubic centimeters. ($\pi = 3.14$)



(a) 240 (b) 628
(c) 314 (d) 376.8

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (b) : Volume of cone = $\frac{1}{3}\pi r^2 h$

radius = 5 cm

height = 12 cm

Volume of given figure = 2 × volume of one perpendicular cone

Volume of figure = $\left(\frac{1}{3}\times3.14\times5\times5\times12\right)\times2$

[where π = 3.14]

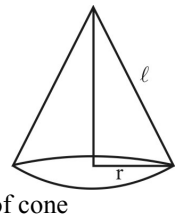
$= \frac{1884}{3} = 628\text{ cm}^3$

248. What is the entire surface area of a cone, If 'r' is the radius and 'l' is the oblique height?

(a) $\pi r(l + r)$ (b) $2\pi r(l + r)$
(c) πrl (d) $2\pi rl^2$

RRB NTPC 29.04.2016 Shift : 3

Ans: (a)



Total surface area of cone

= area of base + area of curve surface

$= \pi r^2 + \pi r\ell \quad = \pi r(r+\ell)$

Type - 10

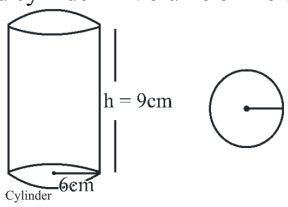
249. What will the radius of a sphere which is formed, by melting a cylinder. Whose radius is 6 cm. and height is 9 cm.

(a) $3\sqrt[3]{9}$ (b) $4\sqrt[3]{3}$
(c) $3\sqrt[3]{3}$ (d) 27

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans. (a) According to question,

Volume of solid cylinder = Volume of molten sphere



$\pi r^2 h = \frac{4}{3}\pi R^3$

$(6)^2 \times 9 = \frac{4}{3}R^3$

$\frac{36\times9\times3}{4} = R^3$

$R = \sqrt[3]{9\times9\times3}$

$R = \sqrt[3]{3\times3\times3\times3\times3\times3}$

radius of sphere (R) = $3\sqrt[3]{9}$

250. Two perpendicular cones of height 16.4 cm and 17.2 cm respectively whose base radius is 8.4 cm Both these cones are melted and formed into a sphere. Find the diameter of the sphere.

(a) 8.6 cm (b) 8.2 cm
(c) 8.4 cm (d) 16.8 cm

RRB JE - 22/05/2019 (Shift-III)

Ans : (d) Given radius of both cone $r_1 = r_2 = 8.4$ cm
height h_1 of first cone = 16.4 cm
height h_2 of second cone = 17.2 cm
Suppose radius of sphere = R
Volume of both cone = Volume of sphere

$$\frac{1}{3}\pi r_1^2 h_1 + \frac{1}{3}\pi r_2^2 h_2 = \frac{4}{3}\pi R^3$$

$$\frac{1}{3}\pi\left[r_1^2 h_1 + r_2^2 h_2\right] = \frac{4}{3}\pi R^3$$

$$\left[(8.4)^2 \times 16.4 + (8.4)^2 \times 17.2\right] = 4R^3$$

$$(8.4)^2\left[16.4 + 17.2\right] = 4R^3$$

$$\frac{8.4 \times 8.4 \times 33.6}{4} = R^3$$

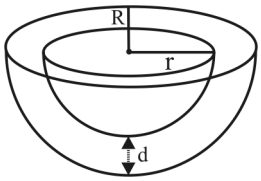
$R^3 = 8.4 \times 8.4 \times 8.4$
R = 8.4
diameter of sphere (d) = 2R
= 2 × 8.4
= 16.8 cm

251. Find the surface area of a semicircular bowl of thickness 'd' and internal radius 'r'.

(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) $4\pi r^2 + 6\pi rd + 3d^2$

RRB JE - 25/05/2019 (Shift-II)

Ans : (a)



Internal radius of semi-bowl sphere = r
thickness (d) = R – r
external radius of semi-bowl = R = d + r
surface area of semi-bowl sphere
$= 2\pi R^2 + 2\pi r^2 + \pi(R^2 - r^2)$
$= 2\pi\{(d+r)^2\} + 2\pi r^2 + \pi\{(d+r)^2 - r^2\}$
$= 2\pi\{d^2 + r^2 + 2dr\} + 2\pi r^2 + \pi\{d^2 + r^2 + 2rd - r^2\}$
$= 2\pi d^2 + 2\pi r^2 + 4\pi rd + 2\pi r^2 + \pi d^2 + 2\pi rd$
$= 3\pi d^2 + 4\pi r^2 + 6\pi rd$
$= \pi(4r^2 + 6rd + 3d^2)$

252. 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.

(a) 6.5 cm (b) 2.5 cm
(c) 4 cm (d) 8 cm

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

Ans : (d) According to the question the volume of sphere = volume of cone

$$\Rightarrow \quad \frac{4}{3}\pi R^3 = \frac{1}{3} \times \pi \times 8 \times 8 \times 32$$

$$R^3 = \frac{8 \times 8 \times 32}{4}$$

$R^3 = 512$
R = 8 cm
∴ radius of sphere= 8 cm

253. A semi sphere with maximum volume is cut out from a cube of side 6 cm. Find the remaining volume.

(a) 36 – (3π/3) (b) [27 –(2 π /3) × 6]
(c) 216 – 12 π (d) 216 – 18 π

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

Ans : (d) cube volume of 6 cm side = $(6)^3 = 216$ cm^3

Volume of semi sphere $= \frac{2}{3}\pi r^3 = \frac{2}{3}\pi(3)^3 = \frac{2}{3} \times 27 \times \pi$

intended difference $= 216 - \frac{2}{3} \times 27 \times \pi$
= 216 – 18 π

254. The volume of a sphere divided by its surface area gives the answer 27 cm. Find the radius of the sphere.

(a) 243 cm (b) 81 cm
(c) 27 cm (d) 9 cm

RRB JE - 02/06/2019 (Shift-II)

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 × 3) cm.
= 81 cm.

255. Find the volume of the sphere whose surface area is 1386 m^2.

(a) 3850 m^3 (b) 4851 m^3
(c) 4651 m^3 (d) 5711 m^3

RRB JE - 01/06/2019 (Shift-I)

Ans : (b) Given, surface area of sphere = 1386 m^2

$$4\pi r^2 = 1386$$

$$4 \times \frac{22}{7} \times r^2 = 1386$$

$4 \times r^2 = 63 \times 7$
$4 \times r^2 = 7 \times 3 \times 3 \times 7$

$$r = \sqrt{\frac{7 \times 7 \times 3 \times 3}{4}}$$

$$r = \frac{7 \times 3}{2}$$

$$r = \frac{21}{2} \text{ m}$$

volume of sphere $= \frac{4}{3}\pi r^3$

$= \frac{4}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$

$= 21 \times 21 \times 11$

$= 4851\ m^3$

256. A solid cylinder made of glass is 1 m high and the diameter of its base is 1.5 m wide. It is melted and turned into a solid sphere. The diameter of the sphere is.

(a) 1.5 m (b) 1 m
(c) 0.5 m (d) 2.5 m

RRB Group-D – 30/10/2018 (Shift-I)

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

$\frac{2.25\pi}{4} = \frac{4}{3}\pi R^3$

$R^3 = \frac{2.25 \times 3}{16}$

$= \frac{3 \times 3 \times 3 \times 0.5 \times 0.5}{2 \times 2 \times 2 \times 2} = \frac{3^3}{2^3 \times 2^3}$

$R = \frac{3}{4}$ m

So diameter of sphere = 2R

$= 2 \times \frac{3}{4} = \frac{3}{2}$ m = 1.5 m

257. How many balls of 1 cm radius can be made from a steal sphere with a radius of 6 cm.

(a) 64 (b) 216
(c) 27 (d) 126

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (b) Volume of steel sphere in 6 cm radius

$= \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times (6)^3$

$= \frac{4}{3} \times \pi \times 216$

Volume of steel sphere in 1 cm radius $= \frac{4}{3} \times \pi r^3$

$= \frac{4}{3}\pi \times (1)^3$

$= \frac{4}{3}\pi \times 1$

Intended number of balls $= \frac{\text{Volume of large sphere}}{\text{Volume of small sphere}}$

$= \frac{\frac{4}{3}\pi \times 216}{\frac{4}{3}\pi \times 1} = 216$

= 216 (balls can be made)

258. What is the surface area of the sphere of radius 1 cm. $\left(\pi = \frac{22}{7}\right)$

(a) 89/7 (b) 89/21
(c) 88/21 (d) 88/7

RRB NTPC 17.01.2017 Shift-1

Ans : (d) Surface area of sphere $= 4\pi r^2$

$= 4 \times \frac{22}{7} \times (1)^2$

Surface area of sphere $= \frac{88}{7} cm^2$

259. What will be the area of the surface of a solid sphere whose radius is 3.5 cm. (given that $\pi = \frac{22}{7}$)

(a) 154/7 cm^2 (b) 154 cm^2
(c) 54 cm^2 (d) 54/7 cm^2

RRB NTPC 17.01.2017 Shift-3

Ans : (b) Surface area of solid sphere $= 4\pi r^2$

$= 4 \times \frac{22}{7} \times 3.5 \times 3.5$

$= 4 \times 22 \times 0.5 \times 3.5 = 154\ cm.^2$

260. The diameter of a cylinder is 6 cm and it is filled with water to a height of 10 cm. If a spherical ball is put in it, then the water level increase by 0.5 cm. Find the diameter of the ball.

(a) 3 (b) 1.5
(c) 2.4 (d) 2.8

RRB NTPC 03.04.2016 Shift : 3

Ans :(a) Increase of water volume by 0.5 cm in the cylinder = Volume of ball

$\pi \times (3)^2 \times 0.5 = \frac{4}{3} \times \pi \times r^3$

$r^3 = \frac{27 \times 0.5}{4} = \frac{27}{8}$ r = 3/2 cm

∴ diameter of ball = 2r = 2 × 3/2 = 3 cm

261. What would be the surface area of a solid sphere its radius is 1.5 cm.? ($\pi = \frac{22}{7}$)

(a) 190/21 (b) 190/7
(c) 198/7 (d) 198/21

RRB NTPC 19.01.2017 Shift : 1

Ans : (c) Surface area of soild sphere $= 4\pi r^2$

r = 1.5cm., $\pi = \frac{22}{7}$

$= 4 \times \frac{22}{7} \times (1.5)^2 = \frac{198}{7}$ square cm.

262. Find the area of a solid sphere whose radius is 2 cm. (Given $\pi = \frac{22}{7}$)

(a) 352/7 (b) 350/21
(c) 352/21 (d) 350/7

RRB NTPC 19.01.2017 Shift : 3

Ans : (a) Area of sphere $= 4\pi r^2 = 4\times\frac{22}{7}\times(2)^2$

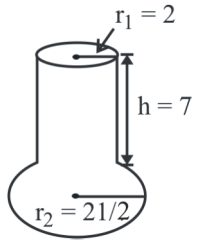
$= \frac{16\times 22}{7} = \boxed{\frac{352}{7}\text{cm}^2}$

263. A spherical glass vessel has a cylindrical upper part 7 cm long and 4 cm in diameter. The diameter of the spherical part is 21cm. Find the quantity of water it can hold in cm^3.

(a) 4932 cm^3 (b) 4939 cm^3
(c) 4930 cm^3 (d) 4929 cm^3

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (b)



Intended quantity of water

= Volume of cylinder + Volume of sphere

$= \pi r_1^2 h + \frac{4}{3}\pi r_2^3 = \pi\left[r_1^2 h + \frac{4}{3}r_2^3\right]$

$= \frac{22}{7}\left[2^2\times 7 + \frac{4}{3}\times\left(\frac{21}{2}\right)^3\right]$

= 4939 cubic cm.

264. The area of the base of a cone is 64π cm^2 while its slant height is 17 cm. This cone is remolded to obtain a solid sphere. The radius of this sphere will be

(a) $2\sqrt[3]{30}$ cm (b) $2\sqrt[3]{40}$ cm
(c) $8\sqrt[3]{30}$ cm (d) 6.5 cm

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

Ans : (a) Given—

base area of cone $=64\pi$ square cm.

$\Rightarrow$ $\pi r^2 = 64\pi$

$\Rightarrow$ r = 8 cm

$\because$ Slant height of cone $(l) = 17$ cm

$\therefore$ height of cone $(h) = \sqrt{\ell^2 - r^2}$

$= \sqrt{(17)^2 - (8)^2}$

$= \sqrt{289 - 64} = \sqrt{225}$

= 15 cm.

According to question $\rightarrow$ Volume of cone = Volume of sphere

$\Rightarrow$ $\frac{1}{3}\pi r^2 h = \frac{4}{3}\pi R^3$

$\Rightarrow$ $64\times 15 = 4R^3$

$\Rightarrow$ $240 = R^3$

$\Rightarrow$ $R = \sqrt[3]{240}$

$= \sqrt[3]{8\times 30} = 2\sqrt[3]{30}$ cm.

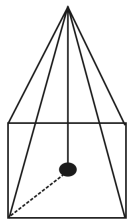
Type - 11

265. The base of a right pyramid is a square with a 16 unit diagonal. Its one slant edge is 17 units. Find its vertical height.

(a) 30 (b) 12
(c) 25 (d) 15

RRB JE - 24/05/2019 (Shift-III)

Ans : (d)



$h = \sqrt{(17)^2 - (8)^2}$

$h = \sqrt{289 - 64}$

$h = \sqrt{225}$

h = 15 unit

266. The base of a triangular prism is a triangle with 8, 15, 17 unit sides and its height is 20 units. Find its total surface area.

(a) 920 (b) 1020
(c) 960 (d) 940

RRB JE - 02/06/2019 (Shift-I)
RRB RPF Constable – 17/01/2019 (Shift-I)

Ans : (a) Given,

Sides of triangular prism is 8, 15, 17 (unit)

height (h) = 20 unit

Total surface area = perimeter of base × height + 2 × area of base

$= (8 + 15 + 17)\times 20 + 2\times\frac{1}{2}\times 8\times 15$

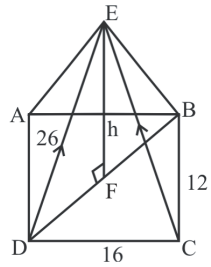
= 40 × 20 + 120 = 920 square unit

267. The base of the pyramid is a rectangle whose length and width are 16 cm and 12 cm respectively. If all the lateral edges passing through the top of the right rectangular pyramid are 26 cm in length, find the volume of the pyramid in cubic centimeters.

(a) 1536 (b) 1024
(c) 718 (d) 2072

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (a)



Diagonal of rectangle

$= \sqrt{(16)^2 + (12)^2} \Rightarrow \sqrt{400} = 20$ cm

We draw the perpendicular from the Vertex E at the base of the pyramid which is at point F. And the height of the pyramid is h and the hypotenuse is 26 cm.

$\text{height}(h) = \sqrt{(26)^2 - (10)^2} = \sqrt{576} = 24\text{ cm}$

Volume of pyramid $= \frac{1}{3} \times$ area of rectangle $\times$ height

$= \frac{1}{3} \times 16 \times 12 \times 24$

$= 1536\text{ cm}^3$

268. Ratio of the sides of the base of a symmetrical triangular prism 8 : 15 : 17 is. If the height of the prism is 21 cm and the sum of the area of the lateral surfaces is 840 cm^2, Find the volume of the prism in cubic centimeters.

(a) 1200 (b) 1260
(c) 1280 (d) 1240

RRB Group-D – 12/10/2018 (Shift-II)
RRB Group-D – 01/10/2018 (Shift-II)

Ans : (b) Suppose bases of prism are 8x, 15x and 17x.
total area of lateral surfaces = 840 cm^2
lateral surface area = perimeter of base (right triangular) × h

840 = (8x + 15x + 17x) × 21
840 = 40 x × 21

$x = \frac{840}{40 \times 21} = 1$

So sides of triangular is 8cm, 15 cm, 17 cm
Triangle (base of prism) is right angle triangled

$\therefore (17)^2 = (8)^2 + (15)^2$
289 = 289

Volume of prism = area of base × height

$= \frac{1}{2} \times 8 \times 15 \times 21 = 60 \times 21 = 1260\text{ cm}^3$

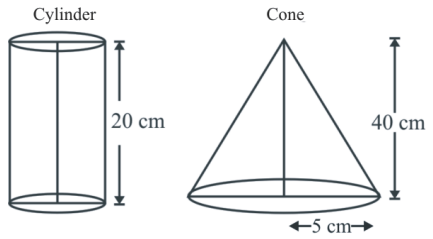
Type - 12

269. Find the percentage of material wasted in converting a cylinder of base diameter 10 cm and height 20 cm into same base but double the height of a cone.

(a) 25% (b) 20%
(c) 35% (d) 33.3%

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

Ans : (d)



Volume of cylinder $= \pi r^2 h = \pi \times 25 \times 20$
$= 500\pi\text{ cm}^3$

Volume of formed cone $= \frac{1}{3}\pi R^2 H$

$\left\{\begin{matrix} H = 2h \\ r = R \end{matrix}\right\}$ given

$= \frac{1}{3}\pi \times 25 \times 40$

$= \frac{1000\pi}{3}$

quantity of waste materials $= 500\pi - \frac{1000\pi}{3} = \frac{500\pi}{3}$

Percentage of waste materials % $= \frac{\frac{500\pi}{3}}{500\pi} \times 100$

= 33.3%

270. The ratio of the radii of the bases of a cylinder and cone is $\sqrt{3} : \sqrt{2}$ and the ratio of their heights is $\sqrt{2} : \sqrt{6}$, then find the ratio of their volume.

(a) $\sqrt{3} : \sqrt{3}$ (b) $3\sqrt{3} : 2$
(c) $\sqrt{3} : \sqrt{2}$ (d) $3\sqrt{3} : \sqrt{2}$

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

Ans : (b)

$\frac{\text{Volume of cylinder}}{\text{Volume of cone}} = \frac{\pi R_1^2 h_1}{\frac{1}{3}\pi R_2^2 h_2} = 3\left(\frac{R_1}{R_2}\right)^2 \left(\frac{h_1}{h_2}\right) = \frac{V_1}{V_2}$

$\frac{V_1}{V_2} = 3\left(\frac{\sqrt{3}}{\sqrt{2}}\right)^2 \times \left(\frac{\sqrt{2}}{\sqrt{6}}\right) = 3 \times \frac{3}{2} \times \frac{1}{\sqrt{3}}$

$\frac{V_1}{V_2} = \frac{3\sqrt{3}}{2}$

$\therefore V_1 : V_2 = 3\sqrt{3} : 2$

271. Find the area of the hexagon of side 6 cm.

(a) $72\sqrt{3}$ cm^2 (b) $64\sqrt{3}$ cm^2
(c) $108\sqrt{3}$ cm^2 (d) $54\sqrt{3}$ cm^2

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) formula : area of regular hexagon

$= 6\frac{\sqrt{3}}{4} \times (\text{side})^2$

$= 6\frac{\sqrt{3}}{4} \times 6 \times 6$

$= 54\sqrt{3}\text{ cm}^2$

272. How much material is wasted when a solid cylinder of 6 cm. radius and 6 cm. height is made from a cone of 24 cm. height and 8 cm. radius?

(a) 57.8% (b) 37.5%
(c) 52% (d) 64%

RRB RPF SI – 16/01/2019 (Shift-II)

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 % $= \frac{(512\pi - 216\pi)\times 100}{512\pi}$

$= \frac{296\pi}{512\pi}\times 100 = \boxed{57.81\%}$

273. The volume of a cone, hemisphere and cylinder with equal radius and equal height are P, Q and R respectively. Find the value of P : Q : R.

(a) 1 : 3 : 2 (b) 3 : 4 : 2
(c) 2 : 1 : 3 (d) 1 : 2 : 3

RRB JE - 27/05/2019 (Shift-I)

Ans : (d)

Volume of cone $= \frac{1}{3}\pi r^2 h$

Volume of hemisphere $= \frac{2}{3}\pi r^3$

Volume of cylinder $= \pi r^2 h$

$P : Q : R = \frac{1}{3}\pi r^3 : \frac{2}{3}\pi r^3 : \pi r^3$ $(\because r = h)$

$\boxed{P : Q : R = 1 : 2 : 3}$

274. A square sheet of paper is fold into a cylinder by turning is side. Find the ratio of the side of the square and the radius of the base of the cylinder.

(a) 2π : 1 (b) 1 : 4 π
(c) 1 : π (d) 1 : 2 π

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

Ans : (a) Suppose side of square = x

radius of cylinder = r

from question−

Circumference of the base of cylinder = side of square

$2\pi r = x$

$\frac{x}{r} = \frac{2\pi}{1}$

$x : r = 2\pi : 1$

275. What is the ratio between the volume of a cube and the volume of a sphere that will fit perfectly in the cube?

(a) 3 : π (b) 6 : π
(c) 3 : 4 (d) π : 1

RRB JE - 30/05/2019 (Shift-III)

Ans : (b) diameter of sphere = side of cube

$2r = a$

$r = \frac{a}{2}$

$\frac{\text{Volume of cube}}{\text{Volume of sphere}} = \frac{a^3}{\frac{4}{3}\pi\left(\frac{a}{2}\right)^3}$

$= \frac{a^3}{\frac{4}{3}\pi\frac{a^3}{8}}$

$= \frac{1}{\frac{\pi}{6}} = 6 : \pi$

276. The height of a cube and a sphere is the same. Find the ratio of their volume.

(a) 6 : π (b) 4 : π
(c) 2 : π (d) 3 : π

RRB JE - 28/05/2019 (Shift-II)

Ans : (a) Height of sphere = height of cube

$2r = a$

$r = \frac{a}{2}$

$\Rightarrow \frac{\text{Volume of cube}}{\text{Volume of sphere}} = \frac{a^3}{\frac{4}{3}\pi r^3}$

$= \frac{a^3}{\frac{4}{3}\pi\times\left(\frac{a}{2}\right)^3} = \frac{a^3}{\frac{4}{3}\pi\times\frac{a^3}{8}}$

$= a^3 \times \frac{6}{\pi a^3} = 6 : \pi$

277. The area of a rectangle is 9/20 times the area of a square. If the length and breadth of the rectangle are in the ratio 5 : 4, find the ratio of the perimeter of the rectangle and the square.

(a) 25:48 (b) 27:20
(c) 27:40 (d) 25:45

RRB JE - 31/05/2019 (Shift-III)

Ans. (c) Let length of rectangle is 5x and breadth is 4x

area of rectangle = $5x \times 4x = 20x^2$

According to the question

Area of square $\times \frac{9}{20}$ = area of rectangle

Area of square $\times \frac{9}{20} = 20x^2$

Area of square $= \frac{400x^2}{9}$

Side of square $= \frac{20x}{3}$

$\frac{\text{Perimeter of rectangle}}{\text{Perimeter of square}} = \frac{2\times(5x+4x)}{4\times\frac{20x}{3}}$

$= \frac{18x\times 3}{80x} = \frac{27}{40}$

Required ratio = 27 : 40

278. How many carpets of 6 m, 4 m will be required to lay on the floor of a room measuring 40 m × 24 m?

(a) 40 (b) 12
(c) 18 (d) 15

RRB JE - 02/06/2019 (Shift-III)

Ans : (a) $\frac{\text{area of room's floor}}{\text{area of 1 carpet}} = \text{number of carpet}$

$\frac{40\times24}{6\times4} = \text{Number of carpets}$

Number of carpets = 40

279. The length of a room is 5.5 meters and the breadth is 3.75 meters. Find the cost of laying slab at the rate of Rupees 800 per m^2 on the floor.

(a) Rs. 15550 (b) Rs. 15600
(c) Rs. 16500 (d) Rs. 15000

RRB Paramedical Exam – 21/07/2018 (Shift-I)

Ans : (c) Given− length of room = 5.5 m
breadth of room = 3.75 m
area of room = area of floor = 5.5 × 3.75 = 20.625 m^2
cost of laying slab on the floor = 20.625 × 800
= Rs. 16500.00

280. The capacity to fill water in a drum is 0.6. when 38 liters of water is taken out, then it is 0.125 full. What will be the capacity of the drum in liters?

(a) 40 (b) 120 (c) 80 (d) 160

RRB RPF Constable – 19/01/2019 (Shift-III)

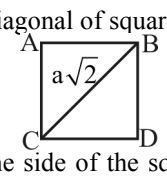
Ans : (c) Let capacity of drum is x litre
then, According to question,
$0.6x - 38 = 0.125x$
$\Rightarrow 0.6x - 0.125x = 38$
$\Rightarrow 0.475x = 38$
$x = \frac{38}{0.475} = \frac{38\times1000}{475}$ x = 80 litres

281. If only diagonal measurements are given, which of the following quadrilateral can be constricted.
1. Square 2. Rectangle 3. Rhombus

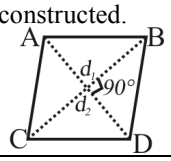
(a) 1 and 3 (b) 1 and 2
(c) only 1 (d) only 3

RRB JE - 01/06/2019 (Shift-I)

Ans : (a) Square and rhombus are geometric figures which have the same four sides.
We know, diagonal of square = $a\sqrt{2}$



With this, the side of the square can be known and the square can be constructed.
The diagonals of the rhombus intersect each other at 90°. Hence side of the rhombus will be known, so the rhombus can be constructed.



282. The ratio of length, breadth and height of room is 5 : 3 : 2. If the length is 2 times, the breadth is one third and the height is halved, then the percentage of expenditure incurred in painting the four walls of the room will be reduced by what percentage?

(a) 32 (b) 28.75
(c) 31.25 (d) 30.75

RRB RPF SI – 13/01/2019 (Shift-III)

Ans. (c) Let length = 5x
breadth = 3x
height = 2x
area of room = 2 (l + b) × h
= 2(5x + 3x) × 2x
= $32x^2$
The length is doubled, breadth is one third and height is halved, then the new area obtained
= 2(10x + x) × x = $22x^2$
Percentage reduction in expenditure

$= \frac{(32x^2 - 22x^2)}{32x^2}\times100$

$= \frac{10x^2\times100}{32x^2} = \frac{500}{16} = 31.25\%$

283. The volume of right circular cone whose base radius is equal to 5/9 of its height and equal to the volume of the sphere then what is the ratio of the radius of the cone and the sphere?

(a) $\sqrt[3]{4}:\sqrt[3]{3}$ (b) $\sqrt[3]{4}:\sqrt[3]{2}$
(c) 1:1 (d) $\sqrt[3]{60}:3$

RRB RPF SI – 12/01/2019 (Shift-II)

Ans. (d) Let height of cone =h, radius = r_1

$\therefore$ Radius $(r_1) = \frac{5}{9}h$

$\therefore \quad h = \frac{9}{5}r_1$

Let radius of sphere = r_2

$\because$ Volume of cone = Volume of sphere

$\frac{1}{3}\pi r_1^2 h = \frac{4}{3}\pi r_2^3$

$r_1^2 \times \frac{9}{5}r_1 = 4r_2^3$

$\left(\frac{r_1}{r_2}\right)^3 = \frac{20}{9}$

$\frac{r_1}{r_2} = \sqrt[3]{\frac{20\times3}{9\times3}} = \frac{\sqrt[3]{60}}{3}$

$\therefore \quad r_1 : r_2 = \sqrt[3]{60} : 3$

284. A right circular cylindrical jar with a radius of 14 cm has some water. If a solid spherical ball of radius 5.6 cm is dropped in the jar and ball is fully submerged, then calculate the approximate rise in the height of the water length in the jar.

(a) 1.2 cm (b) 1.1 cm
(c) 9.0 cm (d) 1.0 cm

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) Let water level will raise to the height of h in the jar.
Radius of circular cylinder = 14 c.m.
Radius of circular ball = 5.6 c.m
Volume of circular cylinder = Volume of circular ball.

$$\pi r_1^2 h = \frac{4}{3}\pi r_2^3, \quad r_1^2 h = \frac{4}{3} r_2^3$$

$$14 \times 14 \times h = \frac{4}{3} \times 5.6 \times 5.6 \times 5.6$$

$$h = \frac{4}{3} \times \frac{5.6 \times 5.6 \times 5.6}{14 \times 14}$$

$$h = 1.194 \approx 1.2 \text{ cm}$$

285. How many bricks of 20 cm × 10 cm size would be required for a 16 m long and 10 m wide floor?

(a) 8400 (b) 9000
(c) 8500 (d) 8000

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (d) Number of bricks $= \frac{\text{Floor area of hall}}{\text{area of bricks}}$

$$= \frac{16 \times 100 \times 10 \times 100}{20 \times 10}$$

$$= 8000$$

286. If the perimeter of a circular plot is equal to the perimeter of a square plot, what will be the ratio of their area?

(a) 6 : 11 (b) 14 : 11
(c) 12 : 11 (d) 7 : 11

RRB Group-D – 22/09/2018 (Shift-I)
RRB Group-D – 29/10/2018 (Shift-III)

Ans : (b) Given-
circumference of a circle = perimeter of square
$2\pi r = 4a$

$$a = \frac{\pi r}{2}$$

Ratio of areas $= \frac{\pi r^2}{a^2} = \frac{\pi r^2}{\frac{\pi^2 r^2}{4}} = \frac{4 \times 7}{22} = \frac{14}{11}$

287. The size of a brick is 20 cm × 12 cm × 8 cm. How many bricks will be required to build a wall 16.8 m height, 2.5 m wide and 12 cm thick.

(a) 2652 (b) 6252
(c) 5262 (d) 2625

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) Number of bricks

$$= \frac{16.8 \times 100 \times 2.5 \times 100 \times 12}{20 \times 12 \times 8}$$

$$= \frac{1680 \times 250 \times 12}{20 \times 12 \times 8} = \frac{210 \times 250}{20}$$

$$= \frac{52500}{20} = 2625$$

288. A bowl of wood that is 1.8m long, 1.5 m wide and 4 m high is filled with an iron cube that is 6 cm wide. Find the number of iron cubes that can be fit in the basket.

(a) 13,500 (b) 15,000
(c) 14,500 (d) 14,000

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (b) Number of iron cubes

$$= \frac{1.8 \times 100 \times 1.5 \times 100 \times 1.2 \times 100}{6 \times 6 \times 6}$$

$$= \frac{180 \times 150 \times 120}{6 \times 6 \times 6} = 15000$$

289. The volume of a right circular cone whose base radius is one third of its height is equal to the volume of a hemisphere. Then what is the ratio of the radii of the cone and hemisphere?

(a) 2 : 3 (b) $\sqrt[3]{2} : \sqrt[3]{3}$
(c) $\sqrt[3]{3} : \sqrt[3]{2}$ (d) $\sqrt[3]{2} : 1$

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (b) : Let cone's radius is R and height H
given,

$$R = \frac{H}{3} \quad \text{.....(i)}$$

Let semi sphere's radius is r
As per question
Volume of cone = Volume of semi sphere

$$\frac{1}{3}\pi R^2 H = \frac{2}{3} r^3 \pi$$

cm (i) से $R = \frac{H}{3}$

$$\frac{1}{3} \times 3R^3 = \frac{2}{3} r^3$$

$$\frac{R^3}{r^3} = \frac{2}{3}$$

$$\left(\frac{R}{r}\right)^3 = \frac{2}{3}$$

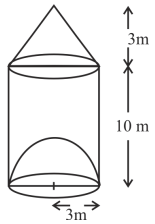
$$\frac{R}{r} = \sqrt[3]{\frac{2}{3}}$$

290. The top of the rocket is shaped like an elliptical cone with a height of 3m while its lower part is cylindrical with a radius of 3m and height 10m. To make room for the engine, the base of the rocket is cut in a semicircular shape from inside, whose radius is also 3m. Find the total volume of the rocket in cubic meters.

(a) 72π (b) 90π
(c) 100π (d) 81π

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (d)



Volume of rocket = Volume of cone + Volume of cylinder – volume of semi circle

$= \frac{1}{3}\pi r^2 h + \pi r^2 H - \frac{2}{3}\pi r^3 = \frac{1}{3}\pi r^2 (h + 3H - 2r)$

$= \frac{1}{3}\pi \times 3 \times 3(3 + 3 \times 10 - 2 \times 3)$

$= 3\pi(33 - 6)$

$= 3\pi \times 27 = 81\pi$ cubic meter

291. A sphere was divided in the ratio 2 : 3. The larger part is inserted as a cone whose height is equal to the radius of its base, while the smaller part is inserted as a cylinder, whose height is equal to the radius of its base. What will be the ratio of the radii of the base of the cone to the height of the cylinder?

(a) 3:1 (b) $\sqrt[3]{9} : \sqrt[3]{2}$

(c) $\sqrt[3]{9} : 1$ (d) $1 : \sqrt[2]{3}$

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (b) large part of sphere $= \frac{3}{5}$

small part of sphere $= \frac{2}{5}$

in 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)

Volume r_c small part of cylinder of sphere $r_c = h$

$\pi r_c^2 h = \frac{2}{5} \times \frac{4}{5}\pi r^3 \Rightarrow h^3 = \frac{8}{25} r^3$ .....(ii)

On dividing equation (i) into equation (ii)

$\frac{r_c^3}{h^3} = \frac{12}{5} \times \frac{15}{8}$

$\frac{r_c^3}{h^3} = \frac{9}{2}$

$\frac{r_c}{h} = \sqrt[3]{\frac{9}{2}}$

$\boxed{r_c : h = \sqrt[3]{9} : \sqrt[3]{2}}$

option (b) will be correct answer

292. What will be the ratio of the area of a hexagon with the same perimeter and the area of 1 square?

(a) 2 : 3 (b) $1 : \sqrt{3}$

(c) $4 : 3\sqrt{3}$ (d) $\sqrt{3} : 2$

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (d) A circumference = equal perimeter

Let side of right hexagon X and side of square y

Then perimeter = 6x = 4y

$\frac{x}{y} = \frac{4}{6}$

$\frac{x}{y} = \frac{2}{3}$

Ratio of square area $= \frac{\frac{3\sqrt{3}}{2} \times (x)^2}{(y)^2}$

$= \frac{\frac{3\sqrt{3}}{2} \times (2)^2}{(3)^2} = \frac{6\sqrt{3}}{9} = \frac{2\sqrt{3}}{3} = \frac{2\sqrt{3}}{\sqrt{3} \times \sqrt{3}} = \frac{2}{\sqrt{3}}$

Intended ratio = $2 : \sqrt{3}$ या $\sqrt{3} : 2$

293. A company plans to pack spherical thin hollow balls in long circular cylinder shape cartons. where there is no lid on either side of the box. If the ball and box are made of the same material, calculate the ratio of the shell and the material used in the box.

(a) $\frac{\pi}{2}$ (b) 1

(c) π (d) 2π

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (b) Let sphere's radius is r

Area of sphere $= 4\pi r^2$ .....(i)

Area of made boxes for keeping sphere = Curve page of boxes

$2\pi rh = 2\pi r \times 2r$

$= 4\pi r^2$ ....(ii)

from equation (i) and (ii)

$\frac{\text{area of sphere}}{\text{area of Boxes}} = \frac{4\pi r^2}{4\pi r^2} = 1$

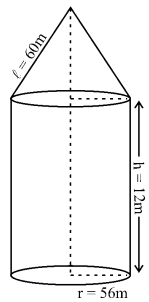
294. A tent is such that its lower part is like a cylinder of 12 meters height with a diameter of 112 meters. Its top is like a cone with a base of the same diameter of 112 meters. Its top is like a cone with a base of the same diameter of 112 meters and is 60 meters slant height. And its canvas is 4 meters wide. Calculate the required length of the canvas to make the tent.

(a) 3276 m (b) 3696 m

(c) 4686 m (d) 4096 m

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (b)



Total area of tent
= Surface area of cylinder + Surface area of cone

$= 2\pi rh + \pi r\ell$

$= \frac{22}{7} \times 56(2 \times 12 + 60)$

$= 22 \times 8 \times 84 = 14784$ मी.^{2}

Let length of canvas $= l$ m

So area of canvas = area of tent

$4 \times \ell = 14784$

$\therefore \quad \ell = 3696$ m

295. A solid sphere of 5 cm radius is melted to from a solid marigold with a maximum possible number of 1 cm radius. If the balls are placed optimally in a cubic box, what percentage of the space will be used in the box?

(a) 52.38% (b) 55.76%
(c) 72.53% (d) 47.62%

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (d) Side of cube = 10 cm (diameter of sphere)
radius of sphere = 5 cm
as per question
Empty place in box = volume of cube – Volume of sphere

$= 10 \times 10 \times 10 - \frac{4}{3}\pi \times 5^3$

$= 1000 - 523.80$

$= 476.19 \text{cm}^3$

Percentage of empty place in boxes $= \frac{476.19 \times 100}{1000}$

$= 47.619 \cong 47.62\%$

296. The area of the cross section of a pipe is 10.4 cm^2 and water flowed through it at a rate of 54 km/h. If the pipe is always filled with 60% flow, then in 5 minutes find the volume of water passing through the pipe.

(a) 2808 (b) 2008
(c) 2010 (d) 2101

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) Volume of taking water by any pipe = cross section area × Velocity of water

$= 10.4\text{cm}^2 \times 54\text{km/h} \times 5\text{min} \times \frac{60}{100}$

$= 10.4 \times 10^{-4}\text{m}^2 \times 54 \times \frac{5}{18}\text{m/sec} \times 5 \times 60\text{sec} \times \frac{60}{100}$

$= 10.4 \times 10^{-4}\text{m}^2 \times 15 \times 5 \times 36$

$= 28080 \times 10^{-4}\text{m}^3$

$= 28080 \times 10^{-4} \times 1000\ \ell \quad \therefore\ 1\text{m}^3 = 1000\ \ell$

$= 28080 \times 10^{-4} \times 10^3\ \ell$

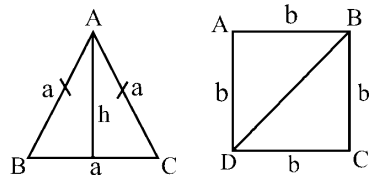
$= 2808\ \ell$

297. The height of an equilateral triangle is equal to one third of the diagonal of a square. What is the ratio between the area of the triangled and the square?

(a) $\sqrt{3}:\sqrt{2}$ (b) $2:9\sqrt{3}$
(c) $3:4\sqrt{3}$ (d) $\sqrt{3}:6$

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (b)



height of equilateral triangle = diagonal of square $\times \frac{1}{3}$

$\frac{\sqrt{3}}{2}a = \sqrt{2}b \times \frac{1}{3} \Rightarrow \frac{a}{b} = \frac{2\sqrt{2}}{3\sqrt{3}}$

$\Rightarrow \frac{\text{area of equilateral triangle}}{\text{area of square}} = \frac{\frac{\sqrt{3}}{4}a^2}{b^2} = \frac{\frac{\sqrt{3}}{4} \times 2\sqrt{2} \times 2\sqrt{2}}{3\sqrt{3} \times 3\sqrt{3}}$

$= 2:9\sqrt{3}$

298. If the ratio of the area of two squares is 1 : 3, what will be the ratio of the perimeter of these squares?

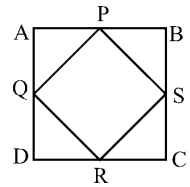
(a) $1:\sqrt{3}$ (b) 1 : 4
(c) 1 : 3 (d) 1 : 2

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (a) : Area ratio of both squares = 1 : 3
side's ratio $= 1:\sqrt{3}$
Perimeter of square = 4a
Ratio of both perimeter of square

$= 4 \times 1 : 4 \times \sqrt{3} = 1:\sqrt{3}$

299.

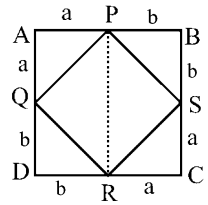


Rectangle PQRS is formed by cutting two pairs of equilateral triangles from the square ABCD in the given figure. The total area of the severed part is 288 meters^2. what will be the length of $\overline{PR}$ in meters?

(a) 24 (b) $\sqrt{288}$
(c) $\sqrt{512}$ (d) 48

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (a) :



Let in ABCD square,
AP = AQ = CS = CR = a m
PB = BS = DQ = DR = b m

According to the question
Total area of part side = 288 m^2

$$\frac{1}{2}\times a\times a+\frac{1}{2}\times a\times a+\frac{1}{2}\times b\times b+\frac{1}{2}\times b\times b=a^2+b^2=288$$

So in PQRS rectangle

$$\text{Diagonal (PR)}=\sqrt{PQ^2+RQ^2}=\sqrt{2\times a^2+2\times b^2}$$

$$=\sqrt{2(a^2+b^2)}=\sqrt{2\times 288}=\sqrt{576}=24\text{ m}$$

300. A wall 4.84 meters long and 3.1 meters high is covered for 22 cm × 10cm tiles. If the value of each tile is Rs. 1.50, Find the total value of the tiles.

(a) Rs. 1,025 (b) Rs. 1,023
(c) Rs. 1,022 (d) Rs. 1,020

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : Length of wall = 4.84 m = 484 cm
Height of wall = 3.1 m = 310 cm

$$\text{Number of tiles}=\frac{484\times 310}{22\times 10}=682$$

Cost of a tile = Rs. 1.50
Total cost of tiles = 682 × 1.50
= Rs. 1023

301. A cylindrical container with no lid is to be made from a rectangular seat of metal measuring 2.2 m × 2 m. The diameter and height of the container to be made is 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 price to make the full container.

(a) 3,000 (b) 5,000
(c) 3,750 (d) 2,500

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (a) area of rectangular sheet = $\ell \times b$
= 2.2 × 100 × 2.1 × 100
= 220 × 210
= 46200 square cm.

According to the question diameter of container is equal to their height So height is = 14 cm. and diameter 14 cm. then radius = 7cm.
area of container = surface area of container + area of base of container.

$$2\pi rh+\pi r^2=2\times\frac{22}{7}\times 7\times 14+\frac{22}{7}\times 7\times 7$$

$$=616+154=770\text{ square cm}$$

Then number of making containers to given seat

$$=\frac{46200}{770}=60$$

So manufacture cost of 60 container from according to Rs. 50 per container = 60 × 50 = 3000

302. The circumference of an equilateral hexagon is 72 cm. what is its area in cm.?

(a) $144\sqrt{3}$ (b) $216\sqrt{3}$
(c) $108\sqrt{3}$ (d) $36\sqrt{3}$

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (b) Perimeter of right hexagon = 72cm
6a = 72 cm
a = 12 cm

$$\text{area of right hexagon}=6\times\frac{\sqrt{3}}{4}a^2$$

$$=6\times\frac{\sqrt{3}}{4}\times(12)^2$$

$$=6\times\frac{\sqrt{3}}{4}\times 144$$

$$=6\times 36\sqrt{3}$$

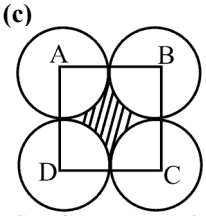
$$=216\sqrt{3}\text{ cm}^2$$

303. 4 cows are tied on four corners of a 35m square area so that he can reach each other which part of the area is left from the graze?

(a) 252.5 sq m (b) 162.5 sq m
(c) 262.5 sq m (d) 260.5 sq m

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (c)



AB = BC = CD = AD = 35 m
side of square = 35 m

$$\text{radius of radius section}=\frac{35}{2}$$

$$\text{So 4 × area of radius section}=4\times\frac{\pi r^2\theta}{360^0}\qquad(\because\theta=90^0)$$

$$\text{area of four radius section}=4\times\frac{22}{7}\times\left(\frac{35}{2}\right)^2\times\frac{90^0}{360^0}$$

$$=4\times\frac{22}{7}\times\frac{35}{2}\times\frac{35}{2}\times\frac{1}{4}$$

$$=\frac{55\times 35}{2}$$

= 55 × 17.5
= 962.5 m^2

area of square = side^2
= $(35)^2$
= 1225 m^2

grazing left part by cow
= area of square – area of four radius section
= 1225.0 – 962.5
= 262.5 m^2

304. If the cost of painting of an 8 meter x 4.5 meter wall is Rs. 4500. Find the cost per square meter.

(a) Rs. 150 (b) Rs. 125
(c) Rs. 175 (d) Rs. 160

RRB NTPC 05.04.2016 Shift : 2

Ans : (b) area of wall = 8×4.5 = 36.0 Square m

$$\text{cost square per m.}=\frac{4500}{36}=\text{Rs. }125$$

305. Find the cost of covering a room of 60 dm × 30 dm at the rate of Rs. 45 square meter.

(a) Rs. 877.50 (b) Rs. 87750
(c) Rs. 87.75 (d) Rs. 8775

RRB NTPC 03.04.2016 Shift : 1

Ans : (a) Area of room= 65 dm × 30 dm
= 6.5 m. × 3.0 m.
= 19.5 m^2 ($\therefore$ 1m = 10 dm)
$\therefore$ Cost to cover the room = 19.5 × 45 = Rs. 877.50

306. A closed wooden rectangular box is made of one cm thick wood whose outer dimensions are as follows length 22cm, breadth 17cm and height 12cm. It is completely filled with cement what will be the amount of cement in the box?

(a) 1488 cube cm (b) 3000 cube cm
(c) 4488 cube cm (d) 2880 cube cm

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) length of the wood = 22 cm
breadth = 17 cm
height = 12 cm
rectangular wood is 1 cm thick So,
length of cement = 22 – 2 = 20 cm
breadth = 17–2 = 15 cm
height = 12–2 = 10 cm
quantity of cement = 20 × 15 × 10 = 3000 cubic cm

307. How many time will it take for Ramesh to walk around a 50 meter square park if he runs at the rate of 18 km/h?

(a) 40 sec (b) 20 sec
(c) 80 sec (d) 160 sec

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) given- Side of square shape park = 50 m
Perimeter of square shape park = 4 × 50
= 200 m
Speed of Ramesh = 18 Km/h
$= 18\times\frac{5}{18}$ meter/second
= 5 meter/second
Rotate one time of park by Ramesh
time = $\frac{200}{5}$ = 40 second

308. The base of a triangle is one-third of the base of a parallelogram having the same area as that of the triangle. The ratio of the corresponding heights of the triangle to the parallelogram will be:

(a) 3 : 2 (b) 4 : 1
(c) 3 : 1 (d) 6 : 1

RRB ALP & Tec. (29-08-18 Shift-I)

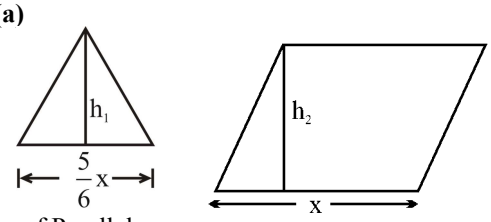
Ans : (d) Let base of parallelogram is a and height h_1 again let height of contiguous triangle is h_2.
As per question,
area of triangle = area of Parallelogram
$\frac{1}{2}\times\frac{a}{3}\times h_2 = a\times h_1$
$\Rightarrow \frac{h_1}{h_2}=\frac{1}{6}$
So height of triangle : height of parallelogram = 6 : 1

309. The base of a triangle is five-sixth of the base of a parallelogram having the same area as that of the triangle. The ratio of the corresponding heights of the triangle to the parallelogram will be:

(a) 12 : 5 (b) 5 : 12
(c) 5 : 3 (d) 6 : 5

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (a)



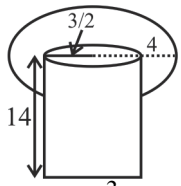
Let base of Parallelogram = x
then base of Δ triangle $=\frac{5}{6}x$
According to the question,
$\frac{1}{2}\times\frac{5}{6}x\times h_1 = x\times h_2$
$\frac{5}{12}h_1 = h_2$
$h_1 : h_2 = 12 : 5$

310. A well of diameter 3m and depth 14 m is dug. The earth, taken out of it, has been evenly spread all around it in the shape of a circular ring of breadth 4m to form an embankment. Find the height of embankment.

(a) $\frac{1}{8}$ m (b) $\frac{9}{8}$ m
(c) $\frac{7}{8}$ m (d) $\frac{3}{8}$ m

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (b)



$h = 14,\ r=\frac{3}{2},\ R = 4+\frac{3}{2}=\frac{11}{2}$
According to the question
height of the pier **(H)** $=\frac{\pi r^2 h}{\pi(R)^2-\pi r_1^2}$
$=\frac{\pi r^2 h}{\pi(R^2-r_1^2)} = \frac{(3/2)^2\times 14}{(11/2)^2-(3/2)^2}$
$H = \frac{9/4\times 14}{\frac{121}{4}-\frac{9}{4}} = \frac{9\times 14}{112},\quad H=\frac{9}{8}$m.

311. From a solid cube of side 7cm, a conical cavity of height 7 cm and radius 3 cm is hollowed out. Find the volume of remaining solid?

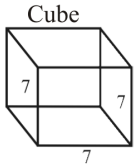
(a) 270 cm^3 (b) 277 cm^3
(c) 300 cm^3 (d) 272 cm^3

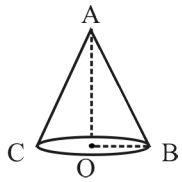
RRB ALP & Tec. (20-08-18 Shift-I)

Ans : (b) volume of cube $= (\text{side})^3$

Volume of cone $= \frac{1}{3}\pi r^2 h$

Volume of left solid = Volume of cube – Volume of cone





OA = h = 7 cm

OB = OC = r = 3

$= (7)^3 - \frac{1}{3}\pi(3)^2 \times 7$

$= 343 - \frac{1}{3} \times \frac{22}{7} \times 3 \times 3 \times 7$

$= 343 - 66 = 277\,\text{cm}^3$

Volume of left solid $= 277\ \text{cm}^3$

312. The volume of a right circular cone, whose radius of the base is half of its altitude, and the volume of a hemisphere are equal. The ratio of the radius of the cone to the radius of the hemisphere is:

(a) $\sqrt{2}:1$ (b) $\sqrt[3]{2}:1$

(c) 1 : 1 (d) 2 : 1

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

Ans : (c) Let height of right circular cone $= h$

According to question base radius (r) $= \frac{1}{2} \times h$

$2r = h$

Volume of cone = Volume of hemisphere

$\frac{1}{3}\pi r^2 h = \frac{2}{3}\pi r_1^3$

$\left(\frac{h}{2}\right)^2 \times h = 2r_1^3$

$\left(\frac{2r}{2}\right)^2 \times 2r = 2r_1^3$

$r^3 = r_1^3 \Rightarrow \frac{r^3}{r_1^3} = 1$

$\boxed{r : r_1 = 1:1}$

313. The volume of a right circular cone, whose radius of the base is same as its altitude, and the volume of a sphere are equal. The ratio of the radius of the cone to the radius of the sphere is :

(a) 1 : 1 (b) $\sqrt[3]{4}:1$

(c) $\sqrt{2}:1$ (d) $\sqrt[3]{3}:\sqrt[3]{2}$

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

Ans : (b) Let radius and height of right circular cone $= r_1$ and radius of sphere $= r_2$

$\therefore$ volume of cone = volume of sphere

$\frac{1}{3}\pi r_1^2 \times r_1 = \frac{4}{3}\pi r_2^3$

$\therefore \frac{r_1^3}{r_2^3} = \frac{4}{1}$

$\therefore \frac{r_1}{r_2} = \frac{\sqrt[3]{4}}{1} = \sqrt[3]{4}:1$

314. The volume of a right circular cone, whose radius of the base is same as one-third of its altitude, and the volume of a sphere are equal. The ratio of the radius of the cone to the radius of the sphere is :

(a) 1 : 1

(b) $\sqrt[3]{3}:\sqrt[3]{2}$

(c) $\sqrt[3]{4}:1$

(d) $\sqrt[3]{4}:\sqrt[3]{3}$

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (d) If height of right circular cone is h and radius of cone's base r_1, and sphere's radius r_2 then—

Volume of right circular cone $= \frac{1}{3}\pi r_1^2 h$

According to the question $= \frac{4}{3}\pi r_2^3$

$\because \quad r_1 = \frac{h}{3}$, $h = 3r_1$ .....(i)

According to the 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)

$\Rightarrow \quad \frac{1}{3}\pi r_1^2 \times 3r_1 = \frac{4}{3}\pi r_2^3$

$\Rightarrow \quad \frac{r_1^3}{r_2^3} = \frac{4}{3}$

$\Rightarrow \quad \left(\frac{r_1}{r_2}\right)^3 = \frac{4}{3}$ s

$\Rightarrow \quad r_1 : r_2 = \sqrt[3]{4}:\sqrt[3]{3}$

22.

Algebra

Type - 1

1. Find the numbers if the arithmetic mean and the geometric mean of the two numbers are 7 and $2\sqrt{10}$ respectively.

(a) 5, 4 (b) 2, 20
(c) 4,10 (d) 8,5

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

Ans : (c) Let two number be a and b

Arithmetic mean of both numbers $= \frac{a+b}{2}$

and geometric mean $= \sqrt{ab}$

According to the question,

$\frac{a+b}{2} = 7$

a + b = 14 ....(i)

and $\sqrt{ab} = 2\sqrt{10}$

ab = 40 ...(ii)

Solving of equation (i) and (ii)

$a + \frac{40}{a} = 14$

$\frac{a^2+40}{a} = 14$

$a^2 + 40 = 14a$

$a^2 - 14a + 40 = 0$

$a^2 - 10a - 4a + 40 = 0$

a (a – 10)–4 (a – 10) = 0

(a – 10) (a – 4) = 0

a = 10 or 4

a = 10

b = 4

So numbers are 4 and 10.

2. Find the three numbers in the arithmetic series whose sum is 15 and the product is 105.

(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

RRB RPF SI – 05/01/2019 (Shift-III)

Ans : (b) From option (b),

3, 5, 7

Succession 5-3=2

7-5=2

from the question, 3+5+7 = 15 (total sum)

$3 \times 7 \times 5 = 105$ (multiple)

3. How many three digit numbers are divisible by 9.

(a) 100 (b) 95
(c) 90 (d) 105

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (a) divisible numbers from 9

108, 117, ----------999

first term (a) = 108

last term (l) = 999

common difference (d) = 117-108

= 9

$\because$ l = a + (n – 1) d

999 = 108 + (n – 1) × 9

999 – 108 = (n – 1)9

891 = (n – 1) ×9

99 = (n – 1)

n = 100

So total three digit numbers to be divided from 9 = 100

4. 16, 32, 64, 128, .. 11th term of this series will be

(a) 16348 (b) 16384
(c) 16834 (d) 13684

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (b) 16, 32, 64, 128, ….. 11th term

= 16(1, 2, 4, 8 ----)

n^{th} term of geometric progression

$t_n = ar^{n-1}$

a = 1, n = 11, r = $\frac{4}{2} = 2$

$t_{11} = 16(1\times2^{11-1}) = 16 \times 1024 = 16384$

5. 10th term of arithmetic series $\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, 7\sqrt{2}$ is ____

(a) $11\sqrt{2}$ (b) $10\sqrt{2}$
(c) 12 (d) $19\sqrt{2}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (d) Following arithmetic series is-

$\sqrt{2}, 3\sqrt{2}, 5\sqrt{2}, 7\sqrt{2}$.....

Tenth term = T_{10} = ?

First term $(a) = \sqrt{2}$, common difference $(d) = 2\sqrt{2}$

n = 10 (number of terms)

Tenth term $= T_{10} = \sqrt{2} + (10-1)2\sqrt{2}$

$[\because T_n = a + (n-1)d]$

$T_{10} = \sqrt{2} + 9 \times 2\sqrt{2}$

$T_{10} = \sqrt{2} + 18\sqrt{2}$

$\boxed{T_{10} = 19\sqrt{2}}$

6. The sum of the first 2007 terms of series 1, 2, 3, 4, 1, 2, 3, 4, will be_____

(a) 5016 (b) 5107
(c) 5020 (d) 5013

RRB Group-D – 22/09/2018 (Shift-I)

Ans : (a) 1, 2, 3, 4, 1, 2, 3, 4, _____ 2007 term
Total term to taking number of 1, 2, 3, 4

$= \frac{2007}{4} = 501 + 3$ remainder

sum of number 1, 2, 3, 4 = 10
Total sum = 501×10 +1 +2 + 3
= 5010 + 6 = 5016

7. 17, 22, 27, 32, ... 20th term in this series will be
(a) 107 (b) 117
(c) 112 (d) 115

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (c) 17, 22, 27, 32, ..., 20th term = ?
∵ Above mention series is arithmetic series.

$\therefore \boxed{T_n = a + (n-1)d}$

where a= first term =17, d = common difference = 5
number of n terms = 20
T_{20} = 17 + (20–1) 5
= 17 + 19 × 5
= 17 + 95
= 112

8. What will be the 12th term of arithmetic series 142, 148, 154 _____
(a) 210 (b) 200
(c) 208 (d) 300

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (c) $\boxed{T_n = a + (n-1)d}$
142, 148, 154 ----- 12th term
a = 142
d = 148 - 142 = 6
T_{12} = 142 + (12 - 1) 6
= 142 + 66
= 208

9. The ratio of the sum of the first three terms of the geometric series (G.P.) and the sum of the first six terms is 125 : 152. What is the common ratio of G.P.
(a) $\frac{4}{5}$ (b) $\frac{5}{3}$
(c) $\frac{5}{4}$ (d) $\frac{3}{5}$

RRB Paramedical Exam – 20/07/2018 (Shift-I)

Ans : (d)

$$\frac{\text{sum of the six terms of geometric series}}{\text{sum of the three terms of geometric series}} = \frac{152}{125}$$

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

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

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

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

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

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

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

10. Find the 5th term in the given geometric series 3, 6, 12, ……..
(a) 48 (b) 62
(c) 57 (d) 50

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (a) first term (a) = 3, common ratio (r) $= \frac{6}{3} = 2$
n = 5
formula- $t_n = ar^{n-1}$
$t_5 = 3\,(2)^{5-1} = 3 \times 2^4$
$t_5 = 3 \times 16$
So in series 5th term is 48.

11. What is the 23rd term in the given series 5, 11, 17, ...
(a) 137 (b) 140
(c) 135 (d) 139

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (a) : Given,
First term (a) = 5
Common difference (d) = 6
T_{23} =?
T_{23} = a + (n – 1)d
T_{23} = 5 + (23 – 1)6
T_{23} = 5 + (22 × 6)
T_{23} = 5 + 132
T_{23} = 137

12. The sum of the parallel mean and the geometric mean of two positive numbers is equal to the difference of those numbers. Find the ratio of those numbers.
(a) 9 : 1 (b) 2 : 3
(c) 1 : 4 (d) 1 : 12

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (a) Let number be a and b

arithmetic mean of two positive number $= \frac{a+b}{2}$

Geometric mean $= \sqrt{ab}$

$$\frac{a+b}{2} + \sqrt{ab} = b - a$$

$$a + b + 2\sqrt{ab} = 2(b - a)$$

$$\left(\sqrt{a}\right)^2 + \left(\sqrt{b}\right)^2 + 2\sqrt{a.b} = 2\left[\left(\sqrt{b}\right)^2 - \left(\sqrt{a}\right)^2\right]$$

$$\left(\sqrt{a} + \sqrt{b}\right)^2 = 2\left(\sqrt{b} - \sqrt{a}\right)\left(\sqrt{b} + \sqrt{a}\right)$$

$\sqrt{a}+\sqrt{b}=2\sqrt{b}-2\sqrt{a}$

$3\sqrt{a}=\sqrt{b}$

$\frac{\sqrt{a}}{\sqrt{b}}=\frac{1}{3}$

Square of both side

$\frac{a}{b}=\frac{1}{9}$

So ratio of number = 9 : 1

13. How many numbers of three digits are divisible by 8.

(a) 114 (b) 111
(c) 113 (d) 112

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (d) The smallest number of three digit divisible by 8 is 104 and largest number = 992

$T_n = a + (n-1)\,d$

Where a = first term = 104

Last term (l) = 992

d = common difference = 8

n = number of terms = ?

$l = 104 + (n-1) \times 8$

$992 = 104 + 8n - 8$

$8n = 992 - 96$

$8n = 896$

$n = 112$

So total of 3 digit is 112 number which will be divide by 8.

14. Find the geometric mean of the numbers 7, 7^2, 7^3, ... 7^n

(a) $7^{\frac{n+1}{2}}$ (b) $7^{\frac{n-1}{2}}$
(c) $7^{\frac{7}{4}}$ (d) $7^{\frac{4}{7}}$

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (a) 7, 7^2, 7^3.....7^n Geometric mean of numbers

Formula− Geometric mean $=\sqrt{ab}$

a = 7, r = 7

$\because$ $T_n = ar^{n-1}$

$T_n = 7.7^{n-1}$

$T_n = 7^n$

Geometric mean $=\sqrt{7.7^n}$

$=\sqrt{7^{n+1}} = 7^{\frac{n+1}{2}}$

15. The sum of the arithmetic progression 1+4+7+ ....+ X is 782. What is the value of x.

(a) 70 (b) 61
(c) 64 (d) 67

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (d) Arithmetic progression 1+4+7+.....X

$S_n = 782$

a = 1 (first term)

d= 4-1 = 3 (common difference)

$S_n = \frac{n}{2}\left[2a+(n-1)d\right]$

$782 = \frac{n}{2}\left[2x1+3n-3\right]$

$1564 = 3n^2 - n$

$3n^2-n-1564=0$

$3n^2-69n+68n-1564=0$

$3n(n-23)+68(n-23)=0$

$(3n+68)\,(n-23)=0$

$n-23=0$

$\boxed{n=23}$

$T_n = a + (n-1)d = 1 + (23-1)\,3 = 1 + 22 \times 3$

n = 67

16. What is the sum of the first 10 numbers in the sequence –3, –8, –13, –18 .....

(a) –260 (b) –250
(c) –245 (d) –255

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (d) given numbers are in arithmetic progression where,

first term (a) = –3

common difference (d) = –5

number of terms (n) = 10

Sum $(S_n) = \frac{n}{2}\left[2a+(n-1)d\right]$

$S_n = \frac{10}{2}\left[2\times(-3)+(10-1)(-5)\right]$

$S_n = 5\left[-6-45\right] = 5\times(-51)$

$S_n = -255$

17. Split 69 into three parts such that they are in A.P. series and the product of their smaller parts is 483.

(a) 19,23,27 (b) 17,23,29
(c) 15,23,31 (d) 21,23,25

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (d) If three part is a–d, a and a+d then-

According to the question,

$a - d + a + a + d = 69$

$3a = 69$

$a = 23$

and $(a-d) \times a = 483$

$(23-d) \times 23 = 483$

$(23-d) = 21$

or, $d = 2$

Now three part

(23 – 2), 23, and (23 + 2)

$\Rightarrow$ it is 21, 23 and 25.

Type - 2

18. Find the HCF of $(a^3 + b^3)$, $(a + b)^2$ and $(a^2 - b^2)$.

(a) (a + b) (b) (a – b)
(c) (a + b) (a – b) (d) $(a^3 + b^3)\,(a^2 - b^2)$

RRB JE - 31/05/2019 (Shift-III)

Ans. (a) $(a^3 + b^3) = (a + b)\,(a^2 + b^2 - ab)$

$(a + b)^2 = (a + b)\,(a + b)$

and

$(a^2 - b^2) = (a + b)\,(a - b)$

So, HCF = (a + b)

19. Find the LCM of $(a^3 - b^3)$, $(a^2 - b^2)$, $(a - b)$.

(a) $(a - b)$ (b) $(a^3 - b^3)(a + b)$
(c) $(a^3 - b^3)$ (d) $(a^3 - b^3)(a^2 - b^2)$

RRB JE - 27/06/2019 (Shift-I)

Ans : (b) $(a^3 - b^3)$, $(a^2 - b^2)$, $(a - b)$
$(a^3 - b^3) = (a - b)(a^2 + b^2 + ab)$
$(a^2 - b^2) = (a - b)(a + b)$
$(a - b) = (a - b)$
LCM $= (a - b)(a + b)(a^2 + b^2 + ab)$
$= (a^3 - b^3)(a + b)$

20. Find HCF of $6xy^2z$, $8x^2y^3z^2$, $12x^3y3^3z^3$

(a) $2xyz$ (b) $4xy^2z$
(c) $3xy^2z$ (d) $2xy^2z$

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) $6xy^2z = 2 \times 3 \times x \times y \times z$
$8x^2 \times y^3 \times z^2 = 2 \times 2 \times 2 \times x \times x \times y \times y \times y \times z \times z$
$12 \times x^3 \times y^3 \times z^3 = 2 \times 2 \times 3 \times x \times x \times x \times y \times y \times y \times z \times z \times z$
HCF $= 2xy^2z$

21. Find HCF of $15x^2+8x-12$, $3x^2 + x - 2$, $3x^2 - 2x$, $9x^2 - 12x + 4$

(a) $x-4$ (b) $x-2$
(c) $3x-4$ (d) $3x-2$

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (d) $15x^2 + 8x - 12$
$= (5x + 6)(3x-2)$
$3x^2 + x - 2$
$= (3x-2)(x+1)$
$3x^2 - 2x = x(3x-2)$
$9x^2 - 12x + 4$
$= (3x-2)(3x-2)$
HCF $= (3x-2)$

22. Find LCM of $2x^3-16$, $3(x^2+3x-10)$, $x^3+2x^2 - 8x$

(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) $6x(x-3)(x+4)(x+5)(x^2+2x+4)$

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b) $2x^3 - 16 = 2(x^3 - 8)$
$= 2(x-2)(x^2 + 4 + 2x)$
$3(x^2 + 3x - 10) = 3(x^2 + 5x - 2x - 10)$
$= 3[x(x+5) - 2(x+5)]$
$= 3(x-2)(x+5)$
$x^3 + 2x^2 - 8x = (x-2)(x^2 + 4x)$
$= x(x-2)(x+4)$
LCM $= 3 \times 2 \times x \times (x-2)(x+4)(x+5)(x^2+4+2x)$
$= 6x(x-2)(x+4)(x+5)(x^2+4+2x)$

Type - 3

23. If there is no solution of the equation $4x+3y+5 = 0$ and $6x-ky-7= 0$, then the value of k will be-

(a) -4.5 (b) -8
(c) 8 (d) 4.5

RRB RPF SI – 12/01/2019 (Shift-III)

Ans : (a)
Given equation is $4x+3y+5=0$ and $6x-ky-7=0$
$a_1x+b_1y+c_1= 0$ and $a_2x+b_2y+c_2=0$ if–

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \Rightarrow \frac{4}{6} = \frac{3}{-k} \neq \frac{5}{-7}$$

$$\Rightarrow \frac{4}{6} = \frac{3}{-k} \Rightarrow -4k = 6 \times 3$$

$$\Rightarrow k = \frac{18}{-4}$$

$$\Rightarrow \boxed{k = -4.5}$$

24. Find the value of x and y by solving the following equations: $9x + 3y + 12 = 0$; $18x + 6y + 24 = 0$

(a) $x = 4; y = -16$
(b) $x = 2; y = 10$
(c) $x = 1; y = 7$
(d) not unique solution but infinite solution

RRB JE - 25/05/2019 (Shift-II)

Ans : (d) $9x + 3y + 12 = 0$
compare to equation of $a_1x + b_1y + c_1 = 0$
$a_1 = 9, b_1 = 3, c_1 = 12$
$18x + 6y + 24 = 0$
compare to equation of $a_2x + b_2y + c_2 = 0$
$a_2 = 18, b_2 = 6, c_2 = 24$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

$$\frac{9}{18} = \frac{3}{6} = \frac{12}{24}$$

$$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$$

So no unique solution but infinite solutions.

25. For which value of p, will have only one solution of the following equation.
$2x + 3y = -5$ and $2x + py = 2$

(a) 3 is the only one solution of p
(b) p has many solution
(c) p has other solution except 3
(d) 2 is the only one solution of p

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

Ans : (c) For unique solution

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$$

$$\frac{2}{2} \neq \frac{3}{p}$$

$$p \neq 3$$

Hence p has any solution except 3

26. If there is no solution of the equations $14x + 8y + 5 = 0$ and $21x - ky - 7 = 0$ is possible, then the value of k will be:

(a) -16 (b) 12
(c) 8 (d) -12

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (d) $14x + 8y + 5 = 0$ — (1)

$21x - ky - 7 = 0$ — (2)

equation (1) and (2) solution will not be possible if-

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

$$\frac{14}{21} = \frac{8}{-k}$$

$$\frac{2}{3} = \frac{8}{-k} \Rightarrow \boxed{k = -12}$$

So k = –12 for value solution will not be possible.

27. If there is no solution of $6x^2 + 2kx + k = 0$, then find the value of k:

(a) $0 < k < 6$ (b) $k > -6$

(c) $k > 6$ (d) $k < 6$

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) $6x^2 + 2kx + k = 0$ has no solution

then $\boxed{K = ?}$

put K = 1 in equation

$6x^2 + 2x + 1 = 0$

So there is no solution

on put K = 1 to K = 6

$6x^2 + 12x + 6 = 0$

$6x^2 + 6x + 6x + 6 = 0$

$6x(x + 1) + 6(x + 1) = 0$

$\boxed{x = -1,}$

So there is a solution on equation K = 6

Therefore, it is clear that the equation from K=1 to K=5. There will be no solution.

i.e. $\boxed{0 < K < 6}$

28. What is the value of k for which the equation $16x - 12y + 9 = 0$ and $12x + ky - 11 = 0$ has no solution

(a) –16 (b) 16

(c) –9 (d) 9

RRB Group-D – 04/12/2018 (Shift-III)

Ans. (c) When no solution is there then,

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

equation $16x - 12y + 9 = 0$ ...(i)

$12x + ky - 11 = 0$ ...(ii)

from equation (i) and (ii) when there is no solution on comparison then,

$$\frac{16}{12} = \frac{-12}{K} \neq \frac{9}{-11}$$

$$\frac{16}{12} = \frac{-12}{K}$$

$$16K = -144$$

$$K = \frac{-144}{16}$$

$$K = -9$$

29. If there is no solution of $20x + 5y + 11 = 0$ and $50x - ky - 9 = 0$, then find the value of k.

(a) 12.5 (b) -12.5

(c) 18 (d) -18

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (b) :

$20x + 5y + 11 = 0$ .....(i)

$50x - ky - 9 = 0$ .....(ii)

$a_1 = 20$ $b_1 = 5$ $c_1 = 11$

$a_2 = 50$ $b_2 = -k$ $c_2 = -9$

There is no solution of 2 linear equation if

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

So taking $\frac{a_1}{a_2} = \frac{b_1}{b_2}$

$$\frac{20}{50} = \frac{5}{-k}$$

$$k = -\frac{50 \times 5}{20}$$

$$k = -12.5$$

30. 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?

(a) -8 (b) 7.5

(c) 8 (d) -7.5

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (d) : There is no solution of equation in that the condition

from formula - $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$$\frac{4}{10} = \frac{3}{-k}$$

$$-2k = 15$$

$$\boxed{k = -7.5}$$

31. If $3x^2 + kx + k = 0$ has no solution, then the value of k will satisfy :

(a) $k > 12$ (b) $k < 12$

(c) $k > -12$ (d) $0 < k < 12$

RRB ALP & Tec. (31-08-18 Shift-II)

Ans. (d) : If there is no solution of $3x^2 + kx + k = 0$ then the origin of the given equation will given equation will be imaginary.

or $b^2 - 4ac < 0$

$\Rightarrow$ $k^2 - 4 \times 3k < 0$

$\Rightarrow$ $k(k - 12) < 0$

$\Rightarrow$ $k - 12 < 0, k < 0$

$k < 12$

If $k < 0$ will be then $k^2 - 12k > 0$

So intended relationship will be = $0 < k < 12$

32. If the equations $6x - 5y + 11 = 0$ and $15x + ky - 9 = 0$ have no solution, then the value of *k* is :

(a) – 18 (b) 12.5

(c) – 12.5 (d) 18

RRB ALP & Tec. (21-08-18 Shift-III)

Ans : (c) When equation's no solution then

condition $= \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

As per question,

equation $6x - 5y + 11 = 0$

$15x + ky - 9 = 0$

Then $\frac{6}{15} = \frac{-5}{k} \neq \frac{11}{-9}$

$\frac{2}{5} = \frac{-5}{k}$, $k = \frac{-25}{2}$

$\boxed{k = -12.5}$

33. If $x^2 + kx + k = 0$ has no solution, then the value of k will satisfy:

(a) $k > 4$ (b) $0 < k < 4$

(c) $k < 4$ (d) $k > -4$

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (b) $\because$ there is no solution $x^2 + kx + k = 0$

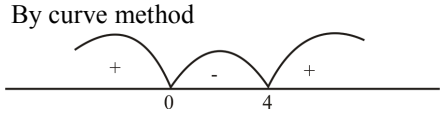
$\therefore$ Discriminant $(D) < 0$

$b^2 - 4ac < 0$

$k^2 - 4k < 0$

$k(k - 4) < 0$

By curve method



so $0 < k < 4$

34. The pair of linear equations $3x + y = 1$ and $px + 2y = 5$ has no finite solution if :

(a) $0 < p < 6$ (b) $P = 6$

(c) $P = 0$ (d) $p \geq 6$

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (b) Linear equation will not be solution for $3x+y = 1$ and $px+2y = 5$

$\frac{3}{p} = \frac{1}{2} \neq \frac{1}{5} \left\{ \because \frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{C_1}{C_2} \right\}$

$\Rightarrow p = 6$

35. The number of solutions of the pair of linear equations $x + 2y - 8 = 0$ and $2x + 4y = 16$ is

(a) 0 (b) 1

(c) infinite (d) 2

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

Ans : (c)

(I) Unique solution will be equation of $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

(II) No solution of equation $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

(III) Infinite solution must be equation of $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

equation $x + 2y - 8 = 0$, $2x + 4y - 16 = 0$

then $\frac{1}{2} = \frac{2}{4} = \frac{-8}{-16}$

$\boxed{\frac{1}{2} = \frac{1}{2} = \frac{1}{2}}$ So infinite solution will be equation.

Type - 4

36. If $(x+1/x) = 3$ then find the value of $(x^3+1/x^3) \div (x^2+1/x^2)$

(a) 18/5 (b) 26/3

(c) 18/7 (d) 54/5

RRB RPF SI – 10/01/2019 (Shift-III)

Ans : (c) $x + \frac{1}{x} = 3$

square of both side

$\left(x + \frac{1}{x}\right)^2 = (3)^2$

$x^2 + \frac{1}{x^2} + 2 \times x \times \frac{1}{x} = 9$

$x^2 + \frac{1}{x^2} = 7$

$x + \frac{1}{x} = 3$

cube of both side

$\left(x + \frac{1}{x}\right)^3 = (3)^3$

$x^3 + \frac{1}{x^3} + 3 \times x \times \frac{1}{x}\left(x + \frac{1}{x}\right) = 27$

$x^3 + \frac{1}{x^3} + 3 \times 3 = 27$

$x^3 + \frac{1}{x^3} = 27 - 9$

$x^3 + \frac{1}{x^3} = 18$

$\frac{x^3 + \frac{1}{x^3}}{x^2 + \frac{1}{x^2}} = \frac{18}{7}$

37. If $a + \frac{1}{a} = -30$ then find the value of $a^3 + \frac{1}{a^3}$

(a) 27090 (b) 26910

(c) -26910 (d) -27090

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (c)

$a + \frac{1}{a} = -30 ----(1)$

$a^3 + \frac{1}{a^3} = ?$

cube of equation (i)

$\left(a + \frac{1}{a}\right)^3 = (-30)^3$

$a^3 + \frac{1}{a^3} + 3\left(a + \frac{1}{a}\right) = -27000$

$$a^3+\frac{1}{a^3}+3(-30)=-27000$$

$$a^3+\frac{1}{a^3}=-27000+90$$

$$\boxed{a^3+\frac{1}{a^3}=-26910}$$

38. If $X^{2n}+\frac{1}{x^{2n}}=k$, then find the value of $x^n-\frac{1}{x^n}$

(a) k + 2 (b) k - 2

(c) $\sqrt{k-2}$ (d) $\sqrt{k+2}$

RRB JE - 24/05/2019 (Shift-I)

Ans : (c)

$\because x^{2n}+\frac{1}{x^{2n}}=k$

$$\left(x^n-\frac{1}{x^n}\right)^2=x^{2n}+\frac{1}{x^{2n}}-2\times x^n\times\frac{1}{x^n}$$

$$\left(x^n-\frac{1}{x^n}\right)^2=k-2$$

$$\therefore\ \left(x^n-\frac{1}{x^n}\right)=\sqrt{k-2}$$

39. If $X-\frac{1}{X}=3$ then find the value of $X^4+\frac{1}{X^4}$

(a) 129 (b) 119

(c) 14 (d) 123

RRB JE - 24/05/2019 (Shift-III)

Ans : (b)

$$X-\frac{1}{X}=3$$

$$X^2+\frac{1}{X^2}-2=9$$

$$X^2+\frac{1}{X^2}=11$$

Again square of both side

$$X^4+\frac{1}{X^4}+2=121$$

$$X^4+\frac{1}{X^4}=119$$

40. If $x^3+y^3=9$ and $x+y=3$ then find the value of x^2+y^2

(a) 25 (b) 6

(c) 3 (d) 5

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

Ans : (d) Given - $x^3+y^3=9$, $x+y=3$

According to the question,

$(x+y)^3=x^3+y^3+3xy\,(x+y)$

$(3)^3=9+3xy\times 3$

$27-9=9xy$

$9xy=18$

$\boxed{xy=2}$

$(x+y)^2=x^2+y^2+2xy$

$(3)^2=x^2+y^2+2\times 2$

$9-4=x^2+y^2$

$\boxed{x^2+y^2=5}$

41. If $a-\frac{1}{a}=7$ then $a^2+\frac{1}{a^2}=?$

(a) 52 (b) 50

(c) 49 (d) 51

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (d) Given–

$$a-\frac{1}{a}=7$$

Square of both side,

$$a^2+\frac{1}{a^2}-2\times a\times\frac{1}{a}=49$$

$$a^2+\frac{1}{a^2}-2=49$$

$$a^2+\frac{1}{a^2}=49+2$$

$$a^2+\frac{1}{a^2}=51$$

42. If a is positive and $a^2+\frac{1}{a^2}=7$ then $a^3+\frac{1}{a^3}=?$

(a) 18 (b) $3\sqrt{7}$

(c) $7\sqrt{7}$ (d) 21

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (a) $a^2+\frac{1}{a^2}=7$ .....(i)

adding 2 in 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)

Taking cube on both sides of equation (ii)

$$a^3+\frac{1}{a^3}+3a\times\frac{1}{a}\left(a+\frac{1}{a}\right)=27$$

$$a^3+\frac{1}{a^3}+3\times 3=27 \qquad (\therefore\ a+\frac{1}{a}=3)$$

$$a^3+\frac{1}{a^3}=27-9$$

$$\boxed{a^3+\frac{1}{a^3}=18}$$

43. If $a+\frac{1}{a}=5$ then find the value of $a^3+\frac{1}{a^3}$?

(a) 140 (b) 110

(c) 120 (d) 130

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (b)

$$a+\frac{1}{a}=5$$

$$a^3+\frac{1}{a^3}=?$$

Now $a+\frac{1}{a}=5$

cube of both sides

$$a^3+\frac{1}{a^3}+3a\times\frac{1}{a}\left(a+\frac{1}{a}\right)=125$$

$$a^3+\frac{1}{a^3}+3\times5=125$$

$$a^3+\frac{1}{a^3}=125-15$$

$$a^3+\frac{1}{a^3}=110$$

44. If $\left(a-\frac{1}{a}\right)=6$ then $\left(a^4+\frac{1}{a^4}\right)=?$

(a) 34 (b) 1444
(c) 38 (d) 1442

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (d) Given by

$$\left(a-\frac{1}{a}\right)=6$$

Square of both side

$$a^2+\frac{1}{a^2}-2=36, \qquad a^2+\frac{1}{a^2}=38$$

Square again

$$a^4+\frac{1}{a^4}+2=1444$$

$$a^4+\frac{1}{a^4}=1442$$

45. If $x^2+\frac{2x}{5}+\frac{1}{25}=0$ then $\left(x-\frac{2}{3}\right)^2=?$

(a) $\frac{1}{3}$ (b) $\frac{169}{225}$
(c) $\frac{44}{169}$ (d) $\frac{225}{256}$

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (b) : $x^2+\frac{2x}{5}+\frac{1}{25}=0$ then $\left(x-\frac{2}{3}\right)^2=?$

$$x^2+\frac{2x}{5}+\frac{1}{25}=0$$

$$25x^2+10x+1=0$$

$$25x^2+5x+5x+1=0$$

$$5x(5x+1)+1(5x+1)=0$$

$$(5x+1)(5x+1)=0$$

$$5x+1=0$$

so $x=-\frac{1}{5}$

Hence $\left(x-\frac{2}{3}\right)^2=\left(-\frac{1}{5}-\frac{2}{3}\right)^2$

$$=\left(-\frac{13}{15}\right)^2=\frac{169}{225}$$

46. If $a-\frac{1}{a}=7$, then $a^2+\frac{1}{a^2}=?$

(a) 51 (b) 53
(c) 52 (d) 54

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (a) Given, $a-\frac{1}{a}=7$

$$\Rightarrow \left(a-\frac{1}{a}\right)^2=(7)^2, \text{ \{square of both side\}}$$

$$\Rightarrow a^2+\frac{1}{a^2}-2\times a\times\frac{1}{a}=49$$

$$\Rightarrow a^2+\frac{1}{a^2}-2=49$$

$$a^2+\frac{1}{a^2}=51$$

47. If $a+\frac{1}{a}=8$, then $a^3+\frac{1}{a^3}=?$

(a) 500 (b) 488
(c) 536 (d) 512

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (b) $a+\frac{1}{a}=8$

cube of both side

$$\left(a+\frac{1}{a}\right)^3=(8)^3$$

$$a^3+\frac{1}{a^3}+3\times a\times\frac{1}{a}\left(a+\frac{1}{a}\right)=512$$

$$a^3+\frac{1}{a^3}+3\times8=512$$

$$a^3+\frac{1}{a^3}=512-24$$

$$a^3+\frac{1}{a^3}=488$$

48. If $a+\frac{1}{a}=-3$ then find the value of $a^6+\frac{1}{a^6}$

(a) 36 (b) 322
(c) 729 (d) 18

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (b)

$$a + \frac{1}{a} = -3$$

square of both side

$$\left(a + \frac{1}{a}\right)^2 = (-3)^2$$

$$a^2 + \frac{1}{a^2} + 2 = 9$$

$$a^2 + \frac{1}{a^2} = 7\text{---------(I)}$$

cube of both side

$$\left(a^2 + \frac{1}{a^2}\right)^3 = (7)^3$$

$$a^6 + \frac{1}{a^6} + 3a^2 \times \frac{1}{a^2}\left(a^2 + \frac{1}{a^2}\right) = 343 \text{ …from equation (I)}$$

$$a^6 + \frac{1}{a^6} = 343 - 21 = 322$$

49. If $x + y = 9, x^2 + y^2 = 41$, then find the value of $x^3 + y^3$

(a) 189 (b) 249
(c) 289 (d) 100

RRB Group-D – 15/11/2018 (Shift-III)

Ans. : (a) Given by-

$x + y = 9$
$x^2 + y^2 = 41$
$x^3 + y^3 = ?$
$(x + y)^2 = (9)^2$
$x^2 + y^2 + 2xy = 81$
$41 + 2xy = 81$
$xy = 20$
$(x + y)^3 = x^3 + y^3 + 3xy (x + y)$
$(9)^3 = x^3 + y^3 + 3 \times 20 \times 9$
$x^3 + y^3 = 729 - 540$
$x^3 + y^3 = 189$

50. If $\frac{x+1}{x} = 2$, then find the value of $x^2 + \frac{1}{x^2}$

(a) 5 (b) 4
(c) 1 (d) 2

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (d) Given -

$$\frac{x+1}{x} = 2$$

$$\therefore \quad 1 + \frac{1}{x} = 2$$

$$\frac{1}{x} = 2 - 1 = 1$$

$$\boxed{1 = x}$$

so $x^2 + \frac{1}{x^2} = (1)^2 + \frac{1}{(1)^2} = 1 + 1 = 2$

51. If $\frac{x-1}{x} = 3$, then what will be the value of $\frac{x^2+1}{x^2}$

(a) 3 (b) 11
(c) 9 (d) 7

RRB Group-D – 12/10/2018 (Shift-II)

Ans : (*) This question cancelled by RRB

$$\frac{x-1}{x} = 3 \Rightarrow 1 - \frac{1}{x} = 3 \Rightarrow x = -\frac{1}{2}$$

so, $\frac{x^2+1}{x^2} = 1 + \frac{1}{x^2} = 1 + \frac{1}{\left(-\frac{1}{2}\right)^2}$

It will be 1+4= 5 (which answer is not in options)

52. If $a - \frac{1}{a} = 10$, then what will be the value of $a^2 + \frac{1}{a^2}$

(a) 98 (b) 102
(c) 100 (d) 99

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (b) : given−

$$a - \frac{1}{a} = 10$$

square of both side,

$$\left(a - \frac{1}{a}\right)^2 = (10)^2$$

$$\Rightarrow \quad a^2 + \frac{1}{a^2} - 2 = 100$$

$$\Rightarrow \quad a^2 + \frac{1}{a^2} = 100 + 2$$

$$\Rightarrow \quad a^2 + \frac{1}{a^2} = 102$$

53. If (a–1/a) = 3/4 then find the value of (a^3–1/a^3)

(a) 164/31 (b) 171/64
(c) 171/32 (d) 164/37

RRB NTPC 19.04.2016 Shift : 1

Ans : (b) $a - \frac{1}{a} = \frac{3}{4}$

cube of both side

$$\left(a - \frac{1}{a}\right)^3 = \frac{27}{64}$$

$$a^3 - \frac{1}{a^3} - 3\left(a - \frac{1}{a}\right) = \frac{27}{64}$$

$$a^3 - \frac{1}{a^3} - 3 \times \frac{3}{4} = \frac{27}{64}$$

$$a^3 - \frac{1}{a^3} = \frac{27}{64} + \frac{9}{4} = \frac{171}{64}$$

54. If $(x^2 + 1/x^2) = 6$ then find the value of $(10x–10/x)$

(a) +/–15 (b) +/–20
(c) +/–30 (d) +/–40

RRB NTPC 19.04.2016 Shift : 1

Ans : (b) – $x^2 + \frac{1}{x^2} = 6$

$x^2 + \frac{1}{x^2} - 2 = 6 - 2$

$\left(x - \frac{1}{x}\right)^2 = 4$

$x - \frac{1}{x} = \pm 2$

$10x - \frac{10}{x} = \pm 20$

55. If $(x^2+1/x^2)^2 = 324$ then find the value of $(x–1/x)$

(a) 4 (b) 6 (c) 8 (d) 10

RRB NTPC 18.04.2016 Shift : 3

Ans : (a) Given–

$\left(x^2 + \frac{1}{x^2}\right)^2 = 324$

$\Rightarrow x^2 + \frac{1}{x^2} = \sqrt{324}$

$\Rightarrow x^2 + \frac{1}{x^2} = 18$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 + 2 = 18$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 18 - 2$

$\Rightarrow \left(x - \frac{1}{x}\right)^2 = 16$

$\Rightarrow x - \frac{1}{x} = \sqrt{16}$

$\Rightarrow x - \frac{1}{x} = 4$

56. If $(x + 1/x) = 2$, then find the value of $(x^3 + 1/x^3) \div (x^{18} + 1/x^{18})$.

(a) 2/9 (b) 5
(c) 1 (d) 1/9

RRB NTPC 12.04.2016 Shift : 3

Ans : (c) From the question,

$x + \frac{1}{x} = 2$

$x^2 + 1 = 2x$

$x^2 – 2x + 1 = 0$

$(x – 1)^2 = 0$

$x – 1 = 0$

$x = 1$

Now

$$\frac{x^3 + \frac{1}{x^3}}{x^{18} + \frac{1}{x^{18}}} = \frac{1+1}{1+1} = \frac{2}{2} = 1$$

57. If $a^2 + \frac{1}{a^2} = 3$ then $a^3 + \frac{1}{a^3} = ?$

(a) $3\sqrt{5}$ (b) $2\sqrt{5}$
(c) $2\sqrt{3}$ (d) $3\sqrt{3}$

RRB ALP & Tec. (21-08-18 Shift-III)

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 $a^2 + \frac{1}{a^2} = 3$

$a + \frac{1}{a} = \sqrt{3+2} = \sqrt{5}$

$a^3 + \frac{1}{a^3} = \left(a + \frac{1}{a}\right)^3 - 3\left(a + \frac{1}{a}\right)$

$= \left(\sqrt{5}\right)^3 - 3 \times \sqrt{5}$

$= 5\sqrt{5} - 3\sqrt{5} = 2\sqrt{5}$

so $\boxed{a^3 + \frac{1}{a^3} = 2\sqrt{5}}$

58. If $a - \frac{1}{a} = 1$, then $a^2 + \frac{1}{a^2} = ?$

(a) 1 (b) 3
(c) 2 (d) 4

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (b) $\because$ $a^2 + \frac{1}{a^2} = \left(a - \frac{1}{a}\right)^2 + 2$

$a^2 + \frac{1}{a^2} = 1^2 + 2 = 3$

Type - 5

59. What will be the remainder when $27x^3 –9x^2 + 3x – 8$ is divided by $3x + 2$

(a) –22 (b) +22
(c) +16 (d) –16

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (a) $27x^3 –9x^2 + 3x – 8$,

$3x + 2 = 0$

$3x = –2$

then, $x = \frac{-2}{3}$

so $27\left(\frac{-2}{3}\right)^3 - 9\left(\frac{-2}{3}\right)^2 + 3\left(\frac{-2}{3}\right) - 8$

$\Rightarrow 27\left(\frac{-8}{27}\right) - 9\left(\frac{4}{9}\right) + 3\left(\frac{-2}{3}\right) - 8$

$\Rightarrow – 8 – 4 – 2 – 8$

$\Rightarrow –22$

60. If $2x^m + x^3 – 3x^2 – 26$ is divided by $x–2$, the remainder 994 is left, find the value of 'm'

(a) 10 (b) 9
(c) 11 (d) 8

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (b)
On division of $2x^m + x^3 - 3x^2 - 26$ from x–2 left remainder 994 or (x–2) a factor of equation is given
so $x - 2 = 0$
x = 2 putting in equation
$2 \times 2^m + 8 - 12 - 26 = 994$
$2 \times 2^m = 1024$
$2^m = 512$
$2^m = 2^9$
$\boxed{m = 9}$

61. On dividing $2x^2 + ax + b$ by $x - 3$, then remainder is 31 and on dividing $x^2 + bx + a$ $x - 3$, the reaminder is 24 then the value of a + b will be equal to-
(a) -7 (b) 23
(c) -23 (d) 7

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : $2x^2 + ax + b$ ..... (i)
$x^2 + bx + a$ ..... (ii)
dividing to both equation from (x–3) left remainder is 31 and 24 respectively.
So a factor of both equation is (x-3)
$\therefore$ putting x = 3 in both equation
from equation (i)
$2 \times 9 + a \times 3 + b = 31$
$3a + b = 13$ .....(iii)
from equation (ii),
$9 + 3b + a = 24$
$a + 3b = 15$ ..... (iv)
equation (iv) × 3
$3a + 9b = 45$
subtract in equation (iv) to equation (iii)
$3a + 9b = 45$
$3a + b = 13$
$- \quad - \quad -$
$8b = 32$
$\boxed{b = 4}$
putting the value of b in equation (iii)
$3a + 4 = 13$
$3a = 9$
$\therefore \boxed{a = 3}$
so $\boxed{a + b = 7}$

62. On dividing $4x^6 - 5x^3 - 3$ by $x^3 - 2$, the remainder left is-
(a) 3 (b) 0
(c) 1 (d) 2

RRB Group-D – 20/09/2018 (Shift-II)

Ans : (a) Divide $4x^6 - 5x^3 - 3$ to $x^3 - 2$
$x^3 - 2 = 0$
$x = (2)^{\frac{1}{3}}$
puttin the value of x in equation
$= 4 \times \left[(2)^{\frac{1}{3}}\right]^6 - 5\left[(2)^{\frac{1}{3}}\right]^3 - 3$
$= 4 \times 2^2 - 5 \times 2 - 3 = 16 - 10 - 3 = 3$
so 3 remainder is left.

63. When $x^2 + ax + b$ is divided by $x - 7$ the remainder left is 35 and when $x^2 + bx + a$ is divided by x - 7, the remainder left is 31. Then a + b is equal to-
(a) 3 (b) 4
(c) –3 (d) –4

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (d) divide in $x^2 + ax + b$ from $x - 7$ remainder = 35
or putting $x = 7$
$(7)^2 + 7a + b = 35$
$7a + b = 35 - 49$
$7a + b = -14$ -------(i)
again divide in $x^2 + bx + a$ from $x - 7$ remainder = 31
or putting $x = 7$
$(7)^2 + 7b + a = 31$
$a + 7b = 31 - 49$
$a + 7b = -18$ -------(ii)
adding equation (i) and (ii) –
$7a + b = -14$
$a + 7b = -18$
$8a + 8b = -32$
$8(a + b) = -32$
$\boxed{a + b = -4}$

64. If $2x^2 + ax + b$ is divided by x – 3, leaves a remainder of 35 and when $2x^2 + bx + a$ is divided by x – 3, leaves a remainder of 29, then the value of a + b will be-
(a) -7 (b) -23
(c) 7 (d) 23

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) $2x^2 + ax + b = 35$ ____ (i)
$2x^2 + bx + a = 29$ _____ (ii)
on putting x = 3 in equation (i) and (ii)
$\Rightarrow 18 + 3a + b = 35$
$\Rightarrow 3a + b = 17$ _____ (iii)
$\Rightarrow 18 + 3b + a = 29$
$\Rightarrow 3b + a = 11$ _____ (iv)
adding equation (iii) and (iv)
$4a + 4b = 28$
$a + b = \frac{28}{4} = 7$
$a + b = 7$

65. If the value for k for which $x^2 + 5kx + k^2 + 5$, is completely divisible by x+2 but not divisible by x+3
(a) neither 1 nor 9 (b) both 1 and 9
(c) 1 (d) 9

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (d) : $x^2 + 5kx + k^2 + 5$, from x + 2 is completely divisible
$\therefore$ putting x = –2 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 from (x+3) is not divisible

$\therefore$ k = 9

66. If $2x^2+ax+2b$, is when divided by x - 1, leaves remainder 16 and when $x^2+bx+2a$ is divided by x + 1, leaves remainder -1 then a+b is equal to-

(a) -8 (b) -14

(c) 14 (d) 8

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : In these questions which to divide. out of that, keep the value of x in equation and write a remainder equal to new equation

$2x^2 + ax + 2b$

putting x–1 = 0, x = 1

$\therefore \quad 2(+1)^2 + a \times (1) + 2b = 16$

$2 + a + 2b = 16$

$a + 2b = 14$ _____ (i)

$x^2 + bx + 2a$

$x + 1 = 0$

putting x = (-1)

again $(-1)^2 + b(-1) + 2a = -1$

$2a-b = -2$ _____(ii)

equation (i) + equation (ii) × 2

$a + 2b = 14$

$4a - 2b = -4$

$5a = 10$

$\boxed{a = 2}$

Putting the value of a in equation (i)

$2+2b = 14$

$2b = 12$

$\boxed{b = 6}$

$a + b = 2 + 6$

$= 8$

67. If $3x^2 + ax + 4$, is completely divisible by x – 8 then the value of 'a' will be-

(a) –24.5 (b) 25.5

(c) 24.5 (d) –25.5

RRB Group-D – 28/09/2018 (Shift-I)

Ans : (a) putting x = 8 in given equation

$3x^2 + ax + 4 = 0$

$x - 8 = 0, \Rightarrow x = 8$

$\Rightarrow 3 \times 64 + a \times 8 + 4 = 0$

$\Rightarrow 192 + 8a + 4 = 0$

$\Rightarrow 8a = -192-4$

$\Rightarrow 8a = -196$

$a = \frac{-196}{8} = -24.5$

$a = -24.5$

68. If $4x^3 - 2x^2 + 5x - 8$ is divided by (x–2) then the remainder will be -

(a) 16 (b) 26

(c) 42 (d) 81

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (b) Divident remainder if $4x^3 - 2x^2 + 5x - 8$ from (x–2)

putting x = 2 in expression $4x^3 - 2x^2 + 5x - 8$

Remainder-

$= 4 \times (2)^3 - 2 \times (2)^2 + 5 \times 2 - 8$

$= 4 \times 8 - 2 \times 4 + 10 - 8$

$= 32 - 8 + 2$

$= \boxed{26}$

69. Find the value of 'A' when the polynomial is P (x) = $x^3 + 3x^2 - 2Ax + 3$ Where 'A' is the constant which divided by $x^2 + 1$ the remainder is equal to -5x

(a) 3 (b) -2

(c) 2 (d) -3

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (c) Polynomial P (x) = $x^3+3x^2-2Ax+3$

Remainder on divident = -5x

So remainder theorem $x^2 + 1 = 0$

putting the value of $x^2 = -1$ in polynomial

P (x) = $-x^2x + 3x^2 - 2Ax + 3$

$(-1) \times x + 3\times(-1) - 2Ax + 3 = -5x$

$-x - 3 - 2Ax + 3 = -5x$

$-2Ax = -4x$

A = 2

70. When $3x^2 + 2ax + 4b$ is divided by x + 3, leaves a remainder of 15 and when $2x^2 + 3bx + 5a$ is divided by x-3, leaves a remainder 65 then the value of a+b is.

(a) 9 (b) 6

(c) 7 (d) 11

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (c) : First expression = $3x^2 + 2ax + 4b$

second expression = $2x^2 + 3bx + 5a$

divide to x + 3 from first expression left remainder is 15

x + 3 = 0

putting in first expression x = -3

$3 \times (-3)^2 + 2a \times (-3) + 4b = 15$

$27 - 6a + 4b = 15$

$3a - 2b = 6$ .....(i)

divide to x–3 from second expression left remainder is 65

x – 3 = 0

x = 3 putting in second expression

$2(3)^2 + 3b(3) + 5a = 65$

$18 + 9b + 5a = 65$

$5a + 9b = 47$ .....(ii)

equation (i) × 9 equation. (ii) × 2

$27a - 18b = 54$

$10a + 18b = 94$

to add

$37a = 148$

a = 4

putting the value of a in equation (i)

$3a - 2b = 6$

$3 \times 4 - 2b = 6$

$12 - 6 = 2b$

$6 = 2b$

$b = 3$

so $b = 3$

then $a + b = 4 + 3 = 7$

71. On dividing $4x^6 - 5x^3 - 3$ by $x^3 - 2$, leaves a remainder.

(a) 3 (b) 2

(c) 0 (d) 1

RRB Group-D – 02/11/2018 (Shift-II)

Ans. (a) According to the question,

$$\begin{array}{r|l} & 4x^3+3 \\ \hline x^3-2 & 4x^6-5x^3-3 \\ & \underline{4x^6-8x^3} \\ & \quad -\quad + \\ & \quad 3x^3-3 \\ & \quad \underline{3x^3-6} \\ & \quad -\quad + \\ & \qquad 3 \end{array}$$

So remainder will be 3

72. If $3x^2 + ax - 12$ is completely divisible by x-8 then the value of 'a' is-

(a) -24.5 (b) 22.5

(c) 24.5 (d) -22.5

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (d) $3x^2 + ax - 12$ .....(i)

equation (i) is totally divisible by $x - 8$

$\therefore$ putting $x = 8$,

$3 \times (8)^2 + a \times 8 - 12 = 0$

$3 \times 64 + 8a - 12 = 0$

$8a = 12 - 192$

$8a = -180$

$a = -22.5$

73. If $3x^2 + ax + 7$ is completely divisible by x-1 then the value of 'a' is-

(a) –10.6 (b) –10.5

(c) –10 (d) –3

RRB Group-D – 12/11/2018 (Shift-II)

Ans : (c)

equation $3x^2 + ax + 7$ is divisible by $x - 1$

then $x - 1 = 0$

putting $x = 1$

$\Rightarrow$ $3(1)^2 + a(1) + 7 = 0$

$\Rightarrow$ $3 + a + 7 = 0$

$\boxed{a = -10}$

74. If $4x^3 - 2x^2 + 5x - 8$ is divided by (x–2) then the remainder is-

(a) 43 (b) 16

(c) 26 (d) 25

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (c) $x - 2 = 0$

$x = 2$

putting the value of x in given expression -

Remainder $= 4(2)^3 - 2(2)^2 + 5 \times 2 - 8$

$= 4\times8 - 2\times4 + 5 \times 2 - 8$

$= 32 - 8 + 10 - 8 = 42 - 16 = 26$

So remainder $= 26$

75. $15y^3 - 30y^2 + 12y - 12$ is divided by 3y–6, what will be the remainder.

(a) 6 (b) 36

(c) 30 (d) 12

RRB NTPC 29.04.2016 Shift : 2

Ans : (d) $\because 3y - 6 = 0$

$\therefore 3y = 6$

$\boxed{y = 2}$

Putting the value of y in the expression

$= 15(2)^3 - 30(2)^2 + 12(2) - 12$

$= 15 \times 8 - 30 \times 4 + 24 - 12$

$= 120 - 120 + 12 = 12$

So remainder will be = 12

76. If $x^2 + ax + b$, divided by $x - 3$, then the remaining 22 is obtained and the expression $x^2 + bx + a$, when divided by $x - 3$ then the remaining 24 is obtained. What is the value of a+b?

(a) 23 (b) – 23

(c) – 7 (d) 7

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

Ans : (d) Left remainder is 22 if divide x^2+ax+b to x-3

$\therefore$ $x^2 + ax + b = 22$ (putting x = 3)

$9 + 3a + b = 22$

$3a + b = 13$ ....(i)

$x^2 + bx + a = 24$ (putting x = 3)

$9 + 3b + a = 24$

$3b + a = 15$ ....(ii)

from equation (i) + (ii)

$4(a + b) = 28$

$a + b = \frac{28}{4}$

$\boxed{a + b = 7}$

77. If $x^2 + ax + b$, when divided by $x - 4$, left a remainder of 32 and $x^2 + bx + a$, when divided by x–4, left a remainder of 35, then a + b = ?

(a) –7 (b) 23

(c) –23 (d) 7

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

Ans : (d) $\because$

left remainder is 32 from $x^2 + ax + b \div (x - 4)$

$\therefore$ totally divide (x-4) from $x^2 + ax + b - 32 = 0$

$x - 4 = 0$

putting $x = 4$

$(4)^2 + 4a + b - 32 = 0$

$\Rightarrow$ $16+4a+b-32 = 0$

$\Rightarrow$ $4a+b = 16$ ..... (i)

and left remainder is 35 from $(x^2+bx+a) \div (x-4)$

$\therefore x^2 + bx + a - 35 = 0$, it will be totally divisible from x–4

$\Rightarrow$ $x - 4 = 0$

$\Rightarrow$ putting $x = 4$

$(4)^2 + b \times 4 + a - 35 = 0$

$16 + 4b + a - 35 = 0$
$4b + a - 19 = 0$
$4b+a = 19$ ..... (ii)
Adding equation (i) + (ii)
$5a+5b = 16+19$
$5(a+b) = 35$
$a+b= 7$

78. If $x^2 + ax + b$, divided by x+3 then the remaining – 1 is obtained and the expression $x^2 + bx + a$ when divided by x – 3 then the remaining 39 is obtained. What is the value of a+b?
(a) – 14 (b) – 38
(c) 14 (d) 38
RRB ALP & Tec. (10-08-18 Shift-II)

Ans : (c) $x^2 + ax + b = -1$
putting x = –3
$9 - 3a + b = -1$
$b - 3a = -10$ ..... (1)
$x^2 + bx + a = 39$
putting x = 3
$9 + 3b + a = 39$
$3b + a = 30$ ..... (2)
solving equation from (1) and (2)
a = 6, b = 8
a + b = 6 + 8 = 14

Type - 6

79. Factors of $x^2 + 7x + 10$ are.
(a) (x – 5) (x – 2) (b) (x + 5) (x + 2)
(c) (x – 5) (x + 2) (d) (x – 4) (x + 2)
RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (b) factor of $x^2 + 7x + 10$
$= x^2 + 5x + 2x + 10$
$= x (x+5) + 2 (x+5)$
$= (x+5) (x+2)$

80. $x^3+5x^2-2x-24$ has a zero x=2. Find the other zero.
(a) -3, 5 (b) -2, 3
(c) -3, -4 (d) 3, 4
RRB JE - 24/05/2019 (Shift-III)

Ans : (c) (x-2) is a factor of $x^3 + 5x1^2 - 2x - 24$
$x^2 (x - 2) + 7x^2 - 2x - 24 = 0$
$x^2 (x - 2) + 7x (x - 2) + 12x - 24 = 0$
$x^2 (x - 2) + 7x (x - 2) + 12 (x - 2) = 0$
$(x^2 + 7x + 12) (x - 2) = 0$
$(x + 4) (x + 3) (x - 2) = 0$
$x = -4, -3, 2$

81. If (x – 1) and (x + 3), is factor of $x^2 + ax + b$, then find the value of 'a' and 'b' respectively.
(a) 2, 3 (b) 2, – 3
(c) –2, –3 (d) –2, 3
RRB JE - 25/05/2019 (Shift-I)

Ans. (b) equation x^2+ax+b has a factor of (x–1) and (x+3)
$(x - 1) (x + 3) = x^2 + ax + b$
$x^2 + 3x - x - 3 = x^2 + ax + b$
$x^2 + 2x - 3 = x^2 + ax + b$
compare of both sides
a = 2 b = –3

82. What is the squarroot of $(x^2+4x+4) (x^2+6x+9)$
(a) (2x + 3) (x + 3) (b) (x + 2) (x+3)
(c) (x + 2) (2x + 3) (d) (x+2) (x+4)
RRB Group-D – 31/10/2018 (Shift-II)

Ans : (b) $(x^2 + 4x + 4) (x^2 + 6x + 9)$
$(a^2 + 2ba+b^2) (a^2 + 2.a.b + b^2)$ comprising
$(a+b)^2 (a+b)^2$
$\{(x^2 + 2.2x + (2)^2\} \{(x^2 + 2.3. x + (3)^2\}$
$(x+2)^2 (x+3)^2$
square root = $\boxed{(x+2)(x+3)}$

83. Find the factors of $(x^2 + x - 42)$
(a) (x+14) (x–3) (b) (x+6) (x–7)
(c) (x–6) (x+7) (d) (x–14) (x+3)
RRB NTPC 30.03.2016 Shift : 1

Ans : (c) $x^2 + x - 42$
$= x^2 + 7x - 6x - 42$
$= x(x+ 7) - 6 (x+7)$
$= (x-6) (x+7)$

84. Select the correct factor of $f(x) = 2x^2 - 5x + 2$
(a) x – 2 (b) x – 3
(c) x – 4 (d) x –5
RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (a) $f (x) = 2x^2 - 5x + 2$
$= 2x^2 - 4x - x + 2$
$= 2x (x - 2) - 1 (x - 2)$
$= (2x - 1) (x - 2)$

85. Find the factors of $x^2 + x - 20$
(a) (x + 5) (x – 4) (b) (x + 4) (x – 5)
(c) (x – 2 (x + 10) (d) (x – 2) (x + 5)
RRB NTPC 09.04.2016 Shift : 3

Ans : (a) $x^2 + x - 20$
$= x^2 + 5x - 4x -20$
$= x (x+5) - 4 (x+ 5)$
$= (x + 5) (x - 4)$

86. If the factor of $3x^4 - (a + 2) x^3 - x^2 - 4$ is (x-2), then find the value of 'a'
(a) 5 (b) -1
(c) 3 (d) 4
RRB NTPC 22.04.2016 Shift : 1

Ans : (c) Given -
factor of $3x^4 - (a + 2) x^3 - x^2 - 4 = (x -2)$
$\because$ x -2, is a factor
$\therefore$ $x-2 = 0 \Rightarrow x = 2$
$\Rightarrow 3\times(2)^4 - (a+2)\times(2)^3 - (2)^2 - 4 = 0$
$\Rightarrow 3\times16 - (a+2)\times8 - 4 - 4 = 0$
$\Rightarrow 48 - 8a - 16 - 8 = 0$
$\Rightarrow 24 - 8a = 0$
$\Rightarrow 8a = 24$
$\Rightarrow a = \frac{24}{8}$
$\Rightarrow \boxed{a = 3}$

87. Factorise : $(x^2 - 13x - 48)$
(a) (x - 4) (x + 12) (b) (x + 4) (x - 12)
(c) (x - 16) (x + 3) (d) (x + 16) (x - 3)
RRB NTPC 26.04.2016 Shift : 1

Ans : (c) $x^2 - 13x - 48$
$= x^2 - 16x + 3x - 48$
$= x(x-16) + 3(x-16)$
$= (x-16)(x+3)$

88. Factors of $x^2 - 8x + 12$
(a) $(x-6)(x-2)$ (b) $(x-6)(x+2)$
(c) $(x-4)^2$ (d) $(x+6)(x-2)$
RRB NTPC 27.04.2016 Shift : 1

Ans : (a) $x^2 - 8x + 12$
$= x^2 - 6x - 2x + 12$
$= x(x-6) - 2(x-6)$
$= (x-6)(x-2)$

89. Factors of $x^2 - 6x + 8$
(a) $(x-4)(x-2)$ (b) $(x+4)(x+2)$
(c) $(x+8)(x-2)$ (d) $(x-4)(x+2)$
RRB NTPC 29.04.2016 Shift : 2

Ans : (a) given expression $x^2 - 6x + 8$
$= x^2 - 4x - 2x + 8$
$= x(x-4) - 2(x-4)$
$= (x-4)(x-2)$

90. Factors of $x^2 - 2x - 15$
(a) $(x+5)(x-3)$ (b) $(x-5)(x-3)$
(c) $(x-3)(x-1)$ (d) $(x-5)(x+3)$
RRB NTPC 29.04.2016 Shift : 3

Ans. (d) : from the question
$x^2 - 2x - 15$
$= x^2 - 5x + 3x - 15$
$= x(x-5) + 3(x-5)$
$= (x-5)(x+3)$

91. Factors of $x^2 - 6x + 8$
(a) $(x+4)(x-2)$ (b) $(x-4)(x+2)$
(c) $(x-4)^3$ (d) $(x-4)(x-2)$
RRB NTPC 30.04.2016 Shift : 1

Ans : (d) $x^2 - 6x + 8$
$= x^2 - 4x - 2x + 8$
$= x(x-4) - 2(x-4)$
$= (x-4)(x-2)$

92. Factors of $x^2 + 6x + 8$
(a) $(x+4)(x+2)$ (b) $(x-4)(x+2)$
(c) $(x-)2$ (d) $(x-4)(x-2)$
RRB NTPC 30.04.2016 Shift : 2

Ans : (a) $x^2 + 6x + 8$
$= x^2 + 4x + 2x + 8$
$= x(x+4) + 2(x+4)$
$= (x+4)(x+2)$

Type - 7

93. If there is two real solution of $x^2 - 4x + 4b = 0$, then find the value of 'b'.
(a) $b \geq 1$ (b) $b < 1$
(c) $b = +1, -1$ (d) $b = 0$
RRB JE - 22/05/2019 (Shift-I)

Ans : (b) $x^2 - 4x + 4b = 0$
Discriminant's value must be positive for two real solution of quadratic equations
or
$b^2 - 4ac > 0$
$(-4)^2 - 4 \times 1 \times 4b > 0$
$16 - 16b > 0$
$16 > 16b$
$1 > b$
so $b < 1$

94. If the two roots of the quadratic equation is α andβ, when $\alpha+\beta=8$ and $\alpha-\beta=2$, then equation is
(a) $x^2 - 8x + 15 = 0$ (b) $x^2 + 8x - 15 = 0$
(c) $x^2 - 8x - 15 = 0$ (d) $x^2 + 8x + 15 = 0$
RRB JE - 23/05/2019 (Shift-II)

Ans : (a)
$\because \alpha$ and β quadratic equations have two roots.
$\alpha + \beta = 8$ ..... (i)
$\alpha - \beta = 2$ ..... (ii)
$2\alpha = 10$
$\alpha = 5$
from equation (i) −
$5 + \beta = 8$
$\beta = 3$
quadratic equation
$x^2 - (\alpha + \beta)x + \alpha\beta = 0$
$x^2 - 8x + 15 = 0$

95. Find the root of $2x^2 - 15x + 28$
(a) Both negative
(b) Not real
(c) One positive, one negative
(d) Both positive
RRB JE - 27/05/2019 (Shift-I)

Ans : (d)
$2x^2 - 15x + 28 = 0$
$2x^2 - (8 + 7)x + 28 = 0$
$(2x^2 - 8x) - (7x - 28) = 0$
$2x(x-4) - 7(x-4) = 0$
$(2x-7)(x-4) = 0$
$2x - 7 = 0$
$x = 7/2$
$x - 4 = 0$
$x = 4$
It is clear that both roots is positive.

96. For which value of 'K' are the roots of the equation kx(x-2) + 6 = 0 is similar.
(a) 6 (b) 0, 6
(c) 3, 2 (d) -2
RRB JE - 27/05/2019 (Shift-III)

Ans : (a) $kx(x-2) + 6 = 0$
$kx^2 - 2kx + 6 = 0$
roots of quadratic equations will be equal if value of these discriminant will be zero.
$b^2 - 4ac = 0$
$(-2k)^2 - 4 \times k \times 6 = 0$
$4k^2 - 24k = 0$
$4k(k-6) = 0$
$k = 6$

97. If a and b are the roots of equation $3x^2 - 5x + 2 = 0$ then find the value of (a/b)+(b/a).

(a) 13/9 (b) 13/6
(c) 13/2 (d) 9/13

RRB JE - 28/05/2019 (Shift-II)

Ans : (b) Comparing equation $Ax^2 + Bx + C = 0$ from equation $3x^2 - 5x + 2 = 0$
A = 3, B = -5, C = 2

sum of roots $(a + b) = \frac{-B}{A} = \frac{-(-5)}{3} = \frac{5}{3}$

Multiplication of roots $(ab) = \frac{C}{A} = \frac{2}{3}$

$$\frac{a}{b} + \frac{b}{a} = \frac{a^2 + b^2}{ab}$$
$$= \frac{a^2 + b^2 + 2ab - 2ab}{ab}$$
$$= \frac{(a+b)^2 - 2ab}{ab}$$
$$= \frac{\left(\frac{5}{3}\right)^2 - 2 \times \frac{2}{3}}{\frac{2}{3}}$$
$$= \frac{\frac{25}{9} - \frac{4}{3}}{\frac{2}{3}}$$
$$= \frac{\frac{25-12}{9}}{\frac{2}{3}}$$
$$= \frac{13}{9} \times \frac{3}{2} = \frac{13}{6}$$

98. For which value of 'K' in equation $x^2 + 2Kx + 4 = 0$, is a real solution?

(a) 0 (b) 2, 0
(c) –2, 0 (d) 2, – 2

RRB JE - 31/05/2019 (Shift-I)

Ans : (d) Real solution is $x^2 + 2Kx + 4 = 0$ for the value of K

$B^2 + 4AC = 0$
$4k^2 - 16 = 0$
$k^2 = 4$
$k = \pm 2$

99. Given $2x^2+19x+45 = 0$ and $2y^2+11y+12 = 0$ then which of the following is true for the roots x, y.

(a) $x \geq y$ (b) $x < y$
(c) $x \leq y$ (d) $x > y$

RRB JE - 31/05/2019 (Shift-III)

Ans. (b) $2x^2 + 19x + 45 = 0$
$2x^2 + 10x + 9x + 45 = 0$
$2x(x + 5) + 9(x + 5) = 0$
$(x + 5)(2x + 9) = 0$
$x = -5, -9/2$

$\because$ $2y^2 + 11y + 12 = 0$
$2y^2 + 8y + 3y + 12 = 0$
$2y(y + 4) + 3(y + 4) = 0$
$(y + 4)(2y + 3) = 0$
$y = -4, -3/2$

It is clear that $y > x$

100. Find the equation whose roots are $(a + \sqrt{b})$ and $(a - \sqrt{b})$.

(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) $x^2 + ax + a^2 - b^2 = 0$

RRB JE - 02/06/2019 (Shift-III)

Ans : (b) Equation's roots is $(a + \sqrt{b})$, $(a - \sqrt{b})$

x^2 – (sum of roots) x + multiplication of roots = 0
$x^2 - (a+\sqrt{b} + a-\sqrt{b})x + (a+\sqrt{b})(a-\sqrt{b}) = 0$
$x^2 - 2ax + (a^2 - b) = 0$

101. If α and β are the roots of quadratic equation $(5+\sqrt{2})x^2 - (4+\sqrt{5})x + (8+2\sqrt{5}) = 0$ then the value of $\frac{2\alpha\beta}{\alpha+\beta}$ will be.

(a) 4 (b) 2
(c) 8 (d) 7

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (a) $\alpha + \beta = \frac{-b}{a} = \frac{+(4+\sqrt{5})}{(5+\sqrt{2})}$

$$\alpha\beta = \frac{c}{a} = \frac{8+2\sqrt{5}}{5+\sqrt{2}}$$

$$\frac{2\alpha\beta}{\alpha+\beta} = \frac{2 \times \left(\frac{8+2\sqrt{5}}{5+\sqrt{2}}\right)}{\left(\frac{4+\sqrt{5}}{5+\sqrt{2}}\right)}, = 4 \times \frac{(4+\sqrt{5})}{(5+\sqrt{2})} \times \frac{(5+\sqrt{2})}{(4+\sqrt{5})} = 4$$

102. A root of $x^2 - 12x + 2k = 0$ is x = 4. The other root will be -

(a) x = 6 (b) x = 8
(c) x = –4 (d) x = –8

RRB RPF SI – 06/01/2019 (Shift-I)

Ans. (b) : $x^2 - 12x + 2k = 0$ putting x = 4 in
$(4)^2 - 12 \times 4 + 2k = 0$
$16 - 48 + 2k = 0$
$2k = 32$
$\boxed{k = 16}$

New equation
$x^2 - 12x + 32 = 0$
$x^2 - 12x + 32 = 0$
$x^2 - 8x - 4x + 32 = 0$
$x(x-8) - 4(x-8) = 0$
$(x-8)(x-4) = 0$
$x - 8 = 0 \Rightarrow x = 8$
$\therefore$ 0 then root = 8

103. Solve the following equation to find the value of 'x'. $(x-2)^2 - 36 = 0$; $x \in N$

(a) 4 (b) –8
(c) –4 (d) 8

RRB Group-D – 03/10/2018 (Shift-I)
RRB RPF Constable – 17/01/2019 (Shift-I)

Ans : (d)
$(x-2)^2 - 36 = 0$ $x \in N$
$x^2 + 4 - 4x - 36 = 0$
$x^2 - 4x - 32 = 0$
$x^2 - 8x + 4x - 32 = 0$
$x(x-8) + 4(x-8) = 0$
$(x-8)(x+4)$
so x = 8, –4 but according to the question $x \in N$ so value of x will be 8.

104. Two square roots of a quadratic equation is given as $x = \frac{1}{7}$ and $x = \frac{-1}{8}$. The equation can be written as–

(a) $(7x + 1)(8x + 1) = 0$
(b) $(7x - 1)(8x - 1) = 0$
(c) $(7x + 1)(8x - 1) = 0$
(d) $(7x-1)(8x+1) = 0$

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (d)
$x = \frac{1}{7}, \quad x = -\frac{1}{8}$
$\Rightarrow 7x = 1, \quad 8x = -1$
$(7x - 1) = 0, (8x + 1) = 0$
quadratic equations will be–
$\boxed{(7x-1)(8x+1) = 0}$

105. Solve- $x : x \in N; (x-4)^2 - 36 = 0$

(a) 2 (b) –2
(c) 10 (d) –10

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (c) $(x-4)^2 - 36 = 0$
$x^2 + 16 - 8x - 36 = 0$
$x^2 - 8x - 20 = 0$
$x^2 - 10x + 2x - 20 = 0$
$x(x-10) + 2(x-10) = 0$
$(x+2)(x-10) = 0$
$x - 10 = 0$
$\boxed{x = 10}$
$x + 2 = 0$
$x = -2$
Always it is taken as positive value.

106. One of the roots of equation $x^2 - 24x + k = 0$ is x = 2 other value will be–

(a) x = 12 (b) x = –22
(c) x = 22 (d) x = –12

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (c) : $x^2 - 24x + k = 0$
one root x = 2 then putting the value of x in equation
$(2)^2 - 24 \times 2 + k = 0$
$4 - 48 + k = 0$
$k - 44 = 0$
$k = 44$
substituting the value of k into the equation-
$x^2 - 24x + 44 = 0$
$x^2 - 22x - 2x + 44 = 0$
$x(x-22) - 2(x-22) = 0$
$(x-2)(x-22) = 0$
x = 2 and x = 22
(given)
so other root = 22

107. If $a + \frac{1}{a} = -6$ then find the value of $a^3 + \frac{1}{a^3}$.

(a) -198 (b) -216
(c) 216 (d) 198

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (a) : $a + \frac{1}{a} = -6$
Cube of both sides
$\left(a + \frac{1}{a}\right)^3 = (-6)^3$
$a^3 + \frac{1}{a^3} + 3 \times a \times \frac{1}{a}\left(a + \frac{1}{a}\right) = (-6)^3$
$a^3 + \frac{1}{a^3} + 3\left(a + \frac{1}{a}\right) = -216$
$a^3 + \frac{1}{a^3} + 3 \times (-6) = -216$
$a^3 + \frac{1}{a^3} = -216 + 18$
$a^3 + \frac{1}{a^3} = -198$

108. If $x^2+1.5kx+4.5k=0$ contains the recurring root, what will be the satisfactory value of k.

(a) only k = 8 (b) k < 0 or k > 8
(c) k = 8 or k = 0 (d) 0 < k < 8

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (c) Quadratic equations-
comparing from $ax^2 + bx + c$
$x^2 + 1.5kx + 4.5k = 0$
a = 1, b = 1.5k, c = 4.5k
$b^2 - 4ac = 0$
$(1.5k)^2 - 4 \times 1 \times 4.5k = 0$
$\frac{225k^2}{100} - 18k = 0$
$225k^2 - 1800k = 0$
$225k^2 = 1800k$
$\boxed{k = 8}$ or k = 0

109. If α and β are o (zero) of the polynomial $x^2 - 5x + 6$. Then find the value of $\frac{\alpha^2 + \beta^2}{\alpha^{-2} + \beta^{-2}}$=?

(a) 63 (b) 62
(c) 36 (d) 26

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (c)
Quadratic equations $ax^2 + bx + c = 0$ of root (zero) is α and β then $\alpha+\beta=-\frac{b}{a}$

and $\alpha.\beta=\frac{c}{a}$

given polynomial $x^2 - 5x + 6$

$\therefore \alpha+\beta = 5$

$\alpha.\beta = 6$

$$\therefore \frac{\alpha^2+\beta^2}{\alpha^{-2}+\beta^{-2}}=\frac{\alpha^2+\beta^2}{\alpha^{\frac{1}{2}}+\beta^{\frac{1}{2}}}=\frac{\alpha^2+\beta^2}{\alpha^2+\beta^2}.\alpha^2\beta^2=\alpha^2\beta^2$$

$$=(\alpha\beta)^2$$

$$=6^2=36$$

110. If $x^2 + 4.5kx + 13.5k = 0$ have recurring roots, then what condition will the value to satisfy.

(a) $0 < k < \frac{8}{3}$ (b) $k < 0$ or $k > \frac{8}{3}$

(c) $k=\frac{8}{3}$ (d) $k=\frac{8}{3}$ or $k = 0$

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (d) $x^2 + 4.5\,kx + 13.5\,k = 0$

$$x^2+\frac{9}{2}kx+\frac{27}{2}k=0$$

if root is equal/same then–

$b^2 - 4ac = 0$

$$\left(\frac{9}{2}\right)^2 k^2-4\times\frac{27}{2}k=0$$

$$\frac{81}{4}k^2-54k=0$$

$$k\left\{\frac{81}{4}k-54\right\}=0$$

$k = 0,$

or $81k = 54 \times 4$

$$k=\frac{8}{3}$$

111. Two roots of a quadratic equation are $x=\frac{1}{11}$ and $x=\frac{-1}{9}$. The equation can be written as which of the following.

(a) $(11x + 1)(9x - 1) = 0$
(b) $(11x + 1)(9x + 1) = 0$
(c) $(11x - 1)(9x + 1) = 0$
(d) $(11x - 1)(9x - 1) = 0$

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (c) When two roots given α and β

$$\alpha=\frac{1}{11},\ \beta=\frac{-1}{9}$$

quadratic equation written as-

$$(x-\alpha)(x-\beta)=0$$

$$\left(x-\frac{1}{11}\right)\left(x+\frac{1}{9}\right)=0$$

$$\left(\frac{11x-1}{11}\right)\left(\frac{9x+1}{9}\right)=0$$

$\Rightarrow$ $(11x - 1)(9x + 1) = 0$

112. If $3x^2+2kx+k=0$ has no real solution, then what will be correct about the value of k.

(a) $k < 0$ or $k > 3$ (b) $k > 3$
(c) $0 < k < 3$ (d) $k < 0$

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (c) When root is not real

by formula $b^2 - 4ac < 0$

$3x^2 + 2kx + k = 0$

$a = 3, b = 2k, c = k$

$4k^2 - 12k < 0$

$4k(k-3) < 0$

$0 < k < 3$

113. If $\alpha \neq \beta$ but $\alpha^2 = 5\alpha - 3, \beta^2 = 5\beta - 3$, then find the equation whose roots are $\frac{\alpha}{\beta}, \frac{\beta}{\alpha}$.

(a) $3x^2 - 19x - 3 = 0$ (b) $3x^2 - 19x + 3 = 0$
(c) $3x^2 + 19x - 3 = 0$ (d) $3x^2 + 19x + 3 = 0$

RRB Group-D – 05/12/2018 (Shift-I)

Ans : (b) Given-

$\alpha \neq \beta$

$\alpha^2 = 5\alpha - 3,$ $\beta^2 = 5\beta - 3$

$\alpha^2 - 5\alpha + 3 = 0$ $\beta^2 - 5\beta + 3 = 0$

$$\alpha=\frac{-(-5)\pm\sqrt{(-5)^2-4\times1\times3}}{2}$$

$$\beta=\frac{\left(+5\pm\sqrt{(-5)^2-4\times1\times3}\right)}{2}$$

$$\alpha=\frac{+5+\sqrt{25-12}}{2},\ \beta=\frac{+5-\sqrt{25-12}}{2}$$

$$\boxed{\alpha=\frac{+5+\sqrt{13}}{2}} \qquad \boxed{\beta=\frac{+5-\sqrt{13}}{2}}$$

Formula of quadratic equation -

x^2 – (sum of roots) x + multiplication of roots = 0

$$x^2-\left(\frac{\alpha}{\beta}+\frac{\beta}{\alpha}\right)x+\frac{\alpha}{\beta}\times\frac{\beta}{\alpha}=0$$

$$x^2-\left(\frac{\alpha^2+\beta^2}{\alpha\beta}\right)x+1=0$$

$$x^2-\left[\frac{\left(\frac{+5+\sqrt{13}}{2}\right)^2+\left(\frac{+5-\sqrt{13}}{2}\right)^2}{\left(\frac{+5+\sqrt{13}}{2}\right)\left(\frac{+5-\sqrt{13}}{2}\right)}\right]x+1=0$$

$$x^2-\frac{76}{25-13}x+1=0$$

$$x^2-\frac{76}{12}x+1=0$$

$$12x^2-76x+12=0$$

$$\Rightarrow \boxed{3x^2-19x+3=0}$$

114. If $2x^2+x-28<0$, then which of the following specifies all the possible values of 'x'.

(a) $x>\frac{7}{2}$ (b) $-4<x<\frac{7}{2}$

(c) $0<x<13$ (d) $x<-4$

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (b) $2x^2+x-28<0$

$2x^2+8x-7x-28<0$

$2x(x+4)-7(x+4)<0$

$(x+4)(2x-7)<0$

if $x+4<0$

$x>-4$

if $x-7<0$

$x<\frac{7}{2}$

So All possible value of $-4<x<\frac{7}{2}$, x is specified.

115. If α and β are the roots of $2x^2+7x-4=0$, then what will be the equation whose roots are α^2 and β^2.

(a) $4x^2-65x-16=0$

(b) $4x^2+65x-16=0$

(c) $4x^2-65x+16=0$

(d) $4x^2+65x+16=0$

RRB Group-D – 01/12/2018 (Shift-II)

Ans : (c) Equation $2x^2+7x-4=0$ is root of α, β

or $\alpha+\beta=\frac{-b}{a}=\frac{-7}{2}$

$\alpha.\beta=\frac{c}{a}=\frac{-4}{2}=-2$

if root of equation is α^2 and β^2 then

$\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=\frac{49}{4}-2\times(-2)=\frac{65}{4}$

$\alpha^2\beta^2=(\alpha\beta)^2=4$

quadratic equations–

x^2-(sum of root) $x+$(product of root) $=0$

$=x^2-\frac{65}{4}x+4=0$

$4x^2-65x+16=0$

116. If $2x^2-9x-18<0$, then which of the following specifies all the possible values of 'x'.

(a) $x<-\frac{3}{2}x$ (b) $-\frac{3}{2}<x<6$

(c) $x<6$ (d) $0<x<12$

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (b)

$2x^2-9x-18<0$

$\Rightarrow 2x^2-(12-3)x-18<0$

$\Rightarrow 2x^2-12x+3x-18<0$

$\Rightarrow 2x(x-6)+3(x-6)<0$

$\Rightarrow (x-6)(2x+3)<0$

$x-6<0$

Then $\boxed{x<6}$.....(i)

$2x+3<0$

$\boxed{x>\frac{-3}{2}}$.....(ii)

from equation (i) and (ii),

$-\frac{3}{2}<x<6$

117. What is the number of real roots of the equation? $(6-x)^4+(8-x)^4=16$

(a) 6 (b) 2

(c) 4 (d) 0

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (a) Putting x = 6

$(6-6)^4+(8-6)^4=16$

$2^4=16$

$16=16$

Putting = 8,

$(6-8)^4+(8-8)^4=16$

$(-2)^4=16$

So it is clear that two real root of equation will be 6 and 8.

118. If the roots α and β of the equation $x^2-x-1=0$ then what will be the equation whose roots will be $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$.

(a) $x^2+3x-1=0$ (b) $x^2+x-1=0$

(c) $x^2-x+1=0$ (d) $x^2+3x+1=0$

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (a) : root of $x^2-x-1=0$ is α and β then–

$\alpha+\beta=\frac{-b}{a}=-(-1)=1$ ..... (i)

and $\alpha.\beta=\frac{c}{a}=\frac{-1}{1}=-1$, ... (ii)

square of equation (i)

$\alpha^2+\beta^2+2\alpha\beta=1$

$\alpha^2+\beta^2-2=1$

$\alpha^2+\beta^2=3$ [from equation (i)]

that equation whose root are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$

x^2 – (sum of roots) x + (multiplication of root)

$$x^2-\left(\frac{\alpha}{\beta}+\frac{\beta}{\alpha}\right)x+\frac{\alpha}{\beta}\times\frac{\beta}{\alpha}=0$$

$$x^2-\left(\frac{\alpha^2+\beta^2}{\alpha.\beta}\right)x-1=0$$

$x^2+3x-1=0$

119. If $12x^2-ax+7 = ax^2+9x+3$ has only one (repeated) solution, then the positive integral solution of a is:

(a) 2 (b) 4
(c) 3 (d) 5

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (c) $12x^2-ax+7=ax^2+9x+3$

$x^2(12-a)-x(9+a)+4=0$ .....(i)

equation (i) compare to quadratic equation $ax^2+bx+c=0$
root of equation (i) will be equale (repeated)
if $b^2=4ac$
so taking a=3 from option (c) will be same root (repeated)

120. The value of k, for which the quadratic equation $4x^2+4\sqrt{3}x+k=0$ has equal roots is:

(a) –2 (b) 3
(c) 2 (d) –3

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (b) Same quadratic equation's root will be same if discriminant will be $D=b^2-4ac=0$

here, in $4x^2+4\sqrt{3}x+k=0$

$a=4,\ b=4\sqrt{3}$ and $c=k$

$(4\sqrt{3})^2-4\times4\times k=0$ {from $=b^2-4ac$}

$48-16k=0$

or $16k=48$

$\boxed{k=3}$

121. One of the roots of the equation $x^2-6x+k=0$ is x = 2. The other root is:

(a) x = 4 (b) x = –1
(c) x = –4 (d) x = 1

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (a) equation $x^2-6x+K=0$

x = 2 satisfies the equation

$2^2-6\times2+K=0$

K = 8

Now equation $x^2-6x+8=0$

(x–2) (x–4) = 0, x =2,x = 4

So second root of equation will be $\boxed{x=4}$

122. If $x^2+kx+k=0$ has repeated roots, then the value of k will satisfy:

(a) k < 0 or k > 4 (b) only k = 4
(c) k = 4 or k = 0 (d) 0 < k < 4

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (c) putting D = 0

$D=b^2-4ac=0$..... (1)

so comparing equation $ax^2+bx+c=0$ from $x^2+kx+k=0$

a = 1 b = k c = k

So putting value in equation (1)

$k^2-4\times1\times k=0$

$k^2-4k=0$

$k(k-4)=0$

$\boxed{k=0}$

$k-4=0$

then, $\boxed{k=4}$

So given option (c) is correct.

123. If $x^2+kx+k=0$ has two distinct real solutions, then the value of k will satisfy:

(a) 0 < k < 4
(b) k < 0 only
(c) k > 4 only
(d) k < 0 or k > 4

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

Ans : (d) Root is real and unequal

then $b^2-4ac>0$

According to the question,

$k^2-4k>0$

$k(k-4)>0$

$\boxed{k>4,\ k<0}$

124. The two roots of an quadratic equation are given an $x=\frac{1}{2}$ and $x=\frac{-1}{3}$. The equation can be written as:

(a) (2x–1) (3x–1) = 0 (b) (2x+1) (3x–1) = 0
(c) (2x+1) (3x+1) = 0 (d) (2x–1) (3x+1) = 0

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (d) Given root– $x=\frac{1}{2},\ x=-\frac{1}{3}$

equation,

$$\left(x-\frac{1}{2}\right)\left(x-\left(\frac{-1}{3}\right)\right)=0$$

$$\left(x-\frac{1}{2}\right)\left(x+\frac{1}{3}\right)=0$$

$\Rightarrow (2x-1)(3x+1)=0$

125. One quadratic roots of the equation $x^2-4x+k=0$ is x = 3. The other root is:

(a) x = – 1 (b) x = – 4
(c) x = 1 (d) x = 4

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

Ans : (c) Given-

$x^2-4x+k=0$ ....(i)

x = 3 ....(ii)

From equation (i) and (ii)

$9-4\times3+k=0$

k = 3

So

$x^2 - 4x + 3 = 0$

$x^2 - 3x - x + 3 = 0$

$x(x - 3) - 1(x - 3) = 0$

$(x - 3)(x - 1) = 0$

$x = 3, 1$

other root is 1.

Type - 8

126. What is the sum of the values of x satisfying $x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2$.

(a) 7 (b) -3

(c) 3 (d) -7

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (d)

$x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2$

cube of both side

$\left(x^{\frac{2}{3}} + x^{\frac{1}{3}}\right)^3 = (2)^3$

$x^2 + x + 3 \times 2.x = 8 \Rightarrow x^2 + 7x - 8 = 0$

$\Rightarrow (x + 8)(x - 1) = 0$

$\boxed{x = -8, 1}$

So sum of x value's $= -8 + 1$

$= -7$

127. The numbers of solution of equation $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$ is.

(a) 1 (b) 3

(c) 4 (d) 2

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (d) $x^{\frac{2}{3}} + x^{\frac{1}{3}} - 2 = 0$

$x^{\frac{2}{3}} + x^{\frac{1}{3}} = 2 ----(i)$

cube's both sides of equations

$x^2 + x + 3\left(x^{\frac{2}{3}} + x^{\frac{1}{3}}\right).x = 8$

$x^2 + x + 3x \times 2 = 8$

$x^2 + 7x - 8 = 0$

This is a quadratic equations. So number of solutions will be 2.

128. If $x < 5$ then, the sign of the value of the expression $-5x^2 + 2x + 7$ will be

(a) Can not be said (b) Non negative

(c) Negative (d) Positive

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (a) Since the value of x is less than 5 but not indicated that the value of x will be positive that negative. Hence the value of the given expression can not be determind.

Type - 9

129. Select the value which in the following expression will replace '?' If a+b+c = 0 then $a^3 + b^3 + c^3 = ? \times abc$

(a) 1 (b) 4

(c) 3 (d) 2

RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (c) We know that

$a^3 + b^3 + c^3 - 3abc = (a+b+c)(a^2+b^2+c^2-ab-bc-ca)$ ---(i)

Given-

$a + b + c = 0$

$a^3 + b^3 + c^3 = ? \times abc$

$\frac{a^3 + b^3 + c^3}{abc} = ?$ ---(ii)

Putting a + b + c = 0 in equation (i)

$a^3 + b^3 + c^3 - 3abc = 0$

$a^3 + b^3 + c^3 = 3abc$ ---(iii)

from equation (ii) and (iii)

$\frac{3abc}{abc} = 3$

130. If a(a+b+c) = 45; b (a + b + c) = 75 and c (a+ b + c) = 105 then find the value of $a^2 + b^2 + c^2$.

(a) 83 (b) 225

(c) 625 (d) 90

RRB JE - 25/05/2019 (Shift-III)

Ans : (a) $a(a + b + c) = 45$ .....(i)

$b(a + b + c) = 75$ .....(ii)

$c(a + b + c) = 105$ ..... (iii)

from equation (i) and (ii),

$\frac{a}{b} = \frac{3}{5}$ .....(iv)

from equation (ii) and (iii),

$\frac{b}{c} = \frac{5}{7}$ ..... (v)

from equation (iv) and (v),

$a : b : c = 3 : 5 : 7$

from eqation (i),

$3k(3 + 5 + 7)k = 45$

$45k^2 = 45$

$k^2 = 1$

$k = 1$

$\therefore$ $a^2 + b^2 + c^2 = 3^2 + 5^2 + 7^2$

$= 9 + 25 + 49$

$= 83$

131. If $x^{1/3} + y^{1/3} - z^{1/3} = 0$, then find the value of $(x + y - z)^3 + 27xyz$.

(a) $x^3 + y^3 - z^3$ (b) $-z^3$

(c) 1 (d) 0

RRB JE - 28/05/2019 (Shift-II)

Ans : (d) $x^{\frac{1}{3}} + y^{\frac{1}{3}} - z^{\frac{1}{3}} = 0$

$x^{\frac{1}{3}} + y^{\frac{1}{3}} = z^{\frac{1}{3}}$.....(i)

cube of both side

$$\left(x^{\frac{1}{3}}+y^{\frac{1}{3}}\right)^3=\left(z^{\frac{1}{3}}\right)^3$$

$$\left(x^{\frac{1}{3}}\right)^3+\left(y^{\frac{1}{3}}\right)^3+3x^{\frac{1}{3}}y^{\frac{1}{3}}\left(x^{\frac{1}{3}}+y^{\frac{1}{3}}\right)=z$$

from equation (i)

$$x+y+3x^{\frac{1}{3}}y^{\frac{1}{3}}z^{\frac{1}{3}}=z \qquad \left(\because x^{\frac{1}{3}}+y^{\frac{1}{3}}=z^{\frac{1}{3}}\right)$$

$$x+y-z=-3(xyz)^{\frac{1}{3}}$$

again cube of both side,

$$(x+y-z)^3=\left[-3(xyz)^{\frac{1}{3}}\right]^3$$

$(x + y - z)^3 = -27\ xyz$

$(x + y - z)^3 + 27\ xyz = 0$

132. If a + b + c = 0, then find the value of $(b + c)^2/bc + (c + a)^2/ca + (a + b)^2/ab$.

(a) $a^2 + b^2 + c^2$ (b) $2(a + b + c)^2$

(c) 8 abc (d) 3

RRB JE - 31/05/2019 (Shift-III)

Ans : (d) $a + b + c = 0$

$a + b = -c$

$(a + b)^2 = c^2$

$$\frac{(a+b)^2}{ab}=\frac{c^2}{ab} \qquad \text{----(i)}$$

Similarly,

$$\frac{(b+c)^2}{bc}=\frac{a^2}{bc} \qquad \text{----(ii)}$$

$$\frac{(c+a)^2}{ca}=\frac{b^2}{ca} \qquad \text{----(iii)}$$

from equation (i) + equation (ii) + equation (iii)-

$$\frac{(a+b)^2}{ab}+\frac{(b+c)^2}{bc}+\frac{(c+a)^2}{ca}=\frac{c^2}{ab}+\frac{a^2}{bc}+\frac{b^2}{ca}$$

$$=\frac{c^3+a^3+b^3}{abc}$$

$$=\frac{3abc}{abc}$$

$$\frac{(a+b)^2}{ab}+\frac{(b+c)^2}{bc}+\frac{(c+a)^2}{ca}=3$$

133. If a + b + c = 2s, then find the value of $(s - a)^3 + (s - b)^3 + 3(s - a)(s - b)c$.

(a) 2s (b) c^2

(c) c^3 (d) ac

RRB JE - 01/06/2019 (Shift-II)

Ans : (c) $a + b + c = 2s$ -----(i)

$(s-a)^3+(s-b)^3+3(s-a)(s-b) = (s-a+s-b)^3$

$= (2s-a-b)^3$

$= (a+b+c-a-b)^3$

$= c^3$

134. $$\frac{(a-b)^3+(b-c)^3+(c-a)^3}{3(a-b)(b-c)(c-a)}=?$$

What is the value of above expression?

(a) 1 (b) 4

(c) 0 (d) 2

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (a)

$$\frac{(a-b)^3+(b-c)^3+(c-a)^3}{3(a-b)(b-c)(c-a)}=?$$

Let $a - b = A$

$b - c = B$

$c - a = C$

so $A + B + C = a - b + b - c + c - a$

$= 0$

$\therefore A^3 + B^3 + C^3 = 3ABC$

or

formula- $(a-b)^3 + (b-c)^3 + (c-a)^3 = 3(a-b)(b-c)(c-a)$

so

$$=\frac{3(a-b)(b-c)(c-a)}{3(a-b)(b-c)(c-a)}$$

$= 1$

135. If a+b+c = 16 and ab+bc+ca = 78. Find the value of $a^3+b^3+c^3-3abc$.

(a) 218 (b) 352

(c) 320 (d) 220

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (b) :

$a+b+c=16$

$ab+bc+ca=78$

Find the value of $a^3+b^3+c^3-3abc=?$

$(a+b+c)^2=a^2+b^2+c^2+2ab+2bc+2ca$

$(16)^2=a^2+b^2+c^2+2ab+2bc+2ca$

$(16)^2-2(ab+bc+ca)=a^2+b^2+c^2$

$256-2\times 78=a^2+b^2+c^2$

$256-156=a^2+b^2+c^2$

$100=a^2+b^2+c^2$

$a^3+b^3+c^3-3abc=(a+b+c)\{(a^2+b^2+c^2)-(ab+bc+ca)\}$

$(a+b+c)\{(a^2+b^2+c^2)-(ab+bc+ca)\}$

$16\times(100-78)$

$\Rightarrow 16\times 22$

$\Rightarrow 352$

136. If a+b+c = 9 and $a^2+b^2+c^2 = 29$ then find the value of $a^3 + b^3 + c^3 - 3abc$.

(a) 9 (b) 27

(c) 3 (d) 81

RRB Group-D – 31/10/2018 (Shift-I)

Ans : (b) If $a + b + c = 9$ $a^2 + b^2 + c^2 = 29$

then $a^3 + b^3 + c^3 - 3abc = ?$

formula $= (a + b+c)^2 = a^2 + b^2 + c^2+2\ (ab+bc+ca)$

$(9)^2 = 29 + 2\ (ab + bc + ca)$

$81-29 = 2(ab+bc+ca)$
$26 = (ab+bc+ca)$
formula- $a^3+b^3+c^3-3abc = (a+b+c)[(a^2+b^2+c^2)-(ab+bc+ca)]$
$= 9(29-26)$
$= 9 \times 3$
$\boxed{a^3+b^3+c^3-3abc = 27}$

137. If 2x (x + y + z) = 250, 2y (x + y + z) = 100, 2z (x + y + z) = 100 then find the value of (3x + 6y + 15z).
(a) 110 (b) 95
(c) 85 (d) 69
RRB NTPC 19.04.2016 Shift : 1

Ans : (b) $2x(x+y+z) = 250$ …… (1)
$2y(x+y+z) = 100$ …… (2)
$2z(x+y+z) = 100$ …….. (3)
Adding the equation of (1), (2) and (3)
$(x+y+z)(2x+2y+2z) = 450$
$2(x+y+z)^2 = 450$
$(x+y+z)^2 = 225$
$x+y+z = 15$
$\therefore$ from equation (1), $x = \frac{250}{30} = \frac{25}{3}$
from equation (2), $y = \frac{100}{30} = \frac{10}{3}$
from equation (3), $z = \frac{100}{30} = \frac{10}{3}$
$\therefore 3x+6y+15z$
$= 3\times\frac{25}{3}+6\times\frac{10}{3}+15\times\frac{10}{3} = 25+20+50 = 95$

138. If a = 5, b = 4, c = 8 then find the value of $(a^3 + b^3 + c^3 - 3abc)/(ab + bc + ca - a^2 - b^2 - c^2)$.
(a) 15 (b) 17
(c) –17 (d) –15
RRB NTPC 19.04.2016 Shift : 2

Ans : (c) Given-
$a = 5, b = 4, c = 8$
$$\frac{a^3+b^3+c^3-3abc}{(ab+bc+ca-a^2-b^2-c^2)} = \frac{(a+b+c)(a^2+b^2+c^2-ab-bc-ca)}{-(a^2+b^2+c^2-ab-bc-ca)}$$
$= -(a+b+c) = -(5+4+8) = -17$

139. If $a^3 + b^3 + c^3 - 3abc = 0$ then find the value of $(a^2/bc + b^2/ac - 3)$.
(a) $-c^2/ab$ (b) $-c^2/bc$
(c) $-c^3/ba$ (d) $-c/a$
RRB NTPC 19.04.2016 Shift : 2

Ans : (a) Given-
$a^3+b^3+c^3-3abc = 0$ ……(i)
$\therefore \frac{a^2}{bc}+\frac{b^2}{ac}+\frac{c^2}{ab}-3 = 0$ (divide to abc in both side)
$\frac{a^2}{bc}+\frac{b^2}{ca}-3 = -\frac{c^2}{ab}$
$= \boxed{\frac{-c^2}{ab}}$

140. For real a, b and c if $a^2 + b^2 + c^2 = ab + bc + ca$, then find the value of $(a + b + c)^2$.
(a) $9a^2$ (b) $81a^2$
(c) $27a^2$ (d) $243a^2$
RRB NTPC 18.04.2016 Shift : 1

Ans : (a) from–
$a^2+b^2+c^2 = ab+bc+ca$
similarly $a^2 = ab$
$b^2 = bc$
$c^2 = ca$
so $a = b = c$ ----------(1)
so from the quesiton,
$\therefore (a+b+c)^2 = (a+a+a)^2$
$= 9a^2$

141. Given is a = 128, b = 130 and c = 132, find the value of a + b + c - 3abc
(a) 5000 (b) 4680
(c) 4280 (d) 4890
RRB NTPC 16.04.2016 Shift : 2

Ans : (b) Given-
$a = 128, b = 130, c = 132$
$a^3+b^3+c^3-3abc$
$= \frac{1}{2}(a+b+c)\{(a-b)^2+(b-c)^2+(c-a)^2\}$
$= \frac{1}{2}(128+130+132)$
$\{(128-130)^2+(130-132)^2+(130-132)^2+(132-128)^2\}$
$= \frac{1}{2}\times 390\{(-2)^2+(-2)^2+(4)^2\}$
$= 195 \times 24 = 4680$

142. If $a^2 + b^2 + c^2 + 3 = 2(a + b + c)$ then the value of (a + b + c).
(a) 2 (b) 5
(c) 4 (d) 3
RRB NTPC 12.04.2016 Shift : 1

Ans : (d) from the question,
$a^2+b^2+c^2+3 = 2(a+b+c)$
$\Rightarrow a^2+b^2+c^2+3-2(a+b+c) = 0$
$\Rightarrow (a^2-2a+1)+(b^2-2b+1)+(c^2-2c+1) = 0$
$\Rightarrow (a-1)^2+(b-1)^2+(c-1)^2 = 0$
$\Rightarrow \therefore a-1 = 0$ | $b-1 = 0$ | $c-1 = 0$
$a = 1$ | $b = 1$ | $c = 1$
$\therefore a+b+c = 1+1+1$
$= 3$

143. If (a + b + c) = 6 and $a^2 + b^2 + c^2 = 14$ then (ab + bc + ca) = ?
(a) 22 (b) 11
(c) 33 (d) 44
RRB NTPC 06.04.2016 Shift : 2

Ans : (b) $(a+b+c) = 6$, $a^2+b^2+c^2 = 14$, $(ab+bc+ca) = ?$
$(a+b+c)^2 = a^2+b^2+c^2+2(ab+bc+ca)$
$(6)^2 = 14+2(ab+bc+ca)$
$36-14 = 2(ab+bc+ca)$
$22 = 2(ab+bc+ca)$
$ab+bc+ca = 11$

144. If $w = -2, x = 3, y = 0$ and $z = -\frac{1}{2}$ then find the value of $2(w^2 + x^2 + y^2)$

(a) 26 (b) -26
(c) 25 (d) 28

RRB NTPC 26.04.2016 Shift : 2

Ans : (a) Given by,

$$w = -2,\ x = 3,\ y = 0,\ z = -\frac{1}{2}$$

from the question,

$$2(w^2 + x^2 + y^2) = ?$$

$$\Rightarrow \quad 2\left\{(-2)^2 + 3^2 + 0^2\right\}$$

$$\Rightarrow \quad 2(4 + 9 + 0)$$

$$\Rightarrow \quad 2 \times 13 = 26$$

145. Given is $w = -2,\ x = 3,\ y = 0$ and $z = -\frac{1}{2}$, find the value of $x^2(z + wy)$:

(a) –4.5 (b) 4.5
(c) 2 (d) –2

RRB NTPC 26.04.2016 Shift : 3

Ans : (a) $w = -2$, x=3, y=0, z=$-\frac{1}{2}$

$$x^2(z + wy) = (3)^2\left(-\frac{1}{2} + (-2 \times 0)\right)$$

$$= 9\left(\frac{-1}{2} + 0\right)$$

$$= 9 \times \frac{-1}{2} = \frac{-9}{2} = -4.5$$

146. If a + b + c = 0, then $(a^3 + b^3 + c^3)^2$ = ?

(a) $3a^2b^2c^2$ (b) $9a^2b^2c^2$
(c) 9abc (d) 27abc

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (b) According to the formula−

$a^3+b^3+c^3-3abc = (a + b + c)(a^2+b^2+c^2-ab-bc-ca)$

$\because$ Given− $(a + b + c) = 0$

$\therefore$ $a^3 + b^3 + c^3 - 3abc = 0\ (a^2 + b^2 + c^2 - ab - bc - ca)$

$a^3 + b^3 + c^3 - 3abc = 0$

$a^3 + b^3 + c^3 = 3abc$

Square of both side−

$(a^3 + b^3 + c^3)^2 = (3abc)^2$

$$\boxed{\left(a^3 + b^3 + c^3\right)^2 = 9a^2b^2c^2}$$

Type - 10

147. If $2^x - 2^{x-1} = 8$ then find the value of $2x^2+4x+3$.

(a) 41 (b) 20
(c) 21 (d) 51

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

Ans : (d) $2^x - 2^{x-1} = 8$

$\Rightarrow 2^x(1 - 2^{-1}) = 2^3$

$\Rightarrow 2^x\left(1 - \frac{1}{2}\right) = 2^3$

$\Rightarrow 2^x\left(\frac{1}{2}\right) = 2^3$

Multiply by 2 in both side-

$2^x = 2^4$

$\Rightarrow x = 4$

Put, x = 4 from the equation- $(2x^2+4x+3)$

$2x^2 + 4x + 3 = 2 \times (4)^2 + 4 \times 4 + 3$

$= 2\times16 + 16 + 3 = 32 + 19 = 51$

148. If $a^{x+y} = a^6$ and x is 2 more than y find x.

(a) 1 (b) 2
(c) 3 (d) 4

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (d) $a^{x+y} = a^6 \Rightarrow x + y = 6$.....(i)

from the question $x = y + 2 \Rightarrow$ $\boxed{y = x - 2}$

from the equation (i)-

$x + (x - 2) = 6$

$2x = 8 \Rightarrow x = 4$

149. 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

RRB JE - 28/06/2019 (Shift-III)

Ans. (d) $\frac{p}{b-c} = \frac{q}{c-a} = \frac{r}{a-b} = k$ (suppose)

p = (b–c)k = bk–ck

q = (c–a)k = ck–ak

r = (a–b)k = ak–bk

p+q+r = bk+ck+ak–ck–ak–bk = 0

150. IF y = 5 then find the value of $5y\sqrt{y^3 - y^2}$.

(a) 500 (b) 250
(c) 50 (d) $50\sqrt{2}$

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

Ans : (b) Given−

$y = 5,\quad 5y\sqrt{y^3 - y^2} = ?$

$= 5y\sqrt{y^3 - y^2} \quad = 5 \times 5\sqrt{(5)^3 - (5)^2}$

$= 25\sqrt{125 - 25} \quad = 25\sqrt{100}$

$= 25 \times 10 \quad = 250$

151. If 3x – y = 5 then find the value of $8^x/2^y$.

(a) 32 (b) 256
(c) 64 (d) 16

RRB JE - 27/05/2019 (Shift-II)

Ans : (a) 3x – y = 5 ..... (i)

$\because \quad \frac{8^x}{2^y} = \frac{2^{3x}}{2^y}$

$= 2^{3x-y}$ (from equation (i))

$= 2^5$

$= 32$

152. Evaluate $\sqrt{72+\sqrt{72+\sqrt{72+\sqrt{72+\sqrt{.....}}}}}$?

(a) 9 (b) 8
(c) $\sqrt{72}$ (d) 8.8

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans : (a) $\sqrt{72+\sqrt{72+\sqrt{72+\sqrt{72+.....}}}} = x$.....(i)

Square of both side,

$72+\sqrt{72+\sqrt{72+\sqrt{72+.....}}} = x^2$

from the equation (i)

$72 + x = x^2$

$x^2 - x - 72 = 0$

$x^2 - 9x + 8x - 72 = 0$

$x(x-9)+8(x-9)=0$

$(x+8)(x-9)=0$

$x-9=0, \quad x+8=0$

so $x = 9 \quad x = -8$ (invalid)

153. Find the value $\sqrt{2\sqrt{2\sqrt{2\sqrt{2\sqrt{....\infty}}}}}$?

(a) $\sqrt{2}$ (b) 2
(c) $2\sqrt{2}$ (d) 4

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (b) $\sqrt{2\sqrt{2\sqrt{2\sqrt{2.....\infty}}}}$

Let $x = \sqrt{2\sqrt{2\sqrt{2\sqrt{2.....\infty}}}}$ .....(1)

Square of equation (1)-

$x^2 = 2\sqrt{2\sqrt{2\sqrt{2\sqrt{2.....\infty}}}}$

$x^2=2x$

$x^2-2x=0$

$x(x-2) = 0$

$x = 0, 2 \quad x\neq0$

So, $\boxed{x=2}$

154. Solve:

$(a^{-1} + b^{-1}) \div (a^{-2} - b^{-2})$

(a) $\frac{ab}{b-a}$ (b) $\frac{a+b}{ab}$
(c) $\frac{ab}{a-b}$ (d) $\frac{a}{b}$

RRB NTPC 18.01.2017 Shift : 2

Ans : (a) $(a^{-1} + b^{-1}) \div (a^{-2} - b^{-2})$

$= \frac{\frac{1}{a}+\frac{1}{b}}{\frac{1}{a^2}-\frac{1}{b^2}} = \frac{\frac{a+b}{ab}}{\frac{b^2-a^2}{a^2b^2}} = \frac{a+b}{ab}\times\frac{a^2b^2}{(a+b)(b-a)}$

$\Rightarrow \boxed{\frac{ab}{b-a}}$

155. If Y^2+Y=12 then Y=?

(a) 2 (b) -1
(c) 4 (d) 3

RRB NTPC 31.03.2016 Shift : 3

Ans : (d) $Y^2 + Y = 12$

$\Rightarrow Y^2 + Y - 12 = 0$

$\Rightarrow Y^2 + 4Y - 3Y - 12 = 0$

$\Rightarrow Y(Y+4) - 3(Y+4) = 0$

$\Rightarrow (Y-3)(Y+4) = 0$

$Y = 3, -4$

So $\boxed{Y=3}$

156. Simplify $(2x)^2 - (2y)^2 - (4x)^2$

(a) $-12x^2 + 4y^2$ (b) $12x^2 - 4y^2$
(c) $-12x^2 - 4y^2$ (d) $12x^2 + 4y^2$

RRB NTPC 17.01.2017 Shift-1

Ans : (c) $(2x)^2 - (2y)^2 - (4x)^2$

$=4x^2 - 4y^2 - 16x^2$

$= -12x^2 - 4y^2$

or $-(12x^2 + 4y^2)$

157. If 4 (3x -2) = 2 (3x + 8), then x = ?

(a) 1 (b) 2
(c) 3 (d) 4

RRB NTPC 05.04.2016 Shift-1

Ans : (d) 4 (3x -2) = 2 (3x + 8)

12x – 8 = 6x + 16

12x – 6x = 16 + 8

6x = 24

$\Rightarrow x = \frac{24}{6} \Rightarrow x = 4$

158. Solve : if p=2 and q= –3 then $(p^2q - pq^2)$ = ...

(a) -6 (b) -30
(c) 6 (d) 30

RRB NTPC 04.04.2016 Shift : 2

Ans : (b) $p^2q - pq^2 = pq(p-q)$

$= 2\times(-3)[2-(-3)]$

$= -6(2+3)$

$= -30$

159. If $y = \frac{2x-1}{x+3}$ and y =1 then find the value of x.

(a) 4 (b) - 4
(c) 3/2 (d) 4/3

RRB NTPC 03.04.2016 Shift : 1

Ans : (a) $y = \frac{2x-1}{x+3}$

putting y =1

$1 = \frac{2x-1}{x+3} \quad \Rightarrow x+3 = 2x-1$

$\Rightarrow 2x - x = 3 + 1 \quad \Rightarrow x = 4$

160. Find the value of x in 5x + 7y = 19, 7x + 5y = 17

(a) 1 (b) 2
(c) 3 (d) 4

RRB NTPC 03.04.2016 Shift : 3

Ans : (a) 5x + 7y = 19 ……..(i)
7x + 5y = 17 ……..(ii)

After subracting equation (i) × 5 equation (ii) × 7,

25x + 35 y = 95
49x + 35y = 119
– – – .
−24x = −24

$x = \frac{24}{24} = 1$

161. Solve: (3x + y) (2x – 3y)

(a) $6x^2 - 9xy - 3y^2$ (b) $6x^2 - 7xy + 3y^2$
(c) $6x^2 - 7xy - 3y^2$ (d) $6x^2 - 11xy + 3y^2$

RRB NTPC 31.03.2016 Shift : 1

Ans : (c) (3x+y) (2x – 3y)
$= 6x^2 - 9xy + 2xy - 3y^2$
$= 6x^2 - 7xy - 3y^2$

162. If x + 2y = 27 and x – 2y = – 1 then find the value of y.

(a) 3 (b) 4
(c) 7 (d) 6

RRB NTPC 31.03.2016 Shift : 2

Ans : (c) x + 2y = 27 …….(1)
x – 2y = –1 …….(2)

∴ equation (1) − equation (2)

x + 2y = 27
x – 2y = –1
– + +
4y = 28
y = 7

163. Solve : (x + 2y) (2x –y)

(a) $2x^2 + 5xy + 2y^2$ (b) $2x^2 + 3xy - 2y^2$
(c) $x^2 + 4xy + y^2$ (d) $x^2 + 4xy - y^2$

RRB NTPC 29.03.2016 Shift : 3

Ans : (b) (x + 2y) (2x–y)
$= 2x^2 - xy + 4xy - 2y^2$
$= 2x^2 + 3xy - 2y^2$

164. P + Q = 2 (P – Q) if Q = 10, then find the value of P.

(a) 10 (b) 40
(c) 20 (d) 30

RRB NTPC 29.03.2016 Shift : 3

Ans : (d) P + Q = 2 (P–Q)
putting Q = 10,
P + 10 = 2 (P–10)
P + 10 = 2P–20
P = 30

165. If a+b = –2 and a–b = 12 then find the value of b?

(a) 5 (b) –5
(c) 7 (d) –7

RRB NTPC 28.03.2016 Shift : 2

Ans : (d) a + b = –2.....(i)
a – b = 12.....(ii)

adding, 2a = 10
a = 5

putting the value of a in equation (i)

5+ b = –2
b = –2 – 5
b = –7

166. If (2a/m + b/n) = 2 and (a/m-b/n) = 4 then find the value of 'a' and 'b' respectively.

(a) 2m, -2n (b) -2n, 2m
(c) 2m, 2n (d) -2n, 2m

RRB NTPC 18.01.2017 Shift : 1

Ans : (a) $\frac{2a}{m} + \frac{b}{n} = 2$.....(i)

$\frac{a}{m} - \frac{b}{n} = 4$.....(ii)

Adding equation (i) and (ii)

$\frac{2a}{m} + \frac{a}{m} = 6$

$\frac{3a}{m} = 6$

$\boxed{a = 2m}$

Again multiplying by 2 in equation (ii) then subtract of equation (i)

$\frac{2a}{m} - \frac{2b}{n} = 8$ .....(ii)×2

$\frac{2a}{m} + \frac{b}{n} = 2$ .....(i)

$-\frac{3b}{n} = 6$

$\boxed{b = -2n}$

So, a and b value is 2m, –2n respective y.

167. If $\left(x^2 + \frac{1}{16x^2}\right) = \frac{19}{2}$ then find the value of $\left(2x - \frac{1}{2x}\right)$

(a) 6 (b) 12
(c) 32 (d) 41

RRB NTPC 19.04.2016 Shift : 3

Ans : (a) $x^2 + \frac{1}{16x^2} = \frac{19}{2}$

$\Rightarrow 4x^2 + \frac{1}{4x^2} = \frac{19}{2} \times 4$ (multiply 4 in both side)

$\Rightarrow (2x)^2 + \frac{1}{(2x)^2} = 38$ .....(i)

$\because \quad \left(2x-\frac{1}{2x}\right)^2=(2x)^2+\frac{1}{(2x)^2}-2$

$= 38 - 2 = 36$

$\Rightarrow 2x-\frac{1}{2x}=\sqrt{36}=6$

168. If 3.5x = 0.07y then find the result of [y-x/y+x]

(a) 51/49 (b) 49/53
(c) 49/51 (d) 53/57

RRB NTPC 18.04.2016 Shift : 1

Ans : (c) Given-

3.5 x = 0.07y

$\frac{x}{y}=\frac{0.07}{3.5}=\frac{7}{350}$

$\frac{x}{y}=\frac{1}{50}$

$\therefore \frac{y-x}{y+x}=\frac{50-1}{50+1}=\frac{49}{51}$

169. If 0.08x + 0.04y = 10 and 0.2 (x–1) + 0.4y = 24.8 then find the value of x.

(a) 125 (b) 150
(c) 1.25 (d) 12.5

RRB NTPC 16.04.2016 Shift : 1

Ans : (a) From the question,

0.08x + 0.04y = 10

$\Rightarrow \frac{8}{100}x+\frac{4}{100}y=10$

$\Rightarrow$ 8x + 4y = 1000

$\Rightarrow$ 2x + y = 250 ……(i)

again

0.2 (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 …….(ii)

Multiplying 2 in equation (i) then subtract to equation (ii)

4x – x = 500–125

$\Rightarrow$ 3x = 375

$\boxed{x=125}$

170. Solve: x – 3 = 3x + 7

(a) 5 (b) –5
(c) 1 (d) $\frac{10}{4}$

RRB NTPC 11.04.2016 Shift : 1

Ans : (b) from the question,

x – 3 = 3x + 7

$\Rightarrow$ 3x –x = –3 –7

$\Rightarrow$ 2x = –10

$\boxed{x=-5}$

171. Given w = – 2, x = 3, y = 0 and z = $-\frac{1}{2}$ then the value of $\frac{z}{w}+x$

(a) $3\frac{1}{4}$ (b) $-3\frac{1}{4}$
(c) 3.2 (d) 3.5

RRB NTPC 11.04.2016 Shift : 2

Ans : (a) w = - 2, x = 3, y = 0 and z = $-\frac{1}{2}$

$\frac{z}{w}+x=\frac{-\frac{1}{2}}{-2}+3$

$=\frac{1}{4}+3 \quad =\frac{13}{4}=3\frac{1}{4}$

172. Given w = –2, x = 3, y = 0 and z = $-\frac{1}{2}$ then find the value of $x\sqrt{(x+wz)}$

(a) ±6 (b) –6
(c) 6 (d) 5

RRB NTPC 07.04.2016 Shift : 3

Ans :(a) w = – 2 , x = 3,y = 0 & z = $-\frac{1}{2}$

$x\sqrt{(x+wz)}=3\sqrt{\left(3+(-2\times\frac{-1}{2}\right)}$

$=3\sqrt{(3+1)}=3\sqrt{4}=3\times(\pm2)=\pm6$

173. If 22x – 40 = 207 + 3x, then x = ?

(a) 14 (b) 13
(c) 12 (d) 11

RRB NTPC 06.04.2016 Shift : 2

Ans : (b) 22x – 40 = 207 + 3x

22x – 3x = 207 + 40

19x = 247

$x=\frac{247}{19}$,

$\therefore$ x = 13

Type - 11

174. If $(a^2-b^2)\div(a+b)=25$ then the value of a-b is-

(a) 15 (b) 18
(c) 25 (d) 30

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (c) Given- $(a^2-b^2)\div(a+b)=25$

$\frac{(a-b)(a+b)}{(a+b)}=25$

$\boxed{a-b=25}$

175. If $x + y = 1$, then $x^3 + y^3 + 3xy - 1 = ?$

(a) 0 (b) 1
(c) 5 (d) 2

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (a) $x + y = 1$
Cube of both side
$(x+y)^3 = (1)^3$
$x^3 + y^3 + 3xy(x+y) = 1$ [$\because x + y = 1$]
$x^3 + y^3 + 3xy - 1 = 0$

176. If $a^2 + b^2 = 80$ and $a - b = 4$, then ab = ?

(a) 20 (b) 24
(c) 28 (d) 32

RRB NTPC 05.04.2016 Shift-1

Ans : (d) Given-
$a^2 + b^2 = 80$, $a - b = 4$
$\because (a - b)^2 = a^2 + b^2 - 2ab$
$\Rightarrow (4)^2 = 80 - 2ab$
$\Rightarrow 2ab = 80 - 16$
$\Rightarrow 2ab = 64$
$\Rightarrow ab = \frac{64}{2} \Rightarrow ab = 32$

177. Find $(x+y)^2 - (x-y)^2 = ?$

(a) $2x^2y^2$ (b) $4xy$
(c) $2x^2 + 2y^2$ (d) $x^2 - y^2 + 2xy$

RRB NTPC 03.04.2016 Shift : 2

Ans : (b)
$(x+y)^2 - (x-y)^2 = (x^2 + y^2 + 2xy) - (x^2 + y^2 - 2xy)$
$= x^2 + y^2 + 2xy - x^2 - y^2 + 2xy$
$= 4xy$

178. $(a-b)^2 + 2ab = ?$

(a) $a^2 - b^2$ (b) $a^2 + b^2$
(c) $a^2 - 4ab + b^2$ (d) $a^2 - 2ab + b^2$

RRB NTPC 30.03.2016 Shift : 1

Ans : (b) $(a-b)^2 + 2ab$
$= a^2 + b^2 - 2ab + 2ab$
$= a^2 + b^2$

179. Expand: $(c-3)^3$

(a) $c^3+9c^2+27c+27$ (b) $c^3-9c^2+27c-9$
(c) $c^3-9c^2+27c-27$ (d) $c^3-9c^2-27c-27$

RRB NTPC 30.03.2016 Shift : 2

Ans : (c) $(c-3)^3 = c^3 - 27 - 9c^2 + 27c$
$= c^3 - 9c^2 + 27c - 27$
[$\because (a-b)^3 = a^3 - b^3 - 3a^2b + 3ab^2$]

180. Expand : $(s + 2)^3$

(a) $s^3 + 3s^2 + 12s + 8$ (b) $s^3 + 3s^2 + 6s + 8$
(c) $s^3 + 6s^2 + 12s + 8$ (d) $s^3 + 6s^2 + 6s + 8$

RRB NTPC 29.03.2016 Shift : 3

Ans : (c) $(s + 2)^3 = s^3 + (2)^3 + 3 \times s \times 2(s + 2)$
$= s^3 + 8 + 6s^2 + 12s$
$= s^3 + 6s^2 + 12s + 8$

181. Given $(a^2 + b^2) = 60$, then find the value of $(a + b)^2 + (a-b)^2$

(a) 90 (b) 120
(c) 140 (d) 150

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Given−
$a^2 + b^2 = 60$ ……. (i)
$\therefore (a + b)^2 + (a-b)^2 = (a^2 + b^2 + 2ab) + (a^2 + b^2 - 2ab)$
$= a^2 + b^2 + 2ab + a^2 + b^2 - 2ab = 2(a^2 + b^2)$
$= 2 \times 60$ from equation (i)
$= \boxed{120}$

182. If $40x^2 = 334^2 - 134^2$ then value of x^2 is–

(a) 2340 (b) 234
(c) 1234 (d) 144

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) From the question,
$40x^2 = 334^2 - 134^2$ $\{a^2 - b^2 = (a+b)(a-b)\}$
$\Rightarrow 40x^2 = (334 - 134)(334+134)$
$\Rightarrow 40x^2 = 200 \times 468$
$\Rightarrow x^2 = 2340$

183. If $a - b = 5$ and $a^2 + b^2 = 97$ then ab = ?

(a) 48 (b) 32
(c) 36 (d) 72

RRB NTPC 27.04.2016 Shift : 2

Ans : (c) Given-
$a - b = 5$, $a^2 + b^2 = 97$
$(a-b)^2 = (5)^2$
$a^2 + b^2 - 2ab = 25$ ....(i)
take both side square
putting value of a^2+b^2 in eq^n (i)
$97 - 2ab = 25$
$-2ab = -72$
$ab = 36$

184. $(4x - 7)^2 = ?$

(a) $4x^2 - 56x + 49$ (b) $4x^2 - 14x + 49$
(c) $16x^2 - 14x + 49$ (d) $16x^2 - 56x + 49$

RRB NTPC 27.04.2016 Shift : 2

Ans : (d)
$\because (a - b)^2 = a^2 - 2ab + b^2$
$\therefore (4x-7)^2 = 16x^2 - 56x + 49$

185. If a-b = 5 and $a^2+b^2 = 31$ then find the value of ab –

(a) 4 (b) 5 (c) 2 (d) 3

RRB NTPC 28.04.2016 Shift : 1

Ans : (d) Given $a - b = 5$, $a^2 + b^2 = 31$
$(a - b)^2 = a^2 + b^2 - 2ab$
$5^2 = 31 - 2ab$
$25 = 31 - 2ab$
$2ab = 31 - 25 = 6$
$\boxed{ab = 3}$

23.

Venn Diagram

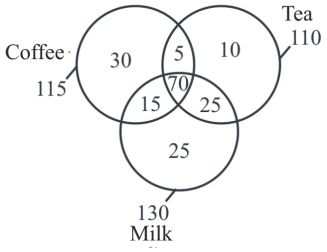
Type - 1

1. In a survey of 170 families, 115 take coffee, 110 take tea and 130 take milk. In addition, 85 coffee and milk, 75 coffee and tea, 95 tea and milk and 70 take all three. How many families take coffee and milk but not tea?

(a) 15 (b) 18
(c) 20 (d) 25

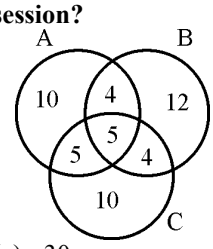
RRB RPF Constable – 19/01/2019 (Shift-I)

Ans : (a)



The number of families who take coffee and milk but not tea = 15

2. Following venn diagram represents 50 students who under go vocational training A, B & C. Each student participates in at least one training session. How many students actually participate in at least one such training session?

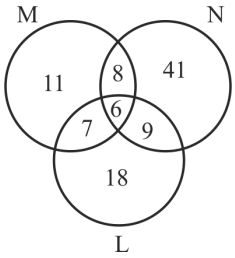


(a) 30 (b) 14
(c) 20 (d) 32

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (d) From venn diagram number of students who participate in at least one session of training session = 10 + 12 + 10 = 32

3.



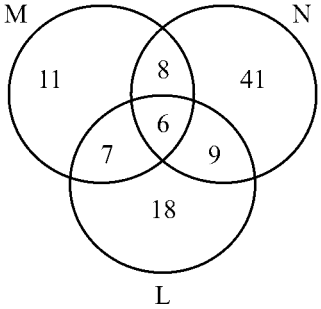
The above venn diagram shows the student who play 3 sport M, N and L. Number of students, playing sport N.

(a) 64 (b) 41
(c) 9 (d) 23

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (a)
Total number of students who play game N
= 41 + 8 + 6 + 9
= 64

4. The venn diagram shows the three games L, M and N is played by the students in a class. Number of total students who played only one game.

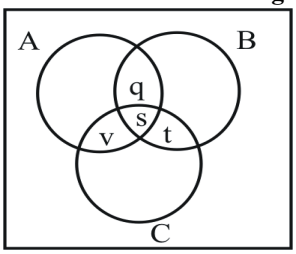


(a) 71 (b) 75
(c) 70 (d) 72

RRB Group-D – 05/10/2018 (Shift-II)

Ans. (c)
Total number of students who played only one game
= 11 + 41 + 18 = 70

5. Answer the following question using the venn diagram
A- People who are skilled.
B- People who are honest
C- People who are hard working.

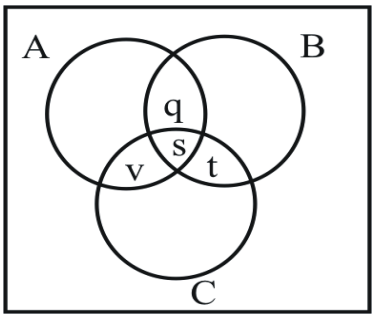


Which segment represent people who are only hard working but not honest or skilled.

(a) c-(v+t) (b) c
(c) c-(v+s+t) (d) c-(v+s)

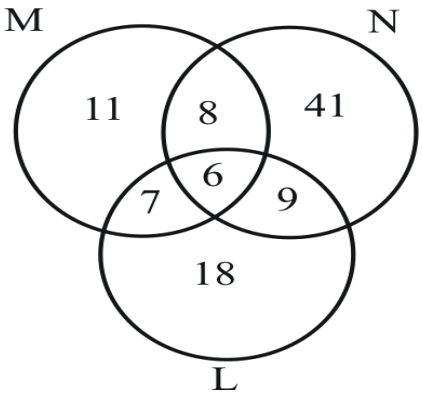
RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans. (c) :



It is clear from the Venn diagram that one who is only hardworking but not honest or skilled = c–(v+s+t)

6.



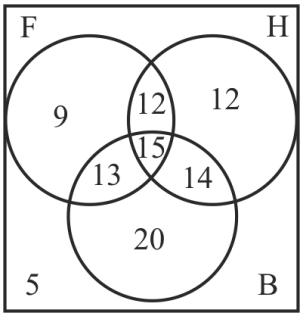
Above venn diagram shows those students who play 3 games M, N and L in the class. Number of students who play game L?

(a) 41 (b) 18
(c) 40 (d) 23

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (c) : It is clear from the given Venn diagram that the number of students, who play game L = 18+7+6+9= 40

7.

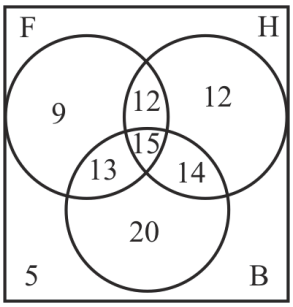


The given venn diagram shows those students who play football (F), Hockey (H) and Basket Ball (B) in the class. Total number of those students who play bastketball in class?

(a) 20 (b) 62
(c) 49 (d) 53

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (b)

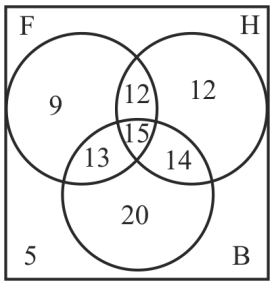


Number of students who play baseket ball

= 20+14+13+15

= 62

8. Following diagram shows no. of students play football (F), Hockey (H) and Basket Ball (B). What is the total no. of students who play the game F.

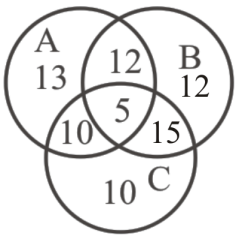


(a) 9 (b) 49
(c) 53 (d) 62

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (b) According to the diagram, the number of students who play game F = 9 + 12 + 15 + 13 = 49

9. The given venn diagram represents the sports competition of a group of 77 college students. Three sports are A–Badminton, B–Basketball and C–Tennis. How many students who like to play basketball but not Tennis?

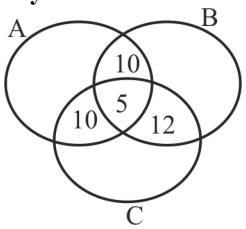


(a) 17 (b) 24
(c) 35 (d) 15

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (b) : Number of students who like to play basketball but not Tennis = 12 + 12 = 24

10. The given venn diagram shows the total 50 student. Who are sitting in three different exam A, B and C. All these who appeared in at least one examination, in how many students apeare in any one examination?

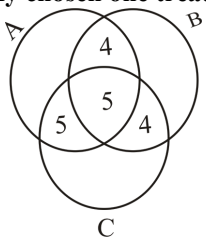


(a) 32 (b) 13
(c) 20 (d) 18

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (b) Number of students who appeared in only one exam = 50 – (10 + 5 + 12 + 10)
= 13

11. The given venn diagram shows 50 patient. Those who have selected at least one of the three treatment A, B and C. How many people have actually chosen one treatment?

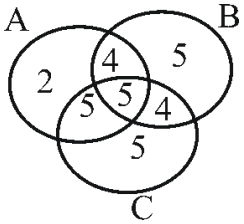


(a) 16 (b) 32
(c) 28 (d) 30

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (b) : The number of patients
Who choose one treatment
= 50 – (4 + 5 + 5 + 4)
= 50 – 18
= 32

12. Given venn diagram shows total 30 shops. Which buy three different brands of biscuits (A, B and C) from a vender. Every store has purchases at least one brand from the seller. How many shops purchased brand A biscuits from the seller.

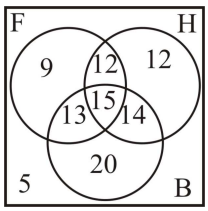


(a) 16 (b) 20
(c) 18 (d) 30

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (a) Required number of persons
= 2 + 4 + 5 + 5 = 16

13.



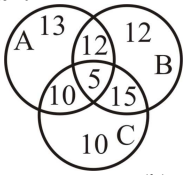
The diagram shows the number of students, playing football (F), Hockey (H) and Basketball (B) in a class. Total no. of students playing game H.

(a) 62 (b) 53
(c) 12 (d) 49

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (b) Total number of students who play Hockey (H)
= 12+15+12+14
= 38+15 = 53

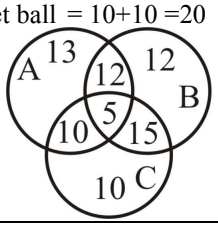
14. The given venn diagram represents the sports performances of a group of college students. Three sports A-Badminton, B-Basketball and C-Tennis. How many students play tennis but not Basketball.



(a) 20 (b) 12
(c) 17 (d) 40

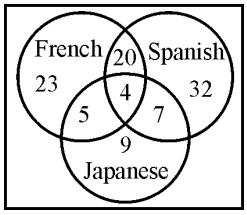
RRB Group-D – 26/10/2018 (Shift-II)

Ans : (a) Number of students who playing tennis but not basket ball = 10+10 =20



A = badminton
B = basketball
C= Tennis

15.



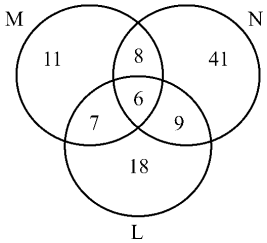
The above figure shows the number of students who study 3 languages in a class. What is the number of student studing only one language?

(a) 100 (b) 45
(c) 4 (d) 64

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (d) From the given data:-
The number of students who study only one language.
= 23 + 32 + 9 = 64

16. The appropriate venn diagram shows the students who play 3 games M, N and L in a class what is the total number of students playing game 'M'.



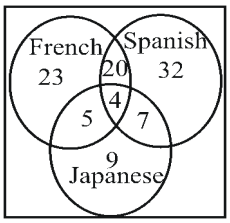
(a) 11 (b) 7
(c) 32 (d) 21

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (c) Total number of students who playing game M is = 11 + 8 + 7 + 6 = 32

Type - 2

17.



The given diagram shows the number of students studying 3 lanuages in a class, what is the number of students studying only 2 languages?

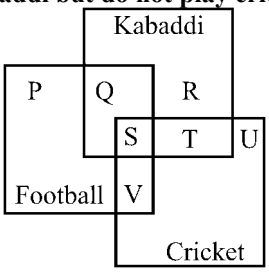
(a) 32 (b) 100
(c) 45 (d) 64

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

Ans. (a) From the given venn diagram the number of students who study only two languages

= 20 + 5 + 7 = 32

18. The students of a school play three different games. As given below, the diagram shows the number of students playing each sport, which part represents the players who play football and Kabaddi but do not play cricket.

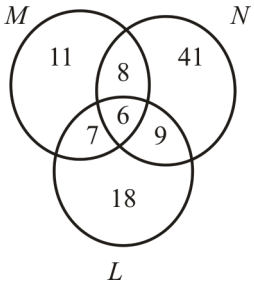


(a) P + Q + R (b) V + T
(c) S + T + V (d) Q

RRB RPF SI – 11/01/2019 (Shift-II)

Ans. (d) 'Q' plays both football and kabaddi but not plays cricket.

19.



The following venn diagram shows the students who pay 3 game M, N and L in a class, what is the total number of such students who play minimum two games?

(a) 28 (b) 31
(c) 35 (d) 30

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (d) According to the Venn diagram-

The number of students who play 3 games M, N and L in the class = 6

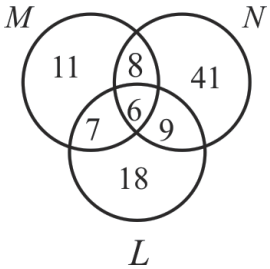
The number of students who play minimum two games

= 7 + 8 + 9 = 24

So the total students who play minimum two games

= 24+6 = 30

20.



The following venn diagram shows the students who play three games M, N and L in a class. What is the total numbers of students who are playing games N and L but not M is-

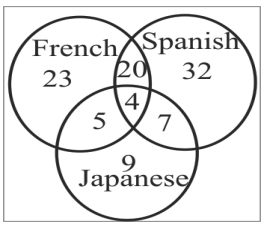
(a) 15 (b) 68
(c) 9 (d) 12

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) From the given Venn diagram-

Total number of students who play N and L but not play game M is '9'.

21.

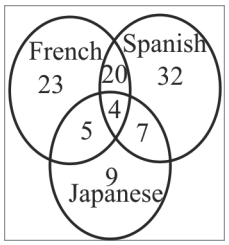


In this diagram the number of students studying three Language is shown, the number of students studying two language is-

(a) 45 (b) 100
(c) 64 (d) 32

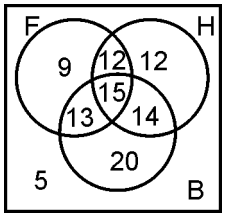
RRB Group-D – 16/10/2018 (Shift-I)

Ans. (d) :



The number of students who studying of two language
= 20+5+7
= 32

22. The diagram shows the number of students playing Football (F), Hockey (H) and Basketball (B) in a class. The total number of students actually playing two games.

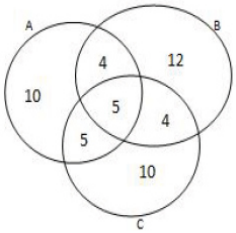


(a) 41 (b) 39
(c) 80 (d) 54

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (b) Total number of students who play two games
= 12 + 13 + 14 = 39

23. The following venn diagram shows a total of 50 students taking vocational training A, B and C. Each of which participates in at least one training session, how many students attend only two training session?

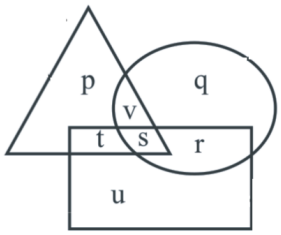


(a) 13 (b) 20
(c) 18 (d) 32

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a) Accoding to the question-
Number of students who attend only two training sessions = 5 + 4 + 4 = 13

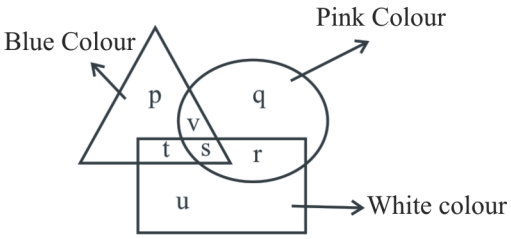
24. The following figure shows the color perference of a group of girl. The circle represents pink, the traingle represents blue and the rectangle represents white. Which group of girls like blue and pink but not white?



(a) s (b) p + v + q
(c) v (d) q + v

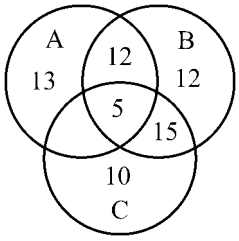
RRB Group-D – 24/10/2018 (Shift-II)

Ans. (b) :



It is clear from the figure that only P and q indicate blue colour and Pink colour whereas V indicate both blue and pink.
So Indicating blue and pink colour whereas not to white = p + v + q

25. In the given venn diagram, the game preference for a group of 77 college students is given. The three games are given as A, B and C. How many students like to play C and A but not B.

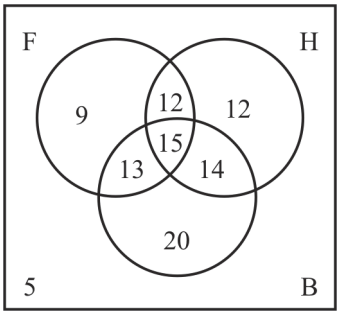


(a) 15 (b) 33
(c) 10 (d) 23

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (d)
∵Accoding to the venn diagram the number of students who like game C and A but not like game B.
= 10+13 = 23

26.



The given diagram shows the number of students playing game football (F), Hockey (H) and Basketball (B) in the class. The total number of students playing maximum two games is.

(a) 39 (b) 54
(c) 41 (d) 80

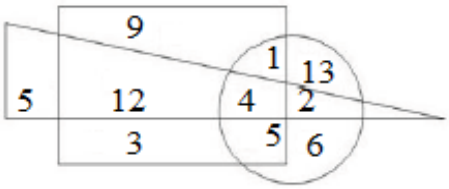
RRB Group-D – 31/10/2018 (Shift-I)

Ans : (d) Total number of students who like to play maximum two games.

= liking one game + liking two game

9 + 12 + 20 + 12 + 13 + 14 = 80

27. In the following venn diagram the rectangle represents the number of RPS supporters, the traingle represents the number of MI supporters and the circle represents the number of KKR supporters. Find the numbers of supporters who support the KKR and only one other team.

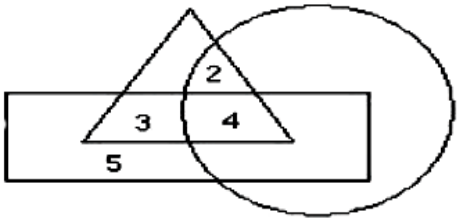


(a) 8 (b) 10
(c) 2 (d) 6

RRB Group-D – 07/12/2018 (Shift-III)

Ans : (a) Numbers of team who support KKR and only another team 5 + 1 + 2 = 8

28. In the given venn diagram, the triangle represents the healthy people, rectangle represents old people and the circle represents men. What is the number of healthy but old people?

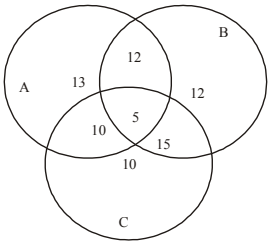


(a) 4 (b) 3
(c) 2 (d) 6

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) From the given venn diogram it is clear that the number of healthy but old people = 4

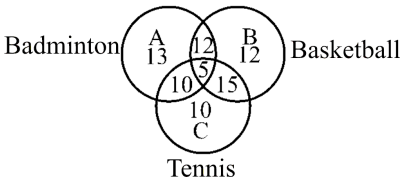
29. The given venn diagram represents the sports preferences of a group of college students. Badminton for A, B for Basketball and C for Tennis. How many students actually like to play two of these three games.



(a) 35 (b) 17
(c) 5 (d) 37

RRB Group-D – 31/10/2018 (Shift-I)

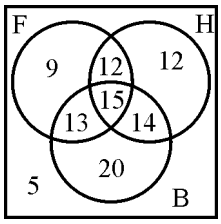
Ans. (d) :



The number of students who like two of these three games

= 12+15+10=37

30. The given diagram shows the number of students playing football (F), Hockey (H) and Basketball (B).



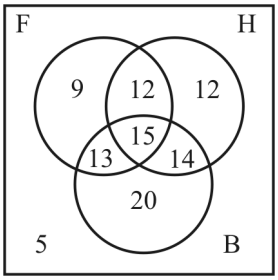
What is the number of students playing at least two games?

(a) 41 (b) 39
(c) 54 (d) 80

RRB Group-D – 15/11/2018 (Shift-II)

Ans : (c) The number of students who play at least two games = 12 + 13 + 15 + 14 = 54

31. The given venn diagram shows the number of students playing football (F), Hockey (H) and Bastketball (B) in a class.



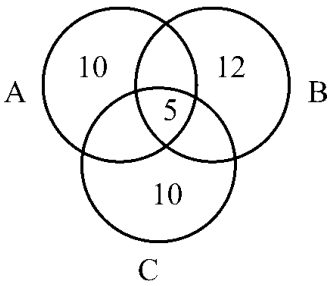
Find the total number of student playinig F and H but not B.

(a) 33 (b) 21
(c) 12 (d) 27

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) The number of students who playing F and H but not playing B is = 12

32. The following venn diagram shows the 50 students who attend the vocational training session A, B and C. Each student participates in at least one training session. How many students actually participate in only 2 sessions in the training?



(a) 8 (b) 4
(c) 13 (d) 5

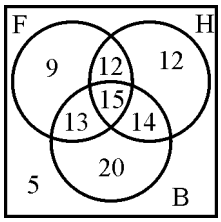
RRB Group-D – 12/11/2018 (Shift-I)

Ans. (c) : The number of students who participate only in two sessions = Number of total students – (number of students who Participating one or more than two sessions)

= 50 – (12 + 10 + 10 + 5)

= 50 – 37 = 13

33. The following diagrams shows the number of students playing football (F), Hockey (H) and Basketball (B) in the class, what is the total number of students playing F and B but not playing H?



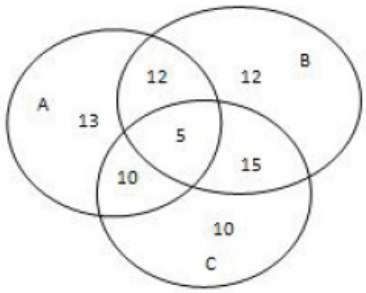
(a) 28 (b) 29
(c) 42 (d) 13

RRB Group-D – 05/11/2018 (Shift-II)

Ans : (d) From the venn diagram, the number of students who play F and B but not play H is 13.

34. The given venn diagram represents the sports preferences of a group of college students. Three sports are Batminton-A, Basketball-B and Tennis-C. How many students play badminton and basketball but not tennis?

(a) 37 (b) 15
(c) 30 (d) 20

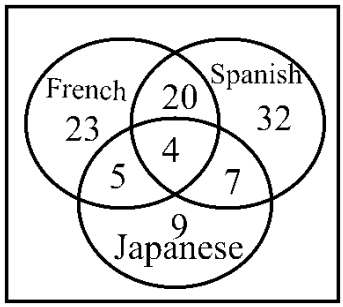


RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a) From the given Venn diagram

Number of players who play Badminton or Basketball play but not Tennis = 13+12+12 = 37

35. Answer the following question by consider the venn diagram below.

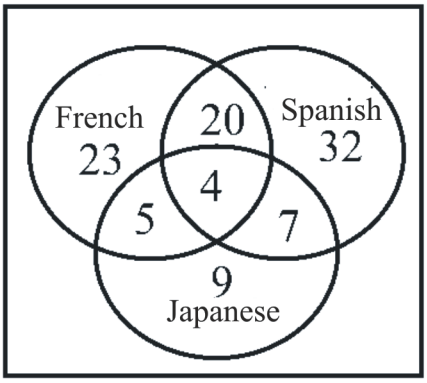


The venn diagram shows students studying 3 subjects in a class. The number of students studying French and Spanish but not studying Japanese is:

(a) 29 (b) 4
(c) 20 (d) 24

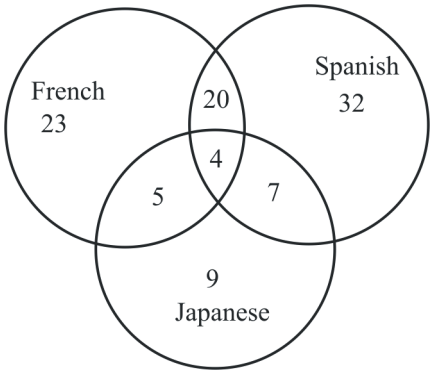
RRB Group-D – 24/10/2018 (Shift-III)

Ans. (c) :



From the following venn diagram it is clear that the number of students who read French and Spanish but not Japanese = 20

36.



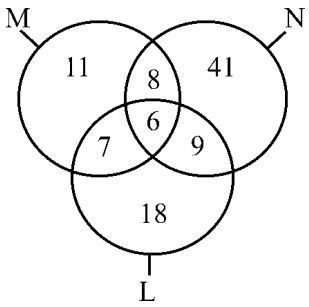
This diagram shows the number of students studying three languages in the classroom. How many students who study Spanish and Japanese but not frence.

(a) 7 (b) 11
(c) 32 (d) 4

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (a) The number of students who study Spanish and Japanses but not French = 7

37.



The following venn diagram shows the three games played, M, N and L in a class. Find the total number of students who played M and L but not play N.

(a) 36 (b) 13
(c) 15 (d) 7

RRB Group-D – 05/10/2018 (Shift-III)

Ans. (d) It is clear from the venn diagram that-
total number of students playing game M and L but not playing game N = 7

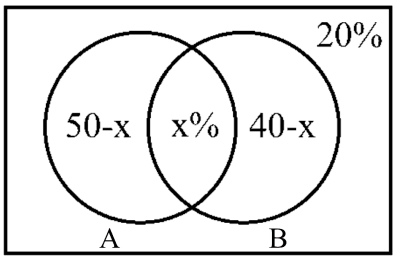
Type - 3

50% of people read 'A' newspaper, 40% of people read 'B' newspaper, 20% of people read neither newspaper A nor newspaper B. If the number of people who read both newspapers is 500. Then how many people were surveyed.

(a) 7000 (b) 4500
(c) 5000 (d) 3000

RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (c)



from the venn diagram,

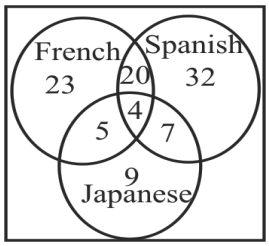
$50 - x + x + 40 - x + 20 = 100$

$110 - x = 100$

$x = 10\%$

10% = 500
100% = 5000
So Total number of people is 5000 in the survey.

39.



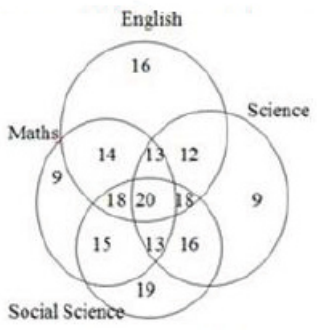
The following figure shows the number of students who study three languages in the class. Total number of students studying three languages French, Spanish and Japanese is.

(a) 100 (b) 4
(c) 16 (d) 41

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (b) It is clear from the figure that the number of students is 4 who studying all the three language.

40. Study the following venn diagram are carefully and answer the question given below.



What is the total number of students who have taken English or Mathematics or social science?

(a) 185 (b) 180
(c) 183 (d) 175

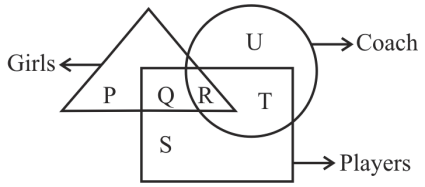
RRB Group-D – 07/12/2018 (Shift-III)

Ans : (c) From the given diagram, total number of students of english, maths and social science

$\Rightarrow 16 + 14 + 9 + 18 + 15 + 19 + 13 + 12 + 20 + 18 + 13 + 16 = 183$

So the total number of students of all section is 183 except science students.

41. In the following figure the triangle represents the girls and the square represents players and circle represents coach. Which part of the figure represents girls who are players and coach also?

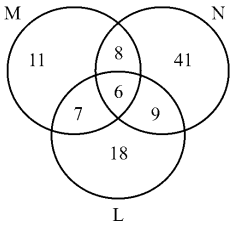


(a) R (b) S
(c) Q (d) P

RRB Group-D – 26/11/2018 (Shift-III)

Ans : (a) From the given figure it is clear that diagram's "R" part represents those girls who are player as well as coach.

42. The given venn diagram represents the students participating from a class in three types of games M, N and L.



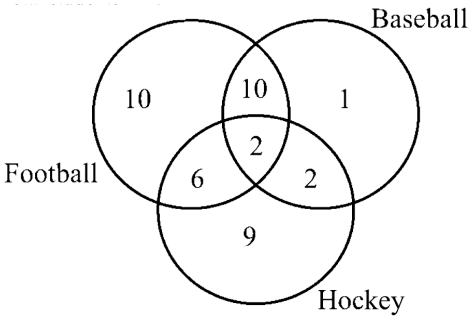
(a) 64 (b) 6
(c) 100 (d) 30

RRB Paramedical Exam – 21/07/2018 (Shift-I)

And. (b) From the following venn diagram it is clear that total number of students who participating in three games is 6.

43. The given venn diagram shows the students who like Football, Basketball and Hockey in the class of 40 students. The total number of students who like at least one sport is.

Total students = 40



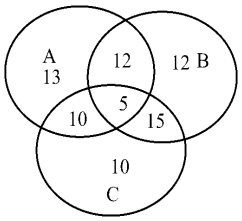
(a) 40 (b) 30
(c) 10 (d) 20

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (a) Hence sum of students is 40 in given Venn diagram.

So all students like minimum one game.

44. The given venn diagram represents the game priorities of the group of college students. Three games are A-Badminton, B-Basketball and C-Tennis. How many students play at least one game?



(a) 77 (b) 35
(c) 17 (d) 5

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (a) :

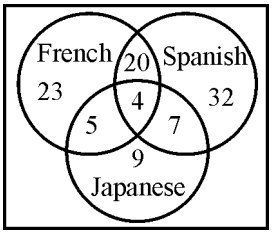
Number of students playing only one game = 13 + 12 + 10 = 35

Students playing at least two games = 12 + 10 + 15 = 37

Number of students playing all three games = 5

So number of students who playing minimum one game is = 35 + 37 +5 = 77

45.



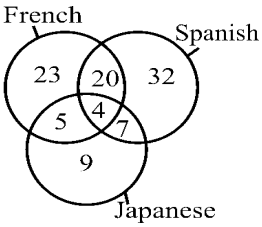
The venn diagram shows the number of students studying three languages in a class. What is the total number of students studying in the class?

(a) 100 (b) 45

(c) 101 (d) 64

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) :

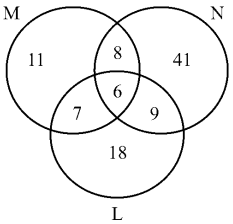


Total number of students who studying in the class.

= 23+20+32+5+4+7+9

= 100

46.



The above venn diagram shows the students who are playing three games M, N and L in a class. What is the total number of students in the class?

(a) 100 (b) 102

(c) 101 (d) 98

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (a) : Total number of students in M, N and L class = 11 + 8 + 41 + 6 +7 + 9 + 18 = 100

Type - 4

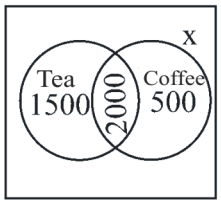
47. The number of students in a college is 5000. 3500 students like coffee, 2500 students like tea and 2000 students like both tea and coffee. How many students don't like either of these two drinks?

(a) 1500 (b) 1000

(c) 500 (d) 2000

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans. (b) Let the number of students is X who do not like both



5000 = 2000 + 1500 + 500 + x

x = 5000 – 4000

x = 1000

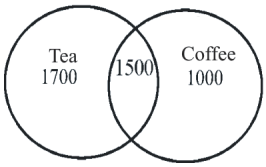
48. In a town with a population of 5000, 3200 people take tea, 2500 people take coffee and 1500 people take both tea and coffee. How many of them neither take tea nor coffee?

(a) 800 (b) 770

(c) 900 (d) 1800

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (a)



The number of people who take only tea

= 3200 – 1500 = 1700

The number of people who take only coffee

= 2500 – 1500 = 1000

Number of people Neither take tea nor coffee

= 5000 – (1700 + 1000 + 1500)

= 5000 – 4200 = 800

So, 800 people neither take tea nor coffee.

24.

Trigonometry

Type - 1

1. If tan A + cot A = 2, then find the value of $\tan^2 A + \cot^2 A$

(a) 4 (b) 2
(c) 1 (d) 1/2

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

Ans : (b) Given, tan A + cot A = 2
Square of both sides
$(\tan A + \cot A)^2 = 4$
$\tan^2 A + \cot^2 A + 2\tan A \cot A = 4$
$\tan^2 A + \cot^2 A + 2\times1 = 4$ ($\because \tan A \cot A = 1$)
$\tan^2 A + \cot^2 A = 4 - 2 = 2$

2. If $\cos^2 x + \sin x = 5/4$, then find the value 'sin x'

(a) 3/4 (b) 1/2
(c) - 1/2 (d) 3/2

RRB JE - 24/05/2019 (Shift-I)

Ans : (b)

$\because \cos^2 x + \sin x = \frac{5}{4}$

$1 - \sin^2 x + \sin x = \frac{5}{4}$

$\sin^2 x - \sin x + \frac{1}{4} = 0$

$\sin^2 x - 2\times\frac{1}{2}\times\sin x + \frac{1}{4} = 0$

$\left(\sin x - \frac{1}{2}\right)^2 = 0$

$\sin x - \frac{1}{2} = 0$

$\sin x = \frac{1}{2}$

3. If cosecθ – sinθ = P and secθ – cosθ = q, then which of the following is correct?

(a) $(p^2q)^{\frac{2}{3}} - (pq^2)^{\frac{2}{3}} = 1$

(b) $\sin\theta\sec\theta = \frac{1}{P}$

(c) $\sin\theta\tan\theta = \frac{1}{q}$

(d) $(p^2q)^{\frac{2}{3}} + (pq^2)^{\frac{2}{3}} = 1$

RRB RPF SI – 16/01/2019 (Shift-III)

Ans. (d) Given–

$\operatorname{cosec}\theta - \sin\theta = p$ $\qquad$ $\sec\theta - \cos\theta = q$

$\therefore \frac{1}{\sin\theta} - \sin\theta = p$ $\qquad$ $\frac{1}{\cos\theta} - \cos\theta = q$

$\frac{1-\sin^2\theta}{\sin\theta} = p$ $\qquad$ $\frac{1-\cos^2\theta}{\cos\theta} = q$

$\cos^2\theta = p\sin\theta$ $\qquad$ $\sin^2\theta = q\cos\theta$

$p = \frac{\cos^2\theta}{\sin\theta}$ $\qquad$ $q = \frac{\sin^2\theta}{\cos\theta}$

$p^2q = \frac{\cos^4\theta}{\sin^2\theta}\times\frac{\sin^2\theta}{\cos\theta}$

$p^2q = \cos^3\theta$

$(p^2q)^{\frac{1}{3}} = \cos\theta$

$(p^2q)^{\frac{2}{3}} = \cos^2\theta$....(i)

Similar

$(q^2p)^{\frac{2}{3}} = \sin^2\theta$.....(ii)

Adding equation (i) equation (ii)

$(p^2q)^{\frac{2}{3}} + (pq^2)^{\frac{2}{3}} = 1$ ($\because \sin^2\theta + \cos^2\theta = 1$)

4. If secθ + tanθ = 12.5, then secθ - tanθ = ?

(a) 1 (b) 0.08
(c) 0.8 (d) 0.4

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans. (b) : $\sec\theta + \tan\theta = 12.5$
Multiplying to $(\sec\theta - \tan\theta)$ in both sides

$\operatorname{Sec}^2\theta - \tan^2\theta = 12.5(\sec\theta - \tan\theta)$ $\quad (\because \sec^2 - \tan^2\theta = 1)$

$1 = 12.5(\sec\theta - \tan\theta)$

or, $\sec\theta - \tan\theta = \frac{1}{12.5}$

$\boxed{\operatorname{Sec}\theta - \tan\theta = 0.08}$

5. If $\sec^4\theta - \sec^2\theta = 3$, then $\tan^4\theta + \tan^2\theta = ?$

(a) 2 (b) 0
(c) 3 (d) 1

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (c) If $\operatorname{Sec}^4\theta - \operatorname{Sec}^2\theta = 3$

$\operatorname{Sec}^2\theta(\operatorname{Sec}^2\theta - 1) = 3$ $\quad [\because \sec^2\theta - \tan^2\theta = 1]$

$(\tan^2\theta + 1)\tan^2\theta = 3$

$\tan^4\theta + \tan^2\theta = 3$

So $\boxed{\tan^4\theta + \tan^2\theta = 3}$

6. If $\cot^4\theta+\cot^2\theta = 2.2$, then $\text{cosec}^4\theta - \text{cosec}^2\theta = ?$

(a) 0 (b) 1.1
(c) 2.2 (d) 3.3

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (c) $\cot^4\theta + \cot^2\theta = 2.2$
$\cot^2\theta (\cot^2\theta + 1) = 2.2$ $\boxed{\therefore \cot^2\theta = \text{cosec}^2\theta - 1}$
$(\text{cosec}^2\theta - 1) (\text{cosec}^2\theta - 1 + 1) = 2.2$
$(\text{cosec}^2\theta - 1) (\text{cosec}^2\theta) = 2.2$
$\text{cosec}^4\theta - \text{cosec}^2\theta = 2.2$

7. If $(\tan\theta + \cot\theta) = 5$, then find the value of $(\tan^2\theta + \cot^2\theta)$?

(a) 23 (b) 27
(c) 25 (d) 21

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (a) $\tan\theta + \cot\theta = 5$ ----------(i)
Square of both sides
$\tan^2\theta+\cot^2\theta+2\tan\theta.\cot\theta = 25$ $[\tan\theta.\cot\theta=1]$
$\tan^2\theta+\cot^2\theta = 25-2 = 23$

8. If $\sec\theta + \tan\theta = 3.2$, then what is $\sec\theta$?

(a) 2.28 (b) 1.6
(c) 1.75625 (d) 1.92625

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (c) $\sec\theta + \tan\theta = 3.2 = \frac{32}{10} = \frac{16}{5}$.....(i)

multiplying to $(\sec\theta - \tan\theta)$ of equation (i) in both sides.

$(\sec\theta + \tan\theta) (\sec\theta - \tan\theta) = \frac{16}{5} (\sec\theta - \tan\theta)$

$\therefore$ $[\sec^2\theta - \tan^2\theta = 1]$

$\sec\theta - \tan\theta = \frac{5}{16}$.....(ii)

from equation (i) + (ii)

$2\sec\theta = \frac{16}{5} + \frac{5}{16} = \frac{281}{80} \Rightarrow 2\sec\theta = 3.5125$

$\sec\theta = \frac{3.5125}{2} = 1.75625$

9. If $\sin\theta - \cos\theta = 0$, than what is the value of $\sin^4\theta + \cos^4\theta + \tan^4\theta$

(a) $\frac{5}{4}$ (b) $\frac{3}{2}$ (c) $\frac{7}{4}$ (d) 2

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (b) : $\sin\theta - \cos\theta = 0$ then $\sin^4\theta + \cos^4\theta + \tan^4\theta$ value will be–

$\sin\theta - \cos\theta = 0$
$\sin\theta = \cos\theta$
$\because$ $\theta = 45°$ on $\sin\theta = \cos\theta$
$\theta = 45°$ putting
$\sin^4\theta + \cos^4\theta + \tan^4\theta$
$= \sin^4(45°) + \cos^4(45°) + \tan^4(45°)$

$= \left(\frac{1}{\sqrt{2}}\right)^4 + \left(\frac{1}{\sqrt{2}}\right)^4 + (1)^4$

$= \frac{1}{4} + \frac{1}{4} + 1 = \frac{2}{4} + 1 = \frac{1}{2} + 1 = \frac{3}{2}$

10. If $\cot^4\theta + \cot^2\theta = 3.6$, then $\text{cosec}^4\theta - \text{cosec}^2\theta = ?$

(a) 0.6 (b) 3.6
(c) 2.4 (d) 1.8

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (b) : $\cot^4\theta + \cot^2\theta = 3.6$
$\cot^2\theta (1 + \cot^2\theta) = 3.6$

$$\begin{cases} \text{cosec}^2\theta - \cot^2\theta = 1 \\ \text{cosec}^2\theta = 1 + \cot^2\theta \\ \text{cosec}^2\theta - 1 = \cot^2\theta \end{cases}$$

$\boxed{\cot^2\theta.\ \text{cosec}^2\theta = 3.6}$ .....(i)

$(\text{cosec}^2\theta - 1).\ \text{cosec}^2\theta = 3.6$
$\text{cosec}^4\theta - \text{cosec}^2\theta = 3.6$

11. If $\cos x + \sin x = \sqrt{2}\cos x$, then what is the value of $\cot x$?

(a) $\sqrt{2}$ (b) 1
(c) $\sqrt{2}+1$ (d) $\sqrt{2}-1$

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (c)
$\cos x + \sin x = \sqrt{2}\cos x$
sinx divide from sinx,
$\cot x + 1 = \sqrt{2}\cot x$
$\sqrt{2}\cot x - \cot x = 1$
$\cot x\left(\sqrt{2}-1\right) = 1$
$\cot x = \frac{1}{\sqrt{2}-1}$
or

$\cot x = \frac{\left(\sqrt{2}+1\right)}{\left(\sqrt{2}-1\right)\left(\sqrt{2}+1\right)}$

$\cot x = \frac{\sqrt{2}+1}{2-1}$

$\cot x = \sqrt{2}+1$

12. If $\sec\theta + \tan\theta = 1.25$, then $\sec\theta - \tan\theta = ?$

(a) 1 (b) 0.80
(c) 0.75 (d) 0.25

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (b) $\sec\theta + \tan\theta = 1.25 = \frac{125}{100}$

$\frac{(\sec\theta + \tan\theta)(\sec\theta - \tan\theta)}{(\sec\theta - \tan\theta)} = \frac{125}{100}$

$\frac{\sec^2\theta - \tan^2\theta}{(\sec\theta - \tan\theta)} = \frac{125}{100}$ $\left\{\sec^2\theta - \tan^2\theta = 1\right\}$

$\frac{1}{(\sec\theta - \tan\theta)} = \frac{125}{100}$

$\sec\theta - \tan\theta = \frac{100}{125}$

$\sec\theta - \tan\theta = 0.80$

13. If $\tan^4\theta + \tan^2\theta = 11$, then $\sec^4\theta - \sec^2\theta = ?$

(a) 12 (b) 11
(c) 13 (d) 10

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (b) $\because \tan^4\theta + \tan^2\theta = 11$
$\therefore \tan^2\theta\,(1 + \tan^2\theta) = 11$
$\tan^2\theta.\ \sec^2\theta = 11$
$(\sec^2\theta - 1)\sec^2\theta = 11$ $\{\because 1 + \tan^2\theta = \sec^2\theta\}$
$\sec^4\theta - \sec^2\theta = 11$

14. If $\cot^4\theta + \cot^2\theta = 4$, then what is the value of $\text{cosec}^4\theta - \text{cosec}^2\theta = ?$

(a) 4 (b) 0
(c) 2 (d) 3

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (a) $\cot^4\theta + \cot^2\theta = 4$
$(\text{cosec}^2\theta - 1)^2 + \text{cosec}^2\theta - 1 = 4$
$\text{cosec}^4\theta + 1 - 2\,\text{cosec}^2\theta + \text{cosec}^2\theta - 1 = 4$
$\text{cosec}^4\theta - \text{cosec}^2\theta = 4$

15. If $\sec\theta + \tan\theta = 8$, then $\sec\theta - \tan\theta = ?$

(a) 0.5 (b) 0.625
(c) 0.125 (d) 0.8

RRB Group-D – 05/12/2018 (Shift-II)

Ans. (c) Given− $\sec\theta + \tan\theta = 8$ .....(i)
Multipling to $(\sec\theta - \tan\theta)$ of equation (i) in both sides−
$(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 8(\sec\theta - \tan\theta)$
$\therefore$ $(\sec^2\theta - \tan^2\theta = 1)$
$(\sec\theta - \tan\theta) = \frac{1}{8}$
$(\sec\theta - \tan\theta) = 0.125$

16. If $\tan\alpha = 3 - 2\sqrt{2}$, then what is the value of $\tan\alpha - \cot\alpha$?

(a) -4 (b) $3 + 2\sqrt{2}$
(c) $-4\sqrt{2}$ (d) $-8\sqrt{2}$

RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans. (c) $\tan\alpha = 3 - 2\sqrt{2}$ ...(i)
then, $\tan\alpha - \cot\alpha = ?$
$= \tan\alpha - \frac{1}{\tan\alpha}$ (i) from equation
$= \left(3 - 2\sqrt{2}\right) - \frac{1}{3 - 2\sqrt{2}}$
$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{\left(3 - 2\sqrt{2}\right)\left(3 + 2\sqrt{2}\right)}$
$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{9 - 8}$
$= \left(3 - 2\sqrt{2}\right) - \frac{\left(3 + 2\sqrt{2}\right)}{1}$
$= 3 - 2\sqrt{2} - 3 - 2\sqrt{2}$
$= -4\sqrt{2}$

17. If $\sec\theta + \tan\theta = 6$, then $\sec\theta = ?$

(a) $3\frac{1}{12}$ (b) $3\frac{1}{6}$ (c) 3 (d) $3\frac{1}{3}$

RRB Group-D – 28/11/2018 (Shift-I)

Ans : (a) $\sec\theta + \tan\theta = 6$ then $\sec\theta = ?$
$\because$ $\sec^2\theta - \tan^2\theta = 1$
$\therefore$ $(\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 1$
$\therefore$ $\sec\theta - \tan\theta = \frac{1}{\sec\theta + \tan\theta}$
$\therefore$ $\sec\theta - \tan\theta = \frac{1}{6}$...(i)
$\sec\theta + \tan\theta = 6$...(ii)
Adding of equation (i) and (ii)
$\sec\theta - \tan\theta = \frac{1}{6}$.....(i)
$\sec\theta + \tan\theta = 6$.....(ii)
$2\sec\theta = \frac{1}{6} + 6$
$2\sec\theta = \frac{37}{6}$
$\sec\theta = \frac{37}{12} = 3\frac{1}{12}$

18. If $\sec\theta + \tan\theta = 2.5$, then what is the value of $\sec\theta - \tan\theta = ?$

(a) 1 (b) 0.4 (c) 0.8 (d) 0.6

RRB Group-D – 02/11/2018 (Shift-I)

Ans. (b) $\sec\theta + \tan\theta = 2.5$
Multipling to $(\sec\theta - \tan\theta)$ in both sides
$(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 2.5(\sec\theta - \tan\theta)$
$\sec^2\theta - \tan^2\theta = 2.5\,(\sec\theta - \tan\theta)$
$\because$ $\boxed{\sec^2\theta - \tan^2\theta = 1}$
$\therefore$ $\frac{1}{2.5} = \sec\theta - \tan\theta$
$\sec\theta - \tan\theta = \frac{10}{25}$
$\boxed{\sec\theta - \tan\theta = 0.4}$

19. If $\cos\theta + \sin\theta = m$, $\sec\theta + \text{cosec}\theta = n$, then what is the value of m/n?

(a) 1 (b) $\sin\theta\cos\theta$
(c) $\sec\theta\,\text{cosec}\,\theta$ (d) $\cot\theta\tan\theta$

RRB NTPC 03.04.2016 Shift : 1

Ans : (b) $\cos\theta + \sin\theta = m$ .....(i)
and $\sec\theta + \text{cosec}\,\theta = n$
$\frac{1}{\cos\theta} + \frac{1}{\sin\theta} = n$
$\Rightarrow$ $\frac{\sin\theta + \cos\theta}{\cos\theta\sin\theta} = n$
$\Rightarrow$ $\frac{m}{\cos\theta\sin\theta} = n$ [$\sin\theta + \cos\theta = m$ from equation (i)]
$\Rightarrow$ $\frac{m}{n} = \sin\theta\cos\theta$

20. If $\sec\theta - \tan\theta = \frac{1}{3}$, then what is the value of $\sec\theta + \tan\theta$?

(a) 1 (b) 9 (c) 3 (d) 1/9

RRB NTPC 28.03.2016 Shift : 2

Ans : (c) $\text{sce}\theta - \tan\theta = \frac{1}{3}$

$\because \sec^2\theta - \tan^2\theta = 1$

$(\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 1$

$\frac{1}{3}(\sec\theta + \tan\theta) = 1$

$\sec\theta + \tan\theta = 3$

21. If $4\sin\theta - 3\cos\theta = 0$, then $\sec\theta\text{cosec}\theta$ = ?

(a) 5/12 (b) 25/12

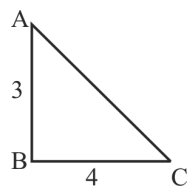
(c) 13/12 (d) 12/5

RRB NTPC 29.04.2016 Shift : 2

Ans : (b) Given—

$4\sin\theta - 3\cos\theta = 0$

$4\sin\theta = 3\cos\theta$



$\frac{\sin\theta}{\cos\theta} = \frac{3}{4}$

$\tan\theta = \frac{3}{4} = \frac{\text{Perpendicular}}{\text{base}}$

from the Pythagoras theorem-

$(\text{hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{base})^2$

$(AC)^2 = 3^2 + 4^2 = 9 + 16 = 25$

AC (hypotenuse) = $\sqrt{25} = 5$

Then, $\sec\theta.\ \text{cosec}\theta = \frac{\text{hypotenuse}}{\text{base}} \times \frac{\text{hypotenuse}}{\text{perpendicular}}$

$= \frac{5}{4} \times \frac{5}{3}$

$\sec\theta.\ \text{cosec}\theta = \frac{25}{12}$

22. If $\sin x + \cos x = \sqrt{2}\sin x$, then the value of tan x is:

(a) $\sqrt{2}+1$ (b) 1

(c) $\sqrt{2}-1$ (d) $\sqrt{2}$

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (a) $\sin x + \cos x = \sqrt{2}\sin x$

divide by cosx in both sides

$\frac{\sin x}{\cos x} + \frac{\cos x}{\cos x} = \frac{\sqrt{2}\sin x}{\cos x}$

$\tan x + 1 = \sqrt{2}\tan x$

$1 = \sqrt{2}\tan x - \tan x$

$1 = \tan x\left(\sqrt{2}-1\right)$

$\tan x = \frac{1}{\sqrt{2}-1}$

$\tan x = \frac{\sqrt{2}+1}{(\sqrt{2}-1)(\sqrt{2}+1)} = \sqrt{2}+1$

23. If $\sec\theta + \tan\theta = 4$, $\sec\theta - \tan\theta$ = ?

(a) 1 (b) 0.75

(c) 0.25 (d) 0.5

RRB ALP & Tec. (13-08-18 Shift-II)

Ans : (c) Given that,

$(\sec\theta + \tan\theta) = 4$

$\Rightarrow (\sec\theta - \tan\theta)(\sec\theta + \tan\theta) = 4(\sec\theta - \tan\theta)$

$\Rightarrow (\sec^2\theta - \tan^2\theta) = 4(\sec\theta - \tan\theta)$

$\Rightarrow 1 = 4(\sec\theta - \tan\theta)$

$\Rightarrow (\sec\theta - \tan\theta) = 1/4$

$\Rightarrow (\sec\theta - \tan\theta) = 0.25$

24. If $\text{cosec}\,\theta + \cot\theta = 2$, then $\cot\theta$ = ?

(a) 0 (b) 1

(c) 0.75 (d) 0.5

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

Ans : (c) given- $(\text{cosec}\theta + \cot\theta = 2)$

and $\text{cosec}\theta + \cot\theta = 2$ ..... (i)

$\text{cosec}^2\theta - \cot^2\theta = 1$ (from formula)

$\because (\text{cosec}\,\theta + \cot\theta)(\text{cosec}\,\theta - \cot\theta) = 1$

$(2)(\text{cosec}\theta - \text{tot}\theta) = 1$

$\therefore \text{cosec}\theta - \cot\theta = \frac{1}{2}$ ..... (ii)

Subtracting equation (ii) from (i)

$2\cot\theta = 2 - \frac{1}{2} = 1.50$

$\therefore \cot\theta = \frac{1.50}{2} = 0.75$

Type - 2

25. What is the value of $\sqrt{\cot^2\theta - \cos^2\theta}$

(a) 1 (b) $\cot\theta\cos ec\theta$

(c) $\cot\theta\cos\theta$ (d) $\cos\theta\cos ec\theta$

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

Ans : (c)

$\sqrt{\cot^2\theta - \cos^2\theta} = \sqrt{\frac{\cos^2\theta}{\sin^2\theta} - \cos^2\theta}$

$= \sqrt{\frac{\cos^2\theta - \sin^2\theta\cos^2\theta}{\sin^2\theta}}$

$= \sqrt{\frac{\cos^2\theta\left(1-\sin^2\theta\right)}{\sin^2\theta}} = \sqrt{\cot^2\theta.\left(1-\sin^2\theta\right)} = \cot\theta.\ \cos\theta$

26. What is the value of $\cos^4 A - \sin^4 A$

(a) cos2A (b) $\sin^2 A + \cos^2 A$

(c) 0 (d) 2

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

Ans : (a) $\cos^4 A - \sin^4 A = (\cos^2 A)^2 - (\sin^2 A)^2$

$= (\cos^2 A + \sin^2 A)(\cos^2 A - \sin^2 A)$

$= \cos^2 A - \sin^2 A$ $\{\because \cos^2 A + \sin^2 A = 1\}$

$= \cos 2A$

27. What is the value of $(1-\cos^2\theta)(\cot^2\theta + 1) - 1$

(a) 0 (b) $\sec^2\theta$

(c) 2 (d) -2

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

Ans : (a) $(1-\cos^2\theta)(\cot^2\theta+1)-1$

$\{1-\cos^2\theta=\sin^2\theta$

$1+\cot^2\theta=\text{cosec}^2\theta\}$

$=\sin^2\theta\times\text{cosec}^2\theta-1=1-1=0$

28. Simplify : cos θ/(1 + sin θ)

(a) cosec θ + cot θ (b) sec θ - tan θ
(c) cosec θ - cot θ (d) sec θ + tan θ

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (b) $\frac{\cos\theta}{1+\sin\theta}$

Multiplying to (1 – sin θ) in denominator and numerator

$=\frac{(1-\sin\theta)\times\cos\theta}{\cos^2\theta}=(\sec\theta-\tan\theta)$

29. Find the value of 'θ'

$\frac{\cos\theta}{1-\sin\theta}-\frac{\cos\theta}{1+\sin\theta}=2$

(a) 45 (b) 90^0
(c) 30^0 (d) 60^0

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

Ans : (a) $\frac{\cos\theta}{1-\sin\theta}-\frac{\cos\theta}{1+\sin\theta}=2$

$\Rightarrow\frac{\cos\theta(1+\sin\theta)-\cos\theta(1-\sin\theta)}{(1-\sin^2\theta)}=2$

$\Rightarrow\frac{\cos\theta+\cos\theta.\sin\theta-\cos\theta+\cos\theta.\sin\theta}{\cos^2\theta}=2$

$\Rightarrow\frac{2\cos\theta.\sin\theta}{\cos^2\theta}=2$ [∵ tan45° = 1]

$\Rightarrow$ tanθ = 1 = tan45°

$\Rightarrow$ θ = 45°

30. If x = r sin A cos B, y = r sin A sin B and z = r cos A, then find the value of $x^2+y^2+z^2$

(a) $r^2(\cos^2B+\cos^2A)$ (b) $2r^2$
(c) $3/2\ r^2$ (d) r^2

RRB JE - 24/05/2019 (Shift-II)

Ans : (d) x = r sin A cos B

y = r sin A sin B

z = r cos A

$x^2+y^2+z^2=(r\sin A\cos B)^2+(r\sin A\sin B)^2+(r\cos A)^2$

$=r^2\sin^2A\cos^2B+r^2\sin^2A\sin^2B+r^2\cos^2A$

$=r^2\sin^2A(\cos^2B+\sin^2B)+r^2\cos^2A$

$=r^2\sin^2A+r^2\cos^2A$ [$\sin^2B+\cos^2B=1$]

$=r^2(\sin^2A+\cos^2A)=r^2$

31. Simplify: sin (A+B) sin (A-B)

(a) $\sin^2A-\sin^2B$ (b) $\sin^2A+\sin^2B$
(c) cos 2A (d) $\cos^2A-\cos^2B$

RRB JE - 24/05/2019 (Shift-III)

Ans : (a) sin (A+B) sin (A–B)

formula (a + b) (a – b) = a^2-b^2

(sinA.cosB + cosA.sinB) (sinA.cosB – cosA.sinB)

$(\sin A.\cos B)^2-(\cos A.\sin B)^2$

$\sin^2A.\cos^2B-\sin^2B.\cos^2A$

$\sin^2A(1-\sin^2B)-\sin^2B(1-\sin^2A)$

$\sin^2A-\sin^2A.\sin^2B-\sin^2B+\sin^2A.\sin^2B$

$\boxed{\sin^2A-\sin^2B}$

32. Simplify: cos θ (1 – tan θ) + sin θ (1 – cot θ)

(a) sin θ + cos θ (b) sin θ – cos θ
(c) 0 (d) tan θ + cot θ

RRB JE - 27/05/2019 (Shift-I)

Ans : (c) cos θ (1 – tan θ) + sin θ (1 – cot θ)

$=\cos\theta\left(1-\frac{\sin\theta}{\cos\theta}\right)+\sin\theta\left(1-\frac{\cos\theta}{\sin\theta}\right)$

$=\cos\theta-\cos\theta\frac{\sin\theta}{\cos\theta}+\sin\theta-\sin\theta\frac{\cos\theta}{\sin\theta}$

= cosθ – sinθ + sinθ – cosθ = 0

33. If x = a sec θ + b tan θ and y = a tan θ + b sec θ, then find the value of x^2-y^2

(a) a^2+b^2 (b) $\sqrt{a^2+b^2}$
(c) a + b (d) a^2-b^2

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (d)

x = a secθ + b tanθ and y = a tanθ + b sec θ

$x^2-y^2=?$

$x^2-y^2=(a\sec\theta+b\tan\theta)^2-(a\tan\theta+b\sec\theta)^2$

$=a^2\sec^2\theta+b^2\tan^2\theta+2ab\sec\theta\tan\theta-a^2\tan^2\theta-b^2\sec^2\theta-2ab\sec\theta\tan\theta$

$=a^2\sec^2\theta+b^2\tan^2\theta-a^2\tan^2\theta-b^2\sec^2\theta$

$=a^2(\sec^2\theta-\tan^2\theta)-b^2(\sec^2\theta-\tan^2\theta)$

$x^2-y^2=(a^2-b^2)(\sec^2\theta-\tan^2\theta)$

$x^2-y^2=a^2-b^2$ $\{\sec^2\theta-\tan^2\theta=1$

34. Simplify:

$\frac{\sin\theta-2\sin^3\theta}{2\cos^3\theta-\cos\theta}$

(a) tan θ (b) sin θ – cos θ
(c) 2 sin θ cos θ (d) sin θ + cos θ

RRB JE - 31/05/2019 (Shift-I)

Ans : (a) $\frac{\sin\theta-2\sin^3\theta}{2\cos^3\theta-\cos\theta}=\frac{\sin\theta(1-2\sin^2\theta)}{\cos\theta(2\cos^2\theta-1)}$

$=\frac{\sin\theta.\cos2\theta}{\cos\theta.\cos2\theta}=\tan\theta$

35. Simplify:

$\frac{\tan A}{(1+\tan^2A)^2}+\frac{\cot A}{(1+\cot^2A)^2}$

(a) 2 sin A cos A (b) sin A-cos A
(c) sin A cos A (d) $(\sin A+\cos A)^2$

RRB JE - 31/05/2019 (Shift-III)

Ans. (c) $\frac{\tan A}{(1+\tan^2A)^2}+\frac{\cot A}{(1+\cot^2A)^2}$

$=\frac{\frac{\sin A}{\cos A}}{(\sec^2A)^2}+\frac{\frac{\cos A}{\sin A}}{(\text{cosec}^2A)^2}$

$=\frac{\sin A}{\cos A}\cos^4A+\frac{\cos A}{\sin A}\sin^4A$

$=\sin A.\cos^3A+\cos A.\sin^3A$

$=\sin A.\cos A(\cos^2A+\sin^2A)$

$=\sin A.\cos A$ (∵ $\sin^2A+\cos^2A=1$)

36. Simplify:
sin θ/(1 - cos θ)
(a) tan θ- sec θ (b) cosec θ + cot θ
(c) cosec θ -cot θ (d) tan θ + sec θ
RRB JE - 02/06/2019 (Shift-I)

Ans : (b) $\frac{\sin\theta}{1-\cos\theta}$

$= \frac{\sin\theta(1+\cos\theta)}{(1-\cos\theta)(1+\cos\theta)}$ (rationalization)

$= \frac{\sin\theta\,(1+\cos\theta)}{1-\cos^2\theta} = \frac{\sin\theta(1+\cos\theta)}{\sin^2\theta}$

$= \frac{1+\cos\theta}{\sin\theta} = \frac{1}{\sin\theta} + \frac{\cos\theta}{\sin\theta}$ = cosec θ + cot θ

37. Simplify:
$\frac{1}{(\sec\theta - \tan\theta)}$
(a) $\sec^2\theta - \tan^2\theta$ (b) $\cos\theta + \sin\theta$
(c) $\operatorname{cosec}\theta - \cot\theta$ (d) $\sec\theta + \tan\theta$
RRB JE - 01/06/2019 (Shift-III)

Ans. (d)
$\frac{1}{(\sec\theta - \tan\theta)}$
Multiplying in denominator and numerator of (secθ + tanθ)
$\Rightarrow \frac{1(\sec\theta + \tan\theta)}{(\sec\theta - \tan\theta)(\sec\theta + \tan\theta)}$
$\Rightarrow \frac{(\sec\theta + \tan\theta)}{(\sec^2\theta - \tan^2\theta)}$ $\{\sec^2\theta - \tan^2\theta = 1\}$
$\Rightarrow$ (secθ + tanθ)

38. Simplify: ($\sin^2\theta/\cos\theta$) +($\cos^2\theta/\cos\theta$)
(a) tan θ (b) cot θ
(c) cosec θ (d) sec θ
RRB JE - 28/06/2019 (Shift-III)

Ans. (d) $\frac{\sin^2\theta}{\cos\theta} + \frac{\cos^2\theta}{\cos\theta} = \left(\frac{\sin^2\theta + \cos^2\theta}{\cos\theta}\right)$

$\frac{1}{\cos\theta} = \sec\theta$

39. $\frac{\sin A + \sin B}{\cos A - \cos B} + \frac{\cos A + \cos B}{\sin A - \sin B} = ?$
(a) sin A cos B (b) 0
(c) tan A tan B (d) cos A cos B
RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b)
$\frac{\sin A + \sin B}{\cos A - \cos B} + \frac{\cos A + \cos B}{\sin A - \sin B}$

$= \frac{(\sin A + \sin B)(\sin A - \sin B) + (\cos A + \cos B)(\cos A - \cos B)}{(\cos A - \cos B)(\sin A - \sin B)}$

$= \frac{\sin^2 A - \sin^2 B + \cos^2 A - \cos^2 B}{(\cos A - \cos B)(\sin A - \sin B)}$

$= \frac{(\sin^2 A + \cos^2 A) - (\sin^2 B + \cos^2 B)}{(\cos A - \cos B)(\sin A - \sin B)}$

$(\because \sin^2\theta + \cos^2\theta = 1)$

$= \frac{1-1}{(\cos A - \cos B)(\sin A - \sin B)} = 0$

40. Complete the following–
ΔABC, cos (B+C/2) = ?
(a) cos A (b) sin A/2
(c) sin A + B /2 (d) cot B
RRB Group-D – 29/10/2018 (Shift-III)

Ans : (b) $\because A + B + C = 180^0$
$B + C = 180 - A$

$\frac{B+C}{2} = \left(\frac{180 - A}{2}\right)$

$\cos\frac{(B+C)}{2} = \cos\frac{(180^0 - A)}{2}$

$\cos\left(\frac{B+C}{2}\right) = \cos\left(90^0 - \frac{A}{2}\right)$

$\cos\left(\frac{B+C}{2}\right) = \sin\frac{A}{2}$

41. If $2x = \sec A$ and $\left(\frac{2}{x}\right) = \tan A$, then find the value of $2\left(x^2 - \frac{1}{x^2}\right) =$
(a) 1 (b) 1/2
(c) 1/4 (d) 1/3
RRB Group-D – 10/10/2018 (Shift-III)

Ans : (b)
2x = sec A ..... (i)
$\frac{2}{x} = \tan A$ ..... (ii)
Squaring of equation (i) and (ii) then subtracting
$4x^2 - \frac{4}{x^2} = \sec^2 A - \tan^2 A$
$\{\sec^2 A - \tan^2 A = 1\}$
or $4\left(x^2 - \frac{1}{x^2}\right) = 1$
or $2\left(x^2 - \frac{1}{x^2}\right) = \frac{1}{2}$

42. In triangle ABC, find the value of $\tan^2\frac{A}{2} + \tan^2\frac{B}{2} + \tan^2\frac{C}{2}$
(a) > 1 (b) ≥ 1
(c) <1 (d) ≤ 1
RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) $\because$ in Δ ABC,
A + B + C = π
We know

$$\left(\tan\frac{A}{2}-\tan\frac{B}{2}\right)^2+\left(\tan\frac{B}{2}-\tan\frac{C}{2}\right)^2+\left(\tan\frac{C}{2}-\tan\frac{A}{2}\right)^2\geq 0$$

$$\Rightarrow 2\left(\tan^2\frac{A}{2}+\tan^2\frac{B}{2}+\tan^2\frac{C}{2}\right)$$

$$-2\left(\tan\frac{A}{2}.\tan\frac{B}{2}+\tan\frac{B}{2}.\tan\frac{C}{2}+\tan\frac{C}{2}.\tan\frac{A}{2}\right)\geq 0....(I)$$

$A + B + C = \pi$

$$\frac{A+B+C}{2}=\frac{\pi}{2}$$

$$\frac{A+B}{2}=\frac{\pi}{2}-\frac{C}{2}$$

$$\tan\left(\frac{A}{2}+\frac{B}{2}\right)=\tan\left(\frac{\pi}{2}-\frac{C}{2}\right)$$

$$\frac{\tan\frac{A}{2}+\tan\frac{B}{2}}{1-\tan\frac{A}{2}\tan\frac{B}{2}}=\cot\frac{C}{2}$$

$$\frac{\tan\frac{A}{2}+\tan\frac{B}{2}}{1-\tan\frac{A}{2}\tan\frac{B}{2}}=\frac{1}{\tan\frac{C}{2}}$$

$$\tan\frac{A}{2}\tan\frac{C}{2}+\tan\frac{B}{2}\tan\frac{C}{2}=1-\tan\frac{A}{2}\tan\frac{B}{2}$$

$$\tan\frac{A}{2}\tan\frac{B}{2}+\tan\frac{B}{2}\tan\frac{C}{2}+\tan\frac{A}{2}\tan\frac{C}{2}=1.....(ii)$$

Putting value in equation (i) to equator (ii) -

$$2\left(\tan^2\frac{A}{2}+\tan^2\frac{B}{2}+\tan^2\frac{C}{2}\right)-2\times 1\geq 0$$

$$\Rightarrow\left(\tan^2\frac{A}{2}+\tan^2\frac{B}{2}+\tan^2\frac{C}{2}\right)\geq 1$$

43. If $x = r\cos\theta\cos\phi$, $y = r\cos\theta\sin\phi$ and $z = r\sin\theta$, then find the value of $x^2+y^2+z^2$

(a) y^2 (b) x^2
(c) r^2 (d) z^2

RRB Group-D – 26/10/2018 (Shift-II)

Ans : (c) given-

$x = r\cos\theta\cos\phi$ .....(1)
$y = r\cos\theta\sin\phi$ ..... (2)
$z = r\sin\theta$ .....(3)

Squaring of equation (1), (2) and (3) by Add-

$$x^2+y^2+z^2=r^2\cos^2\theta\cos^2\phi+r^2\cos^2\theta\sin^2\phi+r^2\sin^2\theta$$

$$=r^2\cos^2\theta\left[\cos^2\phi+\sin^2\phi\right]+r^2\sin^2\theta$$

$$=r^2\cos^2\theta+r^2\sin^2\theta \qquad \left[\because \sin^2\phi+\cos^2\phi=1\right]$$

$$=r^2\left(\sin^2\theta+\cos^2\theta\right)$$

$$\boxed{x^2+y^2+z^2=r^2}$$

44. Find the value of $(\sec\theta-\tan\theta)^2$

(a) $\cot\theta$
(b) $(1-\sin\theta)/(1+\sin\theta)$
(c) $\cos\theta\times\operatorname{cosec}\theta$
(d) 1

RRB NTPC 04.04.2016 Shift : 2

Ans : (b) $(\sec\theta-\tan\theta)^2=\left(\frac{1}{\cos\theta}-\frac{\sin\theta}{\cos\theta}\right)^2$

$$=\left(\frac{1-\sin\theta}{\cos\theta}\right)^2=\frac{(1-\sin\theta)^2}{\cos^2\theta}$$

$$=\frac{(1-\sin\theta)^2}{1-\sin^2\theta} \qquad (\because \sin^2\theta+\cos^2\theta=1)$$

$$=\frac{(1-\sin\theta)(1-\sin\theta)}{(1-\sin\theta)(1+\sin\theta)}=\frac{1-\sin\theta}{1+\sin\theta}$$

45. $\sin^6A + \cos^6A - 1$ is equal to

(a) $-3\sin^2A\cos^2A$ (b) $1-3\sin A\cos A$
(c) $1+3\sin^2A\cos^2A$ (d) 0

RRB NTPC 18.04.2016 Shift : 1

Ans : (a)

$\sin^6A + \cos^6A-1$
$= (\sin^2A)^3 + (\cos^2A)^3-1$

Formula,

Form, $a^3+b^3 = (a+b)^3-3ab\,(a+b)$
$= (\sin^2A+\cos^2A)^3-3\sin^2A.\cos^2A(\sin^2A+\cos^2A)-1$
$= (1)^3-3\sin^2A.\cos^2A(1)-1 \quad \{\sin^2A+\cos^2A=1\}$
$= 1-3\sin^2A.\cos^2A-1$
$= -3\sin^2A.\cos^2A$

46. Simplify:$(\sin\theta / \cos\theta) \times (\cot\theta / \operatorname{cosec}\theta)$

(a) $\cos\theta$ (b) $\sin\theta$
(c) $\tan\theta$ (d) $\sec\theta$

RRB NTPC 06.04.2016 Shift : 2

Ans : (b) $\frac{\sin\theta}{\cos\theta}\times\frac{\cot}{\operatorname{cosec}\theta}$

$$\frac{\sin\theta}{\cos\theta}\times\frac{\frac{\cos\theta}{\sin\theta}}{\frac{1}{\sin\theta}}=\sin\theta$$

47. What is the value of $\sin\theta\tan\theta - \sec\theta$

(a) $-\cos\theta$ (b) 1
(c) $-\sec\theta$ (d) $\operatorname{cosec}\theta$

RRB NTPC 28.04.2016 Shift : 1

Ans : (a) $\sin\theta\tan\theta - \sec\theta = \sin\theta\frac{\sin\theta}{\cos\theta}-\frac{1}{\cos\theta}$

$$=\frac{\sin^2\theta}{\cos\theta}-\frac{1}{\cos\theta}$$

$$=\frac{\sin^2\theta}{\cos\theta}-\left(\frac{\sin^2\theta+\cos^2\theta}{\cos\theta}\right) \qquad \{1=\sin^2\theta+\cos^2\theta\}$$

$$=\frac{\sin^2\theta-\sin^2\theta-\cos^2\theta}{\cos\theta}=\frac{-\cos^2\theta}{\cos\theta}=-\cos\theta$$

48. Solve the following :

$$\frac{1}{1+\sin\theta}+\frac{1}{1-\sin\theta}=?$$

(a) 0 (b) $2\,\text{Cos}^2\theta$
(c) $2\text{Sec}^2\theta$ (d) 1

RRB ALP & Tec. (17-08-18 Shift-III)

Ans : (c) $\frac{1}{1+\sin\theta}+\frac{1}{1-\sin\theta}=\frac{1-\sin\theta+1+\sin\theta}{1-\sin^2\theta}$

$=\frac{2}{1-\sin^2\theta}$ $\left[\therefore 1-\sin^2\theta=\cos^2\theta\right]$

$=\frac{2}{\cos^2\theta}=2\sec^2\theta$

Type - 3

49. If sin (A – B) = sin A cos B – cos A sin B, then what is the value of sin15°?

(a) $\frac{\sqrt{3}-1}{4}$ (b) $\frac{\sqrt{6}-\sqrt{2}}{2}$
(c) $\frac{\sqrt{3}-\sqrt{2}}{2}$ (d) $\frac{\sqrt{6}-\sqrt{2}}{4}$

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

Ans : (d) sin (A – B) = sinA cosB – cosA sinB
$\sin 15^0=\sin(60°-45°)=\sin 60^0\cos 45^0-\cos 60^0\sin 45^0$

$\sin 15^0=\frac{\sqrt{3}}{2}\times\frac{1}{\sqrt{2}}-\frac{1}{2}\times\frac{1}{\sqrt{2}}$

$=\frac{\sqrt{3}}{2\sqrt{2}}-\frac{1}{2\sqrt{2}}$

$\sin 15^0=\frac{\sqrt{3}-1}{2\sqrt{2}}$

$\sin 15^0=\frac{(\sqrt{3}-1)\sqrt{2}}{2\times 2}=\frac{\sqrt{6}-\sqrt{2}}{4}$

50. The value of Cos(-780^0) is

(a) $\sqrt{3}/2$ (b) $-\sqrt{3}/2$
(c) $1/2$ (d) $-1/2$

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (c) Cos(-780^0)
= Cos 780^0 [$\because$ Cos (-θ) = Cosθ]
= Cos (2 × 360^0 + 60^0)
= Cos 60^0 = $\frac{1}{2}$

51. If tan 2A = cot(A-18^0) and 2A is acute angle, then find the value of 'A'

(a) 36^0 (b) 24^0
(c) 28^0 (d) 18^0

RRB JE - 22/05/2019 (Shift-III)

Ans : (a) tan2A = cot (A – 18°)
cot (90° – 2A) = cot (A – 18°)
90° – 2A = A – 18° [$\because$ cot (90° – θ) = tanθ]
108° = 3A
A = 36°

52. Find the value of sin 75°?

(a) $\frac{\sqrt{6}+\sqrt{2}}{4}$ (b) $\frac{\sqrt{6}-\sqrt{2}}{4}$
(c) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (d) $\frac{\sqrt{3}+1}{2}$

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

Ans : (a) sin (75°)
= sin (45° + 30°)
= sin45°. cos30° + cos45°. sin30°

$=\frac{1}{\sqrt{2}}\times\frac{\sqrt{3}}{2}+\frac{1}{\sqrt{2}}\times\frac{1}{2}$

$=\frac{\sqrt{3}}{2\sqrt{2}}+\frac{1}{2\sqrt{2}}=\frac{\sqrt{3}+1}{2\sqrt{2}}\times\frac{\sqrt{2}}{\sqrt{2}}$

$=\frac{\sqrt{6}+\sqrt{2}}{4}$

53. tan (60° + 30°) – tan (60° – 30°) = ?

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$
(c) Infinite (d) 1

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (c) tan (60 + 30) – tan (60 – 30)
= tan 90° - tan 30°

$=\frac{1}{0}-\frac{1}{\sqrt{3}}=\frac{\sqrt{3}-0}{0}=\frac{\sqrt{3}}{0}=\infty$

54. $\frac{2\sin 30°}{1+\cos 30°}+\frac{1+\cos 30°}{\sin 30°}=?$

(a) 4 (b) 8
(c) $4-2\sqrt{3}$ (d) $6-\sqrt{3}$

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (d) $\frac{2\sin 30°}{1+\cos 30°}+\frac{1+\cos 30°}{\sin 30°}$

$=\frac{2\sin^2 30°+(1+\cos 30°)^2}{\sin 30°(1+\cos 30°)}=\frac{2\times\frac{1}{4}+\left(1+\frac{\sqrt{3}}{2}\right)^2}{\frac{1}{2}\left(1+\frac{\sqrt{3}}{2}\right)}$

$=\frac{\frac{1}{2}+\frac{(2+\sqrt{3})^2}{4}}{\frac{1}{2}\times\frac{(2+\sqrt{3})}{2}}=\frac{2+7+4\sqrt{3}}{2+\sqrt{3}}=\frac{9+4\sqrt{3}}{2+\sqrt{3}}$

$=\frac{9+4\sqrt{3}}{2+\sqrt{3}}\times\frac{2-\sqrt{3}}{2-\sqrt{3}}$

$=\frac{18+8\sqrt{3}-9\sqrt{3}-12}{4-3}=6-\sqrt{3}$

55. $\frac{\tan 45^0}{1+\cos 45^0}+\frac{1+\sin 45^0}{\cot 45^0}=?$

(a) $3-\frac{\sqrt{2}}{2}$ (b) $\sqrt{2}$

(c) $3-2\sqrt{2}$ (d) $-\frac{\sqrt{2}}{2}$

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (a) :

$$\frac{\tan 45^0}{1+\cos 45^0}+\frac{1+\sin 45^0}{\cot 45^0}$$

$$\frac{1}{1+\frac{1}{\sqrt{2}}}+\frac{1+\frac{1}{\sqrt{2}}}{1}$$

$$\frac{\sqrt{2}}{\sqrt{2}+1}+\frac{\sqrt{2}+1}{\sqrt{2}}=\frac{2+(\sqrt{2}+1)^2}{\sqrt{2}(\sqrt{2}+1)}=\frac{2+2+1+2\sqrt{2}}{\sqrt{2}(\sqrt{2}+1)}$$

$$\frac{5+2\sqrt{2}}{\sqrt{2}(\sqrt{2}+1)}$$

$$\frac{\left(5+2\sqrt{2}\right)}{\sqrt{2}\left(\sqrt{2}+1\right)}\times\frac{\sqrt{2}\left(\sqrt{2}-1\right)}{\sqrt{2}\left(\sqrt{2}-1\right)}=\frac{10+4\sqrt{2}-5\sqrt{2}-4}{2(2-1)}$$

$$=\frac{6-\sqrt{2}}{2}=3-\frac{\sqrt{2}}{2}$$

56. Which of the following is $\sin\left(90°-\theta\right)$

(a) cosec θ (b) cot θ

(c) sin θ (d) cos θ

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (d) : $\sin\left(90-\theta\right)=\cos\theta$

57. Given that $\tan(A+B)=\frac{\tan A+\tan B}{1-\tan A\tan B}$, then what is the value of $\tan 75^0$?

(a) $2+2\sqrt{3}$ (b) $2-\sqrt{3}$

(c) $2+\sqrt{3}$ (d) $2-2\sqrt{3}$

RRB Group-D – 27/11/2018 (Shift-I)

Ans. (c) : on putting A = 45° and B = 30°,

$$\Rightarrow\frac{\tan 45°+\tan 30°}{1-\tan 45°\tan 30°}=\tan\left(45°+30°\right)$$

$$\Rightarrow\frac{\tan 45°+\tan 30°}{1-\tan 45°\tan 30°}=\tan 75°$$

$$\Rightarrow\frac{1+\frac{1}{\sqrt{3}}}{1-1\times\frac{1}{\sqrt{3}}}=\tan 75°$$

$$\Rightarrow\frac{1+\frac{1}{\sqrt{3}}}{1-\frac{1}{\sqrt{3}}}=\frac{\sqrt{3}+1}{\sqrt{3}-1}=\tan 75°$$

rationalization,

$$\Rightarrow\frac{\sqrt{3}+1}{\sqrt{3}-1}\times\frac{\sqrt{3}+1}{\sqrt{3}+1}$$

$$\Rightarrow\frac{\left(\sqrt{3}+1\right)^2}{\left(\sqrt{3}-1\right)\left(\sqrt{3}+1\right)}$$

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

formula−

$\because\ \left(a+b\right)^2=a^2+b^2+2ab$ and

$a^2-b^2=\left(a+b\right)\left(a-b\right)$ from,

$$=\frac{3+1+2\sqrt{3}}{3-1}=\frac{4+2\sqrt{3}}{2}=\tan 75°$$

$$=\frac{2\left(2+\sqrt{3}\right)}{2}=\tan 75°=2+\sqrt{3}=\tan 75°$$

58. If sin15° = $\frac{\sqrt{6}-\sqrt{2}}{4}$, then approx value of tan15° ?

(a) $2-2\sqrt{3}$ (b) $2+2\sqrt{3}$

(c) $2-\sqrt{3}$ (d) $2+2\sqrt{3}$

Ans. (c) : sin 15° = $\frac{\sqrt{6}-\sqrt{2}}{4}$

following value sin15° = sin (45° – 30°) got the solution by formula sin (A – B). Likewise for tan 15° = tan (45° – 30°) will used of tan (A – B)

$$\tan(45°-30°)=\frac{\tan 45°-\tan 30°}{1+\tan 45°\tan 30°}$$

$$=\frac{1-\frac{1}{\sqrt{3}}}{1+1\times\frac{1}{\sqrt{3}}}=\frac{\frac{\sqrt{3}-1}{\sqrt{3}}}{\frac{\sqrt{3}+1}{\sqrt{3}}}=\frac{\sqrt{3}-1}{\sqrt{3}+1}\times\frac{\sqrt{3}-1}{\sqrt{3}-1}$$

$$=\frac{\left(\sqrt{3}-1\right)^2}{\left(\sqrt{3}\right)^2-\left(1\right)^2}=\frac{3+1-2\sqrt{3}}{3-1}$$

$$=\frac{4-2\sqrt{3}}{2}=\frac{2\left(2-\sqrt{3}\right)}{2}=2-\sqrt{3}$$

59. If $\text{coses}(A-B)=\frac{\sec A\sec B}{\tan A-\tan B}$, then coses 15°= ?

(a) $\sqrt{6}-\sqrt{3}$ (b) $\sqrt{6}-\sqrt{2}$

(c) $\sqrt{6}+\sqrt{3}$ (d) $\sqrt{6}+\sqrt{2}$

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (d) :

Suppose

A = 60°

B = 45°

$$\text{cosec}\left(60°-45°\right)=\frac{\sec 60°\times\sec 45°}{\tan 60°-\tan 45°}$$

$\operatorname{cosec}15° = \frac{2\times\sqrt{2}}{\sqrt{3}-1}$

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

$= \frac{2\sqrt{6}+2\sqrt{2}}{3-1} = \frac{2\sqrt{6}+2\sqrt{2}}{2} = \frac{2(\sqrt{6}+\sqrt{2})}{2}$

$\operatorname{cosec}15° = \sqrt{6}+\sqrt{2}$

60. Identify the in compatible:

$\sin 90^0$	$\cos 0^0$	$\tan 90^0$	$\tan 45^0$
A	B	C	D

(a) B (b) C
(c) A (d) D

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (b) Sin 90° = 1
Cos0° = 1
tan 90°= ∞
and tan 45° = 1
tan 90°
tan 90° is inconsistent because trigonometry ratio got the value 1 in other when tan 90° is undefined (∞)

61. Find the value of

$$\frac{5\cos^2 60^0 + 4\sec^2 30^0 - \tan^2 45^0}{\sin^2 30^0 + \cos^2 30^0} = ?$$

(a) 1 (b) 2
(c) $\frac{49}{12}$ (d) $\frac{67}{12}$

RRB Group-D – 09/10/2018 (Shift-II)

Ans. (d) : $\frac{5\cos^2 60^0 + 4\sec^2 30^0 - \tan^2 45^0}{\sin^2 30^0 + \cos^2 30^0}$

$\because \sin^2\theta + \cos^2\theta = 1$

$= \frac{5\times\left(\frac{1}{2}\right)^2 + 4\times\left(\frac{2}{\sqrt{3}}\right)^2 - (1)^2}{1} = \frac{5\times\frac{1}{4}+4\times\frac{4}{3}-1}{1}$

$= \frac{5}{4}+\frac{16}{3}-1 = \frac{15+64-12}{12} = \frac{67}{12}$

62. $\frac{(\cos 60^0 + \sin 60^0)}{(\cos 60^0 - \sin 60^0)} = ?$

(a) $-(\sqrt{3}+2)$ (b) $(\sqrt{3}-2)$
(c) -1 (d) $-\frac{\sqrt{3}}{2}$

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (a) $\left(\frac{\cos 60° + \sin 60°}{\cos 60° - \sin 60°}\right)$

$= \frac{\left(\frac{1}{2}+\frac{\sqrt{3}}{2}\right)}{\left(\frac{1}{2}-\frac{\sqrt{3}}{2}\right)} = \frac{\frac{1+\sqrt{3}}{2}}{\frac{1-\sqrt{3}}{2}} = \frac{1+\sqrt{3}}{1-\sqrt{3}}$

$= \frac{(1+\sqrt{3})(1+\sqrt{3})}{(1-\sqrt{3})(1+\sqrt{3})}$

Multiplying in denominator and numerator from $(1+\sqrt{3})$

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

$= \frac{1+3+2\sqrt{3}}{-2}, \quad = \frac{(4+2\sqrt{3})}{-2}$

$= \frac{2(2+\sqrt{3})}{-2}, \quad = -(\sqrt{3}+2)$

63. Find the value of $[\sin(45^0) + \cos(45^0)]^2$

(a) 1/2 (b) $1/\sqrt{2}$
(c) 3/2 (d) 2

RRB NTPC 05.04.2016 Shift : 2

Ans : (d) $[\sin(45^0) + \cos(45^0)]^2$

$= \left(\frac{1}{\sqrt{2}}+\frac{1}{\sqrt{2}}\right)^2$

$= \left(\frac{2}{\sqrt{2}}\right)^2 = \frac{4}{2} = 2$

64. If cot 52° = b, tan 38° = ?

(a) $\sqrt{b}$ (b) $\sqrt{b}/2$
(c) -b (d) b

RRB NTPC 05.04.2016 Shift : 3

Ans :(d) $\cot 52^0 = b$

$\cot(90^0 - 38^0) = b$

$\tan 38^0 = b \quad [\because \cot(90^0-\theta) = \tan\theta]$

65. What is the value of tan (315°)?

(a) 1 (b) -1
(c) $1/\sqrt{2}$ (d) $-1/\sqrt{2}$

RRB NTPC 04.04.2016 Shift : 3

Ans : (b) $\tan 315^0 = \tan(360^0 - 45^0)$

$= -\tan 45^0 \quad [\because \tan(360^0-\theta) = -\tan\theta]$

$= -1$

66. Find the value of $\tan(1125^0)$ is

(a) 1 (b) –1
(c) 0 (d) ∞

RRB NTPC 31.03.2016 Shift : 1

Ans : (a) $\tan(1125^0)$
$= \tan(3\times 360^0 + 45^0)$
$= \tan 45^0 \quad [\because \tan(n\times 360^0+\theta) = \tan\theta]$
$= 1$

67. Find the value of tan (-405^0)

(a) 1 (b) –1
(c) ∞ (d) 0

RRB NTPC 29.03.2016 Shift : 3

Ans : (b) tan (-405^0)
$= -\tan 405^0$
$= -\tan(360^0 + 45^0)$
$= -\tan 45^0 = -1$
[$\because$ tan ($360^0+\theta$)= tanθ]

68. $\text{cosec}(90^0 - \theta) = ?$

(a) $\tan\theta$ (b) $\cot\theta$
(c) $\sec\theta$ (d) $\cos\theta$

RRB NTPC 06.04.2016 Shift : 1

Ans : (c) $\text{cosec}(90-\theta) = \sec\theta$

69. Find the value of cos0° is:

(a) 0 (b) Infinite
(c) Not defined (d) 1

RRB NTPC 27.04.2016 Shift : 3

Ans : (d) $\cos 0^0 = 1$,

70. Evaluate: $\frac{\sin 23^0}{\cos 67^0}$

(a) 1/2 (b) 2
(c) 1 (d) 2/3

RRB NTPC 29.04.2016 Shift : 1

Ans : (c) $\frac{\sin 23^0}{\cos 67^0} = \frac{\sin 23^0}{\cos(90^o - 23)} = \frac{\sin 23^o}{\sin 23^o} = 1$

71. Find the value of $\text{cosec}\, 60^0$

(a) $\sqrt{3}/2$ (b) $\sqrt{2}$
(c) $2/\sqrt{3}$ (d) $1/\sqrt{2}$

RRB NTPC 30.04.2016 Shift : 1

Ans : (c) $\text{cosec } 60^0 = \frac{1}{\sin 60^0} = \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}}$

Type - 4

72. Find the value of $\sin 120^0 \sin 240^0 \sin 270^0$

(a) -1/8 (b) -1/2
(c) 3/4 (d) 1/8

RRB JE - 22/05/2019 (Shift-I)

Ans : (c) sin120° sin240° sin270°
⇒ sin (90° + 30°) sin (180° + 60°) sin (180° + 90°)
⇒ cos30° (–sin60°) (–sin90°)
$\Rightarrow \frac{\sqrt{3}}{2} \times \left(-\frac{\sqrt{3}}{2}\right) \times (-1) = \frac{3}{4}$

73. Find the value of $\sin\frac{7\pi}{4}\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\sin\frac{5\pi}{4}$

(a) $\frac{1}{4}$ (b) $\frac{1}{8}$
(c) $\frac{1}{16}$ (d) $\frac{3}{16}$

RRB JE - 22/05/2019 (Shift-I)

Ans : (a)

$$\sin\frac{7\pi}{4}\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\sin\frac{5\pi}{4}$$
$$= \sin\left(\pi + \frac{3\pi}{4}\right)\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\sin\left(\pi + \frac{\pi}{4}\right)$$
$$= \left(-\sin\frac{3\pi}{4}\right)\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\left(-\sin\frac{\pi}{4}\right)$$
$$= \sin\frac{3\pi}{4}\sin\frac{\pi}{4}\sin\frac{3\pi}{4}\sin\frac{\pi}{4}$$
$$= \sin\left(\pi - \frac{\pi}{4}\right)\sin\frac{\pi}{4}\sin\left(\pi - \frac{\pi}{4}\right)\sin\frac{\pi}{4}$$
$$= \sin\frac{\pi}{4}\sin\frac{\pi}{4}\sin\frac{\pi}{4}\sin\frac{\pi}{4} = \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{1}{4}$$

74. Simplify: cos18° + cos 162°+sin 126°+ sin 234°

(a) 2 (b) 1
(c) -2 (d) 0

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (d) $\cos 18^0 + \cos 162^0 + \sin 126° + \sin 234^0$
= cos18°+cos (180°–18°) + sin 126° + sin (360° – 126°)
= cos 18° + (–cos 18°) + (sin 126°) + (–sin 126°)
= cos 18° – cos 18°+ sin 126° – sin 126° = 0

75. If $\tan^2 45^0 - \cos^2 60^0 = x \sin 45^0 \cos 45^0 \cot 30^0$, Find the value of 'x'

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{2}{\sqrt{3}}$ (d) $\frac{3}{2}$

RRB JE - 24/05/2019 (Shift-I)

Ans : (a) $\tan^2 45^0 - \cos^2 60^0 = x \sin 45^0 \cos 45^0 \cot 30^0$

$$1 - \left(\frac{1}{2}\right)^2 = x \times \frac{1}{\sqrt{2}} . \frac{1}{\sqrt{2}} . \sqrt{3}$$
$$\frac{3}{4} = \frac{x}{2} \times \sqrt{3}$$
$$x = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3} \times \sqrt{3}}{2 \times \sqrt{3}} = \frac{\sqrt{3}}{2}$$

76. Simplify: $\sin 780^0 \sin 480^0 + \cos 120^0 \sin 30^0$

(a) 2/3 (b) 1/3
(c) 0 (d) 1/2

RRB JE - 24/05/2019 (Shift-I)

Ans : (d) $\sin 780^0 \sin 480^0 + \cos 120^0 \sin 30^0$
= sin (2×360°+60°) sin (360° + 120°) + cos120° sin30°
= sin60° sin (120°) + cos120° sin30°
= sin60° sin(90° + 30°) + cos (90° + 30°) sin30°
= sin60° cos30° – sin30°sin30°
$= \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{1}{2} = \frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

77. Simplify:
$\cos 5^0 + \cos 24^0 + \cos 175^0 + \cos 204^0 + \cos 300^0$
(a) 1/2 (b) 1
(c) -1/2 (d) 0

RRB JE - 25/05/2019 (Shift-I)

Ans : (a)
$\cos 5^0 + \cos 24^0 + \cos 175^0 + \cos 204^0 + \cos 300^0$
$= \cos 5° + \cos 24° + \cos (180° - 5°) + \cos (180° + 24°) + \cos (270° + 30°)$
$= \cos 5° + \cos 24° - \cos 5° - \cos 24° + \sin 30°$
$= \sin 30° = \frac{1}{2}$

78. Find the value of tan 10° tan 15° tan 80° tan 75°
(a) 1/3 (b) 1
(c) 1/2 (d) 2/3

RRB JE - 25/05/2019 (Shift-II)

Ans : (b) tan10°. tan 15° . tan 80°. tan75°
= tan10°. tan 15° . tan(90°–10°) tan (90°–15°)
= tan10°. tan 15°. cot 10°. cot 15°
$= \tan 10°.\tan 15° \times \frac{1}{\tan 10°} \times \frac{1}{\tan 15°}$
= 1

79. Find the value of $\tan^2 60^o - 2\tan^2 45^o - \cot^2 30^o + 2\sin^2 30^o + 3/4\,\text{cosec}^2 45^o$
(a) $-\frac{\sqrt{3}}{2}$ (b) 0
(c) 2 (d) – 1

RRB JE - 31/05/2019 (Shift-I)

Ans : (b) $\tan^2 60^o - 2\tan^2 45^o - \cot^2 30^o + 2\sin^2 30^o + 3/4\,\text{cosec}^2 45^o$
$(\sqrt{3})^2 - 2 \times 1 - (\sqrt{3})^2 + 2\left(\frac{1}{2}\right)^2 + \frac{3}{4} \times \left(\sqrt{2}\right)^2$
$3 - 2 - 3 + 2 \times \frac{1}{4} + \frac{3}{4} \times 2$
$3 - 5 + \frac{1}{2} + \frac{3}{2}$
$\frac{6 - 10 + 1 + 3}{2} = \frac{10 - 10}{2} = 0$

80. tan 34° tan42° tan48° tan56° + tan60° cot 30° - cosec30° sec60° = ?
(a) 0 (b) 1.5
(c) 1 (d) 2

RRB Group-D – 26/09/2018 (Shift-III)

Ans : (a) tan 34° tan42° tan48° tan56° + tan60° cot 30° - cosec30° sec60°
= tan (90°-56°) tan(90°-48°) tan48° tan56° + tan60° cot (90°-60°) - cosec(90°-60°) sec60°
= Cot 56° cot 48° tan 48° tan 56° + $\tan^2 60°$ - $\sec^2 60°$
$= 1 \times 1 + (-1) = 1 - 1 = 0$ $\left\{\begin{matrix}\tan\theta.\cot\theta = 1 \\ \sec^2\theta - \tan^2\theta = 1\end{matrix}\right\}$

81. Find the value of $\tan 8^0 \tan 22^0 \cot 60^0 \tan 68^0 \tan 82^0$
(a) 1 (b) $\frac{2}{\sqrt{3}}$
(c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$

RRB Group-D – 16/10/2018 (Shift-II)

Ans : (c)
$\tan 8^0 \tan 22^0 \cot 60^0 \tan 68^0 \tan 82^0$
$= \tan 8^0.\tan 22^0 \cot 60^0 \tan\left(90^0 - 22^0\right).\tan\left(90^0 - 8^0\right)$
$= \tan 8^0.\tan 22^0 \cot 60^0.\cot 22^0.\cot 8^0$
$= \tan 8^0 \times \frac{1}{\tan 8^0} \times \tan 22^0 \times \frac{1}{\tan 22^0}.\cot 60^0$
$= 1 \times 1 \times \cot 60^0$
$= 1 \times 1 \times \frac{1}{\sqrt{3}}$ $\left[\because \cot 60^0 = \frac{1}{\sqrt{3}}\right]$
$= \frac{1}{\sqrt{3}}$

82. Find the value of $\sin 12^0 \times \cos 18^0 \times \sec 78^0 \times \text{cosec } 72^0$
(a) $\frac{1}{2}$ (b) $\sqrt{3}$
(c) $\frac{\sqrt{3}}{3}$ (d) 1

Ans. (d) : $\sin 12^0 \times \cos 18^0 \times \sec 78^0 \times \text{cosec } 72^0$
$\sin 12^0 \times \cos 18^0 \times \frac{1}{\cos 78^0} \times \frac{1}{\sin 72^0}$
$= \frac{\sin 12^0 \times \cos 18^0}{\cos 78^0 \times \sin 72^0}$
$= \frac{\sin\left(90 - 78\right)^0 \times \cos\left(90 - 72\right)^0}{\cos 78^0 \times \sin 72^0}$
$= \frac{\cos 78^0 \times \sin 72^0}{\cos 78^0 \times \sin 72^0} = 1$

83. What is the sum of the value of all six trigonometric ratio when the angle $\alpha = 45^0$?
(a) $2 + 3\sqrt{2}$ (b) $\frac{6 + 3\sqrt{2}}{2}$
(c) 6 (d) $2 + 4\sqrt{2}$

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) : Sum of all six trigonometry ratio
$= \sin\alpha + \cos\alpha + \tan\alpha + \cot\alpha + \sec\alpha + \text{cosec}\alpha$
$= \sin 45^0 + \cos 45^0 + \tan 45^0 + \cot 45^0 + \text{Sec}45^0 + \text{cosec}45^0$
$= \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 1 + 1 + \sqrt{2} + \sqrt{2} = \frac{2}{\sqrt{2}} + 2 + 2\sqrt{2}$
$= \sqrt{2} + 2 + 2\sqrt{2} = 3\sqrt{2} + 2 = 2 + 3\sqrt{2}$

84. $\sin^2 60^0 + \cos^2 30^0 + \cot^2 45^0 + \sec^2 60^0 = ?$
(a) $\frac{7}{2}$ (b) $\frac{5}{2}$
(c) $\frac{13}{2}$ (d) $\frac{15}{2}$

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (c) : $\sin^2 60^0 + \cos^2 30^0 + \cot^2 45^0 + \sec^2 60^0 = ?$

$$= \left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 + (1)^2 + (2)^2$$

$$= \frac{3}{4} + \frac{3}{4} + 1 + 4 = \frac{6}{4} + 5 = \frac{6+20}{4} = \frac{26}{4} = \frac{13}{2}$$

85. What is the value of following expression? ($Cot1^0\ Cot2^0\ Cot3^0\ Cot4^0\ Cot5^0$ ….. $Cot90^0$)

(a) 0 (b) 1
(c) 2 (d) 1/2

RRB NTPC 28.04.2016 Shift : 3

Ans : (a) ($Cot1^0\ Cot2^0\ Cot3^0\ Cot4^0\ Cot5^0$ ….. $Cot90^0$)
$\because$ Cot $90^0 = 0$
So ($Cot1^0\ Cot2^0\ Cot3^0\ Cot4^0\ Cot5^0$ .. $Cot89^0 \times 0) = 0$

86. The value of $\cos 100^0 \cos 10^0 + \sin 100^0 \sin 10^0$ is equal to?

(a) 0 (b) $\cos 110^0$
(c) $\sin 110^0$ (d) 1

RRB NTPC 10.04.2016 Shift : 3

Ans : (a) cos (A–B) = cosA. cos B + sin A. sin B
from the question
$\cos 100^0 . \cos 10^0 + \sin 100^0 . \sin 10^0$
$= \cos (100^0 – 10^0) = \cos 90^0 = 0$

87. Find the value of tan24. tan48. tan42.tan66

(a) 0 (b) 1
(c) 1/2 (d) 2

RRB NTPC 22.04.2016 Shift : 1

Ans : (b) $\tan 24^0 . \tan 48^0 . \tan 42^0 . \tan 66^0$

$= \tan 24^0 . \tan 48^0 . \tan (90^0 - 48^0) . \tan (90^0 - 24^0)$

$= \tan 24^0 . \tan 48^0 . \cot 48^0 . \cot 24^0$

$\{\because \tan(90^0 - \theta) = \cot\theta\}$

$= 1$

88. What is the value of the following expression ($\tan 0^o\ \tan 1^o\ \tan 2^o\ \tan 3^o\ \tan 4^o$……$\tan 89^o$)

(a) 0 (b) 1
(c) 2 (d) 1/2

RRB NTPC 28.04.2016 Shift : 2

Ans : (a) $\because \tan 0^o = 0$

$\therefore \tan 0^o\ \tan 1^o\ \tan 2^o\ \tan 3^o$ ……$\tan 89^o = 0$

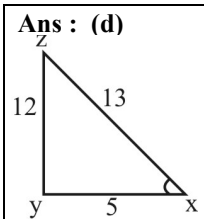
Type - 5

89. If Cot x = $\frac{5}{12}$, then sin x – sec x = ?

(a) $-\frac{229}{65}$ (b) $\frac{229}{65}$
(c) $\frac{109}{65}$ (d) $-\frac{109}{65}$

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (d)



$\because$ Cot x = $\frac{xy}{yz} = \frac{5}{12}$

In right angle Δ xyz from Pythagoras theorem
$(\text{hypotenuse})^2 = (\text{perpendicular})^2 + (\text{base})^2$
$(xz)^2 = (yz)^2 + (xy)^2$
$(xz)^2 = (12)^2 + (5)^2$
$(xz)^2 = 144 + 25$
$xz = \sqrt{169}$
$xz = 13$
$\therefore$ Sin x –Sec x

$$= \frac{12}{13} - \frac{13}{5} = \frac{60-169}{65} = -\frac{109}{65}$$

90. If cos A = 12/13, then sin A(1-tanA) = ?

(a) 32/135 (b) 32/137
(c) 35/152 (d) 35/156

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (d) Given-

$\cos A = \frac{12}{13} = \frac{\text{base}}{\text{hypotenuse}}$

$\therefore$ $(\text{perpendicular})^2 = (\text{hypotenuse})^2 - (\text{base})^2$
$= (13)^2 - (12)^2 = 25$

So perpendicular $= \sqrt{25} = 5$

$\therefore \sin A.(1-\tan A) = \frac{5}{13}\left(1 - \frac{5}{12}\right)$ $\{\because \text{Sin}\theta = \frac{\text{Perpendicular}}{\text{hypotenuse}}$

$\tan\theta = \frac{\text{Perpendicular}}{\text{base}}\}$

$$= \frac{5}{13} \times \frac{7}{12} = \frac{35}{156}$$

91. If tan α =1/2, tan $\beta = \frac{1}{3}$ then find the value of α + β

(a) 0^0 (b) 135^0
(c) 90^0 (d) 45^0

RRB JE - 24/05/2019 (Shift-III)

Ans : (d) $\tan\alpha = \frac{1}{2}$ $\tan\beta = \frac{1}{3}$ $\alpha + \beta = ?$

$$\tan(\alpha+\beta) = \frac{\tan\alpha + \tan\beta}{1 - \tan\alpha . \tan\beta}$$

$$= \frac{\frac{1}{2} + \frac{1}{3}}{1 - \frac{1}{2} \times \frac{1}{3}} = \frac{\frac{3+2}{6}}{1 - \frac{1}{6}} = \frac{\frac{5}{6}}{\frac{5}{6}} = 1$$

tan (α + β) = 1 = tan 45°
α + β = 45°

92. If $\cot\theta = \frac{a}{b}$, then find the value of $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta}$

(a) b/a (b) (a – b)/(a + b)
(c) a/b (d) a^2/b^2

RRB JE - 25/05/2019 (Shift-I)

Ans : (b)

$$\frac{\cos\theta-\sin\theta}{\cos\theta+\sin\theta}=\frac{\text{Sin}\theta\left(\frac{\cos\theta}{\sin\theta}-1\right)}{\sin\theta\left(\frac{\cos\theta}{\sin\theta}+1\right)}$$

$$=\frac{\cot\theta-1}{\cot\theta+1}\qquad\left[\because\cot\theta=\frac{a}{b}\right]$$

$$=\frac{\frac{a}{b}-1}{\frac{a}{b}+1}=\frac{a-b}{a+b}$$

93. If $\text{cosec}\,\alpha=\sqrt{2}$, then find the value of $\frac{2\sin^2\alpha+3\cos^2\alpha}{\text{cosec}^2\alpha+\cot^2\alpha}$

(a) $\frac{5}{12}$ (b) $\frac{5}{3}$

(c) $\frac{5}{2}$ (d) $\frac{5}{6}$

RRB JE - 01/06/2019 (Shift-III)

Ans. (d) $\text{cosec}\alpha=\sqrt{2}=\text{cosec}45°$

$\therefore\quad \alpha=45^0$

$$\frac{2\sin^2\alpha+3\cos^2\alpha}{\text{cosec}^2\alpha+\cot^2\alpha}=\frac{2\sin^2 45°+3\cos^2 45°}{\text{cosec}^2 45°+\cot^2 45°}$$

$$=\frac{2\times\left(\frac{1}{\sqrt{2}}\right)^2+3\times\left(\frac{1}{\sqrt{2}}\right)^2}{\left(\sqrt{2}\right)^2+1^2}$$

$$=\frac{2\times\frac{1}{2}+3\times\frac{1}{2}}{2+1}=\frac{1+\frac{3}{2}}{3}=\frac{\frac{5}{2}}{3}=\frac{5}{2}\times\frac{1}{3}=\frac{5}{6}$$

94. If $\sin\theta=\frac{3}{4}$ then What is the value of $16\cos^2\theta+\tan^2\theta$

(a) $\frac{58}{7}$ (b) $\frac{60}{7}$

(c) $\frac{55}{7}$ (d) $\frac{62}{7}$

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (a) $\sin\theta=\frac{3}{4}$ (given)

$$16\cos^2\theta+\tan^2\theta=16\cos^2\theta+\frac{\sin^2\theta}{\cos^2\theta}$$

$$=16\left(1-\sin^2\theta\right)+\frac{\sin^2\theta}{\left(1-\sin^2\theta\right)}$$

$$=16\times\left(1-\frac{9}{16}\right)+\frac{\frac{9}{16}}{\left(1-\frac{9}{16}\right)}$$

$$=16\times\left(\frac{7}{16}\right)+\frac{\frac{9}{16}}{\left(\frac{7}{16}\right)}=7+\frac{9}{7}=\frac{58}{7}$$

95. If $\tan\theta=\frac{4}{3}$, then the value of $\sin\theta+\cos\theta$?

(a) $\frac{6}{5}$ (b) $\frac{7}{5}$

(c) 1 (d) $\frac{4}{5}$

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (b) $\tan\theta=\frac{4}{3}$ then $\sin\theta+\cos\theta=?$

$$\tan\theta=\frac{\text{Perpendicular}}{\text{base}}$$

Perpendicular = 4

base = 3

Then hypotenuse $=\sqrt{(4)^2+(3)^2}=\sqrt{25}$

hypotenuse = 5

$$\sin\theta=\frac{\text{Perpendicular}}{\text{hypotenuse}}=\frac{4}{5}$$

$$\cos\theta=\frac{\text{base}}{\text{hypotenuse}}=\frac{3}{5}$$

then $\sin\theta+\cos\theta=\frac{4}{5}+\frac{3}{5}=\frac{7}{5}$

96. If 4 cotθ = 5, then find the value of $\frac{(5\sin\theta+3\cos\theta)}{(5\sin\theta-3\cos\theta)}$

(a) 3 (b) 9

(c) 7 (d) 4

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (c) $4\cot\theta=5\Rightarrow\cot\theta=\frac{5}{4}$

$$\frac{5\sin\theta+3\cos\theta}{5\sin\theta-3\cos\theta}=\frac{\sin\theta\left(5+3\frac{\cos\theta}{\sin\theta}\right)}{\sin\theta\left(5-3\frac{\cos\theta}{\sin\theta}\right)}$$

$$=\frac{5+3\cot\theta}{5-3\cot\theta}=\frac{5+3\times\frac{5}{4}}{5-3\times\frac{5}{4}}=\frac{5+\frac{15}{4}}{5-\frac{15}{4}}=\frac{35}{5}=7$$

97. If $\tan\theta=\frac{5}{6}$, then what is the value of $\frac{12\sin\theta-5\cos\theta}{12\sin\theta+5\cos\theta}$?

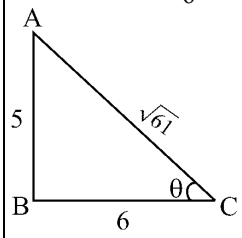
(a) $\frac{2}{3}$ (b) $\frac{1}{3}$

(c) $\frac{3}{4}$ (d) $\frac{1}{4}$

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (b) :

$\tan\theta = \frac{5}{6}$ then $\frac{12\sin\theta - 5\cos\theta}{12\sin\theta + 5\cos\theta} = ?$



From Pythagoras theorem,
$AC^2 = AB^2 + BC^2$
$AC^2 = 5^2 + 6^2$
$AC^2 = 61$
$AC = \sqrt{61}$

$\sin\theta = \frac{5}{\sqrt{61}}$,

Putting the $\cos\theta \frac{6}{\sqrt{16}}$ = value in equation

$$\frac{12\sin\theta - 5\cos\theta}{12\sin\theta + 5\cos\theta}$$

$$\Rightarrow \frac{12\times\frac{5}{\sqrt{61}} - 5\times\frac{6}{\sqrt{61}}}{12\times\frac{5}{\sqrt{61}} + 5\times\frac{6}{\sqrt{61}}}$$

$$\Rightarrow \frac{\frac{60-30}{\sqrt{61}}}{\frac{60+30}{\sqrt{61}}}$$

$$\Rightarrow \frac{\frac{30}{\sqrt{61}}}{\frac{90}{\sqrt{61}}} = \frac{30}{\sqrt{61}}\times\frac{\sqrt{61}}{90} = \frac{1}{3}$$

98. Find the value of sinα cosβ – cosα sinβ. If α and β complementary angle and cosecα = 5/3

(a) $\frac{-25}{7}$ (b) $\frac{-7}{25}$

(c) $\frac{7}{25}$ (d) $\frac{25}{7}$

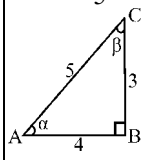
RRB Group-D – 30/10/2018 (Shift-III)

Ans. (b) :

$\operatorname{cosec}\alpha = \frac{5}{3}$

$\frac{1}{\sin\alpha} = \frac{5}{3}$

$\sin\alpha = \frac{3}{5}$



$\sin\alpha = \frac{\text{Perpendicular}}{\text{hypotenuse}} = \frac{3}{5}$

$\cos\alpha = \frac{\text{base}}{\text{hypotenuse}} = \frac{4}{5}$

$\because \sin\beta = \frac{4}{5}$

$\cos\beta = \frac{3}{5}$

$\sin\alpha\cos\beta - \cos\alpha\sin\beta$

$\frac{3}{5}\times\frac{3}{5} - \frac{4}{5}\times\frac{4}{5}$

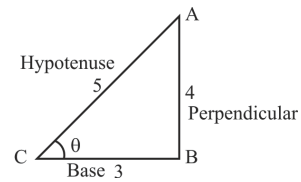
$\frac{9}{25} - \frac{16}{25} = \frac{-7}{25}$

99. If $\tan\theta = \frac{4}{3}$, then find the value of $\sin\theta + \cos\theta$. (sinθ and cosθ both are positive).

(a) 1 (b) 7

(c) $2\frac{1}{3}$ (d) $1\frac{2}{5}$

Ans. (d) :



$\tan\theta = \frac{4}{3}$

$AC^2 = AB^2 + BC^2$

$AC^2 = (4)^2 + (3)^2$

$AC^2 = \sqrt{16+9}$

$AC^2 = \sqrt{25}$

AC = 5

then, $\sin\theta = \frac{4}{5}, \cos\theta = \frac{3}{5}$

sinθ + cosθ

$= \frac{4}{5} + \frac{3}{5} = 1\frac{2}{5}$

100. If $\tan A = \frac{3}{4}$, then

$\{1/2\} + \{(1+\cos A)(1-\cos A)/(1+\sin A)(1-\sin A)\} - 1 = ?$

(a) $\frac{1}{16}$ (b) $\frac{12}{25}$

(c) $\frac{-9}{25}$ (d) $\frac{-1}{9}$

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (a) : If $\tan A = \frac{3}{4}$

$$\left\{\frac{1}{2}\right\} + \left\{\frac{(1+\cos A)(1-\cos A)}{(1+\sin A)(1-\sin A)}\right\} - 1 = ?$$

$$= \frac{1}{2} + \left\{\frac{(1-\cos^2 A)}{1-\sin^2 A}\right\} - 1 \quad = \frac{1}{2} + \left\{\frac{\sin^2 A}{\cos^2 A}\right\} - 1$$

$$= \frac{1}{2} + \tan^2 A - 1 \quad = \frac{1}{2} + \left(\frac{3}{4}\right)^2 - 1$$

$$= \frac{1}{2} + \frac{9}{16} - 1 = \frac{8+9-16}{16} \quad = \frac{17-16}{16}$$

$$\boxed{? = \frac{1}{16}}$$

101. If $\text{Tan A} = \frac{15}{8}$ and $\text{Tan B} = \frac{7}{24}$, then Tan (A - B) = ?

(a) $\frac{304}{297}$ (b) $\frac{304}{425}$

(c) $\frac{416}{87}$ (d) $\frac{87}{416}$

RRB NTPC 11.04.2016 Shift : 2

Ans : (a) $\text{Tan A} = \frac{15}{8}, \text{Tan B} = \frac{7}{24}$

$$\text{Tan}(A-B) = \frac{\text{Tan A} - \text{Tan B}}{1 + \text{Tan A Tan B}} = \frac{\frac{15}{8} - \frac{7}{24}}{1 + \frac{15}{8} \times \frac{7}{24}}$$

$$= \frac{\frac{45-7}{24}}{\frac{192+105}{8 \times 24}} = \frac{38 \times 8}{297} = \frac{304}{297}$$

102. If sin x = $\frac{4}{5}$ then cosec x + cot x =

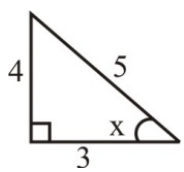
(a) 31/12 (b) 35/12

(c) 2 (d) 1/2

RRB NTPC 17.01.2017 Shift-1

Ans : (c) If $\sin x = \frac{4}{5}$ then $\cos x = \frac{3}{5}$

then cosec x + cot x



$$\frac{1}{\sin x} + \frac{\cos x}{\sin x}$$

$$\frac{1}{\frac{4}{5}} + \frac{3/5}{\frac{4}{5}}$$

$$\frac{5}{4} + \frac{3}{4} = \frac{8}{4} = 2$$

$$\boxed{\text{cosec}x + \cot x = 2}$$

103. If tanθ = $\frac{1}{\sqrt{5}}$, then cosec²θ = ?

(a) 5 (b) $\sqrt{5}$

(c) $\sqrt{3}$ (d) 6

RRB NTPC 17.01.2017 Shift-2

Ans : (d) $\tan\theta = \frac{1}{\sqrt{5}}$

$\Rightarrow \cot\theta = \sqrt{5}$

$\text{cosec}^2\theta = 1 + \cot^2\theta$

$= 1 + \left(\sqrt{5}\right)^2 = 1 + 5 = 6$

104. If sinθ = 5/13, find cosθ.

(a) 8/13 (b) 12/13

(c) 23/13 (d) 1

RRB NTPC 04.04.2016 Shift : 1

Ans : (b) $\sin\theta = \frac{5}{13}$

$\sin^2\theta = \frac{25}{169}$

$\cos\theta = \sqrt{1 - \sin^2\theta} = \sqrt{1 - \frac{25}{169}} = \sqrt{\frac{144}{169}} = \frac{12}{13}$

105. Find the value of (3sin θ – 2 cosθ) ÷ (2 sinθ + 3 coθs). If 5 tanθ = 4.

(a) 6/23 (b) 2/23

(c) 4/23 (d) 5/23

RRB NTPC 31.03.2016 Shift : 3

Ans : (b) Given- $5\tan\theta = 4 \Rightarrow \tan\theta = \frac{4}{5}$

$$\frac{3\sin\theta - 2\cos\theta}{2\sin\theta + 3\cos\theta}$$

$$= \frac{3\left(\frac{\sin\theta}{\cos\theta}\right) - 2\left(\frac{\cos\theta}{\cos\theta}\right)}{2\left(\frac{\sin\theta}{\cos\theta}\right) + 3\left(\frac{\cos\theta}{\cos\theta}\right)}$$

(divided by cosθ in numerator and denominator)

$$= \frac{3\tan\theta - 2 \times 1}{2\tan\theta + 3} = \frac{3 \times \frac{4}{5} - 2}{2 \times \frac{4}{5} + 3} = \frac{\frac{12-10}{5}}{\frac{8+15}{5}} = \frac{2}{23}$$

106. Find the value of cos2θ. If $\sqrt{3}$tanθ = 1 .

(a) 1/2 (b) $1/\sqrt{3}$

(c) 1/3 (d) 1

RRB NTPC 12.04.2016 Shift : 1

Ans : (a) From the question,

$\sqrt{3}\tan\theta = 1$

$\Rightarrow \tan\theta = \frac{1}{\sqrt{3}} = \tan 30^0$

$\therefore \theta = 30^0$

$\therefore \cos 2\theta = \cos 2 \times 30^0$

$= \cos 60^0 = \frac{1}{2}$

107. If $\text{Sin x} = \frac{4}{5}$, then $\frac{\text{Sec x}}{\text{Sin x}} = ?$

(a) $\frac{23}{12}$ (b) $\frac{25}{4}$

(c) $\frac{4}{5}$ (d) $\frac{25}{12}$

RRB NTPC 11.04.2016 Shift : 2

Ans : (d) $\text{Sin x} = \frac{4}{5}$

$\sin x = \frac{\text{Perpendicualr}}{\text{hypotenuse}}$

$(\text{base})^2 = (\text{hypotenuse})^2 - (\text{Perpendicular})^2$

base = $\sqrt{(5)^2-(4)^2}$

base = $\sqrt{25-16}$

base = $\sqrt{9}$

base = 3

then $\sec x = \frac{\text{hypotenuse}}{\text{base}} = \frac{5}{3}$

$$\frac{\sec x}{\sin x} = \frac{\frac{5}{3}}{\frac{4}{5}} = \frac{5}{3}\times\frac{5}{4} = \frac{25}{12}$$

108. If sinx = $\frac{4}{5}$, then tanx + cosx = ?

(a) $\frac{31}{15}$ (b) $\frac{29}{12}$

(c) $\frac{15}{29}$ (d) $\frac{29}{15}$

RRB NTPC 07.04.2016 Shift : 2

Ans : (d)

$\sin x = \frac{4}{5} = \frac{\text{Perpendicular}}{\text{hypotenuse}}$

$\therefore$ base = $\sqrt{\text{hypotenuse}^2 - \text{Perpendicular}}$

$= \sqrt{(5)^2-(4)^2} = \sqrt{25-16} = \sqrt{9} = 3$

$\therefore$ from the question,

tan x + cos x

$= \frac{\text{Perpendicular}}{\text{base}} + \frac{\text{base}}{\text{hypotenuse}}$

$= \frac{4}{3} + \frac{3}{5} = \frac{20+9}{15} = \frac{29}{15}$

109. If tanA = $\frac{15}{8}$ and tanB = $\frac{7}{24}$, then cosec (A–B) = ?

(a) $\frac{425}{304}$ (b) $\frac{425}{416}$

(c) $\frac{425}{87}$ (d) $\frac{425}{297}$

RRB NTPC 07.04.2016 Shift : 2

Ans : (a) $\tan A = \frac{15}{8}$ and $\tan B = \frac{7}{24}$

$\frac{\text{Perpendicular}}{\text{base}} = \frac{15}{8}$ $\frac{\text{Perpendicular}}{\text{base}} = \frac{7}{24}$

hypotenuse = $\sqrt{(15)^2+(8)^2}$ hypotenuse = $\sqrt{(24)^2+(7)^2}$

$= \sqrt{225+64}$ $= \sqrt{576+49}$

$= \sqrt{289}$ $= \sqrt{625}$

$= 17$ $= 25$

$\therefore$ sin (A–B) = sinA . cos B – cosA . sinB

$\text{cosec}(A-B) = \frac{1}{\sin(A-B)}$

$= \frac{1}{\sin A.\cos B - \cos A.\sin B}$

$= \frac{1}{\frac{15}{17}\times\frac{24}{25} - \frac{8}{17}\times\frac{7}{25}}$ $= \frac{1}{\frac{360}{425} - \frac{56}{425}}$

$= \frac{425}{360-56} = \frac{425}{304}$

$\therefore \text{cosec}(A-B) = \frac{425}{304}$

110. If 2cosθ = √3, then cosθ × tanθ = ?

(a) 1 (b) √3/3

(c) √3/2 (d) 1/2

RRB NTPC 06.04.2016 Shift : 2

Ans : (d) $2\cos\theta = \sqrt{3}$ $\cos\theta = \frac{\sqrt{3}}{2}$

cosθ = cos 30^0

θ = 30^0

cosθ × tanθ = cos 30 × tan 30 $= \frac{\sqrt{3}}{2}\times\frac{1}{\sqrt{3}} = \frac{1}{2}$

111. If sin x = 4/5 then sec x + tan x = ?

(a) 37/20 (b) 31/12

(c) 3 (d) 1/3

RRB NTPC 19.01.2017 Shift : 3

Ans : (c) $\sin x = \frac{4}{5}$

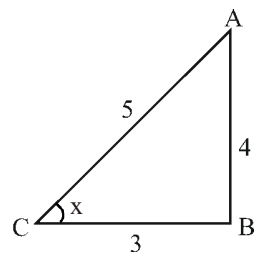
from triangle ABC,

$BC = \sqrt{AC^2 - AB^2}$

$= \sqrt{(5)^2-(4)^2}$

$= \sqrt{25-16} = \sqrt{9}$

BC = 3 unit



$\sec x + \tan x = \frac{5}{3} + \frac{4}{3}$

$\Rightarrow \frac{9}{3} = 3$

$\boxed{\sec x + \tan x = 3}$

112. If A + B = 90° and cos B = $\frac{1}{3}$, then the value of sin A

(a) 1/2 (b) 1/4

(c) 1/3 (d) 2/3

RRB NTPC 27.04.2016 Shift : 1

Ans : (c) A + B = 90°

B = 90° – A

taking cos both side

cosB = cos (90°–A)

$\because \cos B = \frac{1}{3}$

$\cos(90^\circ - A) = \frac{1}{3}$

$\sin A = \frac{1}{3}$

113. If $\sin A = \frac{4}{5}$ and $\sin B = \frac{5}{13}$ then cot (A–B)=?

(a) $\frac{56}{33}$ (b) $\frac{65}{33}$

(c) $\frac{33}{56}$ (d) $\frac{16}{33}$

RRB NTPC 30.04.2016 Shift : 3

Ans : (a) $\sin A = \frac{4}{5}$

$$\sin A = \frac{\text{Perpendicular}}{\text{hypotenuse}} = \frac{4}{5}$$

$$\text{base} = \sqrt{(\text{Hypotenuse})^2 - (\text{Perpendicular})^2}$$

$$\text{base} = \sqrt{(5)^2 - (4)^2}$$

$$\text{base} = \sqrt{25-16}$$

$$\text{base} = \sqrt{9}$$

$$\text{base} = 3$$

$$\cot A = \frac{\text{base}}{\text{perpendicular}}$$

$$\cot A = \frac{3}{4}$$

Likwise

$$\sin B = \frac{5}{13} = \frac{\text{Perpendicular}}{\text{hypotenuse}}$$

then base = 12

$$\therefore \quad \cot B = \frac{12}{5}$$

$$\cot(A-B) = \frac{\cot A \cot B + 1}{\cot B - \cot A}$$

$$= \frac{\frac{3}{4}\times\frac{12}{5}+1}{\frac{12}{5}-\frac{3}{4}} = \frac{\frac{36+20}{20}}{\frac{48-15}{20}} = \frac{56}{33}$$

114. If $\tan\theta = \frac{7}{24}$ then find the value of p such that $\frac{\tan\theta - \sec\theta}{\sin\theta} = \frac{-p}{28}$

(a) 25 (b) 75

(c) 50 (d) 100

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (b) given- $\tan\theta = \frac{7}{24} = \frac{\text{Perpendicular}}{\text{base}}$

$$\therefore \text{hypotenuse} = \sqrt{(\text{base})^2 + (\text{Perpendicular})^2}$$

$$= \sqrt{24^2 + 7^2} = \sqrt{625} = 25$$

$\therefore$ from the question

$$\frac{\tan\theta - \sec\theta}{\sin\theta} = \frac{-P}{28}$$

$$\Rightarrow \frac{\frac{7}{24} - \frac{25}{24}}{\frac{7}{25}} = \frac{-P}{28}$$

$$\Rightarrow \frac{-18}{24} \times \frac{25}{7} = \frac{-P}{28}$$

$$P = \frac{18 \times 25 \times 28}{24 \times 7} = 75$$

Type - 6

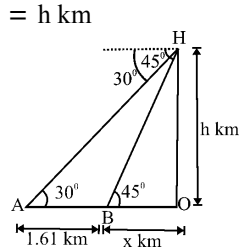
115. The angle of depression of two points in the same direction on the road from an aeroplane over a flat road are 45° and 30° respectively. The distance between the two points is one mile (1.61 km). Approximate distance of aeroplane from land in kilometers?

(a) 1.8 (b) 2.2

(c) 2.4 (d) 2.0

RRB RPF SI – 11/01/2019 (Shift-II)

Ans. (b) : Suppose distance of ship from the land = h km



in Δ BOH,

$$\tan 45° = \frac{h}{x}$$

$$h = x \quad \text{.....(i)}$$

in Δ AOH,

$$\tan 30° = \frac{h}{1.61 + x}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{1.61 + x}$$

$$\sqrt{3}h = 1.61 + x$$

$$\sqrt{3}h = 1.61 + h \quad \{\because \text{ from the equation (i)}\}$$

$$(1.732 - 1)h = 1.61$$

$$h = \frac{1.61}{0.732}$$

$$= 2.19 \approx 2.2 \text{ km}$$

$$h = 2.2 \text{ km}$$

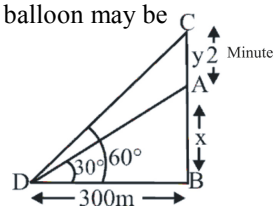
116. The angle of elevation of a hot air balloon going upward in vertical direction when viewed from a distance of 300 m from the flight point at 10:00 am, changing from 30° to 60° at 10:02 am. Find the speed of the balloon in the vertical direction.

(a) 2 m/sec. (b) 2.18 m/sec.

(c) 3.4 m/sec. (d) 2.9 m/sec.

RRB JE - 22/05/2019 (Shift-III)

Ans : (d) Suppose position of balloon may be A to C in 2 minutes.



in ΔABD,

$$\tan 30° = \frac{x}{300}$$

$$\frac{1}{\sqrt{3}} = \frac{x}{300}$$

$$x = \frac{300}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 100\sqrt{3} \text{ m}$$

in ΔCBD,

$$\tan 60° = \frac{x+y}{300}$$

$$\sqrt{3} = \frac{x+y}{300}$$

$$x + y = 300\sqrt{3}$$

$$100\sqrt{3} + y = 300\sqrt{3}$$

$$y = 200\sqrt{3}$$

$\therefore$ Speed of balloons $= \frac{y}{t} = \frac{200\sqrt{3}}{2 \times 60} = \frac{5}{3}\sqrt{3}$

$= \frac{5 \times 1.732}{3} = 5 \times 0.577 = 2.885 = 2.9$ m/sec

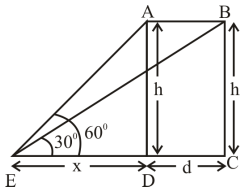
117. An aeroplane is flying at a steady altitude 'h'. At 10:00 am, it appears at an elevation angle of 30°. After 1 minute, it appears at an elevation angle of 60°. If the speed of the aeroplane is 960 km/h, find the value of 'h'.

(a) 15 km. (b) 13.86 km.
(c) 20 km. (d) 12.46 km.

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

Ans : (b)

$\therefore$ Speed = distance/time



$$960 = \frac{CD}{1 \text{minute}}$$

$$\frac{960 \times 1}{60} = d \Rightarrow d = 16\text{km}$$

from ΔAED−

$$\tan 60° = \frac{h}{x} \Rightarrow x\sqrt{3} = h.....(i)$$

from ΔBEC−

$$\tan 30^0 = \frac{h}{x+d} \Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{16+x}.....(ii)$$

from equation (i) and (ii)−

$$\frac{1}{\sqrt{3}} = \frac{x\sqrt{3}}{16+x}$$

16 + x = 3x

2x = 16

x = 8 km

$\therefore$ $h = x\sqrt{3} = 8\sqrt{3}$

h = 1.732 × 8 = 13.86 km

118. The angle of elevation of a steep ladder supported by a wall is 45° and its lower end is 10 meters from the wall. Find height of the ladder.

(a) 10 $\sqrt{2}$ meter (b) 13 meter
(c) 15 meter (d) 16 meter

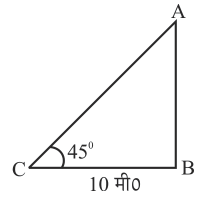
RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (a)

As per figure−

height of ladder = AC

in Δ ABC −



$\cos 45^0 = BC/AC$

$$\frac{1}{\sqrt{2}} = \frac{10}{AC}$$

$AC = 10\sqrt{2}$ meter

119. The elevation angles formed when looking at the top of the tree from two points located 'x' meters and 'y' meters from both the foot of the tree are α, β respectively. If α + β = 90°, then find the height of tree.

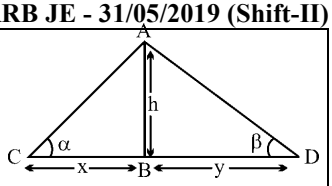
(a) $\frac{(x+y)^2}{2}$ (b) $\sqrt{xy}$

(c) $x\cos a + y\cos B$ (d) $(x-y)^2$

RRB JE - 31/05/2019 (Shift-II)

Ans : (b)

Suppose height of is h.



$\alpha + \beta = 90°$ ----(i)

in ΔABC,

$\tan \alpha = \frac{h}{x}$ ----(ii)

in ΔABD,

$\tan \beta = \frac{h}{y}$

$\tan (90-\alpha) = \frac{h}{y}$ {from equation (i) }

$\cot \alpha = \frac{h}{y}$ ----(iii)

from equation (ii) and (iii)-

$$\tan \alpha \cot \alpha = \frac{h}{x} \times \frac{h}{y}$$

$$1 = \frac{h^2}{xy}$$

$$h = \sqrt{xy}$$

120. The angle of depression of the foot of a building from the top of a tower of $32\sqrt{3}$ meters height is 60°. How far is the building from the tower?

(a) 32 meter (b) $16\sqrt{3}$ meter
(c) $32\sqrt{3}$ meter (d) 16 meter

RRB RPF SI – 06/01/2019 (Shift-II)

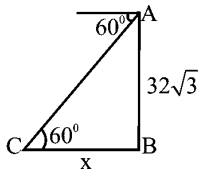
Ans. (a) : height of tower AB = $32\sqrt{3}$ m

Let distance of tower to building is x m.

Then $\tan 60^0 = \frac{AB}{CB}$

$\sqrt{3} = \frac{32\sqrt{3}}{x}$

x = 32 m



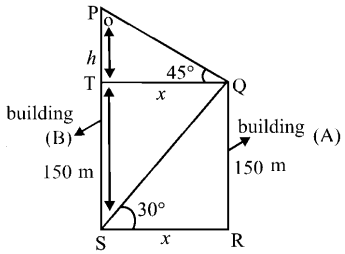
121. A 45° elevation angle is formed from the top of a 150 meter high building A to the top of building B. A depression angle of 30° is formed at the bottom of building B. What is the height of building B?

(a) $150\left(1+\sqrt{3}\right)$m (b) 250 m

(c) $150\sqrt{3}$m (d) $\frac{450}{\sqrt{3}}$m

RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (a)



in ΔQPT -

$\tan 45° = \frac{h}{x}$

$1 = \frac{h}{x}$

$h = x$ _____ (i)

in ΔSRQ -

$\tan 30° = \frac{150}{x}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{150}{x}$

$x = 150\sqrt{3}$

$h = 150\sqrt{3}$

∴ Total height of building (B) = 150 + h

$= 150 + 150\sqrt{3}$

$= 150\ (1+\sqrt{3})$m

122. The angle of elevation of the top of a large building from a 18 meter high tower is 45° and the angle of depression of bottom of the same building is 60°. What is the height of building (in meters)?

(a) $6\left(3+\frac{\sqrt{3}}{2}\right)$ (b) $6\left(3+\sqrt{3}\right)$

(c) $18+\sqrt{2}$ (d) $12+6\sqrt{3}$

RRB Group-D – 20/09/2018 (Shift-II)

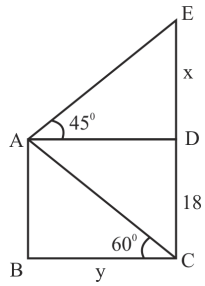
Ans : (b)

in ΔABC

$\tan 60^0 = \frac{18}{y}$

$\sqrt{3} = \frac{18}{y}$

∴ $y = \frac{18}{\sqrt{3}} = 6\sqrt{3}$



in ΔADE

$\tan 45° = \frac{x}{y} = \frac{x}{6\sqrt{3}}$

$1 = \frac{x}{6\sqrt{3}}$

$x = 6\sqrt{3}$

So x = y

then height of building = 18 + x

$CE = 18 + 6\sqrt{3}$

$CE = 6\left(3+\sqrt{3}\right)$ m

123. A 13 meter long ladder is placed along the wall and the lower part of the ladder is 6.5 meter from the wall. What is the angle of elevation of the ladder tilted along the wall?

(a) 45^0 (b) 60^0

(c) 105^0 (d) 30^0

RRB Group-D – 22/09/2018 (Shift-I)

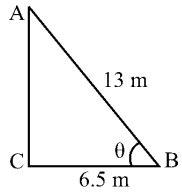
Ans : (b) Given

length of ladder AB = 13m

distance from wall = 6.5 m

Let angle of height is θ

in Δ ACB



$\cos\theta = \frac{\text{base}}{\text{hypotenuse}}$

$\Rightarrow \cos\theta = \frac{BC}{AB} = \frac{6.5}{13} = \frac{1}{2}$

$\Rightarrow \cos\theta = \cos\ 60°$

$\theta = 60°$ $\left[\because \cos 60° = \frac{1}{2}\right]$

So angle of height θ = 60°

124. From the top of the stage the elevation angle of the top of the tower at a distance of $50\sqrt{3}$ meter is 30°. If the height of the tower is 60 meter; what will be the height of the stage?

(a) $20\sqrt{3}$ m (b) 10 m

(c) 40 m (d) $45\sqrt{3}$ m

RRB Group-D – 28/09/2018 (Shift-III)

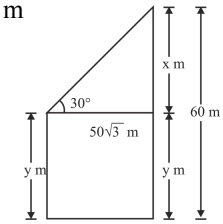
Ans : (b) Let height of stage = y m

As per question—

$\tan 30° = \frac{x}{50\sqrt{3}}$

$\frac{1}{\sqrt{3}} = \frac{x}{50\sqrt{3}}$

x = 50 m



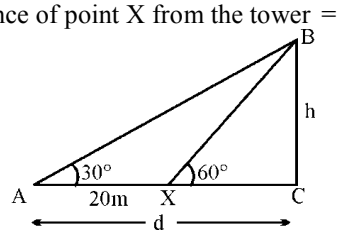
$\because x + y = 60$
$y = 60 - x$
$y = 60 - 50$
$y = 10$ m
so height of stage = 10 m

125. The angle of elevation of a point A from the top of a tower to the ground is 30°. When moving to the point X at 20 meter towards the foot of the tower, the elevation angle changes to 60°. What is the distance of the tower from point A?

(a) $5\sqrt{11}$ m (b) 30 m
(c) 5 m (d) 16m

RRB Group-D – 28/09/2018 (Shift-III)

Ans : (b) Let height of tower CB = h m
and distance of point A from the tower = d m
∴ distance of point X from the tower = (d – 20)m



From the figure, $\tan 30° = \frac{h}{d}$

$$\frac{1}{\sqrt{3}} = \frac{h}{d}$$

$$h = \frac{d}{\sqrt{3}}$$

and

$$\tan 60° = \frac{h}{(d-20)} \Rightarrow \sqrt{3} = \frac{h}{(d-20)}$$

Putting the value of 'h'

$$\sqrt{3} = \frac{d}{\sqrt{3}(d-20)}$$

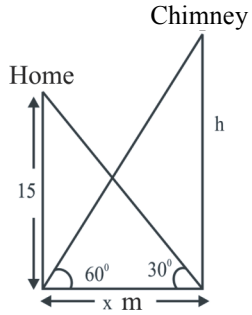
3 (d – 20) = d
3d – d = 60
2d = 60
d = 30
So distance of point A from the base = 30 m.

126. A 15 meter tall house situated on the banks of a river opposite to a chimney situated on the other bank of the river. The angle of depression of the bottom of chimney from the roof of the house is 30° and the elevation angle of the top of the chimney from the bottom of the house becomes 60°. Find the approximate width of the river and the height of the chimney.

(a) 24 m and 47 m
(b) 20 m and 25 m
(c) 26 m and 45 m
(d) 25 m and 41 m

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (c) ΔABC in—
Let breadth of river = x m



$$\tan 30° = \frac{15}{x}$$

$$\frac{1}{\sqrt{3}} = \frac{15}{x}$$

$x = 15\sqrt{3}$ _____(i)

$$\tan 60° = \frac{h}{x}$$

$$\sqrt{3} = \frac{h}{x}$$

$h = \sqrt{3} \times x$ _____(ii)

Putting the value of equation (i), in equation (ii)

$h = \sqrt{3} \times 15\sqrt{3} = 45$m

breadth of river $(x) = 15 \times 1.732 = 25.98 \simeq 26$m

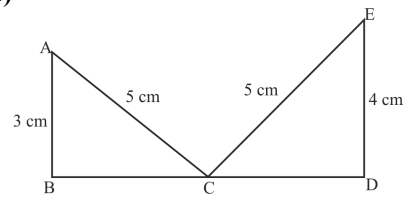
height of chimney $(h) = 45$m

127. A 5 meter long staircase with a stable base on the road can reach two windows 4 meter and 3 meter high on the other side of the road. What is the width of the road?

(a) 6.2 m (b) 6 m
(c) 7 m (d) 5.5 m

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (c)



$$BD = \sqrt{BC^2} + \sqrt{CD^2}$$
$$= \sqrt{5^2 - 3^2} + \sqrt{5^2 - 4^2}$$
$$= \sqrt{4^2} + \sqrt{3^2} \quad = 4 + 3 = 7 \text{ m}$$

So breadth of road = 4 + 3 = 7m

128. From the top of a platform of 7 meter height, the elevation angle of a tower which is 47 meter in height is 30°. How far is the tower located from the platform.

(a) $45\sqrt{3}$ m (b) 40 m
(c) $40\sqrt{3}$ m (d) $15\sqrt{3}$ m

RRB Group-D – 18/09/2018 (Shift-II)

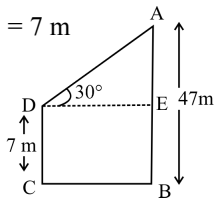
Ans. (c) :

$\because$ AB = height of tower = 47 m

CD = BE = height of platform = 7 m

$\therefore$ AE = 47 – 7 = 40 m

from ΔADE ,



$$\tan 30° = \frac{AE}{ED} = \frac{40}{DE}$$

$\because$ DE = BC =

(distance between platform to tower)

$$\therefore \quad \frac{1}{\sqrt{3}} = \frac{40}{DE}$$

$$DE = 40\sqrt{3}\text{ m or } BC = 40\sqrt{3}\text{ m}$$

129. The elevation angle of the top was 40° from the initial position of a woman standing on the ground floor with a 43.5 tall tower. She moves in a straight line from the position of the tower in such way that the angle of the alevation of the tower from its final position becomes 30° then what will be the changed distance.

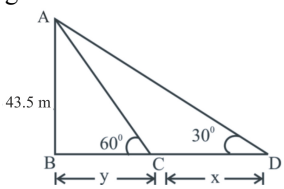
(a) $\frac{29}{3}\sqrt{3}$ meter (b) $29\sqrt{3}$ meter

(c) $\frac{29}{2}\sqrt{3}$ meter (d) 29 meter

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (b) : Let primary distance of lady from the tower = y m. and distance after change place = x m.

(AB) height of tower = 43.5 m



in ΔABC,

$$\text{Tan}60° = \frac{AB}{BC}$$

$$\sqrt{3} = \frac{43.5}{y}$$

$$y = \frac{43.5}{\sqrt{3}}$$

$$\boxed{3y = 43.5\sqrt{3}}\text{.....(i)}$$

in ΔABD,

$$\text{Tan}30° = \frac{AB}{BC}$$

$$\frac{1}{\sqrt{3}} = \frac{43.5}{x+y}$$

$$\boxed{x + y = 43.5\sqrt{3}}\text{.....(ii)}$$

Putting the value $43.5\sqrt{3}$ in equation (ii)

x + y = 3y

x = 2y

$$y = \frac{x}{2}$$

Again putting the value of y in equation (i)

$$3 \times \frac{x}{2} = 43.5\sqrt{3}$$

$$x = \frac{43.5\sqrt{3} \times 2}{3}$$

$$x = \frac{87\sqrt{3}}{3}$$

$$= 29\sqrt{3} \text{ m}$$

130. The elevation angle of the top of a tower 78 feet high is 30° from the initial position of the person standing on the ground. He moves towards the tower in such a way that he finds its initial position and final position are all in the same straight line. The angle of elevation of the top of the tower from its final position is 60°. How far did he go from her initial position?

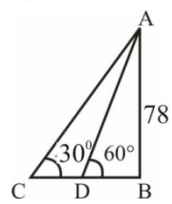
(a) 52 feet (b) $26\sqrt{3}$ feet

(c) $52\sqrt{3}$ feet (d) $26\frac{\sqrt{3}}{3}$ feet

RRB Group-D – 15/11/2018 (Shift-III)

Ans. : (c) Tower AB = 78 feet

in ΔABC,



$$\tan 30^0 = \frac{78}{(CD + BD)}$$

$CD + BD = 78\sqrt{3}$ feet ----(i)

in Δ ABD

$$\tan 60^0 = \frac{78}{BD}$$

$$BD = \frac{78}{\sqrt{3}} \text{------(ii)}$$

Putting the value of BD in equation (i)

$$CD = 78\sqrt{3} - \frac{78}{\sqrt{3}}$$

$$CD = \frac{156}{\sqrt{3}}$$

$$CD = \frac{156\sqrt{3}}{\sqrt{3} \times \sqrt{3}}$$

$$CD = 52\sqrt{3} \text{ feet}$$

So the travels a distance of $52\sqrt{3}$ feet from his initial to his final position.

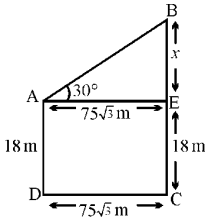
131. From the top of a platform 18 meter high, the elevation angle of the top of the tower is 30°. If the platform is located $75\sqrt{3}$ meter away from the tower, then what is the height of the tower?

(a) 93 m (b) $50\sqrt{3}$ m

(c) 75 m (d) $37.5\sqrt{3}$ m

RRB Group-D – 01/11/2018 (Shift-II)

Ans : (a) Drawing the diagram according to the statement.



in ΔABE,

$$\tan 30° = \frac{x}{75\sqrt{3}}$$

$$\frac{1}{\sqrt{3}} = \frac{x}{75\sqrt{3}}$$

x = 75m

So height of Tower = 18 + 75 = 93m

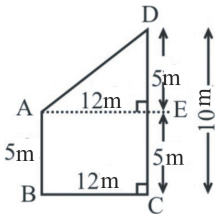
132. Two pillars of 5 meter and 10 meter stand straight on the ground. If the distance between their bottoms is 12 meter, find the distance between their tops.

(a) 11 meter (b) 12 meter

(c) 13 meter (d) 14 meter

RRB NTPC 04.04.2016 Shift : 3

Ans : (c)



Let distance between top of the pillars = AD m

$AE = BC = 120$ m

$DE = CD - CE = 10 - 5$

DE = 5 m

from pythagoras theorem in ΔAED

$AD^2 = AE^2 + DE^2 = (12)^2 + (5)^2 = 144 + 25$

$AD^2 = 169 \Rightarrow AD = 13$ m

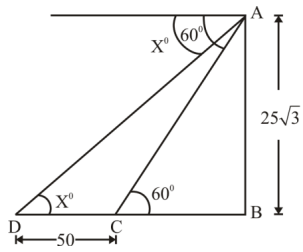
133. The shadow of a tower of $25\sqrt{3}$ height increases by 50 meters when the angle of depression by the sun is 60° to X°. Find the measure of X.

(a) 45^0 (b) 30^0

(c) 75^0 (d) 90^0

RRB NTPC 19.04.2016 Shift : 1

Ans : (b)



In ΔABC

$$\tan 60^0 = \frac{25\sqrt{3}}{BC}$$

$$\sqrt{3} = \frac{25\sqrt{3}}{BC}$$

BC = 25 …… (1)

again in ΔABD,

$$\tan x = \frac{25\sqrt{3}}{50 + BC}$$

$$\tan x = \frac{25\sqrt{3}}{50+25} = \frac{25\sqrt{3}}{75} = \frac{1}{\sqrt{3}}$$

tan x = tan 30^0

x = 30^0

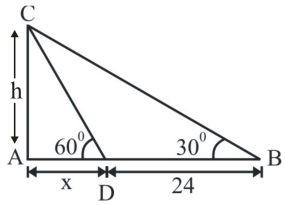
134. The length of the shadow of a pillar decreases by 24 meter. When the angle of elevation of the sun increases from 30° to 60°, the length of the pllar is.

(a) $10\sqrt{3}$ (b) $8\sqrt{3}$

(c) $16\sqrt{3}$ (d) $12\sqrt{3}$

RRB NTPC 18.04.2016 Shift : 2

Ans : (d)



$$\text{Tan } 30^0 = \frac{h}{x+24}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{x+24}$$

$\sqrt{3}h = x + 24$ .....(I)

$$\text{Tan } 60^0 = \frac{h}{x}$$

$$\sqrt{3} = \frac{h}{x}$$

$h = \sqrt{3}x$ .....(II)

Putting the value of h in equation (I)

$\sqrt{3} \times \sqrt{3}x = x + 24$

3x = x + 24

2x = 24

x = 12

$$\text{Tan } 60^0 = \frac{h}{12}$$

$$\sqrt{3} = \frac{h}{12}$$

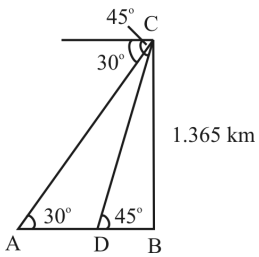
$h = 12\sqrt{3}$ m

135. The angle of depression of two stones in the same direction from an aeroplane 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?

(a) 1 km (b) 2 km
(c) 3 km (d) 4 km

RRB NTPC 16.04.2016 Shift : 2

Ans : (a) $\because$ from ΔDBC



$$\tan 45^\circ = \frac{1.365}{DB}$$

DB = 1.365 km

from Δ ABC,

$$\tan 30^\circ = \frac{1.365}{AB}$$

$AB = 1.365\sqrt{3}$

$\because$ AD = AB – DB

$AD = 1.365\sqrt{3} - 1.365 = 1.365\left(\sqrt{3}-1\right)$

$= 1.365 \times 0.73 = 0.99 \approx 1$ km

So distance between the stones is 1 km.

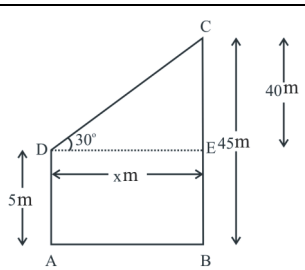
136. From the top of a platform of 5 m height, the angle of elevation of a tower was 30°. If the tower was 45 m high, how far was the platform from the tower.

(a) 40m/40 meter
(b) $40\sqrt{3}$ m\ $40\sqrt{3}$ meter
(c) $45\sqrt{3}$ m\ $45\sqrt{3}$ meter
(d) $15\sqrt{3}$ m\ $15\sqrt{3}$ meter

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (b)

from picture Δ DEC,



$$\tan 30^0 = \frac{CE}{DE}$$

$$\tan 30^0 = \frac{40}{x} \Rightarrow \frac{1}{\sqrt{3}} = \frac{40}{x}$$

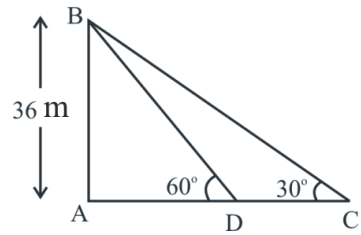
$x = 40\sqrt{3}$ m

137. The angle of elevation of the top of a 36 m long tower from the initial position of a woman on the ground was 60°. She walked away in a manner that the bottom of the tower, her initial position and the final position were all in the same straight line. The angle of elevation of the top of the tower from her final position was 30°. How much did she walk from her initial position?

(a) 24m/24 meter
(b) $36\sqrt{3}$ m/ $36\sqrt{3}$ meter
(c) $24\sqrt{3}$ m\ $24\sqrt{3}$ meter
(d) $12\sqrt{3}$ m\ $12\sqrt{3}$ meter

RRB ALP & Tec. (21-08-18 Shift-II)

Ans : (c)



From Δ ABC–

$$\tan 30^\circ = \frac{AB}{AC}$$

$$\tan 30^\circ = \frac{36}{AC}$$

$AC = 36 \times \sqrt{3}$

$AD + DC = 36 \times \sqrt{3}$ ..... (i)

From Δ ABD–

$$\tan 60^\circ = \frac{AB}{AD} = \frac{36}{AD}$$

$AD = \frac{36}{\sqrt{3}}$ ..... (ii)

from equation (i) and (ii)

$$\frac{36}{\sqrt{3}} + DC = 36\sqrt{3}$$

$$DC = 36\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)$$

$$= 36 \times \frac{2}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 24\sqrt{3} \text{ m}$$

138. The angle of elevation of the top of a hill from the foot of the tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30°. If the tower is 50m high, then what is the height of the hill?

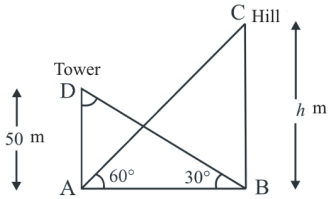
(a) 100m/100 meter
(b) 120m/120 meter
(c) 180m/180 meter
(d) 150m/150 meter

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

Ans : (d) In ΔABD

$$\tan 30° = \frac{50}{AB} \Rightarrow \frac{1}{\sqrt{3}} = \frac{50}{AB}$$

$$\Rightarrow AB = 50\sqrt{3}\text{ m}$$



$\therefore$ In Δ ABC,

$$\tan 60° = \frac{h}{50\sqrt{3}}$$

$$\Rightarrow h = 50\sqrt{3} \times \sqrt{3}$$

$$\Rightarrow h = 150\text{ m}$$

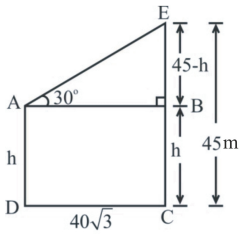
So height of hill is 150 meter.

139. From the top of a platform, the angle of elevation of a tower was 30°. The tower was 45 m high and the horizontal distance between the platform and the tower was $40\sqrt{3}$ m. What was the height of the platform?

(a) 40 m/40 meter
(b) 5 m /5 meter
(c) 45 m/ $45\sqrt{3}$ meter
(d) $20\sqrt{3}$ m/ $20\sqrt{3}$ meter

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

Ans : (b) Given the height of tower EC = 45 meter



Elevation $\angle EAB = 30^o$

Horizontal distance $DC = 40\sqrt{3}$ meter = AB

Let height of platform is h meter.

$\therefore$ in ΔABE -

$$\tan 30^o = \frac{EB}{AB}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{45-h}{40\sqrt{3}}$$

$\Rightarrow$ 45–h = 40

$\Rightarrow$ h = 45–40

$\Rightarrow$ h = 5meter

Type - 7

140. If 0°< θ ≤ 90°, then what is the value of θ, where $\cos^2\theta - 3\cos\theta + 2 = 2\sin^2\theta$

(a) 30° (b) 60°
(c) 90° (d) 45°

RRB RPF SI – 10/01/2019 (Shift-I)

Ans : (c) if 0°< θ ≤ 90°

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 $\cos\theta = 0° = \cos 90°$

then θ = 90°

if $\cos\theta = 1 = \cos 0°$

θ = 0°

141. If $3\sec^2x - 2\tan^2x = 6$ and $0^0 \le x \le 90^0$ then x = ?

(a) 60^0 (b) 45^0
(c) 30^0 (d) 90^0

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (a) $3\sec^2 x - 2\tan^2 x = 6$

$3(1+\tan^2 x) - 2\tan^2 x = 6$ [$\sec^2 x = 1 + \tan^2 x$]

$3 + 3\tan^2 x - 2\tan^2 x = 6$

$\tan^2 x = 3$

$\tan x = \sqrt{3}$

$\tan x = \tan 60^0$

x = 60

142. If $8\sec^2x - 7\tan^2x = 11$ and $0^0 \le x \le 90^0$, then find the value of x

(a) 90^0 (b) 45^0
(c) 30^0 (d) 60^0

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (d) : If $8\sec^2 x - 7\tan^2 x = 11$ then x = ?

$\Rightarrow 8\sec^2 x - 7\tan^2 x = 11$

$\Rightarrow 8(1+\tan^2 x) - 7\tan^2 x = 11$

$\Rightarrow 8 + 8\tan^2 x - 7\tan^2 x = 11$

$\Rightarrow \tan^2 x = 11 - 8$

$\Rightarrow \tan^2 x = 3$

$\Rightarrow \tan x = \sqrt{3}$

$\Rightarrow \tan x = \tan 60^0$

$\boxed{x = 60^0}$

25.

Co-ordinate Geometry

Type - 1

1. Find the co-ordinates of the point, which internally divides the line segment joining the point (–4, 4) and (4, 0) in the ratio of 3 : 1.

(a) (0, 4) (b) (2, 1)
(c) (−3, 4) (d) (1, 3)

RRB RPF SI – 05/01/2019 (Shift-II)

Ans. (b) : Given-

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \quad = \frac{3\times4+1\times(-4)}{3+1}$$

$$= \frac{12-4}{4}, \quad = \frac{8}{4}$$

x = 2

$$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}, \quad = \frac{3\times0+1\times4}{3+1} = \frac{4}{4}$$

y = 1

Then co-ordinates of points = (2, 1)

2. The co-ordinates of a point, which internally divides the line is segment joining the point (-1, 9) and (11, 1) in the ratio of 3:1.

(a) (5, 5) (b) $\left(\frac{13}{2}, 4\right)$
(c) (2, 7) (d) (8, 3)

RRB Group-D – 28/09/2018 (Shift-III)
RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (d) If the coordinates of the inner point of the line joining the two points (x_1, y_1) and (x_2, y_2) are (x, y), then let the coordinates of the inner point are (x,y) then,

(x_1, y_1) (x_2, y_2)
(–1, 9) (11, 1)
m_1 (x, y) m_2

$m_1 = 3, m_2 = 1$

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \quad y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$$

$$x = \frac{3\times11+1\times(-1)}{3+1}, \quad y = \frac{3\times1+1\times9}{3+1}$$

$$x = \frac{33-1}{4}, \quad y = \frac{3+9}{4}$$

$x = 8, y = 3$, So co-ordinate is (8, 3).

3. Find the ratio in which the line 4x + y = 13 divide the segment which is joining to the point (1, 6) and (6, 1).

(a) 1:3 (b) 2:5
(c) 2:3 (d) 1:4

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

Ans. (d) :

Equation of a line passing through two points $(x_1\ y_1)$ and $(x_2\ y_2)$

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

∴ equation of a line passing through the points (1, 6) (6, 1)

$$y - 6 = \frac{1-6}{6-1}(x-1)$$

y – 6 = –x + 1

or x + y = 7 .....(i)

again equation of a given lines 4x + y = 13 .....(ii)

from the equation (i) and (ii)−

The coordinate of the intersection point of both the lines (x, y) = (2,5)

Let the point (1,6) and (6,1) is divided in the ratio of m:n by the point (2,5).

$$x = \frac{mx_2 + nx_1}{m+n}$$

$$2 = \frac{m\times6+n\times1}{m+n}$$

or 2m + 2n = 6m + n

or 4m – n = 0

or 4m = n

or $\frac{m}{n} = \frac{1}{4} = 1:4$

4. The line segment joined by the points (-1, 0) and (2, 6). What will be the co-ordinate of points who divides the line in the ratio of 2:1?

(a) (0, 4) (b) (1, 3)
(c) (1, 4) (d) (0, 5)

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (c)

(-1,0) (x, y) (2, 6)
m_1 (2) m_2 (1)

Let the interior Point is (x, y) -

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \quad y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$$

$$x = \frac{2\times2+1\times(-1)}{2+1}, \quad y = \frac{2\times6+1\times0}{2+1}$$

$$x = \frac{4-1}{3}, \quad y = \frac{12}{3}$$

$x = 1, y = 4$

So interior point (x, y) = (1, 4)

5. At which point, the line segment associated with points (4, 5) and (7, 11) divided internally in the ratio of 2 : 1.

(a) (6, 8) (b) (5, 10)
(c) (5, 9) (d) (6, 9)

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (d) The coordinate of the points P(x, y) internally dividing the line segment joining the two points A (x_1,y_1) and B (x_2,y_2) in the ratio of m:n.

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2} \qquad y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$$

$x_1 = 4$, $y_1 = 5$ $m_1 = 2$
$x_2 = 7$ $y_2 = 11$ $m_2 = 1$

$$x = \frac{2\times7+1\times4}{2+1}, \quad y = \frac{2\times11+1\times5}{2+1}$$

$$x = \frac{14+4}{3}, \quad y = \frac{22+5}{3}$$

$$x = \frac{18}{3}, \quad y = \frac{27}{3}$$

x = 6 y = 9

So required point will be (6, 9)

6. The coordinates of the points that divides the line segment joining the points (–7, 6) and (5, 0) internally in the ratio of 1 : 3

(a) (–3, 4) (b) (–4, 4.5)
(c) (3, 1) (d) (1, 3)

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : given
$x_1 = -7$, $x_2 = 5$ $m_1 = 1$
$y_1 = 6$, $y_2 = 0$ $m_2 = 3$

The point divides the line segment internally, then the coordinate of the point is

$$(x, y) = \left(\frac{m_2x_1 + m_1x_2}{m_1 + m_2}, \frac{m_2y_1 + m_1y_2}{m_1 + m_2}\right)$$

$$= \left(\frac{3\times(-7)+1\times5}{1+3}, \frac{3\times6+1\times0}{1+3}\right)$$

$$= \left(\frac{-21+5}{4}, \frac{18}{4}\right) = \left(\frac{-16}{4}, \frac{18}{4}\right)$$

(x,y) = (–4, 4.5)

7. Find the coordinate of the point, which internally divides the line segment joining the point (-3, 7) and (9, -1) in the ratio of 3:1.

(a) (0, 5) (b) (6, 1)
(c) (3, 3) (d) $\left(\frac{9}{2}, 2\right)$

RRB Paramedical Exam – 21/07/2018 (Shift-III)

Ans. (b) Formula of interior division

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$$

$$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$$

according to the question,

The ratio of the line joining the internal division of the 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, $x = \frac{3\times9+1(-3)}{3+1}$, $x = \frac{27-3}{4}$

$$x = \frac{24}{4} = 6$$

$$y = \frac{3\times(-1)+1\times7}{3+1}$$

$$y = \frac{4}{4} \qquad \Rightarrow y = 1$$

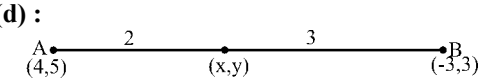
So coordinate of internal division will be (6, 1).

8. The coordinates of a point, which internally divides the line segment joining the point (4, 5) and (-3, 3) in the ratio of 2 : 3 is–

(a) 11/5, 17/5 (b) 13/5, 17/5
(c) 12/5, 13/5 (d) 6/5, 21/5

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (d) :



$m_1 = 2$ $m_2 = 3$

As per the picture,

$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2} = \frac{2\times(-3)+3\times4}{2+3}$$

$$x = \frac{6}{5}$$

$$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2} = \frac{2\times3+3\times5}{2+3}$$

So $(x, y) = \left(\frac{6}{5}, \frac{21}{5}\right)$

9. The coordinates of the point that internally divides the line segment joining the points (–5, 5) and (7, –3) internally in the ratio of 3 : 1 are given by:

(a) (–2, 3) (b) (4, –1)
(c) $\left(\frac{5}{2}, 0\right)$ (d) (1, 1)

RRB ALP & Tec. (29-08-18 Shift-I)

Ans : (b) Let coordinate of points (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)

So coordinate of Points is (4,–1).

Type - 2

10. Find the area of a triangle whose vertex are (1, 2), (-4, 3) and (4, 1)

(a) 7 Square units (b) 10 Square units
(c) 14 Square units (d) 20 Square units

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) area of triangle

$$=\frac{1}{2}\left[x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)\right]$$

$$=\frac{1}{2}\left[1(-3-1)+(-4)(1-2)+4(2-(-3))\right]$$

$$=\frac{1}{2}[-4+4+20]=\frac{20}{2}=10 \text{ Square unit}$$

11. The vertex point of a triangle are (a, b + c), (b, c + a) and (c, a + b) then find the area of triangle.

(a) ab + bc + ca (b) 0
(c) a–b–c (d) a + b + c

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (b) Area of triangle

$$=\frac{1}{2}\left[x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)\right]$$

$$=\frac{1}{2}\left[a\{c+a-(a+b)\}+b\{a+b-(b+c)\}+c\{b+c-(c+a)\}\right]$$

$$=\frac{1}{2}\left[a(c+a-a-b)+b(a+b-b-c)+c(b+c-c-a)\right]$$

$$=\frac{1}{2}[ac-ab+ab-bc+bc-ac]$$

$$=\frac{1}{2}\times 0=0$$

12. The coordinate point of the vertex of a triangle are given (3, 5), (-2, 0) and (6, 4) then find the area of triangle

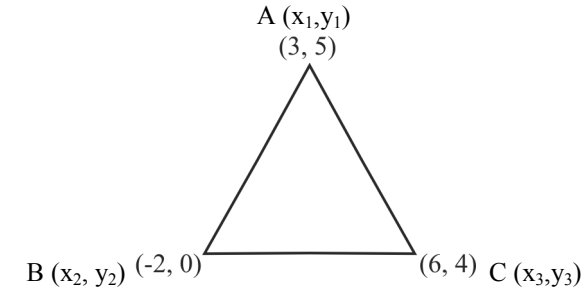
(a) 20 sq. units (b) 7 sq. units
(c) 10 sq. units (d) 14 sq. units

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (c) Vertex of triangle (3, 5), (–2, 0) and (6, 4)

Formula — area of Δ =

$$\frac{1}{2}\left[x_1(y_2-y_3)+x_2(y_3-y_1)+x_3(y_1-y_2)\right]$$



$$=\frac{1}{2}\left[3(0-4)+(-2)(4-5)+6(5-0)\right]$$

$$=\frac{1}{2}\left[3(-4)+(-2)(-1)+6(5)\right]$$

$$=\frac{1}{2}[-12+2+30]$$

$$=\frac{1}{2}[20]$$

= 10 Square Unit

13. If A = (1, 1), B = (-2, 7) and C = (3, -3), then $\frac{1}{AB}+\frac{1}{BC}+\frac{1}{CA}=?$

(a) $\frac{31\sqrt{5}}{150}$ (b) $\frac{31}{60}\sqrt{5}$
(c) $\frac{150}{31}$ (d) $\frac{31}{150}$

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (a) A = (1, 1)
B = (–2, 7)
C = (3, –3)

distance between AB $=\sqrt{(x_1+x_2)^2+(y_1-y_2)^2}$

$$AB=\sqrt{(1+2)^2+(1-7)^2}=\sqrt{9+36}=\sqrt{45}=3\sqrt{5}$$

$$BC=\sqrt{(-2-3)^2+(7+3)^2}=\sqrt{25+100}=\sqrt{125}=5\sqrt{5}$$

$$CA=\sqrt{(3-1)^2+(-3-1)^2}=\sqrt{4+16}=\sqrt{20}=2\sqrt{5}$$

$$\frac{1}{AB}+\frac{1}{BC}+\frac{1}{CA}=\frac{1}{3\sqrt{5}}+\frac{1}{5\sqrt{5}}+\frac{1}{2\sqrt{5}}$$

$$=\frac{1}{\sqrt{5}}\left(\frac{1}{3}+\frac{1}{5}+\frac{1}{2}\right)$$

$$=\frac{1}{\sqrt{5}}\left(\frac{10+6+15}{30}\right)=\frac{31}{30\sqrt{5}}$$

$$=\frac{31\sqrt{5}}{150}$$

14. If the point of vertex of a given triangle are (4, 1), (1, 1) and (3, 5) then triangle is–

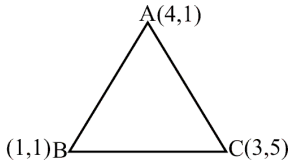
(a) Isosceles but not right angled
(b) Right angled but not isosceles.
(c) Both right angled and isosceles
(d) Asymmetrical triangle

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (d)

If two point is (x_1,y_1) and (x_2,y_2) then distance between them

$$=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$



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

$AC = \sqrt{(3-4)^2 + (5-1)^2} = \sqrt{1+16} = \sqrt{17}$

$BC = \sqrt{(3-1)^2 + (5-1)^2} = \sqrt{4+16} = 2\sqrt{5}$

because three sides of triangle is different, so the triangle will be asymmetrical triangle.

15. The area of the triangle whose vertices are given by (2,4), (–3,–1) and (5,3) is:

(a) 7 sq. units (b) 14 sq. units
(c) 20 sq. units (d) 10 sq. units

RRB ALP & Tec. (17-08-18 Shift-I)

Ans : (d) ∵ Area of triangle

$$= \frac{1}{2}\left[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right]$$

Hence the triangle formed from the vertices (2, 4), (–3, –1), (5, 3)

$$= \frac{1}{2}\left[2(-1-3) + (-3)(3-4) + 5(4+1)\right]$$

$$= \frac{1}{2}\left[-8+3+25\right]$$

$$= \frac{1}{2} \times 20$$

= 10 Square unit

Type - 3

16. Which type of line represented by the line 6x - 3y + 10 = 0 and 2x - y + 9 = 0

(a) concurrent (b) Parallel
(c) intersection (d) None of these

RRB RPF SI – 16/01/2019 (Shift-III)

Ans : (b) given equation

6x – 3y + 10 = 0

Let slope = m_1

$$\therefore m_1 = -\left(\frac{\text{cofficient of x}}{\text{cofficient of y}}\right) = -\left(\frac{6}{-3}\right) = 2$$

equation

2x – y + 9 = 0

Let slope = m_2

$$m_2 = -\left(\frac{\text{cofficient of x}}{\text{cofficient of y}}\right) = -\left(\frac{2}{-1}\right) = 2$$

∵ $m_1 = m_2 = 2$

So the lines will be parallel

17. Find the equation of line which slope is -4 and bisect the y axis at y = 2

(a) $2x + \frac{y}{4} = 1$ (b) $2x + \frac{y}{2} = 1$
(c) $2x + \frac{y}{3} = 1$ (d) 2x + y = 1

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (b) Intersection of y = 2

Hence coordinates = (0, 2) = (x_1, y_1)

gradient (m) = –4

equation of interchange line through a point (x_1, y_1) has slope m

Equation of line ⇒ $y - y_1 = m(x - x_1)$

⇒ y – 2 = –4 (x–0)

⇒ y–2 = –4x

4x + y = 2

$$\boxed{2x + \frac{y}{2} = 1}$$

18. If two straight line x -5y = 2 and x + 2y = 9 cut each other at a point A, further it is cut x axis at the point B and C respectively then find the area of triangle ABC.

(a) 3.2 square unit (b) 3.5 square unit
(c) 3.7 square unit (d) 3.1 square unit

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (b) Point B and C are located on the x-axis.

The coordinate of point B and C on putting y = 0 in the given equation x-5y = 2 and x + 2y = 9 will be (2,0) and (9,0) respectively.

Again lines x –5y = 2 and x + 2y = 9 intersect each other on point A.

$x - 5y = 2$ ------(i)

$x + 2y = 9$ ------(ii)

Solving equation (i) and (ii) $x = 7$, y = 1

So coordinate of Point A = (7, 1)

$x_1 = 2, x_2 = 9, x_3 = 7$

$y_1 = 0, y_2 = 0, y_3 = 1$

Hence area of triangle ABC

$$= \frac{1}{2}\left[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right]$$

from

$$= \frac{1}{2}\left[2(0-1) + 9(1-0) + 7(0-0)\right]$$

$$= \frac{1}{2}\left[-2+9\right] = \frac{7}{2} = 3.5 \text{ square unit.}$$

26.

Geometry

Type - 1

1. If the angles of the triangle are in the ratio 1:2:3, then what is the smallest angle?

(a) 40° (b) 25°
(c) 15° (d) 30°

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

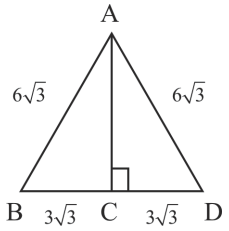
Ans : (d) Let angles of triangle are x, 2x, 3x then–
sum of three angles of triangle = 180°
x + 2x + 3x = 180°
6 x = 180°
$\boxed{x = 30°}$
So smallest angle will be 30°

2. If one side of an equilateral triangle is $6\sqrt{3}$ cm, then what is its hight?

(a) 9 cm (b) 6 cm
(c) 3 cm (d) $3\sqrt{3}$ cm

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (a) Side of equilateral triangle = $6\sqrt{3}$



in triangle ABC -

$(AC)^2 = (AB)^2 - (BC)^2$

$= \left(6\sqrt{3}\right)^2 - \left(3\sqrt{3}\right)^2 = 108 - 27$

$(AC)^2 = 81$

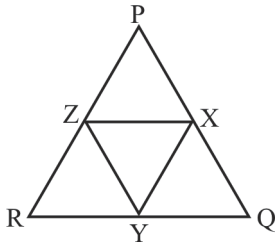
height = 9 cm

3. The midpoints of the sides of an equilateral triangle PQR are X, Y and Z. If the circumference of triangle PQR is 24 cm, then what will be the circumference of traingle XYZ?

(a) 96 cm (b) 36 cm
(c) 12 cm (d) 48 cm

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

Ans : (c) According to the 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 the equation (i), (ii) and (iii)

$ZX + XY + ZY = \frac{1}{2}$ (QR + PQ + PR)

$\frac{1}{2} \times 24 = 12$ cm

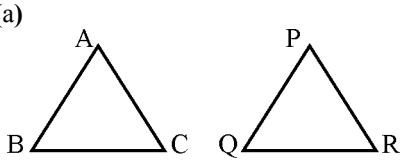
So circumference of ΔXYZ = 12 cm

4. ΔABC, and ΔPQR are similar and their perimeters are 36 and 24 respectively. If PQ = 10 then find the value of AB.

(a) 15 (b) 16
(c) 20 (d) 18

RRB JE - 26/06/2019 (Shift-I)

Ans : (a)



∵ ΔABC ~ ΔPQR

∴ $\frac{\text{Perimeter of } \Delta ABC}{\text{Perimeter of } \Delta PQR} = \frac{AB}{PQ}$

$\frac{36}{24} = \frac{AB}{10}$

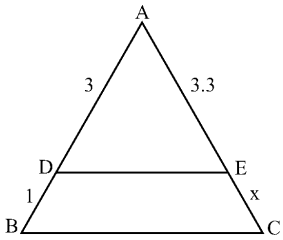
$AB = \frac{360}{24} = 15$

5. In ΔABC, 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.

(a) 5.5 cm (b) 4 cm
(c) 4.4 cm (d) 1.1 cm

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (c)



from the thale'ss theorem-

$\frac{AD}{AB} = \frac{AE}{EC}$

$\frac{3}{1} = \frac{3.3}{EC}$

EC = 1.1

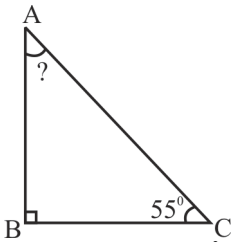
AC = AE + EC = 3.3 + 1.1 = 4.4

6. If acute angle of a right triangle is 55°, what will be the value of the other acute angle?

(a) 25° (b) 30°
(c) 40° (d) 35°

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (d)



Sum total of angles of triangle is 180°

180° = ∠A+∠B+∠C

180°= ∠A + 90° + 55°

180°–145° = ∠A

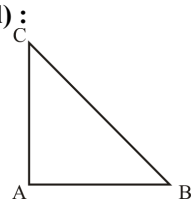
∠A = 35°

7. ABC is a right triangle whose angle A is right angle. Which side needs to bisect for the formation of two other right-angled triangles?

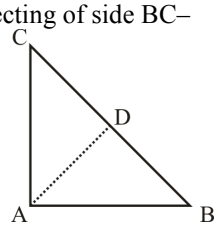
(a) AB (b) CA
(c) at the center (d) BC

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (d) :



On bisecting of side BC–



Right Triangle = Δ ADB, Δ ADC

ABC is right triangle which angle A right angle, for the formation of two other right triangle, side BC will be bisected.

8. Which of the following are sides of a right angled triangle?

(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

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (a) : from pythagoras theorem

In right triangle, the square of hypotenuse is equal to the square of other two sides.

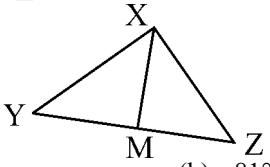
$\therefore (85)^2 = (13)^2 + (84)^2$

7225 = 169 + 7056

7225 = 7225

Sides of right angle Δ will be 85, 84 and 13

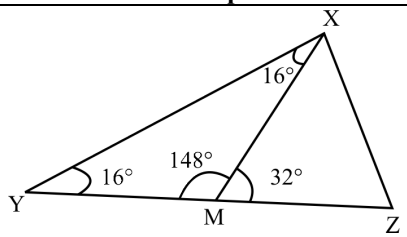
9. In the diagram M is mid point of $\overline{YZ}$, ∠XMZ = 32° and ∠XYZ = 16°. The value of ∠XZY is–



(a) 84° (b) 81°
(c) 74° (d) 68°

RRB Group-D – 27/09/2018 (Shift-I)

Ans. (c)



$\angle XMY = 180° - 32° = 148°$

Then $\angle YXM = 180 - (148 + 16) = 16°$

So $\angle MXZ = 90 - 16 = 74°$

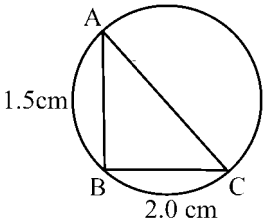
Then $\angle XZY = 180 - (32 + 74) = 74°$

10. Two adjacent sides of a right angled triangle are 1.5 cm and 2 cm long. The area of its circumcircle will be–

(a) 1.75π cm^2 (b) 1.25π cm^2
(c) 1.5625π cm^2 (d) 1.5π cm^2

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (c) :



$(\text{hypotenuse})^2 = (\text{base})^2 + (\text{parpendicular})^2$

$(AC)^2 = (1.5)^2 + (2)^2$

$(AC)^2 = 2.25 + 4$

$(AC)^2 = 6.25$

root $= \sqrt{6.25} = 2.5\text{cm}$

∵ The radius of circum circle is half of hypotenuse.

$R = \frac{AC}{2} = \frac{2.5}{2} = \frac{5}{4}$

area of circum circle $= \pi R^2$

$$= \left(\frac{5}{4}\right)^2 \times \pi$$

$$= \frac{25}{16} \times \pi$$

$$= 1.5625\pi \text{ cm}^2$$

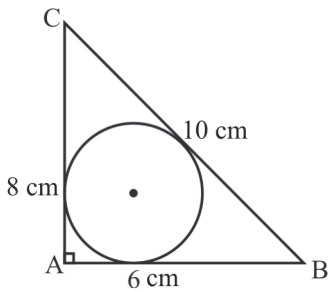
11. ABC is a right angled triangle in which ∠A = 90°, AB = 6 cm and AC = 8 cm. What will be perimeter of a circle whose centre O is inside the triangle?

(a) 4.5 π (b) 3π

(c) 3.5π (d) 4π

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (d)



area of triangle $= \frac{1}{2} \times 6 \times 8 = 24\text{cm}^2$

$$S = \frac{a+b+c}{2} = \frac{8+6+10}{2} = 12$$

radius of incircle (r) = $\frac{\text{area of triangle}(\Delta)}{\text{Semiperimeter of triangle}(S)}$

$$r = \frac{\Delta}{S} = \frac{24}{12}$$

$\boxed{r = 2}$

Perimeter of circle $= 2\pi r$

$= 2 \times \pi \times 2$

$= 4\pi$

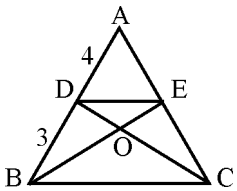
12. In triangle ABC, the points D and E lie on the sides AB and AC respectively. DE is parallel to the base BC. O is the intersection point of BE and CD. If AD : DB = 4:3, find the ratio of DO and DC.

(a) 4 : 11 (b) 3 : 7

(c) 5 : 12 (d) 5 : 7

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (a)



DE || BC

∴ Δ ADE ~ Δ ABC

$$\frac{AD}{AB} = \frac{DE}{BC}$$

$$\frac{4}{7} = \frac{DE}{BC} \quad (\because AB = AD + DB = 4 + 3 = 7)$$

from ΔDOE and ΔBOC

∠ODE = ∠ OCB (Alternate interior angle)

∠OED = ∠OBC (Alternate interior angle)

∠DOE = ∠BOC (Vertically opposite angle)

∴ Δ DOE ~ Δ COB

So $\frac{DO}{CO} = \frac{DE}{CB}$

$$\frac{DO}{CO} = \frac{4}{7}$$

or $\frac{CO}{DO} + 1 = \frac{7}{4} + 1$

$$\frac{DC}{DO} = \frac{11}{4}$$

or DO : DC = 4 : 11

13. Triangle ABC is similar to triangle PQR. If AB = 5 cm and PQ = 3 cm, then find the value of $\frac{ar(\Delta ABC)}{ar(\Delta PQR)}$.

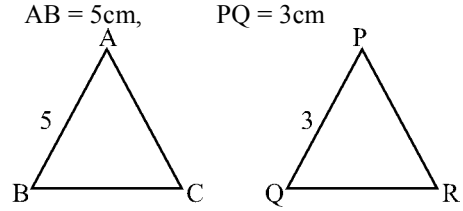
(a) $\frac{9}{25}$ (b) $\frac{3}{5}$

(c) $\frac{5}{3}$ (d) $\frac{25}{9}$

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (d) : ΔABC ≅ ΔPQR

AB = 5cm, PQ = 3cm



The ratio of area of two similar triangles is equal to the ratio of their corresponding sides

$$\frac{\text{area}(\Delta ABC)}{\text{area}(\Delta PQR)} = \left(\frac{5}{3}\right)^2 = \frac{25}{9}$$

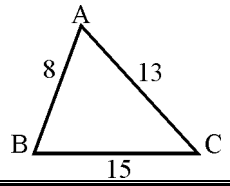
14. The lengths of the three sides of a triangle are 8 cm, 13 cm and 15 cm respectively. What will be the ratio of their altitudes?

(a) 195 : 120 : 104 (b) 15 : 13 : 8

(c) 28 : 23 : 21 (d) 104 : 195 : 120

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a)



Ratio of altitudes

$$= \frac{1}{8} : \frac{1}{13} : \frac{1}{15}$$

$$= 15\times13 : 8 \times 15 : 13 \times 8$$

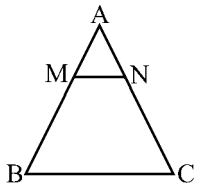
$$= 195 : 120 : 104$$

15. 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. Find the ratio of the area of triangle AMN and the area of trapezium BMNC.

(a) 7 : 9 (b) 32 : 49
(c) 49 : 32 (d) 49 : 81

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (c)



$\because$ BMNC is a trapezium

$\therefore$ MN || BC

$\therefore$ $\Delta AMN \sim \Delta ABC$

So $\frac{\text{area of } \Delta AMN}{\text{area of } \Delta ABC} = \left(\frac{MN}{BC}\right)^2 = \left(\frac{7}{9}\right)^2 = \frac{49}{81}$

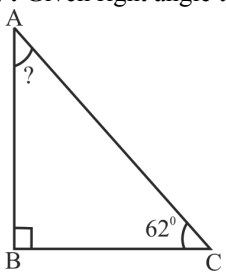
$\therefore \frac{\text{area of } \Delta AMN}{\text{area of } \Delta BMNC} = \frac{49}{81 - 49} = \frac{49}{32}$

16. The acute angle of a right angled triangle is 62°. Find the value of the second acute angle.

(a) 38° (b) 28°
(c) 45° (d) 36°

RRB Group-D – 15/10/2018 (Shift-III)

Ans. (b) : Given right angle triangle



$\angle B = 90°$

$\angle C = 62°$

$\angle A = ?$

Sum of interior angles of triangle is 180°

$\angle A = 180° - (90° + 62°)$

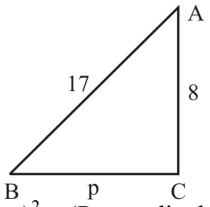
$= 180° - 152° = 28°$

17. If 8, p and 17 are pythagoras triplet, then the value of p will be–

(a) 15 (b) 9
(c) 14 (d) 13

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (a) : According to the question,
8, p and 17 is Pythagoras triplet
then p = ?
from the figure,



$(\text{hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{base})^2$

$(17)^2 = (8)^2 + (p)^2$

$289 = 64 + (p)^2$

$289 - 64 = (p)^2$

$225 = p^2$

$\boxed{p = 15}$

18. The area of a triangle ABC is 63 square unit. 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?

(a) 28 Square unit (b) 35 Square unit
(c) 21 Square unit (d) 48 Square unit

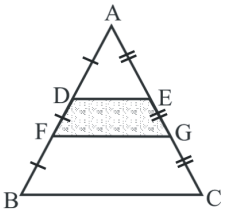
RRB NTPC 02.04.2016 Shift : 2

Ans : (c) in similar Δ ADE and ABC–

$$\frac{\text{area of } \Delta ADE}{\text{area of } \Delta ABC} = \left(\frac{AD}{AB}\right)^2$$

$$\frac{\text{area of } \Delta ADE}{63} = \left(\frac{AD}{3AD}\right)^2$$

area of Δ ADE = 7 square unit



$\Rightarrow$ $\Delta AFG \cong \Delta ABC$

$\therefore$ $\frac{\text{are of } \Delta AFG}{\text{area of } \Delta ABC} = \left(\frac{AF}{AB}\right)^2$

$\Rightarrow$ $\frac{\text{area of } \Delta AFG}{63} = \left(\frac{2AD}{3AD}\right)^2$

$\Rightarrow$ area of Δ AFG $= \frac{4}{9} \times 63 = 28$ Square unit

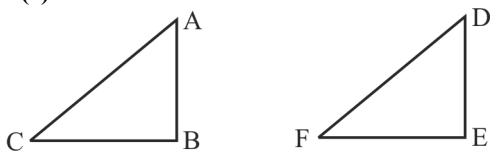
$\therefore$ area of Δ DEFG = ΔAFG – Δ ADE
= 28 – 7 = 21 Square unit

19. If ΔABC and ΔDEF are similar triangles, in which BC = 4 cm, EF = 7 cm and the area of ΔABC is 144 square cm, then find the area of ΔDEF.

(a) 252 Square cm (b) 504 Square cm
(c) 441 Square cm (d) 324 Square cm

RRB NTPC 02.04.2016 Shift : 1

Ans : (c)



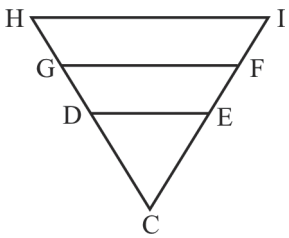
$\because \Delta ABC \sim \Delta DEF$

$\therefore \dfrac{\text{area of } \Delta ABC}{\text{area of } \Delta DEF} = \left(\dfrac{BC}{EF}\right)^2$

$\dfrac{144}{\text{area of } \Delta DEF} = \left(\dfrac{4}{7}\right)^2$

area of $\Delta DEF = \dfrac{144 \times 49}{16} = 441$ Square cm

20.

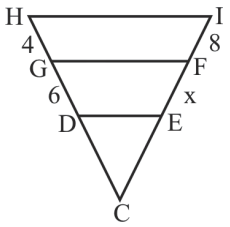


HI, GF and DE are parallel lines, If DG = 6, GH = 4 and FI = 8, then EF = ?

(a) 8 (b) 9
(c) 12 (d) 16

RRB NTPC 31.03.2016 Shift : 1

Ans : (c)



from the thales's theorem

in ΔCGF,

Let EF = x

$\dfrac{CD}{GD} = \dfrac{CE}{EF}$

or $\dfrac{CD}{CE} = \dfrac{GD}{EF}$.....(1)

again in ΔCHI,

$\dfrac{CD}{DH} = \dfrac{CE}{EI}$

$\dfrac{CD}{CE} = \dfrac{DH}{EI}$.....(2)

$\therefore$ from the equation (1) and (2)

$\dfrac{GD}{EF} = \dfrac{DH}{EI}$

$\dfrac{6}{x} = \dfrac{6+4}{x+8}$

10x = 6x + 48

4x = 48

x = 12

EF = 12

21. If the ratio of the angles of a triangle is 1:2:3, find the value of the largest angle?

(a) 30° (b) 60°
(c) 90° (d) 120°

RRB NTPC 19.04.2016 Shift : 1

Ans : (c) If angles of triangle are x, 2x and 3x respectively

Then x + 2x + 3x = 180°

6x = 180°

x = 30°

$\therefore$ largest angle = 3x = 3×30 = 90°

22. If $\Delta ABC \cong \Delta XYZ$ and angle BAC = 55°, then angle ZXY = ?

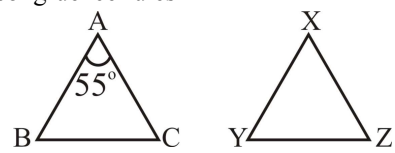
(a) 65° (b) 135°
(c) 55° (d) 67.5°

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (c) given− $\angle BAC = 55°$

$\Delta ABC \cong \Delta XYZ$

So from congruence rules−



$\angle A = \angle X$

or $\angle BAC = \angle ZXY$

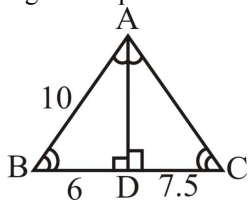
$55^o = \angle ZXY$

23. In ΔABC, AB = 10 cm. BD = 6 cm and DC = 7.5 cm. $\angle A$ is bisected internally to intersect BC at D. What is the length of CA?

(a) 12 cm (b) 10 cm
(c) 10.5 cm (d) 12.5 cm

RRB ALP & Tec. (30-08-18 Shift-III)

Ans : (d) according to the question in ΔABC



$\Delta ADB \cong \Delta ADC$

By the law of similarty,

$\dfrac{AB}{DB} = \dfrac{AC}{DC}$

$\dfrac{10}{6} = \dfrac{AC}{7.5}$, $AC = \dfrac{10 \times 7.5}{6}$

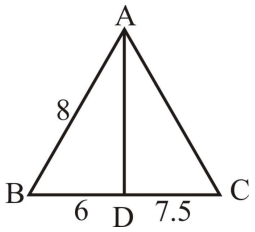
AC = 12.5 cm

24. In ΔABC, AB = 8 cm. The bisector of ∠A is internally meets on BC at D. and BD = 6 cm and DC = 7.5 cm. What will be the value of CA?

(a) 10.5 cm (b) 12.5 cm
(c) 12 cm (d) 10 cm

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

Ans : (d)



from the interior 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 cm

25. In ΔABC, D and E are points on AB and AC respectively in which DE is parallel to BC. If AD = 2 cm, BD = 3 cm then what is the value of $\frac{ar(\Delta ADE)}{ar(\Delta ABC)}$?

(a) $\frac{16}{81}$ (b) $\frac{4}{9}$
(c) $\frac{4}{25}$ (d) $\frac{2}{5}$

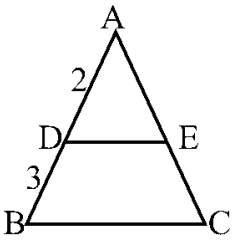
RRB Group-D – 22/09/2018 (Shift-III)

Ans. (c) : ΔABC in

∵ DE//BC ∴ ΔADE ~ ΔABC

AD = 2 cm

BD = 3 cm



in similar ΔADE and ΔABC

$$\frac{ar(\Delta ADE)}{ar(\Delta ABC)}=\frac{AD^2}{AB^2}$$

$$=\frac{(2)^2}{(2+3)^2}=\frac{4}{25}$$

Type - 2

26. All four angles of a quadrilateral are the same. Find their values?

(a) 110° (b) 80°
(c) 75° (d) 90°

RRB Group-D – 09/10/2018 (Shift-I)
RRB RPF SI – 12/01/2019 (Shift-I)

Ans. (d) : Sum of four angles of quadrilateral = 360°

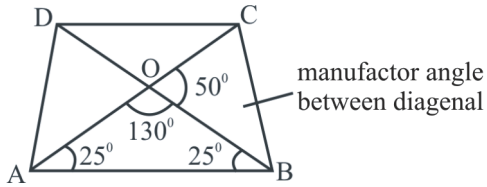
$$\therefore \text{ each angle}=\frac{360°}{4}=90°$$

27. The diagonals of a quadrilateral are inclined 25° on one side of the quadrilateral. The acute angle to be drawn between the diagonals will be–

(a) 40° (b) 50°
(c) 55° (d) 25°

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (b)



in ΔAOB

∠A + ∠B + ∠O = 180°

25° + 25° + ∠O = 180°

obtuse angle (∠O) = 180°–50° = 130°

acute angle (∠COB) = 180°–130°

= 50°

So acute angle formed between diagonals will be 50°

28. The ratio of four angles of a quadrilateral is 3:4:5:6. What will be the value of smallest angle?

(a) 49° (b) 60°
(c) 45° (d) 36°

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (b) : Let four interior angles of quadrilateral are 3x, 4x, 5x, 6x respectively

Sum of four interior angles of quadrilater al = 360°

3x+4x+5x+6x= 360°

18x= 360°

x = 20°

So smallest angle = 3×20

= 60°

29. The values of two adjacent angles of a quadrilateral are 125° and 35° and the other two angles are equal. Find the value of equal angles.

(a) 90° (b) 100°
(c) 135° (d) 80°

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (b) ∵ Sum of all interior angles of quadrilatiral = 360°

Two angles of quadrilaterals are equal

let each of them = x°

∴ 125° + 35° + x° + x° = 360°

2x° = 360° – 160

x° = 100

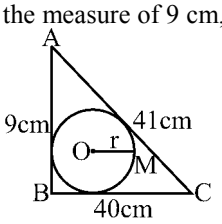
30. What is the radius of a circle formed inside a triangle with sides 9 cm, 40 cm and 41 cm?

(a) 3.5 cm (b) 3 cm

(c) 2.5 cm (d) 4 cm

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (d) A right-angled triangle is formed from the sides of the measure of 9 cm, 40 cm and 41 cm.



Then area of $\Delta = \frac{1}{2} \times 9 \times 40$

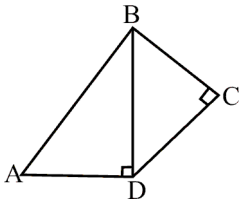
$= 180 cm^2$

Semi perimeter $(s) = \frac{1}{2}[40 + 41 + 9]$

= 45 cm

So radius of in circle $(r) = \frac{\Delta}{s} = \frac{180}{45} = 4cm$

31. In the given figure ∠BAD = 30⁰, ∠DBC = 60⁰ If the length of $\overline{AB}$ is 18 cm, find the length of $\overline{BC}$ –

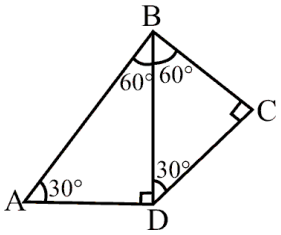


(a) 7.5cm (b) 4.5cm

(c) 9cm (d) 6cm

RRB Group-D – 12/12/2018 (Shift-I)

Ans. (b)



from ΔABD,

$\frac{AB}{\sin 90°} = \frac{BD}{\sin 30°}$

$BD = \frac{AB}{2} = \frac{18}{2}$

BD = 9 cm

∵ from ΔBDC,

$\frac{BD}{\sin 90°} = \frac{BC}{\sin 30°}$

$BC = \frac{1}{2} \times BD = \frac{1}{2} \times 9$

BC = 4.5 cm

32. The value of each of the three acute angles of a quadrilateral is 82°. Find the value of the fourth angle.

(a) 125° (b) 114°

(c) 120° (d) 100°

RRB Group-D – 25/10/2018 (Shift-II)

Ans : (b) Let value of fourth angle = x°

∵ Sum of four interior angles of quadrilateral = 360°

∴ x + 82° + 82° + 82° = 360°

x = 360° - 246° = 114°

33. Three angles of a quadrilateral are same, and the value of the fourth angle is 150°. What is the value of each of the same angles?

(a) 75° (b) 90°

(c) 80° (d) 70°

RRB Group-D – 08/10/2018 (Shift-I)

Ans. (d) : Sum of four angles of quadrilateral is 360°

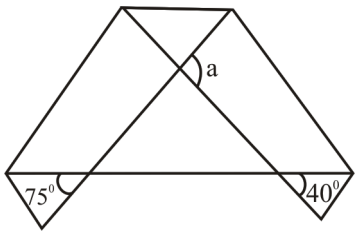
given-

fourth angle = 150°

Sum of other three angles = 360°–150° = 210°

So value of each angle = $\frac{210°}{3}$ = 70°

34. What is the value of a?

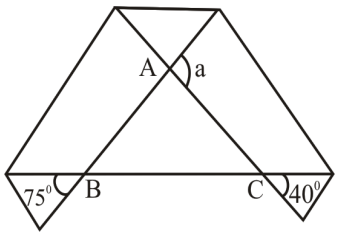


(a) 65° (b) 75°

(c) 105° (d) 115°

RRB NTPC 29.03.2016 Shift : 3

Ans : (d)



$\angle ABC = 75°$ (opposite angle)

$\angle ACB = 40°$ (opposite angle)

$\therefore \angle BAC = 180° - (75° + 40°)$

$= 180° - 115° = 65°$

but $\angle BAC + a = 180°$ (angle of Linear pair)

$a = 180° - 65° = 115°$

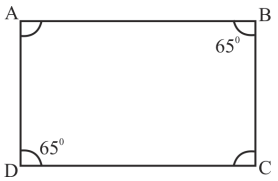
35. The value of each of the two angles of a quadrilateral is 65°. The other two angles are also equal. Find the value of these angles.

(a) 100^0 (b) 115^0

(c) 125^0 (d) 105^0

RRB Group-D – 03/10/2018 (Shift-II)

Ans : (b) Sum of four angles of any quadrilateral is 360°



$\angle B = \angle D = 65^0$

$\angle A = \angle C = x^0$

Then $65^0 + 65^0 + x^0 + x^0 = 360$

$2x^0 = 360 - 130$

$\boxed{x = 115^0}$

So value of remain each angle $= 115^0$

Type - 3

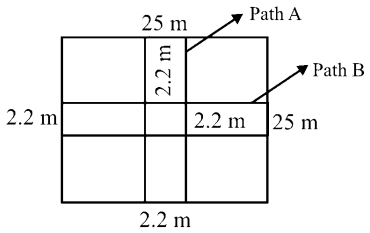
36. Each side of a quadrate park is 25 cm and has 2.2 m wide two paths passing through its centre. How much rupees will its cost to spread concrete on the paths at a cost of ₹1/dm^2?

(a) ₹ 11,000 (b) ₹ 110

(c) ₹ 105.16 (d) ₹ 10,516

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (d) :



area of path A $= 25 \times 2.2 = 55$ m^2

area of path B $= 25 \times 2.2 = 55$ m^2

Total area of street $= 25 \times 2.2 + 25 \times 2.2 - 2.2 \times 2.2$

$= 55 + 55 - 4.84 = 105.16$ m^2

Total cost $= 105.16 \times 100 =$ ₹ 10516

37. In which all the sides have same length?

(a) Rectangle (b) Trapezium

(c) Parallelogram (d) Square

RRB NTPC 30.04.2016 Shift : 1

Ans : (d) All four sides are the same length in both square and rhombus. but the angle of each of the four corners in the square is right-angled, while the rhombus face to face is the same.

Type - 4

38. The length of a rectangular plot is 5 m more than its width. If the circumference of the plot is 142 m, find the dimensions of the plot.

(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

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans. (a) :

Suppose the length of rectangular plot is l meter and breadth b meter.

$\because$ Circumference of rectangular plot $= 2(\ell + b)$

According to the question,

$\because \quad \ell = b + 5$

$\therefore \quad 2(\ell + b) = 142$

$\Rightarrow \quad 2(b + 5 + b) = 142$

$\Rightarrow \quad (2b + 5) = 71$

$\Rightarrow \quad 2b = 71 - 5$

$\Rightarrow \quad 2b = 66$

$\Rightarrow \quad b = 33m$

$\ell = 33 + 5 = 38m$

So length will be 38 meter and breadth 33 meter.

39. If a rectangle length : width = 4:3. Find the value of length : diagonal.

(a) 4 : 7 (b) 2 : 3

(c) 4 : 5 (d) 1 : 5

RRB JE - 24/05/2019 (Shift-I)

Ans : (c) Let the length of rectangle $= 4x$

and breadth of rectangle $= 3x$

$\therefore$ diagonal of rectangle $= \sqrt{(4x)^2 + (3x)^2} = 5x$

$\therefore$ length : diagonal $= 4x : 5x = 4 : 5$

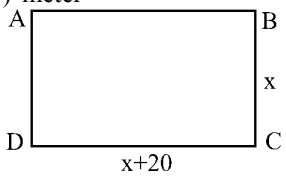
40. The length of a rectangular plot is 20 m more than its width. If the cost of planting the fence at ₹26.50 per meter on the plot is ₹ 5300, find the length of the plot in meters.

(a) 50 m (b) 40 m

(c) 120 m (d) 60 m

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

Ans : (d) Let width of rectangular plot = x m
length of plot = (x + 20) m
Perimeter = 2 (length + width)
= 2 (x + x + 20) meter
= (4x + 40) meter



According to the question
$(4x + 40) \times 26.50 = 5300$
$4x + 40 = 200$
$4x = 160$
x = 40 meter
length of plot = (x + 20) meter = (40 + 20) meter
= 60 meter

41. The ratio of length and width of a rectangle is 3:1. If its perimeter is 96 m, then what is the length of rectangle?

(a) 48 m (b) 24 m
(c) 36 m (d) 12 m

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (c) Let length of rectangle is 3x m. and breadth is x m
Perimeter of rectangle (P) = 2 [l + b]

$$\begin{bmatrix} l = \text{lendth} \\ b = \text{breadth} \end{bmatrix}$$

$96 = 2 [3x + x]$
$96 = 6x + 2x$
$96 = 8x$
$x = \frac{96}{8}$
$\boxed{x = 12}$
length of rectangle = 3 × 12
= 36 meter

42. The dimensions of the rectangular plot of land are given in the nearest integer, 37 m and 23m. What is the upper limit of the circumference of the rectangle?

(a) 122 m (b) 61 m
(c) 60 m (d) 120 m

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (a) : given-
length of rectangle = 37 m
breadth of rectangle = 23 m
circumference of rectangle
= 2 (length + breadth)
= 2 (37 + 23)
= 120 meter
So this answer will be 122 m. Because the nearest integer is given here and asked about the upper limit.

Type - 5

43. The length of one side of a rhombus is 12 cm and the length of one of its diagonals is also 12 cm. The length of second diagonal will be _ cm.

(a) $12\sqrt{3}$ (b) $6\sqrt{3}$
(c) 24 (d) $9\sqrt{3}$

RRB RPF SI – 10/01/2019 (Shift-I)

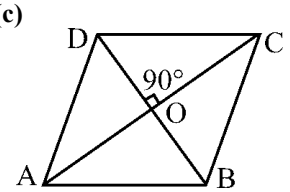
Ans : (a) Let second diagonal of rhombus is d_2
side (a) of rhombus $= \frac{1}{2}\sqrt{d_1^2 + d_2^2}$
where d_1 & d_2 is diagonal of rhombus
$12 = \frac{1}{2}\sqrt{12^2 + d_2^2}$
$12 \times 2 = \sqrt{12^2 + d^2}$
Square on both sides
$(24)^2 = 12^2 + d_2^2$
$d_2^2 = (24)^2 - (12)^2$
$= (24 + 12)(24 - 12)$
$= 36 \times 12 = 432$
$\therefore d_2 = 12\sqrt{3}$cm.

44. The length of one side of a rhombus is $\frac{17}{3}$ cm and its one diagonal is $\frac{16}{3}$ cm. Find the length of second diagonal.

(a) $\frac{20}{3}$ cm (b) $\frac{32}{3}$ cm
(c) 10 cm (d) $\frac{16}{3}$cm

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (c)



side of rhombus $= \frac{17}{3}$cm
first diagonal $AC = \frac{16}{3}$cm
$\because$ AO = OC and BO = OD
$\therefore AO = OC = \frac{AC}{2}$
$= \frac{16}{3} \Big/ 2$
$AO = \frac{8}{3}$cm
ΔAOB in, $AB^2 = AO^2 + BO^2$

$BO = \sqrt{AB^2 - AO^2}$

$= \sqrt{\left(\frac{17}{3}\right)^2 - \left(\frac{8}{3}\right)^2}$

$= \sqrt{\frac{289}{9} - \frac{64}{9}}$

$= \sqrt{\frac{225}{9}}$

$= \frac{15}{3}$

$BO = 5$

So $OB = OD = 5$ cm

Second diagonal $BD = BO + OD = 5 + 5 = 10$ cm

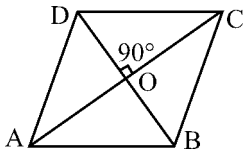
45. The length of the side of rhombus is 5 cm and it's area is 4 cm^2. What will be the sum of the lengths of its diagonals?

(a) 5 cm (b) 6 cm

(c) 8 cm (d) 7 cm

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (b)



$AB = \sqrt{5}$

Rhombus

In 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 $AC = x$

$BD = y$

$\therefore$ area of rhombus $= \frac{1}{2} \times x \times y = 4$

$x \times y = 8$

$(x+y)^2 = 20 + 2\times8$

$(x+y)^2 = 20 + 16$

$(x+y)^2 = 36$

$\boxed{x + y = 6 \text{ cm}}$

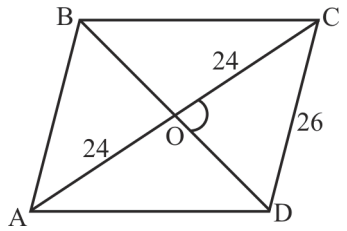
46. The length of one side of a rhombus is 26 cm and the length of one diagonal is 48 cm, then what will be the length of the second diagonal?

(a) 24 cm (b) 20 cm

(c) 25 cm (d) 22 cm

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b)



$(OD)^2 = (CD)^2 - (OC)^2$ (from pythagoras theorem)

$(OD)^2 = (26)^2 - (24)^2$

$(OD)^2 = 676 - 576$

$(OD)^2 = 100$

OD = 10 cm

diagonal $BD = OB + OD$ $\{\therefore OB = OD\}$

BD = 20 cm

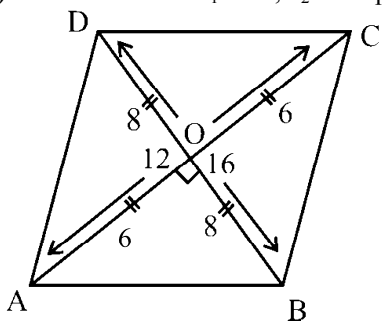
47. The length of diagonals of a rhombus are 16 cm and 12 cm. What is the perimeter of the rhombus?

(a) 56 cm (b) 20 cm

(c) 28 cm (d) 40 cm

RRB Group-D – 06/12/2018 (Shift-II)

Ans. (d) : In the rhombus $d_1 = 16$, $d_2 = 12$ perimeter = ?



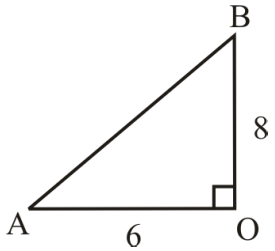
diagonals of rhombus bisect each other at right angles.

AO = OC

BO = OD

$\angle AOB = \angle BOC = \angle COD = \angle DOA = 90°$

sides AB of rhombus



$AB^2 = AO^2 + BO^2$

$AB^2 = 6^2 + 8^2$

$AB^2 = 100$

AB = 10

Perimeter of rhombus = 4a

= 4 × 10

= 40 cm

48. The length of one side of a rhombus is 4 cm and length of one diagonal is 6 cm. The length of second diagonal wil be ___cm.

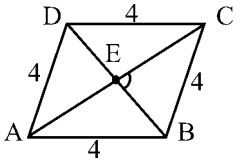
(a) $\sqrt{14}$ (b) $\frac{\sqrt{14}}{2}$

(c) $\sqrt{7}$ (d) $2\sqrt{7}$

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (d) In rhombus, all sides are equal and diagonals of rhombus bisect each other at right angles.

in ΔBEC,



$BC^2 = CE^2 + EB^2$ $\left[BE = \frac{BD}{2} = 3\right]$

$4^2 = CE^2 + 3^2$

$CE = \sqrt{7}$

$CA = 2 \times CE$

$CA = 2 \times \sqrt{7}$

$CA = 2\sqrt{7}$

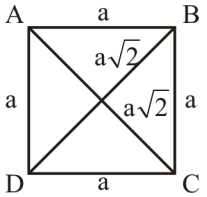
49. The sum of the diagonals of a square is ___ the perimeter of the square.

(a) less than $\frac{3}{4}$ of (b) larger than

(c) equal to (d) less than $\frac{1}{2}$ of

RRB Group-D – 16/11/2018 (Shift-III)

Ans. (a) :



Sum of diagonals $a\sqrt{2} + a\sqrt{2} = 2a\sqrt{2}$

Perimeter $= a + a + a + a = 4a$

$\frac{3}{4}$ times of perimeter $= 4a \times \frac{3}{4} = 3a$

$\Rightarrow 2a\sqrt{2} < 3a$

Thus, the sum of the diagonals of a square is less than $\frac{3}{4}$ the times of the perimeter of the square.

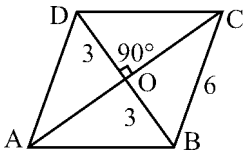
50. The length of one side of rhombus and one of the two diagonals is 6 m. The area of rhombus is _____ cm^2.

(a) 18 (b) $9\sqrt{3}$

(c) $27\sqrt{3}$ (d) $18\sqrt{3}$

RRB Group-D – 18/09/2018 (Shift-I)

Ans. (d) :



According to the figure,

in ΔOBC

$(OC)^2 = (BC)^2 - (OB)^2$

$(OC)^2 = (6)^2 - (3)^2$ (from phythagoras theorem)

$(OC) = 3\sqrt{3}$

area of $\Delta OBC = \frac{1}{2} \times 3 \times 3\sqrt{3}$

$= \frac{9\sqrt{3}}{2} cm^2$

area of rhombus ABCD = 4x ΔOBC area

$= 4 \times \frac{9\sqrt{3}}{2} cm^2$

$= 18\sqrt{3} cm^2$

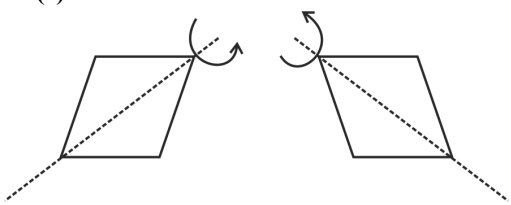
51. The order of rotational symmetry of a rhombus is–

(a) 1 (b) 4

(c) 2 (d) 0

RRB NTPC 22.04.2016 Shift : 2

Ans : (c)



Hence the rotational symmetry will be 2.

Type - 6

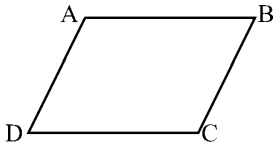
52. In a parallelogram ABCD, ∠A = (3x-25)° and ∠C = (2x+15)°, In which angle A and angle C facing angle. Find the angle A–

(a) 105° (b) 85°

(c) 95° (d) 115°

RRB RPF SI – 13/01/2019 (Shift-II)

Ans : (c)



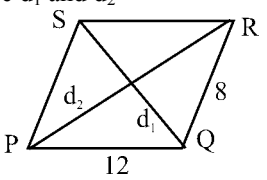
$\angle A = (3x–25)°$
$\angle C = (2x+15)°$
$\angle A = \angle C$ [opposite angle is equal]
$(3x – 25)° = (2x+15)°$
$x = 40°$
$\angle A = (3x – 25)° = 120 – 25 = 95°$

53. A parallel quadrilateral PQRS with lengths of sides 8 cm and 12 cm has a diagonal 10 cm long. The second diagonal is approximately.

(a) 18 cm (b) 17.8 cm
(c) 17 cm (d) 17.5 cm

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (b) If the adjacent sides of a parallelogram are a and b and the diagonals are d_1 and d_2 -



$d_1^2 + d_2^2 = 2\left(a^2 + b^2\right)$

given, a = 12cm, b = 8cm, d_1 = 10cm

$\therefore d_2^2 = 2\left(12^2 + 8^2\right) - 10^2$

$= 2 \times (144 + 64) – 100$
$= 2 \times 208 – 100$
$= 416 – 100 = 316$

$\therefore d_2 = \sqrt{316} = 17.8$ cm

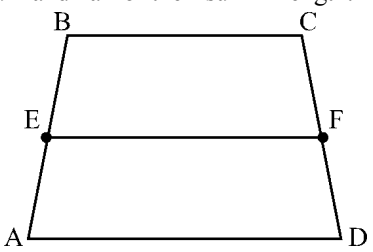
54. If in a asymmetric ABCD, E and F are the midpoints of the two transverse sides AB and CD, then FE = ?

(a) $\frac{2}{3}(AB – CD)$ (b) $\frac{1}{2}(AB + CD)$

(c) $\frac{\sqrt{3}}{2}(AB + CD)$ (d) $\sqrt{3}\,(AB + CD)$

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (b) : In any trapezium, the line joining the midpoint of the eassumetric sides is parallel to the parallel sides of the trapezium and half of their sum in length.



$FE = \frac{1}{2}(AB + CD)$

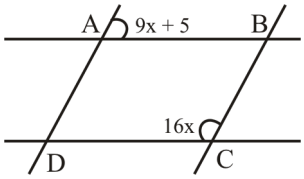
55. The smallest side of a parallelogram is 4.8 cm and the largest side is 1.5 times to the smallest side. Find the circumference of a parallelogram.

(a) 48 cm (b) 36 cm
(c) 24 cm (d) 72 cm

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (c) : Smallest sides of parallelogram =4.8cm
largest sides of parallelogram = $4.8 \times 1.5 = 7.20$ cm
So circumference of Parallelogram = 2(small side + large side)
$= 2 \times (4.8 + 7.2)$
$= 2 \times 12.0$
= 24 cm

56. Find the value (in degrees) of angle ABC in the given parallelogram ABCD.



(a) 112° (b) 102°
(c) 78° (d) 68°

RRB Group-D – 11/10/2018 (Shift-I)

Ans : (d) $\angle D = 9x + 5$ (Corresponding angles)
then $9x + 5 + 16x = 180°$
($\therefore$ sum of adjacent angles is 180° in parallelogram)

$\Rightarrow 25x = 180° – 5°$
$\Rightarrow 25x = 175$
$\Rightarrow x = \frac{175}{25}$
$\Rightarrow x = 7$

then $16x = 16 \times 7 = 112°$
According to the question,

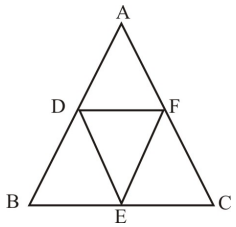
$16x + \angle ABC = 180°$
$\Rightarrow 112 + \angle ABC = 180°$
$\Rightarrow \angle ABC = 180° – 112$
$\angle ABC = 68°$

57. In an equilateral triangle ABC, D, E, F are the midpoints of AB, BC and AC respectively. So the quadrilateral BEFD is:

(a) A square
(b) A rectangle
(c) A parallelogram
(d) A rhombus

RRB NTPC 29.03.2016 Shift : 1

Ans : (c)



In a triangle, the line joining the midpoints of two sides is Parallel and half of the third side.

DF || BC

and $DF = \frac{1}{2}BC$ .....(i)

$\therefore$ E is the mid point of BC

$\therefore$ $BE = \frac{1}{2}BC$ .....(ii)

from the equation (i) and equation (ii)

DF = BE

$\because$ DF || BC $\Rightarrow$ DF || BE

So quadrilateral BEFD is a parallelogram

58. The order of rotational symmetry of a parallelogram is:

(a) 1 (b) 4

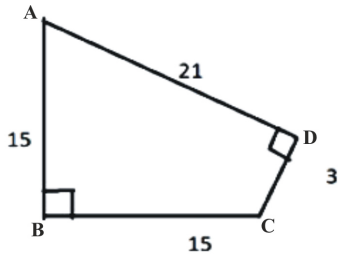
(c) 2 (d) 0

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) The order of rotational symmetry of a Parallelogram is 2.

Type - 7

59. Find the area of the quadrilateral shown in the following figure (underlined is not measured).



(a) 144 (b) 54

(c) 63 (d) 123

RRB Group-D – 10/10/2018 (Shift-III)

Ans : (a)

area of quadrilaterals ABCD = area of ΔABC + area of ΔADC.

$\frac{1}{2}\times AB\times BC+\frac{1}{2}\times CD\times DA$

$\left(\frac{1}{2}\times 15\times 15+\frac{1}{2}\times 3\times 21\right)$

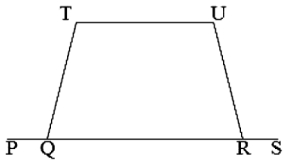
$=\frac{1}{2}(15\times 15+3\times 21)$

$=\frac{1}{2}(225+63)$

$=\frac{288}{2}$

$\boxed{=144}$

60. In the given diagram, TU||PS and points Q and R are located on PS also $\angle PQT = x°$, $\angle RQT = (x-50)°$ and $\angle TUR = (x+25)°$. What is the meassure of $\angle URS$



(a) 130° (b) 115°

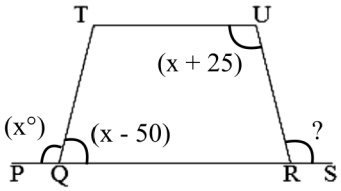
(c) 140° (d) 135°

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (c) : given− TU||PS

$\angle PQT = x°, \angle RQT = (x-50)°$

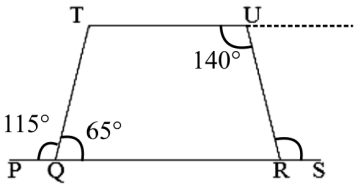
$\angle TUR = (x+25)°$ $\angle URS = ?$



x + x – 50 = 180

2x = 230

$\boxed{x = 115°}$ Putting value of x is diagram.



Alternate angle $\angle TUR = \angle URS$

$\angle URS = 140°$

61. Trapezium is a quadrilateral whose:

(a) All sides are equal.

(b) Opposite sides are equal.

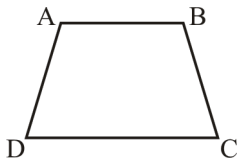
(c) Two pairs of parallel opposite sides are.

(d) One pair of parallel opposite sides is.

RRB NTPC 28.03.2016 Shift : 3

Ans : (d) Trapezium is a quadrilateral with a pair of parallel opposite sides.

AB || DC



62. The order of rotational symmetry of a trapezium is.

(a) 2 (b) 0

(c) 1 (d) 3

RRB NTPC 11.04.2016 Shift : 2

Ans : (c) the rotational symmetry of a trapezium is one order.

Note : If a shape is partially rotated, If the shape looks the same even after rotating, then this property is called rotary symmetry.

Type - 8

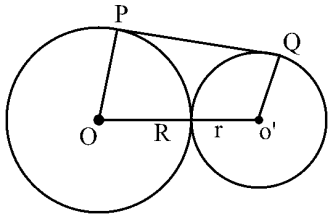
63. Two circles touch each other externally at point X. PQ is simple common tangent touching both circles at P and Q point. If the radius of circles are R and r, find the value of PQ^2.

(a) 4Rr (b) $2\pi Rr$

(c) $\frac{3}{2}$ Rr (d) 2Rr

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

Ans : (a)



$PQ = \sqrt{d^2 - (r_1 - r_2)^2}$

there d = O O' = (R + r)

$r_1 = R$

$r_2 = r$

then, $PQ = \sqrt{(R+r)^2 - (R-r)^2}$

$= \sqrt{R^2 + r^2 + 2Rr - R^2 - r^2 + 2Rr}$

$= \sqrt{4Rr}$

$PQ = 2\sqrt{Rr}$

$PQ^2 = \left(2\sqrt{Rr}\right)^2 = 4Rr$

64. The circumference of a circle is 132 cm. What will be the circumference of the part whose center angle is 135°?

(a) 93.5 cm (b) 101.5 cm

(c) 92.5 cm (d) 91.5 cm

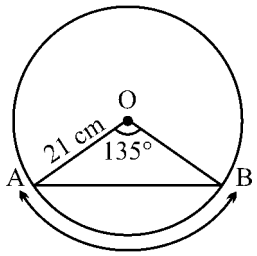
RRB JE - 26/05/2019 (Shift-II)

Ans : (d) According to the question

circumference of circle, $2\pi r = 132$

$2 \times \frac{22}{7} \times r = 132$

$r = \frac{132 \times 7}{2 \times 22} = 21$ cm



circumference $= 2\pi \frac{r\theta}{360} + 2r$

$= \frac{132 \times 135}{360} + 2 \times 21 = 49.5 + 42 = 91.5$ cm

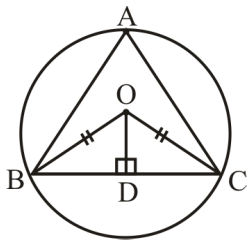
65. If 'O' is the circumcentre of triangle ABC and OD is perpendicular to BC, find the value of angle ∠BOD.

(a) (1/2) ∠A (b) 90° ∠A

(c) ∠A (d) 2∠A

RRB RPF SI – 16/01/2019 (Shift-III)

Ans : (c)



∵ The angle substended by the arc of a circle at the center is twice the angle subtended at the circumference by the same arc.

∠BOC = 2∠A

$\therefore \angle BOD = \frac{\angle BOC}{2} = \frac{2\angle A}{2} = \angle A$

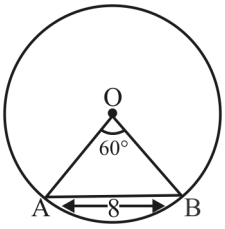
66. A chord of 8 cm length makes an angle of 60° at the center, what will be the value of radius of the circle?

(a) 8 cm (b) 6 cm

(c) 4 cm (d) 12 cm

RRB JE - 30/05/2019 (Shift-II)

Ans : (a)



According to the figure,

$\angle AOB = 60°$

$\because \quad \angle A = \angle B = 60°$

So ΔOAB will be equilateral triagnle

$\because$ OA = OB = AB = 8 cm

$\because$ OA and OB is circle's radius

So r = 8 cm

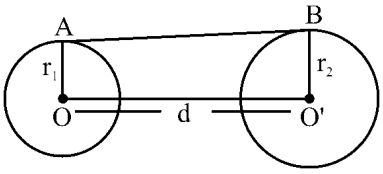
67. Radius r_1 and r_2 the distance between the centers of the two circles is d find the length of their tangent lines.

(a) $\sqrt{d^2\left(r_1^2 r_2^2\right)}$ (b) $\sqrt{d^2-\left(r_1-r_2\right)^2}$

(c) $\sqrt{d^2-\left(r_1^2 r_2^2\right)}$ (d) $\sqrt{d^2-\left(r_1+r_2\right)^2}$

RRB JE - 01/06/2019 (Shift-I)

Ans : (b)



length of tangent line AB

$AB = \sqrt{(\text{distance between centre's})^2 - (\text{difference of radius})^2}$

$= \sqrt{d^2-\left(r_1-r_2\right)^2}$

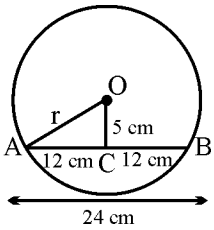
68. If there is a chord of length 24 cm at a distance of 5 cm from the center, find the radius of the circle.

(a) 13 cm (b) 17 cm

(c) 25 cm (d) 15 cm

RRB JE - 28/06/2019 (Shift-III)

Ans. (a)



the perpendicular from the center of the circle on chord divides the chord into two equal parts.

$OA^2 = OC^2 + AC^2$ {where AC = 12 cm}

$r^2 = 5^2 + 12^2$

$r^2 = 25 + 144 = 169$

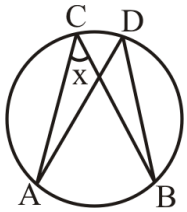
r = 13 cm

69. Read the given question and decide which of the following information is sufficient to answer the question.

What is the value of $\angle ACB$

Information:

(1)



(2) $\angle D = 60^0$

(a) Either 1 or 2 is sufficient.

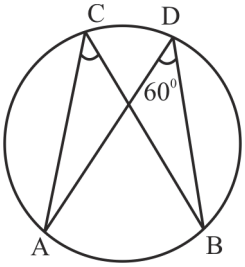
(b) Both 1 and 2 are sufficient.

(c) Only is 2 sufficient.

(d) Only 1 are sufficient.

RRB Group-D – 17/09/2018 (Shift-I)

Ans : (b) $\angle ADB = \angle ACB = 60°$



so both information will be required,

The value of the angle subtended by an arc (chord) on the remaining circumference of the circle is same.

$\angle C = \angle D$

Hence information-2, $\angle D = 60°$ and information -1, $\angle ACB = \angle ADB = 60°$

70. In a semicircle, A and C denote the diameter and B is a point on the semicircle. So the angle ABC will always be.

(a) Can not be determined

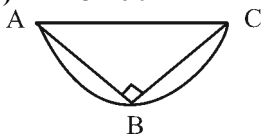
(b) Acute angle

(c) Obtuse angle

(d) Right angle

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (d) $\angle ABC = 90°$



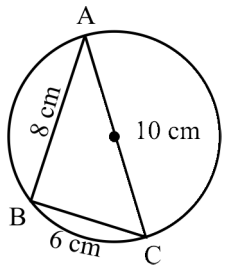
Theorem— The angle on the semicircle is right angled.

71. The area of the circumcircle of a right angled triangle with sides 6 cm, 8 cm and 10 cm will be–

(a) 16π cm^2 (b) 25π cm^2
(c) 24.5π cm^2 (d) 9π cm^2

RRB Group-D – 18/09/2018 (Shift-II)

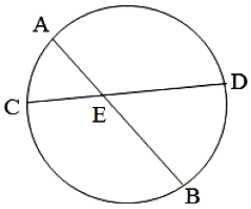
Ans. (b) :



$\therefore$ Circle's radius (r) = 5 cm

$\therefore$ area of circumcircle $= \pi r^2 = \pi \times (5)^2 = 25\pi$ cm^2

72.

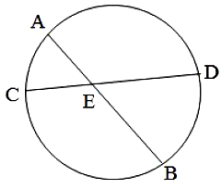


In above circle, given m $\overline{AE}$ = 4 cm, m $\overline{BE}$ = 15 cm and m $\overline{CE}$ = 2.5 cm. What will be the value of m $\overline{DE}$?

(a) 16.5 cm (b) 20 cm
(c) 24 cm (d) 30 cm

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (c)



given–

m $\overline{AE}$ = 4 cm.

m $\overline{BE}$ = 15 cm

m $\overline{CE}$ = 2.5 cm

m $\overline{DE}$ = ?

$\boxed{AE \times BE = CE \times DE}$

$4 \times 15 = 2.5 \times DE$

$DE = \frac{4 \times 15}{2.5}$

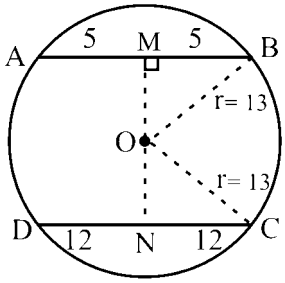
DE = 24 cm.

73. AB and CD are two parallel sides on opposite ends of the centre 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 sides.

(a) 16 cm (b) 17 cm
(c) 18 cm (d) 15 cm

RRB Group-D – 26/10/2018 (Shift-III)

Ans : (b)



from pythagoras theorem in ΔONC

$r^2 = ON^2 + NC^2$

$ON = \sqrt{r^2 - NC^2}$

r = 13 cm

$ON = \sqrt{13^2 - 12^2} = \sqrt{169 - 144}$

ON = 5 cm

like wise $MO = \sqrt{13^2 - 5^2} = 12$ cm

So distance between of both sine.

= MO + NO

= 12 + 5 = 17 cm

74. A 16 cm long arc is cut in a circle of 20 cm diamter. Find the distance of the arc from the center of the circle.

(a) 6 cm (b) 12.8 cm
(c) 12 cm (d) 18.9 cm

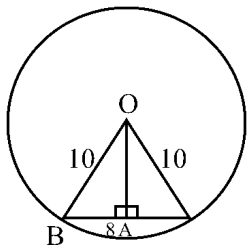
RRB Group-D – 16/11/2018 (Shift-I)

Ans : (a) diameter = 20 cm

arc cut by 16 cm

$\because$ The perpendicular drawn on the chord from the center of a circle bisects the chord.

$\therefore AB = \frac{16}{2} = 8$ cm



$OB^2 = OA^2 + AB^2$

$100 = OA^2 + 64$

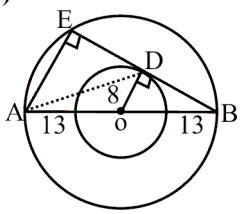
OA = 6 cm

75. The radius 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 smallar circle which touches it on D. The length of AD is equal to:

(a) 17 cm (b) 18 cm
(c) 19 cm (d) 16 cm

RRB Group-D – 11/12/2018 (Shift-III)

Ans : (c)



Small or circle of tangent line is DB and tangent line of circle is making 90° angle from the center of circle on circumference.

So,

Given in, {OB = 13 cm, OD = 8 cm from pythagoras theorem}

In ΔODB,

$(BD)^2 = (OB)^2 - (OD)^2$

$BD = \sqrt{(13)^2 - (8)^2}$

$BD = \sqrt{169 - 64} = \sqrt{105}$

again in ΔAEB,

$EB = 2DB = 2\sqrt{105}$ cm

AB = 2OB = 26 cm

from the pythagoras theorem

$(AE)^2 = (AB)^2 - (EB)^2$

AB = 2OB = 26 cm

again in ΔAED

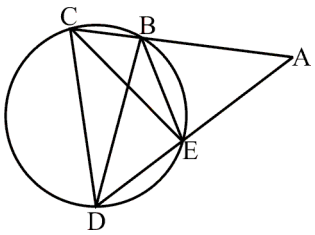
$(AD)^2 = (AE)^2 + (ED)^2$

$(AD)^2 = (16)^2 + \left(\sqrt{105}\right)^2$

$(AD) = \sqrt{256 + 105} = \sqrt{361}$

AD = 19 cm

76.

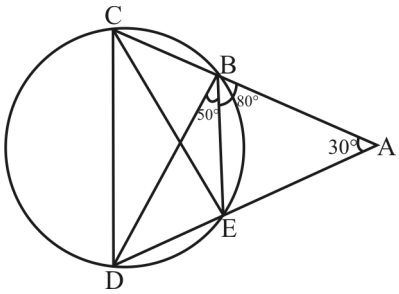


In the above figure, ∠BAE = 30°, ∠ABE = 80° and ∠DBE = 50°, what is the value of ∠BCE ?

(a) 25° (b) 10°
(c) 20° (d) 5°

RRB Group-D – 10/12/2018 (Shift-I)

Ans. (c) :



given

∠BAE = 30°

∠ABE = 80°

∠DBE = 50°

from ΔBAE

∠BEA + 80 + 30 = 180° [∵Sum of Δ of interior angles = 180°]

∴∠BEA = 180°–110° = 70°

∠DEB = 180° – 70° [angle of straight line = 180°]

= 110°

in cyclic quadrilateral CBED

∠DCB = 70° [∵Sum of opposite angle of cyclic quadrilateral = 180°]

∵∠DBE = 50° [angle formed on circumference from chord is equal]

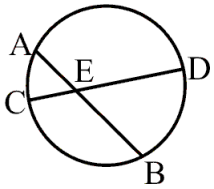
∴∠DCE = 50°

∵∠DCB = 70°

∴∠BCE = 70°–50° = 20°

So, ∠BCE = 20°

77.



In the above circle, $m\overline{AE} = 5cm, m\overline{BE} = 15cm$ and $m\overline{CE} = 25cm$, what will be the length of $m\overline{DE}$?

(a) 2.5 cm (b) 1 cm
(c) 3 cm (d) 2 cm

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (c) : given

$m\overline{AE} = 5cm, m\overline{BE} = 15cm$

$m\overline{CE} = 25cm, m\overline{DE} = ?$

We know that,

If chord AB and CD is intersecting each other of inside the circle on point E, then

$$AE \times BE = CE \times DE$$

$$DE = \frac{AE \times BE}{CE}$$

$$= \frac{5 \times 15}{25} = 3cm$$

So, $m\overline{DE} = 3cm$.

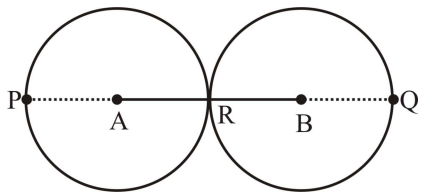
78. The radius of circle A and circle B is 4 units. If the point P is located on A and the point Q is located on B, and Both circle touch each other exactly at a point. Then what will be the maximum length of PQ.

(a) 0 (b) 4

(c) 8 (d) 16

RRB NTPC 30.03.2016 Shift : 2

Ans : (d)



Circle A and circle B touch on point R in the figure then,

AR = BR = 4 unit (radius of circle is)

PR then QR is diameter of circle A and circle B.

then PR = QR = 2AR

PR = QR = 2×4 = 8 unit

Or maximum length of PQ =2×PR = 2×8 = 16 unit

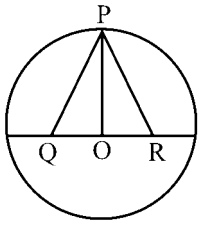
79. An equilateral triangle is constructed in such a way that the two end of the triangle are placed on the diameter of the circle and the third is placed on the circle. If the area of the circle is 48π then what will be the side of the triangle.

(a) 8 (b) 4

(c) $8/\sqrt{3}$ (d) $4\sqrt{3}$

RRB NTPC 10.04.2016 Shift : 3

Ans : (a) from the figure,



Let of circle radius = r

$\therefore$ area $= \pi r^2$

$= 48\pi = \pi r^2$

$r = \sqrt{48} = 4\sqrt{3}$

Radius = length of OP is perpendicular PQR equilateral triangle.

$$\Rightarrow 4\sqrt{3} = \frac{\sqrt{3}}{2}a$$

$$\therefore a = 4 \times 2 = 8$$

So length of triangle's sides = 8

80. If a circle is divided into 6 equal parts. What will be the measure of each angle?

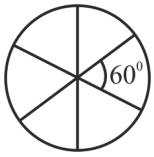
(a) 45 (b) 60

(c) 30 (d) 90

RRB NTPC 28.04.2016 Shift : 1

Ans : (b)

$\because$ angle formed by all 6 sides on the center of circle =360°



$\therefore$ According to the question

$$= \frac{360°}{6} = 60°$$

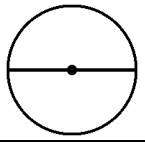
81. The largest chord of a circle is.

(a) Radius (b) Diameter

(c) Line segment (d) Sector

RRB NTPC 29.04.2016 Shift : 2

Ans : (b) Largest chord of circle is "diameter" which passes through the center of the circle.



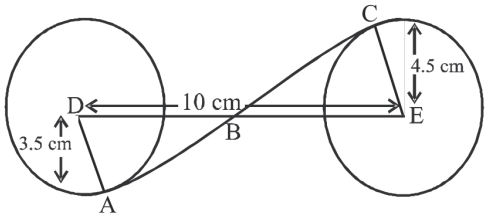
82. Find the length of a transverse common tangent of the two circles whose radii are 3.5 cm, 4.5 cm and the distance between their centres is 10 cm.

(a) 6 cm/6 cm (b) 8 cm/8 cm

(c) 6.4 cm/6.4 cm (d) 3.6cm/3.6 cm

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (a)



length of transverse tangent line

$$= \sqrt{(\text{distance between of centers})^2 - (\text{sum of both radius's})^2}$$

$$= \sqrt{10^2 - (3.5 + 4.5)^2} = \sqrt{100 - 64} = \sqrt{36} = 6 \text{ cm}$$

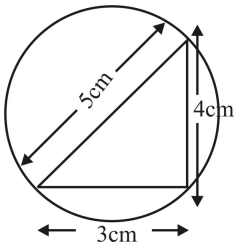
83. The two sides forming the right-angle in a triangle are 3 cm and 4 cm long respectively. What will be the area of the circumcircle of this tringle?

(a) $5\pi\ cm^2$ (b) $7\pi\ cm^2$

(c) $6.75\pi\ cm^2$ (d) $6.25\pi\ cm^2$

RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (d)



The centre of the circumcircle formed on any right triangle is at the midpoint of the hypotenuse of the triangle, which is the diamter of the circle.

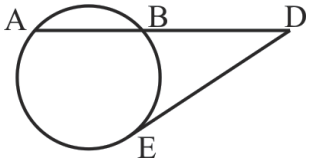
So radius of circle $= \frac{\sqrt{4^2+3^2}}{2} = \frac{\sqrt{25}}{2} = 5/2$ cm

area of circle $= \pi r^2$

$$= \pi \times \left(\frac{5}{2}\right)^2 = \pi \times \frac{25}{4} = 6.25\pi\ cm^2$$

Type - 9

84.



In the circle shown above, chord AB is extended so that it meets tangent line DE to D. If AB = 5 cm and DE = 6 cm, Find the length of BD.

(a) 6 cm (b) 5 cm

(c) 4 cm (d) $\sqrt{30}$ cm

RRB RPF Constable – 18/01/2019 (Shift-III)

Ans : (c) Since $DE^2 = DA \times BD$

$DE^2 = (AB+BD) \times BD$

$6^2 = (5+BD) \times BD$

$36 = 5BD + BD^2$

$\Rightarrow BD^2 + 5BD - 36 = 0$

$\Rightarrow BD^2 + 9BD - 4BD - 36 = 0$

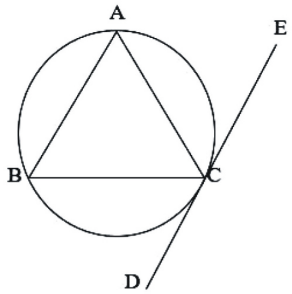
$\Rightarrow BD(BD+9) - 4(BD+9) = 0$

$(BD-4)(BD+9) = 0$

$BD - 4 = 0,\ BD \neq -9$

BD = 4 centimeter

85. Answer the question based on the figure given below.



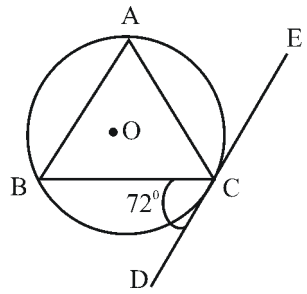
If AB is parallel to EC and ∠BCD = 72°, then what will be the value of ∠BAC?

(a) 75° (b) 72°

(c) 73° (d) 67°

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (b)



∠BCD = 72°

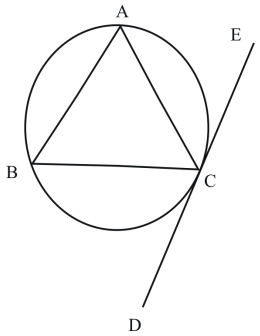
∠BAC = ?

If the angle between the line and the chord passing through one end of the chord of the circle is equal to the angle substended by the chord in the alternate segment, then this line is the tangent line of the circle.

Let the center of the circle be O and AC is the chord of this circle. A straight line DE going through the C point is drawn such that ∠BCD = ∠BAC where ∠BAC is loacted in alternating circle.

So, ∠BAC = 72°

86.



If ∠BCD = 82° then find the value of ∠BAC ?

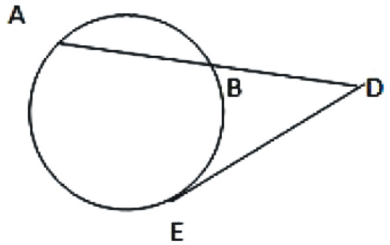
(a) 85° (b) 77°

(c) 83° (d) 82°

RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : The angle formed by the chord of a circle along the line of the circle is equal to the angle made by the chord on the alternate segment of the circle.
$\therefore \angle BAC = \angle BCD = 82°$

87. In the circle below, chord AB is extended to point D to join tangent DE. If AB = 9 cm and BD = 3 cm, find the length of DE.

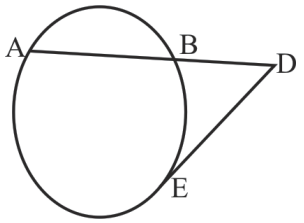


(a) 4 cm (b) $\sqrt{27}$ cm
(c) 6 cm (d) 5 cm

RRB Paramedical Exam – 21/07/2018 (Shift-I)

Ans : (c) from the theorem
$DE^2 = DB \times DA = 3 \times 12$
$DE^2 = 36$
DE = 6 cm

88. In the circle below, chord AB is extended to meet tangent DE at point D. If AB = 24 cm and DE = 9 cm, find the length of BD.

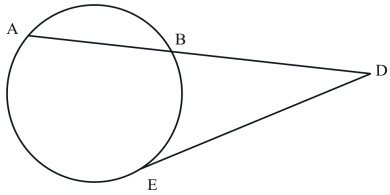


(a) 3 cm (b) $4\sqrt{6}$ cm
(c) 5 cm (d) 4 cm

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : $AD \times BD = (DE)^2$
(Suppose BD = x)
$(24 + x) \times x = (9)^2$
$24x + x^2 = 81$
$x^2 + 24x - 81 = 0$
$x^2 + 27x - 3x - 81 = 0$
$x(x + 27) - 3(x + 27) = 0$
$x + 27 = 0, x = -27$ (Negative)
$x - 3 = 0$
$x = 3$
length of BD = 3 cm

89. In the circle below, chord AB is extended to join point D with tangent DE. If AB = 6 cm and BD = 2 cm, find the length of DE.



(a) $\sqrt{12}$cm (b) 4cm
(c) 4.5cm (d) 5 cm

RRB Group-D – 05/10/2018 (Shift-I)

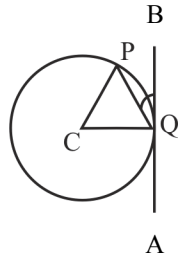
Ans. (b) : from given figure we know that
$\therefore DE^2 = AD \times BD$
$DE^2 = (AB + BD) \times BD$
$= (6 + 2) \times 2$
$= 8 \times 2$
$DE^2 = 16$
DE = 4 cm

90. 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 acute angle in radian Q formed by the tangent of the circle drawn on P.

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{4}$
(c) $\frac{\pi}{2}$ (d) $\frac{\pi}{3}$

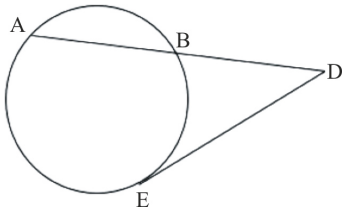
RRB Group-D – 10/10/2018 (Shift-I)

Ans : (a)



from the figure– CP = CQ
given– radius r = PQ
$\therefore$ CP = CQ = PQ (equilateral triangle)
$\because$ Value of each angle of equilateral trianle = 60°
So value of acute angle on $\angle PQB$
$= 90° - 60° = 30° = \frac{\pi}{6}$ radian

91.



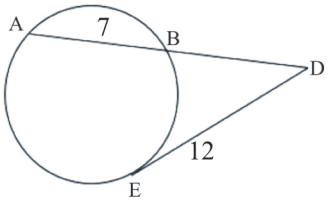
In the given circle, the line AB is extended to meet with the tangent DE at the D point. If AB = 7 cm and DE = 12 cm, then the length of BD will be?

(a) 7 cm (b) 9 cm

(c) $2\sqrt{21}$ cm (d) 8 cm

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (b)



$DE^2 = AD \times BD$

If BD = x then

$12^2 = (7 + x) \times x$

$x^2 + 7x - 144 = 0$

$x^2 + 16x - 9x - 144 = 0$

$x(x+16) - 9(x+16) = 0$ or $x + 16 = 0$, $x - 9 = 0$ hence

$x = 9$, $x = -16$ (invalid)

So, BD = x = 9 cm

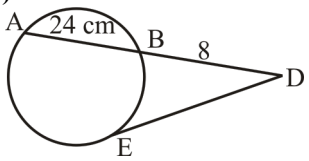
92. In a circle, chord AB is extended to touch tangent DE to D. If AB = 24 cm and BD = 8 cm, then the length of DE is known.

(a) 12 cm (b) 18 cm

(c) 16 cm (d) 24 cm

RRB Group 'D' 07/12/2018 (Shift-I)

Ans : (c)



$DE^2 = AD \times BD$

$DE^2 \ (24 + 8) \times 8$

$DE^2 = 32 \times 8$

$DE = \sqrt{16 \times 16}$

DE = 16 cm.

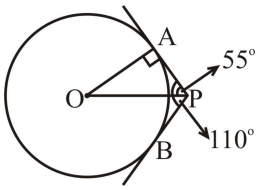
93. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 110^0 then the angle POA is :

(a) 50° (b) 70°

(c) 35° (d) 45°

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

Ans : (c)



ΔPOA in $\angle OAP = 90^o$ (put perpendicular on tangent line make right angle.)

$\angle OPA = 55^o$ $\left(\frac{110^o}{2} = 55^o\right)$

So $\angle OAP + \angle OPA + \angle POA = 180^o$

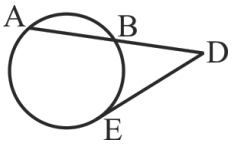
$90^o + 55^o + \angle POA = 180^o$

$\angle POA = 180^o - (90^o + 55^o)$

$= 180^o - 145^o$

$\angle POA = 35^o$

94.



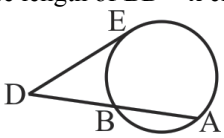
In the circle above chord $\overline{AB}$ is extended to meet the tangent $\overline{DE}$ at D. If $\overline{AB}$ = 12 cm and $\overline{DE}$ = 8 cm. Find the length of $\overline{BD}$.

(a) 6 cm (b) $\sqrt[4]{6}$ cm

(c) 5 cm (d) 4 cm

RRB ALP & Tec. (09-08-18 Shift-I)

Ans : (d) Suppose length of BD = x cm



formula-$(DE)^2 = DB \times DA$

$(8)^2 = x \times (x + 12)$

$\Rightarrow$ $64 = x^2 + 12x$

$\Rightarrow$ $x^2 + 12x - 64 = 0$

$\Rightarrow$ $x^2 + (16 - 4)x - 64 = 0$

$\Rightarrow$ $x^2 + 16x - 4x - 64 = 0$

$\Rightarrow$ $x(x + 16) - 4(x + 16) = 0$

$\Rightarrow$ $(x + 16)(x - 4) = 0$

$\Rightarrow$ $x = -16$ (invalid)

$\Rightarrow$ $x = 4$ cm.

So, DB = 4 cm.

95. To draw a pair of tangents to a circle which are inclined to each other at an angle of 75°, it is required to draw tangents at the end points of those two radius of the circle, the angle between then is.

(a) 65° (b) 75°
(c) 95° (d) 105°

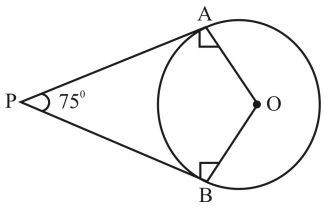
RRB ALP & Tec. (09-08-18 Shift-II)

Ans : (d) from the figure,

$\angle PAO = \angle PBO = 90°$

$\angle APB = 75°$

$\because$ PAOB is a quadrilaterals



$\because$ Sum of four angles of quadrilaterals is 360°

$\because$ PAOB is a quadrilaterals−

$\therefore \angle APB + \angle PBO + \angle PAO + \angle AOB = 360°$

$75° + 90° + 90° + \angle AOB = 360°$

$\boxed{\angle AOB = 360° - 255° = 105°}$

Type - 10

96. In the second quartile, what is the value of sinθ between?

(a) –1 to 1 (b) 1 to –1
(c) 1 to 0 (d) 0 to 1

RRB JE - 30/05/2019 (Shift-I)

Ans : (c) Second quarter is between 90° from 180°

$\sin 90° = 1, \quad \sin 180° = 0$

Similar- $0 < \sin\theta < 1$

Value of sin θ is between from 1 to 0.

97. The ratio of interior and exterior angles of a regular polygon is 4:1. What is the number of sides in the polygon?

(a) 12 (b) 6
(c) 8 (d) 10

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (d) Suppose interior angle and exterior angle is 4x and x.

Interior angle = 180 - exterior angle

$4x = 180 - x$

$5x = 180$

$x = 36$

$$\text{number of sides} = \frac{360}{\text{exterior anlge}} = \frac{360}{36} = 10$$

98. What will be the sum of the interior angles in degrees of a polygon with 7 sides?

(a) 180° (b) 360°
(c) 540° (d) 900°

RRB RPF Constable – 20/01/2019 (Shift-III)

Ans : (d) Sum of interior angles of polygon

$= (2n–4) \times 90° \quad = (2 \times 7–4) \times 90°$

$=10 \times 90° \quad = 900°$

99. Each interior angle in a regular polygon is 108°, then what is the numberof sides?

(a) 6 (b) 15 (c) 5 (d) 7

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (c) Number of sides are n then

each intenior angle of regular polygon $= \frac{(n-2)\times 180}{n}$

$$108 = \frac{(n-2)\times 180}{n}$$

$108n = 180n - 360$

$180n - 108n = 360$

$72n = 360$

$$n = \frac{360}{72}$$

Number of sides $n = 5$

100. What will be the total sides of a regular polygon whose exterior angle is 10°?

(a) 36 (b) 63 (c) 46 (d) 38

RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (a) each exterior angle of polygon

$$= \frac{360^0}{n\,(\text{number of sides})}$$

$$n = \frac{360}{10} = 36$$

101. The sum of all interior angles of a common polygon is 1440°. How many diagonals does the polygon have?

(a) 27 (b) 44
(c) 35 (d) 20

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

Ans : (c) n sum of polygon's interior angles of n sides

$(\sum\theta) = n \times 180 - 360$

$1440 = n \times 180 - 360$

$n \times 180 = 1440 + 360$

$n \times 180 = 1800$

$n = 10$

If n sides is in any polygon then number of their diagonals $D = \frac{n}{2}(n-3)$

So number of these diagonals.

$D = \frac{10}{2}(10-3)$

$D = 5 \times 7$

$D = 35$

102. The interior angle of a regular polygon is 150°. This polygon is a ___.

(a) Octagon (b) Decagon
(c) Dodecagon (d) Heptagon

RRB JE - 22/05/2019 (Shift-I)

Ans : (c)
each interior angle of a regular polygon with n sides.

$$= \frac{(n-2)\times 180}{n}$$

$$150 = \frac{(n-2)\times 180}{n}$$

150n = 180n – 360

30n = 360

$$n = \frac{360}{30} = 12$$

Therefore this polygon will be a dodecagon.

103. Select the incorrect statement

1) All sides of a regular polygon are equal.
2) Its all interior angles are equal.
3) The sum of its exterior angles is 360°
4) The sum of its interior angles are (n–2) × 360°

(a) Statement 1 (b) Statement 4
(c) Statement 2 (d) Statement 3

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

Ans : (b) Sum of regular polygon's interior angles

= (n – 2) × 180

Hence all other statement is true when statement (4) is false.

104. Each interior angle of a regular polygon is 36° greater than its exterior angle. Find out the number of sides of polygon–

(a) 4 (b) 10
(c) 8 (d) 5

RRB JE - 02/06/2019 (Shift-I)

Ans : (d) Suppose number of sides of polygon = n
As per the question,

$$\frac{(2n-4)\times 90}{n} - \frac{360°}{n} = 36°$$

180n - 360° – 360° = 36n

144n = 720°

$$n = \frac{720}{144}$$

Hence number of sides = 5

105. The sum of the angles of regular polygon is 2160°. The number of sides of polygon is–

(a) 12 (b) 16
(c) 18 (d) 14

RRB JE - 27/06/2019 (Shift-I)

Ans : (d) Sum of interior angles of regular Polygon.

= 2160°

(2n – 4) 90° = 2160°

(2n – 4) = 24

2n = 28

n = 14

106. What is the total number of sides of regular polygon with each interior angle equal to 168°?

(a) 20 (b) 30
(c) 15 (d) 31

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (b) Each interior angle of regular polygon

$$= \frac{(n-2)\pi}{n}$$

$$\frac{(n-2)180^0}{n} = 168^0$$

180°n–360°=168°n

12°n = 360°

n = 30

So, number of sidess (n) = 30

107. A polygon with 7 sides is called_____

(a) Nonagon (b) Hexagon
(c) Heptagon (d) Octagon

RRB NTPC 28.03.2016 Shift : 1

Ans : (c) A polygon with 7 sides is called heptagon.

108. The sum of the interior angles of a polygon is equal-

(a) (n – 2) 360 (b) (n – 3) 180
(c) (n – 2) 180 (d) (n + 2) 180

RRB NTPC 07.04.2016 Shift : 1

Ans : (c)
Sum of interior angles of polygon is (n –2) 180

109. In a polygon, each exterior angle is 120°, then the number of sides is-

(a) 6 (b) 4
(c) 3 (d) 5

RRB NTPC 07.04.2016 Shift : 3

Ans :(c)

$$\text{Number of sides of polygon} = \frac{360°}{\text{each exterior angle}}$$

$$= \frac{360}{120} = 3$$

110. In a regular polygon, each exterior angle is 60° then the number of sides:

(a) 7 (b) 5
(c) 6 (d) 8

RRB NTPC 26.04.2016 Shift : 2

Ans : (c) each exterior angle of polygon $= \frac{360^0}{n}$

$\therefore \quad n = \frac{360^0}{60^0} = 6$

111. The number of diagonals in a polygons with 27-sides is-

(a) 320 (b) 324
(c) 322 (d) 325

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (b) : The number of diagonals in a polygon with n-sides

$= \frac{n}{2} \times (n-3)$

$\because n = 27$

$\therefore$ number of diagonal $= \frac{27}{2} \times (27-3)$

$= \frac{27 \times 24}{2} = 27 \times 12 = 324$

112. The sum of all interior angles of a polygon is 1260°. Find the number of sides of the polygon.

(a) 9 (b) 8 (c) 10 (d) 11

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : Suppose numbr of sides of palygon = n

According to the question-

$(n-2)\pi = 1260, \quad (n-2)180 = 1260$

$n-2 = 7, \quad n = 7+2, \quad \boxed{n=9}$

113. The sum of the interior angles of a regular octagon is___

(a) 1080 (b) 720
(c) 540 (d) 900

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (a) Sum of interior angle of an regular polygon with n sides = (2n – 4) × 90°

∴ Sum of interior angle of an octagon = (2 × 8 – 4) × 90 = 1080

114. The measure of each interior angle of a pentagon is _____.

(a) 180^0 (b) 108^0
(c) 115^0 (d) 120^0

RRB Group-D – 05/10/2018 (Shift-II)

Ans. : (b) Exterior angle of any polygon,

$= \frac{360^0}{\text{number of sides}}$

exterior angle $= \frac{360^0}{5} = 72^0$

interior angle = 180° – 72° = 108°

115. What is the diagonal's number in a 19-sides?

(a) 304 (b) 114
(c) 152 (d) 76

RRB Group-D – 08/10/2018 (Shift-II)

Ans : (c) Number of diagonals in polygon with n sides

$= \frac{n(n-1)}{2} - n = \frac{19 \times (19-1)}{2} - 19$

$= \frac{19 \times 18}{2} - 19 = 19 \times 9 - 19$

$= 19\,(9-1) = 19 \times 8 = 152$

116. What will be the ratio of the measurement of the interior angles of a regular octagon to the interior angles of a regular dodecagon?

(a) 4 : 5 (b) 8 : 12
(c) 12 : 8 (d) 9 : 10

RRB Group-D – 12/10/2018 (Shift-III)

Ans : (d) Sum of interior angles of polygon with n sides = $(2n-4) \times 90^0$

each interior angle of octagon $= \frac{(2 \times 8 - 4) \times 90^0}{8}$

$= \frac{12 \times 90}{8} = \frac{1080}{8}$

each interior angle of dodecagon $= \frac{(2 \times 12 - 4) \times 90^0}{12}$

$= \frac{1800}{12}$

ratio $= \frac{1080}{8} : \frac{1800}{12} = 9:10$

117. The number of diagonals in a polygon of 26-sides will be–

(a) 325 (b) 300
(c) 299 (d) 650

RRB Group-D – 25/09/2018 (Shift-I)

Ans : (c) Diagonals number of polygon $= \frac{n}{2} \times (n-3)$

number of diagonals in polygon with 26 sides

$= \frac{26}{2}(26-3) = 13 \times 23 = 299$

118. The number of diagonals a polygon with in 19-sides will be –

(a) 161 (b) 133
(c) 171 (d) 152

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (d) : number of diagonals $= \frac{n}{2}(n-3)$

$= \frac{19}{2}(19-3) = \frac{19}{2} \times 16$

$= 19 \times 8 = 152$

119. The measure of each interior angle of a normal octagon is–

(a) 115^0 (b) 125^0
(c) 120^0 (d) 135^0

RRB Group-D – 04/10/2018 (Shift-II)

Ans : (d) Measure of interior angles of polygon

$$=\frac{(n-2)180}{n}$$

$$=\frac{(8-2)\times 180}{8} = 135^0$$

120. The value of each interior angle of a regular heptagon is _____

(a) 128.57^0 (b) 126.37^0
(c) 148.24^0 (d) 137.56^0

RRB Group-D – 05/10/2018 (Shift-I)

Ans. (a) : $\because$ each interior angle of regular polygon with n sides

$$=\frac{(2n-4)\times 90}{n}$$

$\therefore$ each interior angle of regular heptagon

$$=\frac{(2\times 7-4)\times 90}{7}$$

$$=\frac{900}{7}=128.57^0$$

121. What is the value of each interior angle of a regular pentagon?

(a) 148.24° (b) 137.56°
(c) 128.57° (d) 108°

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (d) Value of interior angle of polygon with n sides

$$= \frac{(n-2)}{n}180$$

each interior angle of regular pentagon

$$= \frac{(5-2)}{5}180$$

$$= \frac{3\times 180}{5} = \frac{540}{5} = 108°$$

122. The number of diagonals in a polygon with 28 sides is–

(a) 350 (b) 280
(c) 304 (d) 175

RRB Group-D – 11/12/2018 (Shift-I)

Ans. (a) : number of sides (n) = 28

Number of diagonals $=\frac{n(n-3)}{2}$

$$=\frac{28(28-3)}{2} = \frac{28\times 25}{2} = 350$$

123. What is the number of diagonals in a polygon with 17-sides:–

(a) 118 (b) 120
(c) 121 (d) 119

RRB Group-D – 31/10/2018 (Shift-III)

Ans : (d) Number of diagonals in Polygon $= \frac{n}{2}(n-3)$

$$=\frac{17}{2}(17-3) = \frac{17}{2}\times 14 = 119$$

124. A polygon has 9 sides. What will be its interior angle?

(a) 140^0 (b) 100^0
(c) 120^0 (d) 40^0

RRB NTPC 30.03.2016 Shift : 1

Ans : (a) each interior angle of regular polygon—

$$=\frac{(2n-4)\times 90^0}{n} = \frac{(2\times 9-4)\times 90^0}{9} = 140^0$$

125. The number of sides of a regular polygon whose internal angle is 150° will be–

(a) 15 (b) 13
(c) 12 (d) 14

RRB NTPC 17.01.2017 Shift-3

Ans : (c) Let number of sides = n

each interior angle of regular polygon $=\frac{(2n-4)90^0}{n}$

$$150=\frac{180n-360}{n}$$

150 n = 180n – 360

$30n = 360^0 \Rightarrow n = 12$

126. If each of the exterior angle of a regular polygon is 9°, then the number of sides of regular polygon will be–

(a) 30 (b) 40
(c) 45 (d) 36

RRB NTPC 17.01.2017 Shift-1

Ans : (b) each exterior angle of regular polygon

$$=\frac{360}{n}$$

So, $=\frac{360^0}{n}=9^0$

$n=\frac{360^0}{9^0}=40$ sides

127. Each exterior angle in a polygon is 72°. The number of sides is–

(a) 7 (b) 6
(c) 5 (d) 8

RRB NTPC 11.04.2016 Shift : 1

Ans : (c) Number of sides in a polygon

$$=\frac{360^0}{\text{each exterior angle}} = \frac{360^0}{72^0} = 5$$

128. In a regular polygon, each exterior angle is 36°. Find the number of its sides.

(a) 11 (b) 9
(c) 10 (d) 8

RRB NTPC 07.04.2016 Shift : 2

Ans : (c) In polygon

each exterior angle $= \frac{360^0}{\text{number of sides}}$

$\Rightarrow 36^0 = \frac{360^0}{\text{number of sides}}$

$\therefore$ Number of sides = 10

129. In a polygon, each exterior angle is 45°, then the number of sides is:–

(a) 7 (b) 6
(c) 8 (d) 9

RRB NTPC 22.04.2016 Shift : 2

Ans : (c) Number of sides of polygon

$= \frac{360°}{\text{each exterior angle}} = \frac{360}{45} = 8$

130. In a polygon, each exterior angle is 40°, then the number of sides is:

(a) 8 (b) 45
(c) 9 (d) 10

RRB NTPC 26.04.2016 Shift : 3

Ans : (c) Number of sides $= \frac{360°}{\text{each exterior angle}}$

$= \frac{360°}{40} = 9$

131. What is the number of sides of a regular congruent triangle?

(a) 6 (b) 4
(c) 3 (d) 2

RRB NTPC 30.04.2016 Shift : 3

Ans : (c) Sides number of any triangle is 3 and sum of three interior angle is 180°.

Type - 11

132. If two complementary angles are in the ratio of 11:7, then find the smaller angle.

(a) 35° (b) 55°
(c) 45° (d) 25°

RRB RPF SI – 11/01/2019 (Shift-II)

Ans : (a) Sum of two complementary angle is 90°

Small angle $= \frac{7}{11+7} \times 90 = \frac{7}{18} \times 90 = 35^o$

133. The supplement of an angle is 15° more than three times its complementary. What will be the value of the angle?

(a) 57.5° (b) 72.5°
(c) 52.5° (d) 65°

RRB Group-D – 16/10/2018 (Shift-III)

Ans : (c) Suppose angle = x°

According to the question

180°– x° = 3(90°–x°) + 15°

2x° = 270° + 15° – 180°

2x° = 105°

$\boxed{x = 52.5°}$

134. How many degrees does an angle that is 1/5 of its supplementary angle?

(a) 45° (b) 30°
(c) 60° (d) 75°

RRB NTPC 04.04.2016 Shift : 2

Ans : (b) Suppose an angle = x°

its supplementary angle = 5x°

sum of two supplementary angle = 180°

$x + 5x = 180°$

$6x = 180 \Rightarrow x = 30°$

required angle = 30°

135. If two supplementary angles are in the ratio 4:5, Find the larger angle.

(a) 80° (b) 50°
(c) 60° (d) 100°

RRB NTPC 16.04.2016 Shift : 1

Ans : (d) Suppose angle is 4x° and 5x° respectively

We know that sum of two suuplemetary angle is 180°.

$\therefore$ 4x° + 5x° = 180°

9x° = 180°

x° = 20°

$\therefore$ large angle (5x°) = 5 × 20° = 100°

136. If the ratio of two supplementary angles are 13:5, find the difference between the two.

(a) 60° (b) 70°
(c) 80° (d) 120°

RRB NTPC 18.04.2016 Shift : 2

Ans : (c) Let first angle = 13x°

Second angle = 5x°

then 13x° + 5x° = 180°

(sum of supplementary angle)

18x° = 180°, x° = 10°

first angle = 13 × 10° =130°

second angle = 5 × 10° = 50°

required difference = 130° – 50° = 80°

137. If (6y+70)° and (3y+47)° are supplementary angles, find the value of y.

(a) 12 (b) 15

(c) 7 (d) 10

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) $(6y + 70)° + (3y + 47)° = 180°$

$6y° + 70° + 3y° + 47° = 180°$

$9y° + 117° = 180°$

$9y° = 180° – 117°$

$9y° = 63°$, $y° = 7°$

138. If (7x + 5)° and (x + 5)° are complementary angles, then find value of x.

(a) 10°

(b) 20°

(c) 30°

(d) 40°

RRB NTPC 12.04.2016 Shift : 3

Ans : (a) We know that sum of complementary angles is equal to 90°

∴ According to the question,

$(7x + 5)° + (x+5)° = 90°$

$\Rightarrow 7x° + 5° + x° + 5° = 90°$

$\Rightarrow 8x° = 90° – 10°$

$8x° = 80°$

$x° = \frac{80°}{8°} = 10°$

139. The ratio of two complementary angles are 4:5, find the ratio of the square of the first angle to the square of the second angle.

(a) 16 : 25

(b) 64 : 125

(c) 100 : 125

(d) 25 : 16

RRB NTPC 28.04.2016 Shift : 2

Ans : (a) Suppose both complementary angle are $4x°$ and $5x°$ respectively

$\therefore 4x° + 5x° = 90°$

$9x° = 90°$

$x° = 10°$

∴ first complementary angle = 40°

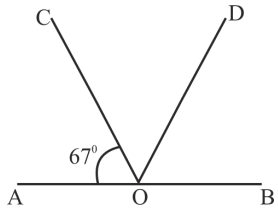
second complementary angle = 50°

∴ required ratio = $(40)^2 : (50)^2$

= 1600 : 2500 = 16 : 25

Type - 12

140. In the given figure, AOB is a straight line, ∠AOC = 67^0 and the bisector of ∠BOC is OD. What is the value of ∠BOD in degrees?



(a) 56° (b) 55.5°

(c) 55° (d) 56.5°

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (d) ∠AOC = 67°

∴∠BOC = 180 – 67

∠BOC = 113°

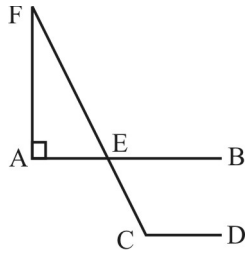
Bisector of ∠BOC is OD

So, $\angle BOD = \frac{\angle BOC}{2}$

$\angle BOD = \frac{113}{2}$

$\angle BOD = 56.5°$

141. In the figure, AB || CD and ∠AFE = 30° then ∠FCD is:

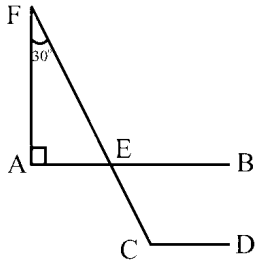


(a) 60° (b) 120°

(c) 90° (d) 45°

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) :



Given,

AB || CD

∠AFE = 30°

∠FCD = ?

ΔAEF से

$\angle AFE = 30°$ (given)

$\angle FAE = 90°$

$\because$ sum of all three angles of Δ is 180°

$\therefore 90° + 30° + \angle AEF = 180°$

$\therefore \angle AEF = 180° - 120° = 60°$

$\angle BEC = 60°$ (vertically opposite angle)

$\angle FEB + \angle BEC = 180°$ (alternate angle)

$\angle FEB + 60° = 180°$

$\angle FEB = 120°$

$\because \angle FEB = \angle FCD$ (corresponding angle)

$\therefore \angle FCD = 120°$

142. There are two vertical pillars of heights 8 m and 12 m. 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?

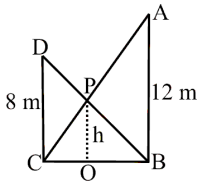
(a) 24/5 m (b) 22/7 m

(c) 29/6 m (d) 31/8 m

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (a) : given-

heights of pillars = 8 m, 12 m

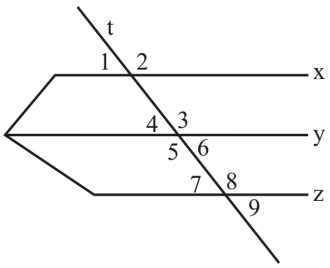


The rope cuts each other at a height of h meter from the ground.

from, $OP = \frac{a \times b}{a + b}$

$h = \frac{12 \times 8}{12 + 8} = \frac{12 \times 8}{20} = \frac{24}{5}$ m

143.



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?

(a) 2, 3, 5 (b) 2, 6, 8

(c) 1, 4, 9 (d) 4, 5, 7

RRB NTPC 31.03.2016 Shift : 1

Ans : (c) $\angle 1 = \angle 4$ (Corresponding angle)

$\angle 4 = \angle 6$ (Vertical opposite angle)

$\angle 6 = \angle 9$ (Corresponding angle)

So angles 1, 4, 9 are equal/same

144. Consider the following statements, and choose the correct option:–

When two straight lines intersect each other, then

1. Adjacent angles are complementary.

2. Opposite angles are complementary.

(a) Both 1 and 2 are incorrect.

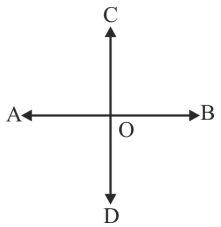
(b) Both 1 and 2 are correct.

(c) 1 is incorrect and 2 is correct.

(d) 1 is correct and 2 is incorrect.

RRB NTPC 16.04.2016 Shift : 1

Ans : (d)



When two straight lines intersect each other then adjacent angle be complementary angle.

145. Horizontal lines are on the same line.

(a) Equal in length

(b) Parallel to each other

(c) Intersecting each other

(d) From a triangle

RRB NTPC 29.04.2016 Shift : 1

Ans : (b) horizontal line on one line is parallel of each other.

27.

Elementary Statistics

Type - 1

1. The arithmetic mean of marks obtained by students of a class was 58. 20% of them achieved by the mean of the marks was 60 and the marks obtained by 30% the mean was 40. then find the mean of the marks obtained by remaining students?

(a) 65 (b) 66
(c) 68 (d) 70

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans : (c) Let students number is the class $=100$
and mean of marks obtained by the remaining 50% students = x

According to the question-

$$20\times60+30\times40+50\times x=100\times58$$
$$1200+1200+50\times x=5800$$
$$2400+50x=5800$$
$$50x=5800-2400=3400$$
$$x=\frac{3400}{50}=68$$

Then mean of marks obtained by the remaining student is 68.

2. The mean of the observations $x, x+3, x+5, x+8, x+9$ is 9. What will be the mean of the last three observations.

(a) $\frac{32}{3}$ (b) $\frac{31}{3}$
(c) $\frac{35}{3}$ (d) $\frac{34}{3}$

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

Ans : (d) Mean $=\frac{\text{sum of total term}}{\text{number of terms}}$

$$9=\frac{x+x+3+x+5+x+8+x+9}{5}$$
$45 = 5x + 25$
$5x = 45 - 25$
$5x = 20$
$x = 4$

Valuve of last three terms
$x + 5 = 4 + 5 = 9$
$x + 8 = 12$
$x + 9 = 13$

$$\text{Mean}=\frac{9+12+13}{3}=\frac{34}{3}$$

3. Find the missing frequency 'x' in this figure. Given that the arithmetic mean is 28.

Profit %	0-10	10-20	20-30	30-40	40-50	50-60
Number of shops	12	18	27	x	17	6

(a) 20 (b) 15
(c) 12 (d) 24

RRB JE - 30/05/2019 (Shift-II)

Ans : (a)

Profit %	x	Shop's number (f)	f.x
0 – 10	5	12	60
10 – 20	15	18	270
20 – 30	25	27	675
30 – 40	35	x	35x
40 – 50	45	17	765
50 – 60	55	6	330
		$\sum f=80+x$	$\sum fx=2100+35x$

arithmetic mean $=\frac{\sum fx}{\sum f}$

$$28=\frac{2100+35x}{80+x}$$
$2240 + 28x = 2100 + 35x$
$7x = 140$
$x = 20$

4. If the mean of the given observation K, 2K + 1, 2K + 5 , 2K + 9 is 30. then find the value of K?

(a) 15 (b) 5
(c) 12 (d) 20

RRB JE - 27/06/2019 (Shift-I)

Ans : (a) Mean $=\frac{\text{sum of total term}}{\text{number of terms}}$

$$30=\frac{K+2K+1+2K+5+2K+9}{4}$$
$120 = 7K + 15$
$7K = 105$
$K = 15$

5. Since a mistake of 68 instead of 86 was typed, then the mean of the class was increased by 1/2. What is the total number of students?

(a) 34 (b) 36
(c) 38 (d) 40

RRB RPF Constable – 19/01/2019 (Shift-II)

Ans : (b) Let number of students is x and mean of all class y mark

So total marks got by the students = xy

According to the question-

$xy + (86 - 68) = x\left(y + \frac{1}{2}\right)$

$\Rightarrow xy + 18 = xy + \frac{x}{2}$

$\Rightarrow \frac{x}{2} = 18$

$\Rightarrow x = 18 \times 2$

$\Rightarrow x = 36$

So students number = 36

6. The mean of the five observation *x*, *x* +3, *x* + 4, *x* + 6 and *x* + 7 is 11. What will be the mean of the last three observations?

(a) 12 (b) 12.67
(c) 19 (d) 13

RRB RPF SI – 16/01/2019 (Shift-II)

Ans : (b) Mean $= \frac{\text{sum of total term}}{\text{number of terms}} = \frac{\sum x}{N}$

$$11 = \frac{x + (x+3) + (x+4) + (x+6) + (x+7)}{5}$$

$55 = 5x + 20$

$35 = 5x$

$x = \frac{35}{5} = 7$

Mean of last three observation

$$= \frac{(x+4) + (x+6) + (x+7)}{3}$$

$$= \frac{(7+4) + (7+6) + (7+7)}{3} = \frac{38}{3} = 12.67$$

7. The following list is given for the frequency distribution of diameter (D) of 101 steel balls.

D (mm)	43	44	45	46	47	48
Number	13	15	22	21	16	14

Find the mean of the diameter in mm.

(a) 45.4 (b) 45.5
(c) 45.7 (d) 45.6

RRB Paramedical Exam –20/07/2019 (Shift-I)

Ans : (b) –

D (mm) (x)	43	44	45	46	47	48
n. (f)	13	15	22	21	16	14
fx	559	660	990	966	752	672

Mean $= \frac{\sum fx}{\sum f}$

$$= \frac{559 + 660 + 990 + 966 + 752 + 672}{13 + 15 + 22 + 21 + 16 + 14}$$

$$= \frac{4599}{101} = 45.53$$

8. The mean of the marks obtained by 40 students in an examination is 72.5. Since a mistake of 48 instead of 84 was written. Find the right mean?

(a) 71.3 (b) 72.4
(c) 77.5 (d) 73.4

RRB RPF SI – 13/01/2019 (Shift-III)

Ans : (d) As per question sum of marks obtained by 40 students right mean = 40 × 72.5 = 2900

According to the question-

right mean $= \frac{2900 + (84 - 48)}{40}$

$$= \frac{2936}{40} = 73.4$$

9. If the mean of the given data 2, x, 7, 3, y, 9, 6, where x and y are constant is 6. If x and y replaced by 3x+1 and y+3 respectively, then mean increased by 2. Find the value of x?

(a) 7 (b) 8
(c) 10 (d) 5

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (d) Mean $= \frac{\text{sum of total marks}}{\text{number of marks}}$

$6 = \frac{2 + x + 7 + 3 + y + 9 + 6}{7}$

$x + y + 27 = 42$

$x + y = 42 - 27$

$x + y = 15$ .....(i)

According to the question,

$\frac{27 + 3x + 1 + y + 3}{7} = 8$

$31 + 3x + y = 56$

$3x + y = 56 - 31$

$3x + y = 25$ .....(ii)

Subtracting equation (i) from equation (ii)–

$3x + y = 25$

$x + y = 15$

$2x = 10$

$x = 5$

10. The mean of the 8 smallest numbers in a group is 17. While the mean of the all numbers is 20. If the smallest eight numbers leave, then the mean of the reamining number is 22. So find out the total numbers in the group?

(a) 20 (b) 22
(c) 18 (d) 19

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (a) : Let total numbers in group = x

According to the question-

$8\times17+(x-8)22=x\times20$

$136+22x-176=20x$

$-40+22x=20x$

$2x=40$

$x=20$

Total number in group = 20

11. The mean of 21 observations (all defferent) is 40. If the meadian increased by 21 them the value of observations increased, the mean of observations will be.

(a) 50 (b) 50.5
(c) 30 (d) 45

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (a) 21 Total sum of observation = 21 × 40 = 840

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

+21

If the value of median is increased to 21, the value of the observations increases.

increase value of observation = (21 – 11) × 21 = 210

Mean of observation = $\frac{\text{Total mean increase value}}{21}$

$=\frac{840+210}{21}=50$

12. 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. Find the mean of the 6 greatest numbers?

(a) 16.50 (b) 16.00
(c) 17.00 (d) 15.50

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (b)

Mean of the 8 smallest number in the group = 12.5

sum of the smallest eight number = 8 × 12.5 = 100

mean of all 14 number = 14

14 sum of 14 number = 14 × 14 = 196

sum of 6 largest number = 196–100 = 96

mean of 6 largest number $=\frac{96}{6}=16$

So intended mean

13. The arithmetic mean of a set of numbers is 12. The mean of another set of numbers is 15. If combined mean of both sets is 12.5. Then find the ratio of frequency of both sets?

(a) 3 : 1 (b) 5 : 1
(c) 3 : 2 (d) 5 : 2

RRB Group-D – 24/10/2018 (Shift-II)

Ans. (b) : Let the number of terms in the first set of number (frequency) = n_1

and the number of terms in the second set of number (frequency)= n_2

According to the question−

$\Rightarrow 12\times n_1+15\times n_2=(n_1+n_2)\times12.5$

$\Rightarrow 12n_1+15n_2=12.5n_1+12.5n_2$

$\Rightarrow 15n_2-12.5n_2=12.5n_1-12n_1$

$\Rightarrow 2.5n_2=.5n_1\Rightarrow\frac{n_1}{n_2}=\frac{5}{1}$

So ratio both group's frequency = 5 : 1

14. Find the median of the given observation – 67, 34, 57, 32, 12, 92, 51, 62, 62 57, 93 and 5

(a) 56.5 (b) 32
(c) 57 (d) 62

RRB Group-D – 06/12/2018 (Shift-III)

Ans. (c) : Writing the given numbers in ascending order

5, 12, 32, 34, 51, $\boxed{57}$, $\boxed{57}$, 62, 62, 67, 92, 93

total numbers (n) =

$$\text{median}\left[\frac{\left(\frac{n}{2}\right)\text{st term}+\left(\frac{n}{2}\right)\text{st term}}{2}\right]$$

$$=\left[\frac{6^{th}\text{ term}+7^{th}\text{ term}}{2}\right]$$

$$=\left[\frac{57+57}{2}\right]=\frac{114}{2}=57$$

15. If the mean of the observation set x_1, x_2 …..x_{10} is 20. Then find the mean of the set x_1+4, x_2+8…..x_{10}+40?

(a) 34 (b) 32
(c) 42 (d) 52

RRB Group-D – 15/11/2018 (Shift-I)

Ans : (c) $\frac{x_1+x_2+x_3+----x_{10}}{10}=20$

$x_1+x_2+x_3+----x_{10}=200$ ----(i)

then mean =

$$\frac{(x_1+4)+(x_2+8)+(x_3+12)+----(x_{10}+40)}{10}$$

$$=\frac{x_1+x_2+x_3+----x_{10}+4+8+12+---40}{10}$$

$$=\frac{200+5(4+40)}{10} \quad \text{[from equation(i)]}$$

$$=\frac{200+220}{10}=\frac{420}{10}=42$$

16. In an examination, the mean of scores of the 36 students was 72.50. On revising the points, it was found that a student mark was written 65 by mistake instead of 56. Then find the carry mean?

(a) 71.50 (b) 72.25
(c) 72 (d) 73

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (b) Right mean $=\frac{36\times 72.50+(56-65)}{36}$

$$=\frac{2610-9}{36}=\frac{2601}{36}=72.25$$

17. The mean score of a group of 17 members was 15, where as mean score of another group of n members was 12. If their combined mean was 13.7, then find the value of n?

(a) 12 (b) 13
(c) 14 (d) 11

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (b) Total score of 17 members = 17 ×15 = 255
Total score of n members = 12n
According to the question,

$$\frac{255+12n}{17+n}=13.7$$

13.7n + 232.9 = 255 + 12n
13.7 n – 12n = 255 – 232.9
1.7n = 22.1
n = 13

18. The mean weight of six children is 17.5 kg. If the person weights of five children are 14, 19, 23, 21 and 13 kg respectively, find the weight of the sixth child.

(a) 17 kg (b) 15 kg
(c) 16 kg (d) 18 kg

RRB Group-D – 05/11/2018 (Shift-III)

Ans. (b) : Suppose the weight of sixth child is x kg,

$$\therefore\ 17.5=\frac{14+19+23+21+13+x}{6}$$

105.0 = 90 + x
x = 15
So weight of sixth child = 15kg

19. On the basis of given below data. Find out the mean of the digits?

marks	0	1	2	3	4	8
Number of students	6	5	4	3	2	5

(a) 3.3 (b) 2.8
(c) 2.5 (d) 3.2

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (b)

Mark (x)	0	1	2	3	4	8	
Number of students (f)	6	5	4	3	2	5	Σf=25
fx	0	5	8	9	8	40	Σfx=70

Mean $=\frac{\sum fx}{\sum f}$

$$=\frac{70}{25}=2.8$$

20. The four numbers a, b, c and d are such that their overall average is 23. The average of a and b is 19.5. then find out the average of c and d?

(a) 26.5 (b) 25.5
(c) 24.5 (d) 27.5

RRB Group-D – 01/10/2018 (Shift-I)

Ans. (a) :
The four numbers are a, b, c, d which average is 23
Total of all numbers = 4 × 23 = 92
Total of a and b = 2 × 19.5 = 39.0
Sum of c and d = sum of 4 number -sum of 2 number
= 92 – 39
Sum of c and d = 53
average of c and d = $\frac{53}{2}$
average of c and d = 26.5

21. If the mean of the numbers 27+x, 31+x, 89+x, 107+x and 156 + x is 82. Then find the mean of the numbers 130+x, 126+x, 68+x, 50+x and 1+x?

(a) 30 (b) 75
(c) 50 (d) 70

RRB Group-D – 23/09/2018 (Shift-II)

Ans : (b) mean $=\frac{\text{sum of terms}}{\text{number of terms}}$

$$\Rightarrow\frac{27+x+31+x+89+x+107+x+156+x}{5}=82$$

$\Rightarrow 410+5x=410$

$\Rightarrow 5x=410-410$

$\Rightarrow 5x=0$

$$x=\frac{0}{5}=0$$

again

$$\frac{130+x+126+x+68+x+50+x+1+x}{5}\left(\text{Putting } x=0\right)$$

$$=\frac{130+126+68+50+1}{5}=\frac{375}{5}=75$$

intended mean = 75

22. If the arithmetic mean of the series x_1, x_2, x_3, …….x_n is 1. Then find the mean of the series $\frac{x_1}{k}, \frac{x_2}{k}, \frac{x_3}{k}, \ldots\ldots\ldots \frac{x_n}{k}$ (where k > 0)?

(a) $\frac{1}{k}$ (b) k

(c) $\frac{2}{k}$ (d) 2k

RRB Group-D – 19/09/2018 (Shift-I)

Ans : (a) $\text{mean} = \frac{\text{sum of terms}}{\text{number of terms}}$

$$1=\frac{x_1+x_2+x_3+\text{------}x_n}{n}-----(I)$$

So,

$$\text{mean}=\frac{\left(\frac{x_1}{k}+\frac{x_2}{k}+----\frac{x_n}{k}\right)}{n}$$

$$\text{mean}=\frac{1}{k}\frac{\left(x_1+x_2+x_3+---x_n\right)}{n}$$

$\text{mean}=\frac{1}{k}$ {∵ from equation (I)}

23. If the arithmetic mean of 10 numbers is 35 and each number is increased by 2, find the mean of the new set of numbers.

(a) 28 (b) 34

(c) 40 (d) 37

RRB NTPC 05.04.2016 Shift : 3

Ans :(d) ∵ Two be added to each number

∴ Two will also be added to the parallel mean.

So new range mean = 35 + 2 = 37

24. The mean of the marks scored by 12 students of a class is 67.4. If the mean of another class consisting of 15 students is 72.3, find the their combined mean?

(a) 70.12 (b) 69.85

(c) 71.23 (d) 68.94

RRB NTPC 03.04.2016 Shift : 2

Ans :(a) Total of arks obtained by 12 students

15 Total of marks obtained by =15×72.3 = 1084.5

Joint mean of both classes $=\frac{808.8+1084.5}{12+15}$

total of marks obtained by 12 students $=\frac{1893.3}{27}=70.12$

25. 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) 18 (b) 17.5

(c) 19 (d) 18.5

RRB NTPC 28.03.2016 Shift : 2

Ans :(a) Mean of four observation = 17.5

Sum of four observation = 17.5 × 4 = 70.0

Adding new observation = 70 + 20 = 90

New mean $=\frac{90}{5}=18$

26. The arithmetic mean of 20 observation is 15.5, later it is found that an observation written 42 by mistake instead of 24. Find out the correct mean?

(a) 14 (b) 14.4

(c) 14.6 (d) 15

RRB NTPC 28.03.2016 Shift : 3

Ans : (c) Total sum of 20 inspection but was mistakenly read 42 instead of 24.

∴ Correct sum = 310 + 24 – 42 = 292

So correct mean $=\frac{292}{20}=14.6$

27. The mean of 22 observations is 10. When two more observations is included then new mean becomes 11. What will be the mean of two new observations?

(a) 19 (b) 20

(c) 21 (d) 22

RRB NTPC 19.04.2016 Shift : 1

Ans : (d) Mean of two new observation

$$=\frac{24\times11-22\times10}{2}$$

$$=\frac{264-220}{2}=\frac{44}{2}=22$$

28. The mean of 8 observations is 10. Three more observations is added the new mean becomes 12. Find out the mean of three new observations?

(a) 16 (b) 18

(c) 17.33 (d) 15

RRB NTPC 16.04.2016 Shift : 2

Ans : (c) Total sum of 8 observation = 8×10 = 80

Sum of observation on inclusion three other observation = 11×12 = 132

∴ Sum of three new observation = 132 – 80 = 52

So mean of three new observations $=\frac{52}{3}=17.33$

29. Find out the mean of the given below data–
$1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}$

(a) $\frac{15}{18}$ (b) $\frac{13}{18}$
(c) $\frac{7}{9}$ (d) $\frac{8}{9}$

RRB NTPC 11.04.2016 Shift : 1

Ans : (b) $\text{Mean} = \frac{\text{Sum of numbers}}{\text{number of numbers}}$

$$= \frac{1+\frac{1}{2}+\frac{1}{2}+\frac{3}{4}+\frac{1}{4}+2+\frac{1}{2}+\frac{1}{4}+\frac{3}{4}}{9}$$

$$= \frac{\frac{4+2+2+3+1+8+2+1+3}{4}}{9} = \frac{26}{36} = \frac{13}{18}$$

30. If the mean of the given data 18, 16, 22, 13, ? is 16 then find the value of '?'.

(a) 9 (b) 11
(c) 10 (d) 12

RRB NTPC 06.04.2016 Shift : 1

Ans : (b)

$$\text{Mean} = \frac{18+16+22+13+?}{5}$$

$$16 = \frac{69+?}{5} \Rightarrow 69+? = 16\times 5$$

$$? = 80-69 = 11$$

31. The mean of 9 observations is 18. Four more observations is added, the new mean becomes 19. What will be the mean of four new observations?

(a) 21.25 (b) 20.25
(c) 19 (d) 22

RRB NTPC 22.04.2016 Shift : 3

Ans : (a) Sum of 9 observations = 18 × 9 = 162
Sum of 13 observation = 19 × 13 = 247
So mean of four new observations $= \frac{247-162}{4}$

$$= \frac{85}{4} = 21.25$$

32. Find out the mean of first 6 prime numbers?

(a) 14/3 (b) 3
(c) 41/6 (d) 13/2

RRB NTPC 29.03.2016 Shift : 1

Ans : (c) First 6 prime numbers $= 2, 3, 5, 7, 11, 13$

$$\therefore \text{ mean } = \frac{2+3+5+7+11+13}{6} = \frac{41}{6}$$

Type - 2

33. Find out the median of the given observations– (a + 4), (a – 3.5), (a – 2.5), (a – 3), (a – 2), (a + 0.5), (a + 5) and (a – 0.5).

(a) a – 1.25 (b) a – 2.5
(c) a – 1.5 (d) a – 0.75

RRB JE - 27/05/2019 (Shift-II)

Ans : (a) Writing the number in ascending –
(a–3.5), (a–3), (a–2.5), (a–2), (a–0.5), (a+0.5), (a+4), (a+5)
order (n) = 8(sum)

$$\text{median} = \frac{\left(\frac{n}{2}\right)\text{th term} + \left(\frac{n}{2}+1\right)\text{st terms}}{2}$$

$$= \frac{4^{th}\text{ term} + 5^{th}\text{ term}}{2}$$

$$= \frac{a-2+a-0.5}{2}$$

$$= \frac{2a-2.5}{2}$$

$$= \boxed{a-1.25}$$

34. Find out the median of the given below data?

In ₹ daily income	10-14	15-19	20-24	25-29	30-34	35-39
No. of employee	5	10	15	20	10	5

(a) 20 (b) 12.33
(c) 26.4 (d) 25.13

RRB JE - 30/05/2019 (Shift-I)

Ans : (d)

daily income in (₹)	Number of staff	Cumulative frequency
9.5 – 14.5	5	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

$$\therefore \frac{n}{2} = \frac{65}{2} = 32.5$$

it is included in the cumulative frequency 50
So median class interval will be (24.5 – 29.5)
minimum limit (L) = 24.5
square height (h) = 5
frequency (f) = 20

The cumulative frequency of the class before the median class. (cf) = 30

$$\therefore \text{ median } = L + \left(\frac{\frac{n}{2} - cf}{f}\right) \times h$$

$$= 24.5 + \left(\frac{32.5 - 30}{20}\right) \times 5$$

$$= 24.5 + \frac{2.5}{4}$$

$$= 24.5 + 0.625$$

$$= 25.125 \approx 25.13$$

35. Find out the median of the positive factore of 48.

(a) 16 (b) 12
(c) 8 (d) 7

RRB RPF SI – 12/01/2019 (Shift-III)

Ans : (d) all positive factors of 48 are–

$1, 2, 3, 4, \boxed{6}, \boxed{8}, 12, 16, 24, 48$

n = 10 (even)

$$\therefore \text{ median} = \frac{10^{th}}{2} \text{ terms value } + \left(\frac{10}{2} + 1\right) \text{st terms value}$$

$$\frac{5^{th} \text{ terms value} + 6^{th} \text{ terms value}}{2}$$

$$= \frac{6+8}{2} = \frac{14}{2} = 7$$

36. What will be the median of the given below data 1.9, 8.4, 3.6, 5.8

(a) 5.1 (b) 4.7
(c) 5.2 (d) 5.6

RRB Paramedical Exam –21/07/2019 (Shift-III)

Ans : (b) Ascending order – 1.9, 3.6, 5. 8, 8.4

n = 4 (even)

$$\text{Median} = \frac{1}{2}\left[\frac{n^{nd}}{2} \text{ term} + \left(\frac{n}{2} + 1\right)^{st} \text{ term}\right]$$

$$\text{Median } = \frac{1}{2}\left[2\text{nd term} + 3^{rd} \text{ term}\right]$$

$$= \frac{1}{2}[3.6 + 5.8] = \frac{1}{2} \times 9.4 = 4.7$$

37. Find out the median of the given below data-

$$\mathbf{1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}}$$

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$
(c) $\frac{1}{6}$ (d) $\frac{3}{4}$

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (b) Putting in ascending order to the figure-

$$\frac{1}{4}, \frac{1}{4}, \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{3}{4}, 1, 2$$

n = 9 (Odd)

$$\text{Median} = \left(\frac{n+1}{2}\right) \text{st term } = \left(\frac{9+1}{2}\right) \text{rd term}$$

$$= 5^{th} \text{ term } = \frac{1}{2}$$

38. What will be the median of the given below data 5, 2, 2, 7, 3 and 8

(a) 3.5 (b) 4.5
(c) 4 (d) 3

RRB RPF Constable – 22/01/2019 (Shift-III)

Ans : (c) 5, 2, 2, 7, 3, 8

Writing in ascending order

2, 2, 3, 5, 7, 8

n = 6

$$\text{Median} = \frac{\frac{n^{th}}{2} \text{ terms value} + \left(\frac{n}{2} + 1\right)^{st} \text{ term value}}{2}$$

$$= \frac{3+5}{2}$$

$$= \frac{8}{2} = 4$$

39. If a school has 50 girls of class X the height survey data (in cm) is as follows:

Length (in cm)	No. of girls
less than 140 cm	4
less than 145cm	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.

(a) 144.03 cm (b) 148.89 cm
(c) 145.03 cm (d) 149.03 cm

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (b)

length (in cm)	frequency	Cumulative frequency
135–140	4	4
140–145	7	11
145–150	18=f	29
150–155	$11=f_b$	40
155–160	6	46
160–165	4	50

$\Sigma f = N = 50$

$$\text{Median} = L + \left(\frac{\frac{N}{2} - f_b}{f}\right) \times i \quad \text{where } \frac{N}{2} = \frac{50}{2} = 25$$

$$= 145 + \frac{(25-11)}{18} \times 5 \qquad L - \text{low limit}$$

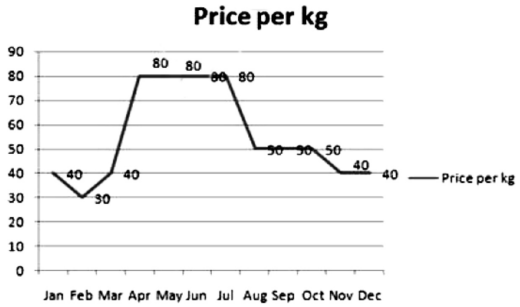
$$= 145 + \frac{70}{18} \qquad f - \text{original frequency}$$

$145 + 3.88 = 148.88 \approx 148.89$

i – original frequency

f_b – below frequency of original frequency

40. The following graph shows the price of 12 months of cabbage what is the median of their values?



(a) 55 (b) 40
(c) 50 (d) 60

RRB Group-D – 17/09/2018 (Shift-III)

Ans. (c) : Writing in ascending order to the given numbers, 30, 40, 40, 40, 40, 50, 50, 50, 80, 80, 80, 80

Total number (n) = 12(even)

$$\text{Median} = \frac{\left(\frac{n}{2}\right)^{th} \text{terms value} + \left(\frac{n}{2}+1\right)^{th} \text{terms value}}{2}$$

$$= \frac{\left(\frac{12}{2}\right)^{st} \text{terms} + \left(\frac{12}{2}+1\right)^{st} \text{terms}}{2}$$

$$= \frac{6^{th} \text{ term} + 7^{th} \text{ term}}{2} = \frac{50+50}{2} = 50$$

41. The mean of the given data 12, 13, 15, 18, X, 28, 18, 12, 6 and 8 is 15. Find out the median of the given data?

(a) 14.5 (b) 13.5
(c) 14 (d) 13

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (c) : mean of given 12, 13, 15, 18, x, 28, 18, 12, 6, 8

mean = 15

$$\frac{6+8+12+12+13+15+18+18+28+x}{10} = 15$$

= 130 + x = 150

x = 150 – 130 = 20

writing in ascending order to the figure

$\therefore 6, 8, 12, 12, \boxed{13, 15}, 18, 18, 20, 28$

terms number here = 10(even)

$$\text{mediam} \cdot \frac{1}{2}\left[\frac{n}{2}\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}\right]$$

$$= \frac{1}{2}\left[\left(\frac{10}{2}\right)\text{th term} + \left(\frac{10}{2}+1\right)\text{th term}\right]$$

$$= \frac{1}{2}[5^{th} \text{ term} + 6^{th} \text{ term}]$$

$$\text{median} = \frac{13+15}{2} = \frac{28}{2} = 14$$

42. Find the median of the firt 10 numbers of the Fibonacci series: A Fibonacci number of that series is the sum of two last numbers first two Fibonacci numbers arte 0 and 1 respectively.

(a) 4 (b) 3
(c) 5 (d) 4.5

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (a)

Number = 0, 1, 1, 2, 3, 5, 8, 13, 21, 34

terms number(n) = 10 (even)

$$\text{median} = \frac{(5\text{th term} + 6\text{th term})}{2} = \frac{3+5}{2} = 4$$

43. What will be the median of the given data– 5, 17, 68, 17, 32, 45, 64, 37, 93, 45, 78, 32, 35 and 45

(a) 41 (b) 44
(c) 42 (d) 43

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (a) : Writing is ascending order of numbers-

5, 17, 17, 32, 32, 35, 37, 45, 45, 45, 64, 68, 78, 93

terms number = 14 (even)

$$\text{median} = \frac{1}{2}\left[\frac{n}{2}\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}\right]$$

$$= \frac{1}{2}(7^{th} \text{ term} + 8^{th} \text{ term})$$

$$= \frac{1}{2}[37+45]$$

$$= \frac{82}{2} = 41$$

44. Find the median of the all prime number from 1 to 55.

(a) 22 (b) 20
(c) 21 (d) 19

RRB Group-D – 08/10/2018 (Shift-III)

Ans : (c) According to the questions

All prime number of till 1 to 55 = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53

n = 16 (even)

$$\therefore \text{ median} = \frac{\left(\frac{n}{2}\right)\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}}{2}$$

$$= \frac{\left(\frac{16}{2}\right)\text{th term} + \left(\frac{16}{2}+1\right)\text{th term}}{2}$$

$$= \frac{8\text{th term} + 9\text{th term}}{2}$$

$$= \frac{19+23}{2}$$

$$= \frac{42}{2}$$

$$= 21$$

So median of all prime numbers between 1 to 55 = 21

45. Points scored by 12 people are 6, 17, 8, 9, 16, 10, 15, 21, 9, 11, 12 and 16 find the median.

(a) 11.5 (b) 11.6
(c) 10.4 (d) 12

RRB Group-D – 01/10/2018 (Shift-II)

Ans. (a) : Putting in ascending order to the series.

6, 8, 9, 9, 10, 11, 12, 15, 16, 16, 17, 21

$\because$ n = 12 (even)

$$\text{Median} = \left[\frac{\left(\frac{n}{2}\right)\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}}{2}\right]$$

$$= \left[\frac{\left(\frac{12}{2}\right)\text{th term} + \left(\frac{12}{2}+1\right)\text{th term}}{2}\right]$$

$$= \frac{6\text{th term} + 7\text{th term}}{2} = \frac{11+12}{2}$$

$$= \frac{23}{2} = 11.5$$

46. By a Kabbaddi team, in a series of matches obtained marks are given as follows–
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?

(a) 11 (b) 12
(c) 16 (d) 15

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (b) : Writing in increasing order of digits− 2, 5, 7, 7, 8, 8, 10, 10, 14, 15, 17, 18, 24, 27, 28, 48

total terms number(n) is = 16(even)

$$\text{median} = \left[\left(\frac{n}{2}\right)^{\text{th}} \text{term} + \left(\frac{n}{2}+1\right)^{\text{th}} \text{term}\right] \div 2$$

$$= \frac{8\text{th term} + 9\text{th term}}{2} = \frac{10+14}{2} = \frac{24}{2} = 12$$

47. What will be the median of the given following data–
7, 21, 2, 17, 3, 13, 7, 4, 9, 7, 9

(a) 4 (b) 17
(c) 7 (d) 9

RRB NTPC 17.01.2017 Shift-3

Ans : (c) Ascending order to given figure−

2, 3, 4, 7, 7, $\boxed{7}$, 9, 9, 13, 17, 21

n = 11 (odd)

$$\text{median} = \frac{11+1}{2} \text{ st term} = 6 \text{ term} = 7$$

48. Find the median of the given following data–
9, 0, 2, 8, 5, 3, 5, 4, 1, 5, 2, 7

(a) 5 (b) 6.5
(c) 4.5 (d) 4

RRB NTPC 04.04.2016 Shift : 2

Ans : (c) Ascending order to the the given figure—

0, 1, 2, 2, 3, 4, 5, 5, 5, 7, 8, 9

n = 12 even

$$\text{median} = \frac{1}{2}\left[\frac{12}{2}\text{th term} + \left(\frac{12}{2}+1\right)\text{st term}\right]$$

$$= \frac{1}{2}[6\text{th term} + 7\text{th term}]$$

$$= \frac{1}{2}(4+5) = \frac{9}{2} = 4.5$$

49. The median of the following numbers arranged in ascending order is 2.5, so find x?
0, 0, 1, 1, 2, 2, x, 3, 3, 4, 5, 7

(a) 2 (b) 3
(c) 4 (d) 0

RRB NTPC 03.04.2016 Shift : 2

Ans : (b) 0, 0, 1, 1, 2, 2, x, 3, 3, 4, 5, 7

n = 12 (even)

$$\text{median} = \frac{1}{2}\left[\frac{n}{2}\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}\right]$$

$$2.5 = \frac{1}{2}\left[\frac{12}{2}\text{th term} + \left(\frac{12}{2}+1\right)\text{th term}\right]$$

$$= \frac{1}{2}[6\text{th term} + 7\text{th term}]$$

$$2.5 = \frac{1}{2}[2+x]$$

$$\Rightarrow 2 + x = 5$$

$$\Rightarrow x = 3$$

50. For the given following data what will be the median? 25, 23, 26, 29, 31, 39 and 11

(a) 25 (b) 26
(c) 29 (d) 31

RRB NTPC 02.04.2016 Shift : 1

Ans : (b) Writing in ascending order,
11, 23, 25, 26, 29, 31, 39
Number of terms = 7 (odd)

$\therefore$ Median $=\left(\frac{7+1}{2}\right)$st tern = 4th term = 26

51. Find the median of the given number– 55, 53, 59, 56, 61, 69, and 31

(a) 55 (b) 56
(c) 59 (d) 61

RRB NTPC 02.04.2016 Shift : 2

Ans : (b) Writing in ascending order to the given numbers –

31, 53, 55, 56, 59, 61, 69
n = 7 (odd)

$$\text{median} = \frac{n+1}{2}\text{ st term} = \left(\frac{7+1}{2}\right)\text{st term}$$
= 4th term
= 56

52. What will be the median of the given number. 2, 3, 4, 3, 0, 5, 1, 1, 3, 2

(a) 0 (b) 3
(c) 2.5 (d) 2.4

RRB NTPC 31.03.2016 Shift : 3

Ans : (c) 2, 3, 4, 3, 0, 5, 1, 1, 3, 2 writing in ascending order – 0, 1, 1, 2, 2, 3, 3, 4, 5
$n = 10$ (even)

$$\text{median} = \frac{1}{2}\left[\frac{n}{2}\text{th term} + \left(\frac{n}{2}+1\right)\text{st term}\right]$$
$$= \frac{1}{2}\left[\frac{10}{2}\text{th term} + \left(\frac{10}{2}+1\right)\text{st term}\right]$$
$$= \frac{1}{2}[5\text{th term} + 6\text{th term}]$$
$$= \frac{1}{2}(3+2) = \frac{5}{2} = 2.5$$

53. If the numbers 3, 6, 7, 11, x, 15, 19, 20, 25 and 28 are in ascending order and median of these numbers are 13, then find the value of x?

(a) 11 (b) 12
(c) 13 (d) 14

RRB NTPC 28.03.2016 Shift : 3

Ans : (a)
Given number 3, 6, 7, 11, x, 15, 19, 20, 25, 28 here terms number = 10 (even)

$$\therefore \quad \text{Median} = \frac{\frac{n}{2}\text{th term} + \left(\frac{10}{2}+1\right)\text{th term}}{2}$$

$$13 = \frac{\left(\frac{10}{2}\right)\text{th term} + \left(\frac{10}{2}+1\right)\text{th term}}{2}$$

$$13 = \frac{5\text{th term} + 6\text{th term}}{2}$$

26 = x + 15
x = 11

54. What will be the median of the given data as follows -3, 4, 0, 4, -2, -5, 1, 7, 10, 5

(a) 2 (b) 2.5
(c) 2.75 (d) 3

RRB NTPC 11.04.2016 Shift : 2

Ans : (b) Writing in ascending order to the figure -
–5, –3, –2, 0, 1, 4, 4, 5, 7, 10
n = 10 (even)

$$\therefore \text{ median} = \frac{1}{2}\left[\frac{n}{2}\text{th term} + \left(\frac{n}{2}+1\right)\text{th term}\right]$$
$$= \frac{1}{2}[5\text{th term} + 6\text{th term}]$$
$$= \frac{1}{2}\times[1+4]$$
= 2.5

55. Find out the median of the given numbers as follows 3, 3, 5, 7, 8, 8, 8, 9, 11, 12, 12

(a) 9 (b) 7
(c) 8 (d) 12

RRB NTPC 19.01.2017 Shift : 3

Ans : (c) Writing in ascending order to the figure-
3, 3, 5, 7, 8, 8, 8, 9, 11, 12, 12
$\Rightarrow$ terms number(n) = 11
if terms number are odd then-

$$\text{median} = \frac{n+1}{2}\text{ th term}$$
$$= \frac{11+1}{2}\text{ th term} = 6\text{th term} = 8$$

56. What will be the median of the given data- 87, 21, 53, 12, 86, 98, 23, 64, 87, 23, 23, 87, 56, 12, 53

(a) 53.5 (b) 54
(c) 53 (d) 56.5

RRB NTPC 28.04.2016 Shift : 3

Ans : (c) Arranging in ascending order to the given data–
12, 12, 21, 23, 23, 23, 53, 53, 56, 64, 86, 87, 87, 87, 98
Total number of digits (n) = 15 (odd)

$$\text{median} = \left(\frac{n+1}{2}\right)\text{st terms value}$$

So, median $=\left(\frac{15+1}{2}\right)$st tems value = 8th terms value

So median = 53

57. The median of the following term was determined: 32, 12, 23, 17, 28, 25, 43. Later it was found that 17 was written by mistake instead of 29. Now what will be the changeable median?

(a) 29 (b) 17
(c) 23 (d) 28

RRB NTPC 29.04.2016 Shift : 1

Ans : (d) 32, 12, 23, 17, 28, 25, 43
arranging in ascending
12, 23, 25, 28, 29, 32, 43
n = 7 (odd)

$$\text{median} = \left(\frac{n+1}{2}\right)\text{th term}$$

$$= \left(\frac{7+1}{2}\right)\text{st term} = 4\text{th term} = 28$$

Type - 3

58. What will be the mode of the given data as follows– 3, 12, 4, 6, 8, 5, 4

(a) 5 (b) 8
(c) 4 (d) 3

RRB RPF SI – 06/01/2019 (Shift-II)

Ans : (c) Mode = the highest frequency number
Mode = 4

59. Find out the mode of the given distribution–

Class interval	1–10	10–20	20–30	30–40	40–50	50–60
Frequency	3	16	26	31	16	8

(a) 34.5 (b) 35
(c) 42 (d) 32.5

RRB JE - 27/06/2019 (Shift-I)

Ans : (d)

Class interval	1–10	10–20	20–30	30–40	40–50	50–60
frequency	3	16	(26) F_0	(31) F_1	(16) F_2	8

Most frequency class is (30-40)
So mode category(30-40)

$\therefore$ $L_1 = 30, L_2 = 40$
$F_1 = 31, F_2 = 16, F_0 = 26$

formula– $\text{Mode} = L_1 + \frac{(L_2 - L_1)(F_1 - F_0)}{2F_1 - F_0 - F_2}$

$$\text{Mode} = 30 + \frac{(40-30)(31-26)}{2\times 31 - 26 - 16}$$

$$\text{Mode} = 30 + \frac{50}{20}$$

Mode = 30 + 2.5
Mode = 32.5

60. 20 homes from a local area by a group of students household family members in a survey conducted on of the following frequency table related to the number of family numbers.

Size of family	Family numbers
1–3	7
3–5	9
5–7	2
7–9	1
9–11	1

Find the mode of the given data.

(a) 3.571 (b) 3.444
(c) 3.628 (d) 3.286

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (b)

Size of family	Family numbers
1–3	$7 = f_0$
3–5	$9 = f_1$
5–7	$2 = f_2$
7–9	1
9–11	1

The frequency of category 3-5 is the highest so polymer category is 3-5
$L = 3, f_0 = 7, f_1 = 9, f_2 = 2$ and $h = 2$

$$\text{mode} = L + \left(\frac{f_1 - f_0}{2f_1 - f_0 - f_2}\right)\times h$$

$$= 3 + \frac{9-7}{18-7-2}\times 2$$

$$= 3 + \frac{2}{9}\times 2 = \frac{31}{9} = 3.444$$

61. Wickets taken by a bowler in 12 cricket matches are as follows:
2, 6, 4, 3, 5, 0, 3, 2, 1, 3, 2, 3
What will be the mode of the given data?

(a) 4 (b) 2
(c) 3 (d) 1

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (c) : Polymer means that the number has come more often or has a higher frequency.
Therefore, the given polymer has a high frequency of 3
$\therefore$ Polymer of figures = 3

62. What will be the mode of the given following data?
25, 45, 58, 87, 45, 54, 65, 12, 25, 59, 42, 60

(a) 25 (b) 45
(c) 45, 54 (d) 45, 25

RRB Group-D – 09/10/2018 (Shift-I)

Ans. (d) : given figures− 25, 45, 58, 87, 45, 54, 65, 12, 25, 59, 42, 60

It has a maximum frequency of 25 (twice) and 45 (twice) also.

So Required mode is 25, 45

63. Details of number of people taking loans from bank based on their age group interval given below Find the mode?

age group	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
No. of people	37	38	70	42	13

Find the mode.

(a) 45.33 (b) 44.89

(c) 45.67 (d) 45.12

RRB Group-D – 15/11/2018 (Shift-III)

Ans : (a) :

Age category	Age category persons number
20 - 30	37
30 - 40	38
40 - 50	70 mode category
50 - 60	42
60 - 70	13

here - L = minimum limit of mode category = 40

f_1 = number of mode category = 70

f_0 = Number of the persons belongs to upper cless of polymer class = 38

f_2 = Number of persons belongs to the class below the polymer class = 42

i = higher limit – lower limit (quadratic) = 10

$$\text{mode (z)} = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i$$

$$= 40 + \frac{70-38}{70\times 2 - 38 - 42} \times 10$$

$$= 40 + \frac{32}{140-80} \times 10$$

$$= 40 + \frac{320}{60} = 40 + 5.33 = 45.33$$

64. Below, details of 100 students present in the class is given on the basis of ther presence (day).

The number of days of presence	6-10	10-14	14-18	18-22	22-26
Number of students	9	28	34	18	11

What will be the mode of the data?

(a) 15.09 (b) 15.01

(c) 14.71 (d) 15.04

RRB Group-D – 12/11/2018 (Shift-I)

Ans. (a) :

Number	**frequncy**
6-10	9
10-14	28 = f_0
14-28	34-f_1
18-22	18 =f_2
22-26	11

$$z\text{ (Mode)} = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i$$

L = 14 f_1 = 34 f_0 = 28

f_2 = 18 i = 4

$$z = 14 + \frac{34-28}{68-28-18} \times 4 = 14 + \frac{24}{22}$$

z = 15.09

65. What will be the mode of the given data?

12, 1, 10, 1, 9, 3, 4, 9, 7, 9

(a) 9 (b) 12

(c) 1 (d) 7

RRB NTPC 17.01.2017 Shift-1

Ans : (a) In the given data the mode = 9 (3 times)

∵ mode is the highest frequency number.

66. What will be the mode of the given data as follows– 32, 34, 35, 36, 35, 34, 33, 35, 33, 31 and 37

(a) 33 (b) 34

(c) 35 (d) 32

RRB NTPC 04.04.2016 Shift : 3

Ans :(c) 32, 34, 35, 36, 35, 34, 33, 35, 33, 31, 37

∵ highest frequence is 3 of the number 35.

So mode = 35

67. What will be the mode of the given data given as – 12, 14, 15, 16, 15, 14, 13, 15, 13, 11 and 17

(a) 13 (b) 14

(c) 15 (d) 12

RRB NTPC 03.04.2016 Shift : 3

Ans :(c) If the frequency of a number is the most frequent in the data, then that number is the mode of the given data.

So mode of data = 15

68. What will be the mode of the given data given as– 2, 4, 5, 6, 5, 4, 3, 5, 3, 1 and 7

(a) 3 (b) 4

(c) 5 (d) 2

RRB NTPC 02.04.2016 Shift : 3

Ans : (c) 2, 4, 5, 6, 5, 4, 3, 5, 3, 1, 7

Frecquency of 5 is highest in the given data.

∴ mode = 5

69. If the mode of the given data is 52, then find the value of x?
52, 45, 49, 54, 56, x-3, 56

(a) 52 (b) 55
(c) 54 (d) 56

RRB NTPC 29.03.2016 Shift : 2

Ans : (b) $\because$ Mode of figures = 52
$\therefore x - 3 = 52 \Rightarrow \boxed{x = 55}$

70. What will be the mode of the given data–
$\mathbf{1, \frac{1}{2}, \frac{1}{2}, \frac{3}{4}, \frac{1}{4}, 2, \frac{1}{2}, \frac{1}{4}, \frac{2}{4}}$

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$
(c) $\frac{3}{4}$ (d) 1

RRB NTPC 07.04.2016 Shift : 3

Ans :(b)
$\because$ frequency of $\frac{1}{2}$ is maximum (3) in data.
$\therefore$ mode $= \frac{1}{2}$

Type - 4

71. Find the standard deviation of {11, 7, 10, 13, 9}.

(a) 1 (b) 2
(c) 4 (d) 5

RRB RPF SI – 10/01/2019 (Shift-II)

Ans : (b) Standard deviation $= \sqrt{\frac{\sum (x-\bar{x})^2}{n}}$

Where
$\bar{x} \rightarrow$ mean
$n \rightarrow$ The number of terms

$\bar{x} = \frac{11+7+10+13+9}{5} = \frac{50}{5} = 10$

$\sum (x-\bar{x})^2 = (11-10)^2 + (7-10)^2 + (10-10)^2 + (13-10)^2 + (9-10)^2 = 1 + 9 + 0 + 9 + 1 = 20$

Standard deviation $= \sqrt{\frac{20}{5}} = 2$

72. The value of the 5 variance is 16. If each value becomes double then find the new value of standard deviation?

(a) 16 (b) 4
(c) 10 (d) 8

RRB JE - 28/05/2019 (Shift-I)

Ans : (d) We know that-
Standard deviation $= \sqrt{\text{Variance}}$
Standard deviation $= 4$

Note : if the figures are added subtracted, multiplied or divided by a given number, then the standard deviation is the same process.

Hence the new standard deviation $= 4 \times 2 = 8$

73. The variance of the 5 values is 36. If each value becomes double, then what will be the standard deviation?

(a) 12 (b) 6
(c) 18 (d) 10

RRB JE - 30/05/2019 (Shift-III)

Ans : (a) Variance $= \sigma^2$
Standard deviation $= \sqrt{\sigma^2} = \sqrt{36}$
Standard deviation $= \sigma = 6$
New standard deviation $= \lambda\sigma$
(Where λ = n times each value)
$= 2 \times 6$
$= 12$

74. What will be the standard deviation of the given following data–
6, 12, 9, 7, 8, 4, 3, 12, 15, 4

(a) 3.80 (b) 2
(c) 3.48 (d) 4

RRB JE - 26/06/2019 (Shift-I)

Ans. (a)

x	6	12	9	7	8	4	3	12	15	4
$d = (x-\bar{x})$	–2	+4	1	–1	0	–4	–5	+4	+7	–4
d^2	4	16	1	1	0	16	25	16	49	16

$\Sigma d^2 = 144$

Mean $(\bar{x}) = \frac{6+12+9+7+8+4+3+12+15+4}{10} = 8$

Standard deviation $= \sqrt{\frac{\Sigma d^2}{n}} = \sqrt{\frac{144}{10}} = \sqrt{14.4} = 3.8$

75. What will be the standard deviation of the first n natural number?

(a) $\sqrt{\frac{n^2-1}{12}}$ (b) $\frac{n(2n+1)}{3}$
(c) $\sqrt{\frac{n^2+1}{6}}$ (d) $\frac{n(n+1)}{12}$

RRB JE - 02/06/2019 (Shift-II)

Ans. (a) σ (S.D) = $\sqrt{\frac{\left(\Sigma x_i^2\right)}{n}-\left(\frac{\Sigma x_i}{n}\right)^2}$

First 'n' natural number

$\Sigma x_i = 1 + 2 + 3 + \text{-----} + n = \frac{n(n+1)}{2}$

$\left(\Sigma x_i\right)^2 = (1^2 + 2^2 + 3^2 + \text{-----} + n^2) = \frac{n(n+1)(2n+1)}{6}$

$\sigma = \sqrt{\frac{n(n+1)(2n+1)}{6\times n}-\left(\frac{n(n+1)}{2n}\right)^2}$

$\sigma = \sqrt{\frac{(n+1)(2n+1)}{6}-\frac{(n+1)^2}{4}}$

$\sigma = \sqrt{(n+1)\frac{(4n+2-3n-3)}{12}}$

$\sigma = \sqrt{\frac{(n+1)(n-1)}{12}} = \sqrt{\frac{n^2-1}{12}}$

76. Sachin Tendulkar scored run in ten innings agains Australia 38, 70, 48, 34, 42, 55, 63, 46, 54, and 44. Find the average deviation with respect to mean.

(a) $\frac{44}{5}$ (b) $\frac{43}{5}$

(c) $\frac{41}{5}$ (d) $\frac{42}{5}$

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (b)

average = $\frac{34+38+42+44+46+48+54+55+63+70}{10}$

$= \frac{494}{10} = \frac{247}{5}$

mean= $\underbrace{34+38+42+44+46}_{\frac{204}{5}}$ $\underbrace{48+54+55+63+70}_{\frac{290}{5}}$

Standard deviation $= \frac{247}{5} - \frac{204}{5} = \frac{43}{5}$

77. If the standard deviation of the given numbers is 255. Then find the value of 'd'

1, 1 + d, 1 + 2d.....1+ 100d

(a) 20.2 (b) 10.1

(c) 20.0 (d) 10.5

RRB Group-D – 16/11/2018 (Shift-II)

Ans : (b) 1,1 + d, 1 + 2d.....1+ 100 d is in arithmetic progression.

∵ Number of total terms = 101

Arithmatic mean $\left(\bar{x}\right) = \frac{1+(1+d)+.....(1+100d)}{101}$

$= \frac{101(1+50d)}{101}$

$\bar{x} = 1+50d$

mean deviation $= \frac{1}{101}\sum_{i=0}^{100}|x_i - \bar{x}|$

$= \frac{1}{101}\left(|-50d|+|-49d|+....|-d|+0+|d|+|2d|+.....+|50d|\right)$

$255 = \frac{2d}{101}\frac{(50\times 51)}{2}$

$255 = \frac{d}{101}\times 50\times 51$

$d = \frac{255\times 101}{50\times 51} = \frac{25755}{2550} = 10.1$

78. What will be the standard deviation of the gtiven data–3, 10, 10, 4, 7, 10, 5

(a) $\frac{49}{7}$ (b) $\frac{19}{7}$

(c) $\frac{50}{7}$ (d) $\frac{18}{7}$

RRB NTPC 17.01.2017 Shift-1

Ans : (d) Data 3, 10, 10, 4, 7, 10, 5

Mean $= \frac{3+10+10+4+7+10+5}{7} = \frac{49}{7}$

Mean = 7

Mean deviation $= \sum_{i=1}^{N}\frac{|M-Xi|}{N}$

$= \frac{|7-3|+|7-10|+|7-10|+|7-4|+|7-7|+|7-10|+|7-5|}{7}$

$= \frac{4+3+3+3+0+3+2}{7}$

$\boxed{\text{mean deviation} = \frac{18}{7}}$

79. What will be the standard deviation of the given set {10, 11, 12, 9, 8}

(a) 1 (b) $\sqrt{2}$

(c) 2 (d) $2\sqrt{2}$

RRB NTPC 31.03.2016 Shift : 2

Ans : (b) $\bar{x} = \frac{10+11+12+9+8}{5} = \frac{50}{5} = 10$

$\sum_{i=1}^{5}(x_i - \bar{x})^2 = (10-10)^2 + (11-10)^2 + (12-10)^2 + (9-10)^2 + (8-10)^2$

$= 0 + 1 + 4 + 1 + 4 = 10$

$\therefore$ Standard deviation $= \sqrt{\frac{\sum_{i=1}^{5}(x_i - \bar{x})^2}{N}} = \sqrt{\frac{10}{5}} = \sqrt{2}$

80. If the standard deviation of a distribution is 6, then what is the value of variance?

(a) 8 (b) 24
(c) 36 (d) 12

RRB NTPC 18.01.2017 Shift : 3

Ans : (c) Variance = (Standard deviation)^2
$= (6)^2 = 36$

81. If the variance of a data set is 196, the standard deviation will be?

(a) ±14 (b) 14
(c) 96 (d) 98

RRB NTPC 11.04.2016 Shift : 1

Ans : (b) Standard deviation
$= \sqrt{\text{variance}} = \sqrt{196} = 14$

82. If the variance of data set is 121, then find the standard deviation of the data.

(a) ±11 (b) 11
(c) 21 (d) 60.5

RRB NTPC 11.04.2016 Shift : 2

Ans : (b) Standard deviation of data $= \sqrt{\text{variance}}$
$= \sqrt{121} = 11$

83. If the variance of data set is 81, then find the standard deviation of the data?

(a) ±9 (b) 9
(c) 81 (d) 40.5

RRB NTPC 11.04.2016 Shift : 3

Ans : (b) Standard deviation of data $= \sqrt{81}$
$= \pm 9 = 9$

84. The coefficiant of a set of data is 64, then find out the standard deviation?

(a) ±8 (b) 8
(c) 14 (d) 64

RRB NTPC 07.04.2016 Shift : 1

Ans : (b)
Standard deviation $= \sqrt{\text{coefficient}} = \sqrt{64} = \pm 8 = 8$

85. The variance of a data set is 361, then find out the value of standard deviation?

(a) ±19 (b) 19
(c) 361 (d) 180.5

RRB NTPC 07.04.2016 Shift : 3

Ans :(b) Standard deviation $= \sqrt{\text{variance}}$
$= \sqrt{361}$
$= \pm 19$
Since the standard deviation is not negative
So standard deviation = 19

86. The variance of a data set is 169, then what will be the standard deviation?

(a) ±13 (b) 13
(c) 69 (d) 845

RRB NTPC 26.04.2016 Shift : 2

Ans : (b) Standard deviation $= \sqrt{\text{variance}}$
$= \sqrt{169}$
$= \pm 13$
$= 13$

87. In n observations $x_1, x_2, x_3, ...x_n$, frequency will be given as $f_1, f_2, f_3 .....f_x$. What will be the standard deviation $\bar{x}$

(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) $\sqrt{\sum_{i=1}^{n} f_i (x_i - \bar{x})}$

RRB NTPC 26.04.2016 Shift : 3

Ans : (b) Standard deviation $= \sqrt{\frac{\sum_{i=1}^{n} f_i (x_i - \bar{x})^2}{\sum_{i=1}^{n} f_i}}$

where $\bar{x}$ = mean

88. Mean of given observation $x_1, x_2, x_3, ...x_n$ is $\bar{x}$. What will be the standard deviation of the n observation?

(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) $\sqrt{\frac{\sum_{1}^{n}\left(x_i-\bar{x}\right)^2}{n}}$

RRB NTPC 30.04.2016 Shift : 3

Ans : (b) Standard deviation $(S.D.)=\sqrt{\frac{\sum_{1}^{n}\left(x_i-\bar{x}\right)^2}{n}}$

where $\sum_{1}^{n}\left(x_1-\bar{x}\right)^2$ = variables

Type - 5

89. When a number is chosen at random, what will be the probabily of two digit numbers, but number not a co-prime?

(a) 7/30 (b) 23/30

(c) 21/90 (d) 67/90

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

Ans : (b) Total number of two digits = 90

Total prime numbers of two digits = 21

Total composite numbers of two digits = 69

$\therefore$

Probability $=\frac{\text{number of favorable results}}{\text{number of total results}}=\frac{69}{90}=\frac{23}{30}$

90. When a pair of dice is thrown, what is the probability of the sum of numbers being odd?

(a) 1 (b) 0.25

(c) 0.4 (d) 0.5

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

Ans : (d) When two dice are thrown,

The probability of occurrence of some event is n (s) = 36

The probability of odd sum of numbers = n (E) = 18

$\therefore$ probability of adding odd = $\frac{n(E)}{n(S)}=\frac{18}{36}=\frac{1}{2}=0.5$

91. Satish puts 5 yellows and 3 blue balls in a closed box. His brother Manish picks two balls at random. Calculate the probability that balls picked are of the same colour.

(a) $\frac{15}{28}$ (b) $\frac{15}{23}$

(c) $\frac{13}{28}$ (d) $\frac{11}{23}$

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

Ans : (c) Number of total balls = 8

Probability of picking balls of the same colour

$$=\frac{{}^5C_2+{}^3C_2}{{}^8C_2} \qquad \left[{}^nc_r=\frac{n!}{r!(n-r)!}\right]$$

$$=\frac{\frac{5!}{3!\times 2!}+\frac{3!}{1!\times 2!}}{\frac{8!}{2!\times 6!}}$$

$$\frac{\frac{5\times 4\times 3!}{2\times 1\times 3!}+\frac{3\times 2!}{2!\times 1}}{\frac{8\times 7\times 6!}{2\times 1\times 6!}}$$

$$=\frac{\frac{5\times 4}{2\times 1}+3}{\frac{8\times 7}{2\times 1}}$$

$$=\frac{\frac{5\times 4}{2}+3}{8\times 7/2}=\frac{\frac{26}{2}}{\frac{56}{2}}=\frac{13}{28}$$

92. In a shooting competition, to hit a target, probability 1/2 for A, 2/3 for B and 3/4 for C. If they hit the target together, then what will be the probability of penetration for each of them?

(a) 1/6 (b) 3/8

(c) 2/3 (d) 1/4

RRB JE - 28/05/2019 (Shift-I)

Ans : (d) Probability of A goal (A) = $\frac{1}{2}$

And the probability of not penetrating the goals of A

(A') = $1-\frac{1}{2}=\frac{1}{2}$

Probability of B goal (B) = $\frac{2}{3}$

And probability of not hitting B goal (B') = $1-\frac{2}{3}=\frac{1}{3}$

Probability of C's target (C) = $\frac{3}{4}$

and probability of not hitting the goals of

(C') = $1-\frac{3}{4}=\frac{1}{4}$

Probability of hitting the target of one when B and C are Hitting simultaneously

= (A×B'×C')+(A'×B×C') + (A'×B'×C)

$$=\frac{1}{2}\times\frac{1}{3}\times\frac{1}{4}+\frac{1}{2}\times\frac{2}{3}\times\frac{1}{4}+\frac{1}{2}\times\frac{1}{3}\times\frac{3}{4}$$

$$=\frac{1}{24}+\frac{2}{24}+\frac{3}{24}=\frac{6}{24}=\frac{1}{4}$$

93. One black, one red and one green dice are thrown together, what is the probability of sum of three numbers is ≥17

(a) 7/216 (b) 5/216
(c) 1/54 (d) 1/36

RRB JE - 30/05/2019 (Shift-III)

Ans : (c) The probability of the sum of the numbers exceeding from 17 or 17 when throwing all three passes together—

(5, 6, 6), (6, 5, 6), (6, 6, 5), (6,6,6)

Total probability $= 6 \times 6 \times 6 = 216$

$\therefore$ Intended probability $= \frac{4}{216} = \frac{1}{54}$

94. Find the probability of the sum being 10, when a dice are thrown two times randemely.

(a) 3 (b) 1/36
(c) 1/12 (d) 5/36

RRB RPF SI – 05/01/2019 (Shift-II)

Ans : (c) 2 times a dice is thrown—

Total probability $N(E) = 6^2 = 36$

The probability of the sum of digits being 10 is N(S) = (4, 6) (6, 4) (5, 5) = 3

So intended probability $P(E) = \frac{N(S)}{N(E)}$

$= \frac{3}{36} = \frac{1}{12}$

95. What will be the probability to remove face card from card dick?

(a) $\frac{6}{13}$ (b) $\frac{12}{13}$
(c) $\frac{3}{13}$ (d) $\frac{3}{26}$

RRB Group-D – 12/10/2018 (Shift-I)

Ans. (c) : Total number of cards = 52

Number of face card = 12

so probability of face card $= \frac{12}{52} = \frac{3}{13}$

96. To ace out the deck of cards probability can be

(a) $\frac{12}{13}$ (b) $\frac{15}{26}$
(c) $\frac{9}{13}$ (d) $\frac{1}{13}$

RRB Group-D – 16/10/2018 (Shift-I)

Ans. (d) : The number of card is 52.

The number of Ace in deck of card is 4.

Probability of getting ace out of the deck of cards

$= \frac{4}{52} = \frac{1}{13}$

97. A box contains 100 pens, out of which eight are defective. One pen is out from the box. Find the probability that the pen is not failse.

(a) 23/25 (b) 8/100
(c) 100/8 (d) 25/23

RRB Group-D – 29/10/2018 (Shift-III)

Ans : (a)

Number of total pens = 100

Number of waste pens = 8

Probability of taking waste pens $= \frac{8}{100}$

Probability of not having waste pen

$= 1 - \frac{8}{100} = \frac{92}{100} = \frac{23}{25}$

98. If a box contians 3 white cushions, 4 red cushions and 5 blue cushions. What is the probability of selection of one white or blue cushion?

(a) 2/3 (b) 3/4
(c) 1/4 (d) 1/9

RRB NTPC 28.04.2016 Shift : 2

Ans : (a) White cushion = 3

red cushion = 4

blue cushion = 5

$$\boxed{\text{Probability} = \frac{\text{favorable events}}{\text{total events}}}$$

Total events $= {}^{12}C_1$

favorable probabilities to choose 1 white or 1 blue custion $= {}^3C_1 + {}^5C_1$

So probability $= \frac{{}^3C_1 + {}^5C_1}{{}^{12}C_1}$ $\left[{}^nC_r = \frac{\lfloor n}{\lfloor r \lfloor n-r} \right]$

$$= \frac{\frac{\lfloor 3}{\lfloor 1 \lfloor 3-1} + \frac{\lfloor 5}{\lfloor 1 \lfloor 5-1}}{\frac{\lfloor 12}{\lfloor 1 \lfloor 12-1}}$$

$$= \frac{\frac{\lfloor 3}{\lfloor 2} + \frac{\lfloor 5}{\lfloor 4}}{\frac{\lfloor 12}{\lfloor 11}} = \frac{\frac{3 \times \lfloor 2}{\lfloor 2} + \frac{5 \times \lfloor 4}{\lfloor 4}}{\frac{12 \times \lfloor 11}{\lfloor 11}} = \frac{3+5}{12} = \frac{8}{12} = \frac{2}{3}$$

Note :- use $\boxed{+}$ for 'or' and $\boxed{\times}$ for 'and'.

99. When a coin is tossed once, what are the prabability of coming Head?

(a) 1 (b) 1/2
(c) 2 (d) Zero

RRB NTPC 29.04.2016 Shift : 1

Ans : (b) Head favorable probability when a coin is tossed

Required probability $= \frac{\text{Favourable probability}}{\text{total probability}} = \frac{1}{2}$

So probability to come Head $= \frac{1}{2}$

Type - 6

100. Find the range of data - 9, 5, 9, 3, 4, 7, 8, 4, 8, 9, 5, 9

(a) 3 (b) 5
(c) 6 (d) 4

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans : (c) Data range = highest value − lowest value
= 9 – 3 = 6

101. Find the range of data-11, 13, 9, 17, 13, 19, 10, 11

(a) 6 (b) 10
(c) 11 (d) 13

RRB RPF SI – 12/01/2019 (Shift-II)

Ans : (b) Data range = highest value – lowest value
= 19 – 9 = 10

102. The standard diviation of a group of values is 4.5. If each value increases by K. then find the variance of group of new values?

(a) 10.5 (b) 20.25
(c) 100.25 (d) 4.5

RRB JE - 26/06/2019 (Shift-I)

Ans. (b) If in each value is increased by K, the standard deviation will have no effect.
Variance = (Standard deviation)^2
= $(4.5)^2 = 20.25$

103. The variance of a set of values X_1, X_2, ... X_n by which of the following formula has given?

(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) $\frac{\sum x^2}{n} - \frac{\sum x}{n}$

RRB JE - 01/06/2019 (Shift-II)

Ans : (a) Variance (σ^2) = $\frac{\Sigma x^2}{n} - \left(\frac{\Sigma x}{n}\right)^2$

104. What will be the range of first 7 prime number?

(a) 15 (b) 8.3
(c) 9 (d) 17

RRB JE - 27/06/2019 (Shift-III)

Ans : (a) First 7 prime number= 2, 3, 5, 7, 11, 13, 17
Range = maximum number – minimum number
Range = 17 – 2 = 15

105. If the upper quartile represents 75% of the data and if the lower quartile represents 25% of the data, then which will show the median?

(a) 20% (b) 100%
(c) 50% (d) 80%

RRB Group-D – 05/12/2018 (Shift-III)

Ans : (c) Median = $\frac{75\% + 25\%}{2} = \frac{100\%}{2} = 50\%$

106. A set of four numbers. The mean of these three smallest numbers is 19 and the mean of three larger numbers is 23. What will be the range of this set?

(a) 18 (b) 12
(c) 14 (d) 15

RRB Group-D – 24/09/2018 (Shift-II)

Ans : (b) Sum of the three smallest number in four numbers = 19 × 3 = 57
sum of three smallest numbers = 23 × 3 = 69
Range of sets = 69 – 57 = 12

107. The mean of three numbers is 20. The range of this data set is 12, while the difference between two smallest numbers is 3. Find the larger number.

(a) 28 (b) 25
(c) 27 (d) 24

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (c) : Suppose numbers = x, y, z where x < y < z
As per the question-
$x + y + z = 60 - (i)$
$z - x = 12 \Rightarrow z = 12 + x$ .....(ii)
$y - x = 3 \Rightarrow y = 3 + x$ .....(iii)
to solving of equation (i),(ii) and (iii)
x + y + z = 60
x + 3 + x + 12 + x = 60
3x + 15 = 60
3x = 45
x = 15
y = 18
z = 12 + x
z = 12 + 15
z = 27
$\boxed{z = 27}$ highest number (z) = 27

108. The mean of three numbers is 33 and the range of data is 29. The middle number is 27 more than the sum of the other two numbers. What is the largest number among these three numbers?

(a) 46 (b) 45
(c) 48 (d) 47

RRB Group-D – 03/12/2018 (Shift-II)

Ans : (a) Suppose three number is x > y > z
as per question—

$$\frac{x+y+z}{3} = 33$$

x + y + z = 99 ----------(I)
x – z = 29 ----------(II)
and y = x + z – 27
y + 27 = x + z ----------(III)
from equation (I) and (III) -
y + y + 27 = 99
2y = 72,
y = 36

Putting the value of y in equation (III)
y + 27 = x + z
36 + 27 = x + z
x + z = 63 ----------(IV)
equation (II) + (IV)
2x = 92,
x = 46
'Putting the value of x in equation (IV)-
z = 63 – 46
z = 17
So number x, y and z is 46, 36, 17
So largest numbers = 46

109. The mean of three numbers 35 and the range of data was 24. Difference between largest and middle number is equal to three times of the difference between the smallest and the middle number. What are the largest of these three numbers?

(a) 51 (b) 50
(c) 49 (d) 52

RRB Group-D – 23/10/2018 (Shift-III)

Ans : (c) Suppose numbers is as a, b, c where a> b> c

$$\text{Mean} = \frac{a+b+c}{3} = 35$$

a+b+c = 105 .....(1)
range a-c = 24 .....(2)
and a-b = 3(b-c) .....(3)
where a-b = 3b -3c
a+3c = 4b
a + c = 4b-2c .....(4)
Putting equation (4) to the value of a + c in equation (1)
b+ 4b-2c=105
5b-2c= 105.....(5)
Putting equation (2) to a = 24 + c in equation (1)
24+c + b + c =105
b+2c = 81 .....(6)
Solving equation (5) and (6)
b = 31 c= 25
from equation (1)
a+31+25= 105
a + 56 = 105
$\boxed{a = 49}$
Hence, the largest number = a = 49

110. What will be the range of the following data?
6, 7, 8, 9, 5, 6, 7, 4, 8, 9, 5, 9

(a) 2 (b) 3
(c) 4 (d) 5

RRB NTPC 31.03.2016 Shift : 1

Ans : (d) lowest limit = 4
highest limit = 9
∴ highest limit – lowest limit = 9 – 4 = 5

111. What will be the range of the following data?
2, 1, 2, 3, 4, 5, 7, 3, 5, 2, 4

(a) 5 (b) 4
(c) 3 (d) 6

RRB NTPC 31.03.2016 Shift : 2

Ans : (d) lowest limit = 1
highest limit = 7
Range = highest limit – lowest limit
∴ Range = 7 – 1 = 6

112. What will be the range of the following data?
12, 11, 18, 28, 19, 13, 19, 18

(a) 11 (b) 17
(c) 18 (d) 19

RRB NTPC 30.03.2016 Shift : 2

Ans : (b) The difference between the highest and lowest values of the given data is called of the range.
Range = 28–11 = 17

113. If the standard deviation of a population is 9.5, then what will be its variance?

(a) 19 (b) 90.25
(c) 81.25 (d) 93.25

RRB NTPC 19.04.2016 Shift : 1

Ans : (b) Variance = $(\text{Standard deviation})^2$
$= (9.5)^2$
= 90.25

114. If the standand deviation of a population is 4.5, then what will be its variance?

(a) 20.25 (b) 20
(c) 9 (d) 18

RRB NTPC 16.04.2016 Shift : 1

Ans : (a) Variance = $(\text{Standard deviation})^2$
$= (4.5)^2 = 20.25$

115. If the variance of data 2, 4, 5, 6, 8, 18 is 23.33 then what will be the variance of the given following data 4, 8, 10, 12, 16, 36

(a) 11.66 (b) 46.66
(c) 93.3333 (d) 483

RRB NTPC 11.04.2016 Shift : 1

Ans : (b) ∴ Data numbers have doubled, so their variance will also be doubled.
∴ Variance = 2 × 23.33
= 46.66

116. What will be the range of the following data? 10, 21, 5, 1, 3, 17, 19, 2

(a) 19 (b) 10
(c) 20 (d) 17

RRB NTPC 09.04.2016 Shift : 3

Ans : (c) Range of numbers = high limit – low limit
= 21 – 1 = 20

117. The following information is $60\sum x^2 = 18000$, $\sum x = 960$ variance is related to the size of a sample.

(a) 55 (b) 44
(c) 22 (d) 16

RRB NTPC 07.04.2016 Shift : 3

Ans :(b) $60\sum x^2 = 18000$

$\sum x^2 = \frac{18000}{60} \Rightarrow \boxed{\sum x^2 = 300}$

$\because \quad \sum x = 960$

average of 60 terms $= \frac{960}{60} = 16$

$\sum x^2 = (16)^2 \Rightarrow \boxed{\sum x^2 = 256}$

∴ Variance = 300 – 256 = 44

118. If the standard deviation of the population is 11, then what will be the variance of population?

(a) 44 (b) 121
(c) 22 (d) 33

RRB NTPC 22.04.2016 Shift : 1

Ans : (b) Standard deviation of population = 11
Population variance (standard deviation)^2=$(11)^2$ = 121

119. What will be the range of the following data? 3, 1, 4, 6, 5, 7, 3, 8, 1, 4

(a) 3 (b) 8
(c) 7 (d) 6

RRB NTPC 26.04.2016 Shift : 1

Ans : (c) writing in given increasing
1, 1, 3, 3, 4, 4, 5, 6, 7, 8
Data rang = large number – small number
= 8 – 1 = 7

120. If the standard deviation of a distribution is 4 then what is the value of variance?

(a) 8 (b) 9
(c) 16 (d) 12

RRB NTPC 28.04.2016 Shift : 3

Ans : (c) Standard deviation = 4
∴ Variance = (Standard deviation)^2 = $(4)^2$ = 16

Type - 7

121. The mean of a distribution is 24 and the standard deviation is 6. Then what is the value of variance cofficient.

(a) 50% (b) 25%
(c) 100% (d) 75%

RRB RPF SI – 11/01/2019 (Shift-I)

Ans : (b) Variance coefficient $= \frac{\text{standard deviation}}{\text{mean}}$

$= \frac{6}{24} \times 100 = 25\%$

122. If the standard deviation of the population is 10, then what will be the variance coefficient?

(a) 100 (b) 30
(c) 5 (d) 20

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans : (a)
Standrad deviation of population= 10
So variance coefficient = (standard deviation)^2
= $(10)^2$ = 100

123. The mean of the distribution is 14 and the standard deviation is 5. Find the variance coefficient.

(a) 60.4% (b) 27.9%
(c) 35.7% (d) 48.3%

RRB JE - 01/06/2019 (Shift-I)

Ans : (c) Variance coefficient $= \frac{\text{standard deviation}}{\text{mean}}$

$= \frac{5}{14} \times 100$

$= \frac{500}{14} = 35.7\%$

124. The ratio of number of blue and red balls in a bag is constant. When the number of red balls are 68 the number of blue balls was 36. Number of blue balls being 63, what is the number of red balls in the bag?

(a) 119 (b) 98
(c) 110 (d) 102

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (a) blue : red = 36 : 68

= 9: 17

When blue balls number is 63 then suppose red balls numbers is n then-

$$\frac{63}{n} = \frac{9}{17}$$

$9n = 63 \times 17$

$$n = \frac{63 \times 17}{9}$$

$n = 7 \times 17$

$n = 119$

So red balls number = 119

125. In the given following data find out the LCM of mode, median and mean?

7, 2, 10, 4, 3, 12, 8, 4, 6, 4.

(a) 30 (b) 20

(c) 12 (d) 60

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (d) 7, 2, 10, 4, 3, 12, 8, 4, 6, 4

Writing in ascending order- 2, 3, 4, 4, 4, 6, 7, 8, 10, 12

⇒ Mode = 4 (the highest frequency)

$$\text{Median} = \frac{1}{2}\left[\frac{n}{2}^{th} + \left(\frac{n}{2}+1\right)^{th}\right]$$

$$\text{Median} = \frac{1}{2}\left(5^{th} + 6^{th}\right)\text{term} \begin{cases}\text{where n = terms number} \\ n = 10\end{cases}$$

$$= \frac{1}{2}(4+6) = 5 = \frac{1}{2} \times 10 = 5$$

$$\text{Mean} = \frac{\text{total sums}}{\text{total number}} = \frac{2+3+4+4+4+6+7+8+10+12}{10}$$

$$\text{mean} = \frac{60}{10} = 6$$

LCM of 4, 5, 6 = 2 × 2 × 3 × 5 = 60

126. For the following data what is the (mode×median+mean)

9, 1, 11, 3, 2, 12, 8, 4, 6, 4.

(a) 34 (b) 31

(c) 26 (d) 29

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (c) Mode = 4(maximum)

writing in ascending order-

1, 2, 3, 4, 4, 6, 8, 9, 11, 12

$$\text{mean} = \frac{1+2+3+4+4+6+8+9+11+12}{10}$$

$$= \frac{60}{10} = 6$$

Total number(n) = 10 (even)

$$\text{median} = \frac{\frac{n}{2}\text{terms value} + \left(\frac{n}{2}+1\right)\text{terms value}}{2}$$

$$= \frac{5^{th}\text{ terms value} + 6^{th}\text{ terms value}}{2}$$

$$= \frac{4+6}{2} = \frac{10}{2} = 5$$

= mode × median + mean

= (4 × 5) + 6 = 26

127. If the mean and median of the numbers 3, 4, a, b, 10 are 6 and 5 respectively where a>b, What will be the value of a and b.

(a) 7,6 (b) 5,8

(c) 6,7 (d) 8,5

RRB Group-D – 19/09/2018 (Shift-III)

Ans. (b) : mean of 3,4,a,b, 10 is 6 and median 5 a < b

$$\text{Mean} = \frac{\text{sum of total number}}{\text{total number}}$$

$$6 = \frac{3+4+a+b+10}{5}$$

$30 = 17 + a + b$

$a + b = 13$

median is 5–

median when terms number are odd– $\left(\frac{n+1}{2}\right)$

terms number(n) = 5

median= $\left(\frac{5+1}{2}\right)^{th}$ term= 3rd term

$5 = a$

$a + b = 13$

$5 + b = 13$

$b = 8$

a = 5, b = 8

128. The mean of the three numbers was 15 and the range of figure was 9. Difference between larges number and middle number is equals to two times of the difference between middle number and smallest number what will be the largest number in the given three numbers?

(a) 20 (b) 21

(c) 19 (d) 22

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (a) Suppose three numbers is a, b and c

where a < b < c

$$\frac{a+b+c}{3} = 15$$

$$\Rightarrow a+b+c = 45 - - - - - (I)$$

then $c - a = 9$ --------(II)

and $c - b = 2(b - a)$

$\Rightarrow c - b = 2b - 2a$

$\Rightarrow 3b = 2a + c \Rightarrow b = \frac{2a+c}{3}$ ----(III)

Putting 'b' value in equation (I) from equation (III)—

$$a + \left(\frac{2a+c}{3}\right) + c = 45$$

$$\Rightarrow 5a + 4c = 135 \text{------(IV)}$$

from equation (IV) + equation (II) × 5—

$9c = 180 \Rightarrow c = 20$

from equation (II)

$20 - a = 9 \Rightarrow a = 11$

from equation (III) - $b = \frac{2\times 11 + 20}{3} = 14$

So largest number = 20

129. The four integers a, b, c and d arranged in ascending order, the range of the set is 20. The difference between c and a is equal to the difference between d and b. The integral mean of the numbers is 25. In the following what will be the value of a?

(a) 13 (b) 15

(c) 14 (d) 16

RRB Group-D – 16/11/2018 (Shift-I)

Ans. (b) As per question,

$c - a = k$ ...(i)

$d - b = k$ ...(ii)

on subtracting

$c - a - d + b = 0$

$b + c = a + d$ ...(iii)

$\because$ mean = 25

$$\frac{a+b+c+d}{4} = 25$$

$a + (b + c) + d = 100$

$a + d + a + d = 100$ [from equation (iii)]

$a + d = 50$ ...(iv)

but $d - a = 20$

$d = 20 + a$

$\therefore$ $a + 20 + a = 50$

$2a = 30$

$a = 15$

130. 4 out of 5 cricketers have played the innings of 13, 9, 5, 11 respectively. If the mean of the data set is 9. Then what will be the number of innings played by that 5th player?

(a) 9 (b) 8

(c) 7 (d) 6

RRB NTPC 05.04.2016 Shift-1

Ans : (c) Total number of innings played by all five players= 5×9 = 45

Total number of innings of four Players

= 13+9+5+11 = 38

$\therefore$ Fifth player's total number of innings = 45–38 = 7

131. The mean of 8 observations is 10.5. In the given observation of the seven observations are 3, 15, 7, 19, 12, 17 and 8. Find the 8th observation-

(a) 10 (b) 11

(c) 3 (d) 12

RRB NTPC 04.04.2016 Shift : 1

Ans : (c) Sum of seven observation = 3 + 15 + 7 + 19 + 12 + 17 + 8 = 81

$\therefore$ eight observation= 8 × 10.5 – 81

= 84.0 – 81 = 3

132. What will be the mean, mode and median of the given numbers– 3, 4, 5, 3, 6, 3, 4, 5, 3

(a) 4, 4, 4 (b) 4, 4, 3

(c) 3, 4, 4 (d) 4, 3, 4

RRB NTPC 31.03.2016 Shift : 1

Ans : (d) Writting data in ascending order

3, 3, 3, 3, 4, 4, 5, 5, 6

$$\text{Mean} = \frac{3+3+3+3+4+4+5+5+6}{9} = \frac{36}{9} = 4$$

Mode = 3 (the highest frequent number)

$\because$ Terms number (n) = 9 (odd)

$$\therefore \text{Median} = \left(\frac{n+1}{2}\right)^{th} \text{term} = \left(\frac{9+1}{2}\right)^{th} \text{term}$$

$= 5^{th}$ term = 4

133. What will be the median, mode and mean of the given numbers?

9, 5, 8, 9, 9, 7, 8, 9, 8

(a) 9, 9, 9 (b) 9, 8, 9

(c) 8, 9, 8 (d) 8, 9, 9

RRB NTPC 31.03.2016 Shift : 2

Ans : (c) Writing data in ascending order,

5, 7, 8, 8, 8, 9, 9, 9, 9

$\because$ terms number = 9 (odd)

$$\therefore \text{median} = \left(\frac{n+1}{2}\right) \text{th term}$$

$$= \frac{9+1}{2} = 5^{th} \text{ term} = 8$$

mode = 9 (the highest frequent number)

$$\text{mean} = \frac{5+7+8+8+8+9+9+9+9}{9}$$

$$= \frac{72}{9} = 8$$

134. What will be the mode and median of the given digits–

8, 6, 8, 7, 8, 6, 8, 7, 6

(a) 7 and 8 (b) 6 and 7
(c) 8 and 7 (d) 6 and 8

RRB NTPC 30.03.2016 Shift : 1

Ans : (c) writing number in ascending order,
6, 6, 6, 7, 7, 8, 8, 8, 8
mode = 8 (most frequent)
terms number = 9 (odd)

$\therefore$ median $= \left(\frac{9+1}{2}\right) = 5^{th}$ term = 7

135. What will be range, mode and median of the given following data?

13, 14, 13, 12, 15, 21, 16, 18, 13

(a) 9, 13, 14 (b) 6, 13, 14
(c) 8, 13, 14 (d) 5, 13, 14

RRB Paramedical Exam – 20/07/2018 (Shift-III)

Ans : (a) Range = 21–12 = 9
Mode = 13 (Most frequent)
Writing data in ascending order
12, 13, 13, 13, 14, 15, 16, 18, 21

$\because$ n = 9 (odd)

$\therefore$ Median $= \left(\frac{9+1}{2}\right)^{th}$ term = 5th term = 14

136. What will be the mean and mode of the given following data?

1, 9, 5, 4, 2, 1, 9, 9, 2, 1, 9, 1, 2, 1

(a) 4 and 9 (b) 5 and 1
(c) 4 and 1 (d) 5 and 9

RRB NTPC 29.03.2016 Shift : 3

Ans : (c) Mean

$$= \frac{1+9+5+4+2+1+9+9+2+1+9+1+2+1}{14}$$

$$= \frac{56}{14} = 4$$

Mode of data = 1(term of most frequent)

137. The mean of a distribution is 13 and the standard deviation is 7. What is the value of variance coefficient?

(a) 50% (b) 76.77%
(c) 53.85% (d) 38.88%

RRB NTPC 19.04.2016 Shift : 1

Ans : (c)

Variance coeffcient $= \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$

$$= \frac{7}{13} \times 100 = 53.85\%$$

138. The mean of 20 observations is 19. One another observation is included and the new mean is 20. What is 21st observation?

(a) 20 (b) 30
(c) 40 (d) 42

RRB NTPC 19.04.2016 Shift : 2

Ans : (c) Total sum of 20 observations=20 × 19 = 380
Sum on inclusion of new observation = 21 × 20 = 420
$\therefore$ Value of 21st observation = 420 – 380 = 40

139. The mean of a distribution is 18 and the standard deviation is 4.5. What is the value of variance coefficient?

(a) 50% (b) 25%
(c) 100% (d) 75%

RRB NTPC 19.04.2016 Shift : 2

Ans : (b) Distribution mean = 18
Standard deviation = 4.5

$\therefore$ Variance coefficient $= \frac{4.5}{18} \times 100\ \%$

$$= \frac{450}{18} = 25\%$$

140. The mean of a distribution is 11 and the standard deviation is 5. What is the value of variance coefficient?

(a) 45.45% (b) 35.35%
(c) 25.25% (d) 55.55%

RRB NTPC 18.04.2016 Shift : 1

Ans : (a) To calculate the variance coeffi divide the standard deviation by the mean and multiply by 100. or

Variance coefficient $= \frac{\text{Variance}}{\text{coefficient}}$

$$= \frac{\sigma}{x} \times 100\%$$

$$= \frac{5}{11} \times 100\%$$

$$= 45.45\%$$

141. The mean of a distribution is 10 and the standard deviation is 5. What is the value of variance coefficient?

(a) 50% (b) 100%
(c) 150% (d) 200%

RRB NTPC 18.04.2016 Shift : 2

Ans : (a)

Variance coefficient $= \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$

$$= \frac{5}{10} \times 100 = 50\%$$

142. If the standard deviation of a population is 8, then what will be its variance?

(a) 64 (b) 16
(c) 32 (d) 24

RRB NTPC 18.04.2016 Shift : 2

Ans : (a) Standard deviation of variance coefficient= 8
Variance = (Standard deviation)^2
$= (8)^2 = 64$

143. The mean of a distribution is 24 and the standard deviation is 8. What is the value of variance coefficient?

(a) 16.66% (b) 66.66%
(c) 33.33% (d) 100%

RRB NTPC 18.04.2016 Shift : 3

Ans : (c) Mean of distributer = 24
Standard deviation= 8

$$\text{Variance coefficient} = \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$$

$$= \frac{8}{24} \times 100\,\%$$

$$= \frac{100}{3}\,\%$$

$= 33.33\%$

144. The mean of a distribution is 20 and the standard deviation is 4, so find out its variance coefficient?

(a) 10 (b) 20
(c) 40 (d) 60

RRB NTPC 16.04.2016 Shift : 1

Ans : (b) Mean = 20
Standard deviation = 4

$$\therefore \text{ Variance coefficient } = \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$$

$$= \frac{4}{20} \times 100 = 20\%$$

145. The mean of a distribution is 18 and the standard deviation s 7. What is the value of variance coefficient?

(a) 50% (b) 76.77%
(c) 54.44% (d) 38.88%

RRB NTPC 16.04.2016 Shift : 2

Ans : (d) Mean = 18
Standard deviation = 7

$$\therefore \text{ Variance coefficient } = \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$$

$$= \frac{7}{18} \times 100\,\%$$

$= 700/18 = 38.88\%$

146. The mean of a distribution is 21 and the standard deviation is 7. Find the variance coefficient?

(a) 16.66% (b) 66.66%
(c) 33.33% (d) 100%

RRB NTPC 16.04.2016 Shift : 3

Ans : (c) Variance coefficient $= \frac{7}{21} \times 100 = 33.33\%$

147. The average of the results of 35 trials is 21. The average result of first 17 trials and last 17 trials are 19 and 22 respectively. What is the value of the result of the 18th test?

(a) 42 (b) 36
(c) 38 (d) 34

RRB NTPC 12.04.2016 Shift : 2

Ans : (c) average of 35 observations = 21
sum of 35 observations = 35×21 = 735
average of 17 observations = 19
sum total of 17 observations = 17×19 = 323
average of last 17 observations = 22
sum total of these = 17×22 = 374
Value of 18th obsevation = 735 – 374 – 323 = 38

148. The mean of a distribution is 15 and the standard deviation is 5. What is the value of variance coefficient?

(a) 16.66% (b) 66.66%
(c) 33.33% (d) 100%

RRB NTPC 12.04.2016 Shift : 3

Ans : (c)

$$\text{Variance coefficient} = \frac{\text{Standard deviation}}{\text{mean}} \times 100\%$$

$$= \frac{5}{15} \times 100$$

$$= \frac{100}{3} = 33.33\%$$

149. If the value of the mode is 14 and arithmetic mean is 5, then find the value of median?

(a) 8 (b) 18
(c) 12 (d) 14

RRB NTPC 10.04.2016 Shift : 3

Ans : (a) mode = 3 × median – 2 × mean
14 = 3× median – 2 × 5
3× median = 14 + 10

$$\text{median} = \frac{24}{3} = 8$$

150. What is the value of mode as well as median of the given following numbers–
3, 4, 5, 5, 3, 6, 7, 3, 5, 5, 6

(a) 5 and 5 (b) 3 and 5
(c) 5 and 4 (d) 3 and 4

RRB NTPC 09.04.2016 Shift : 3

Ans : (a) 3, 4, 5, 5, 3, 6, 7, 3, 5, 5, 6
Writing in ascending order = 3,3,3,4,5,5,5,5,6,6,7
mode = 5 (most frequent)
$\therefore$ where n = 11(odd)
Median = $\left(\frac{n+1}{2}\right) = \frac{11+1}{2} = 6^{th}$ term = 5

151. The variance of a given data is 324, then what will be the value of standard deviation?

(a) ±18 (b) 18
(c) 324 (d) 162

RRB NTPC 07.04.2016 Shift : 2

Ans : (b) Standard deviation $= \sqrt{\text{Variance}}$
$\therefore$ Variance = 324
$\therefore$ Standard deviation $= \sqrt{324}$
$= \pm 18$
$= 18$

152. If the mean value of 12 men's height is 1.70 m. and the mean value of 8 women of height is 1.60 m. What will be the sum of the total height of 8 women (in metre).

(a) 12.9 (b) 12.8
(c) 12.4 (d) 13

RRB NTPC 19.01.2017 Shift : 1

Ans : (b) Sum = number × mean
8 women's total height = 8×1.60 = 12.8m

153. The mean of a distribution is 80 and the standard deviation is 16. What is the value of variance coefficient?

(a) 10% (b) 20%
(c) 40% (d) 60%

RRB NTPC 22.04.2016 Shift : 1

Ans : (b) distribution mean = 80
Standard deviation = 16
Variance coefficient $= \frac{\text{Standard deviation}}{\text{distributers}} \times 100\%$
$= \left(\frac{16}{80}\right) \times 100\ \%$
$= \frac{1}{5} \times 100\ \%$
= 20%

154. If the standard deviation of the population is 13, then what will be the variance of the population?

(a) 78 (b) 39
(c) 26 (d) 169

RRB NTPC 22.04.2016 Shift : 3

Ans : (d) Required variance = (standard deviation)^2
= 13 × 13 = 169

155. What is the value of median, mode and mean of the given following numbers?
9, 8, 3, 5, 1, 9, 8, 2, 9

(a) 9, 9, 6 (b) 9, 6, 9
(c) 8, 9, 6 (d) 8, 5, 6

RRB NTPC 26.04.2016 Shift : 1

Ans : (c) ascending order
1, 2, 3, 5, 8, 8, 9, 9, 9
n = 9 (odd)
Median $= \left(\frac{n+1}{2}\right)$ th term $= \left(\frac{9+1}{2}\right)^{th}$ term
$= 5^{th}$ term = 8
Mean $= \frac{\text{sum of all numbers}}{\text{Total numbers}}$
$= \frac{9+8+3+5+1+9+8+2+9}{9} = \frac{54}{9} = 6$
Mode = 9 (Most frequent)
Hence median mode and mean is 8, 9, 6.

156. If the standard deviation of a distribution is 9. Then find the value of variance.

(a) 18 (b) 27
(c) 81 (d) 36

RRB NTPC 28.04.2016 Shift : 2

Ans : (c) Variance = (Standard deviation)^2
$= (9)^2 = 81$

157. The mean length of 6 rods is 44.2 cm. If the mean length of 5 rods is 46 cm. then what is the value of length of the 6th rods?

(a) 35 (b) 35.2
(c) 35.1 (d) 35.5

RRB NTPC 30.04.2016 Shift : 3

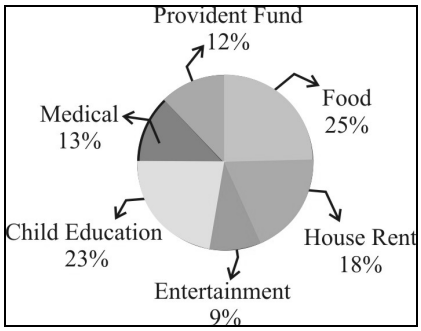
Ans : (b) Mean length of 6 rods = 44.2 cm.
Total length of 6 rods = 44.2 × 6 = 265.2
Mean length of 5 rods = 46 cm
Total length of 5 rods = 46 × 5 = 230
Length of 6th rod = 265.2 – 230 = 35.2 cm

28.

Data Interpretation

Type - 1

1. This chart represent the household lost per month of a family if the family's income is Rs. 33,650 then the total expenditure incurred by the family on entertainment and food in a month.



Family expenditure-
Provident fund
Food
House rent
Entertainment
Child education
Medical

(a) Rs. 11, 144 (b) Rs. 11, 441
(c) Rs. 11, 442 (d) Rs. 11, 414

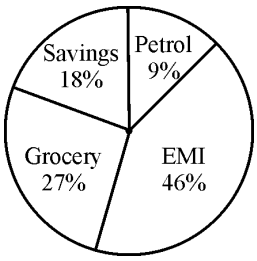
RRB RPF SI – 16/01/2019 (Shift-II)

Ans : (b) Total expenditure on family entertainment and food.

$$= 33650 \times \frac{25+9}{100} = 33650 \times \frac{34}{100}$$

= Rs. 11,441

2. The percentage details of Ramu's monthly household expenses are as follows in four sections. If the earns Rs. 55000/month So, how much is the EMI he pays each month.



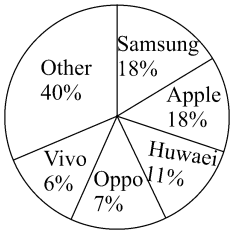
(a) Rs. 25300 (b) Rs. 24000
(c) Rs. 26300 (d) Rs. 25000

RRB RPF SI – 11/01/2019 (Shift-III)

Ans : (a) Payment of EMI every month

$$= \frac{46}{100} \times 55000 = 46 \times 550 = \text{Rs. } 25300$$

3. The given pie graph shows the total sales of various mobile companies for the year 2017.



If the total sales in the year 2017 was 5000 crores then the sales in crore made by Vivo company was.

(a) 300 (b) 250
(c) 350 (d) 2000

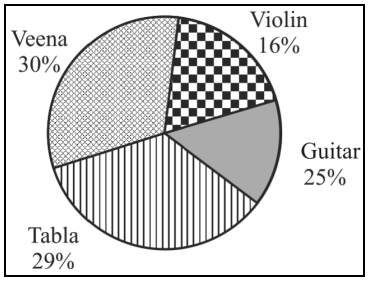
RRB RPF Constable – 17/01/2019 (Shift-I)

Ans : (a)

$$\text{Sales by Vivo Company} = \frac{6}{100} \times 5000$$

$$= 300 \text{ Crore}$$

Note : (4-6) The pie chart below displays the instrument played by the student of a musical class. Read the following graph and answer the following questions.



4. The sector code related to violin is.....

(a) 16.8º (b) 16º
(c) 57.6º (d) 48º

RRB RPF Constable – 22/01/2019 (Shift-I)

Ans. (c) : Total angles = 360º
Percentage of violin = 16%

$$\text{angles of violin} = \frac{360 \times 16}{100} = 57.6^\circ$$

5. If there are 300 students in total, then what is the difference between tabla player and veena players.

(a) 30 (b) 90
(c) 3 (d) 9

RRB RPF Constable – 22/01/2019 (Shift-I)

Ans. (c) : Total numbers of students = 300

number of students playing tabla $= \frac{300 \times 29}{100} = 87$

number of students playing veena $= \frac{300 \times 30}{100} = 90$

intended difference = 90 – 87 = 3

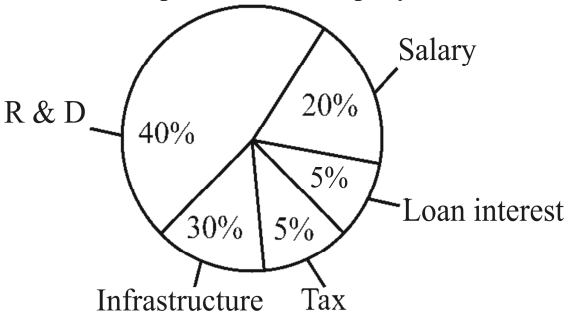
6. What is the ratio of student who play guitar to violinists?

(a) 5:4 (b) 5:6
(c) 25:16 (d) 8:15

RRB RPF Constable – 22/01/2019 (Shift-I)

Ans : (c) Let total students are 100
then the guitarist = 25
Violinist = 16
intended ratio = 25:16

7. The following pie chart Q3 2015 shows different expenditure of company XYZ.



If company XYZ has spend Rs. 100 lakh crore on various department then how much will it cost in R&D (lakh crore)

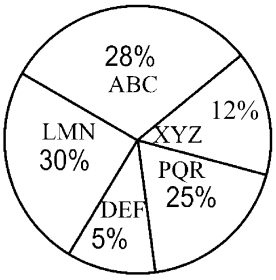
(a) 30 (b) 20
(c) 10 (d) 40

RRB Group-D – 04/10/2018 (Shift-I)

Ans. (d) Out of the total expenditure (Rs. 100 Lakh crore) for XYZ, R & D expenditure $= 100 \times \frac{40}{100}$

= Rs. 40 (Lakh crore)

8. 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.

(a) 1,48,800 (b) 7,200
(c) 28,800 (d) 57,600

RRB Group-D – 08/10/2018 (Shift-III)

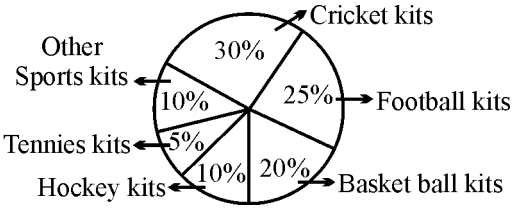
Ans : (a)

Percentage of mobile phones manufactured by XYZ = 12%

$= 12,40,000 \times \frac{12}{100} = 1,48,800$

So number of mobile phone manufactured by XYZ company is 1,48,800

9. The following pie diagram shows information on the sale of sport by the company XYZ. Revenue during the year 2016 was $36,82,000



How much revenue was received by company XYZ through the sale (in $) of cricket kit in 2016

(a) 11,04,600 (b) 2,76,150
(c) 5,52,300 (d) 1,38,075

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (a) : According to the question-

Revenue received during 2016 = $36,82000

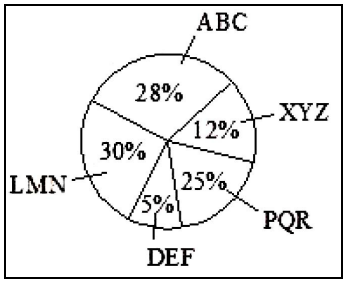
sale of cricket kit = 30%

revenue from the sale of cricket kit

$= \frac{36,82,000 \times 30}{100} = \$1104600$

10. The data given below shows information about the mobile phone manufacturing companies in India. If the total mobile phones manufactured are 12,40,000

Total number of mobile phones manufactured by company PQR?



(a) 12,40,000 (b) 3,10,000
(c) 6,20,000 (d) 30,1000

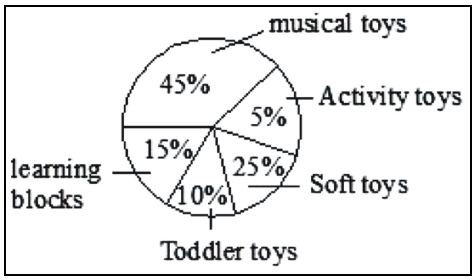
RRB Paramedical Exam – 20/07/2018 (Shift-II)

Ans : (b) Total number of mobile phone manufactured = 12,40,000

So number of mobile phones manufactured by PQR company

$= 12,40,000 \times \frac{25}{100} = 3,\ 10,\ 000$

11. This pie chart shows sales information of toy maker XYZ during the financial year 2017-18.

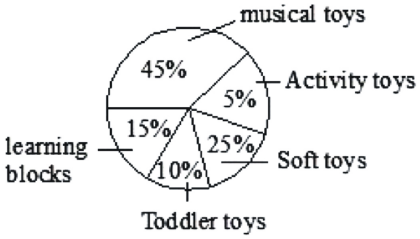


The revenue for sale of toys was Rs. 38,72, 000/–What kind of toys earned the best revenue for the company.

(a) Tolder toy (b) Musical toy
(c) Soft toy (d) Learning toy

RRB Group-D – 03/10/2018 (Shift-I)

Ans : (b)

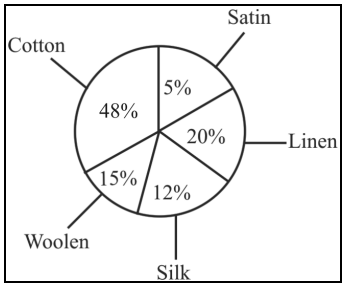


Total revenue = Rs. 3872000

Maximum revenue $= \frac{3872000 \times 45}{100} =$ Rs.1742400

So revenue of musical toy was maximum.

12. The given pie chart shows the information on different types of cloth production in 2015 by company XYZ.



If the total production of clothes in 2015 is 150000 tonnes, then how many clothes in tonnes were produced in 2015.

(a) 7500 (b) 60,000
(c) 15000 (d) 30,000

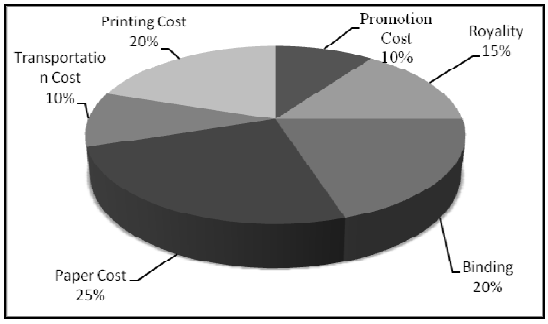
RRB Group-D – 08/10/2018 (Shift-II)

Ans : (a) Total production of garments made by company XYZ in the year 2015 = 1,50,000 tonnes

total production of the satin by XYZ company in the year 2015 $= \frac{1,50,000 \times 5}{100} = 7500$

Hence total production of satin by XYZ company in the year 2015 = 7500 tonnes

13.



The pie graph represents the expenditure of a publishing house in Karnataka. If the total expenditure is Rs. 50,000, then the binding cost is.

(a) 12,500 (b) 10,000
(c) 7,500 (d) 5,000

RRB Group-D – 31/10/2018 (Shift-II)

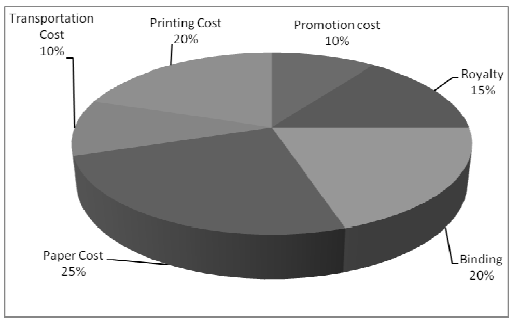
Ans : (b) – Total expense = Rs. 50,000

binding cost = ?

$50,000 \times \frac{20}{100}$

binding cost = $\boxed{\text{Rs. } 10,000}$

14.



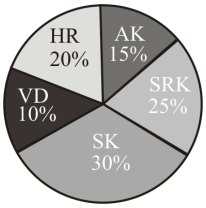
Pie graph shows the expenses of a publishing agency of Karnataka. If the total expenditure is Rs. 50,000, then the total expenditure on transport is.

(a) Rs. 5000 (b) Rs. 7000
(c) Rs. 10000 (d) Rs. 2500

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (a)
Total expense 50000 rupees of publishing agency
100% = 50000
1% = 500
transportation charges = 10%
= 10 × 500
= Rs. 5000

Note : (15-17) pie chart shows favorite stars of a family people.
(Bollywood stars SRK, SK, AK, HR and VD)



Study the pie chart carefully and answer the questions based on it.

15. The ratio of those who like SK to these who like SRK is
(a) 6/5 (b) 5/6
(c) 1/2 (d) 2/1

RRB NTPC 11.04.2016 Shift : 2

Ans. (b) : SRK = 25 %
SK = 30 %
SRK : SK = 25 : 30
= 5:6

16. Which is the sector angle of HR.
(a) 36^0 (b) 72^0
(c) 54^0 (d) 108^0

RRB NTPC 11.04.2016 Shift : 2

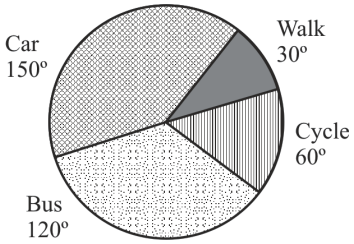
Ans. (b) : Percentage of HR = 20%
total angles = 360^0
Homologous area angles of HR = $360 \times \frac{20}{100} = 72^0$

17. If there are 40 people in the family, the difference between these who like AK and these who like VD
(a) 2 (b) 3
(c) 4 (d) 6

RRB NTPC 11.04.2016 Shift : 2

Ans. (a) : Number of family members = 40
number of people who like AK $= 40 \times \frac{15}{100}$
= 6
number of people who like VD $= 40 \times \frac{10}{100}$
= 4
intended difference = 6 − 4
= 2

18. In a school, 1200 students were asked about their arrival vehicles and information received is indicated by the following pie chart, then based on the information given, find out how many students come to school by car.

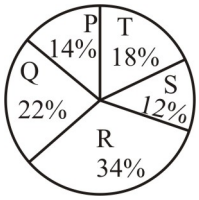


(a) 1000 (b) 900
(c) 500 (d) 750

RRB NTPC 28.03.2016 Shift : 2

Ans. (c) : Total students = 1200
Angle made by that students who comes by car = 150°
number of students coming by car $= 1200 \times \frac{150^0}{360^0}$
= 500

Note (19-21): The following pie chart shows the 5 states P, Q, R, S and T forest area. Consider the chart and answer the question based on it.



19. What would be the area of the state Q if the total area is 61700 sq. km.
(a) 11686 sq. km (b) 12,340 sq. km
(c) 13,574 sq. km (d) 19,744 sq. km

RRB NTPC 04.04.2016 Shift : 2

Ans. (c) : The area of state Q
$= 61700 \times \frac{22}{100} = 617 \times 22 = 13574$ sq. km

20. Sector angle of state P is.....
(a) 50.4^0 (b) 64.8^0
(c) 43.2^0 (d) 79.2^0

RRB NTPC 04.04.2016 Shift : 2

Ans. (a) : Sum of sector angles of all states = 360^0
Sector angles of state P $= \frac{360 \times 14}{100}$ $\left[\because 100\% = 360^0,\ 14\% = \frac{360 \times 14}{100}\right]$
$= 50.4^0$

21. The ratio of forest area of state R to the combined forest area of states T and S is.
(a) 17/16 (b) 17/15
(c) 11/15 (d) 11/16

RRB NTPC 04.04.2016 Shift : 2

Ans. (b) :
Intended ratio = (forest area of state R) : (forest area of state T and S)

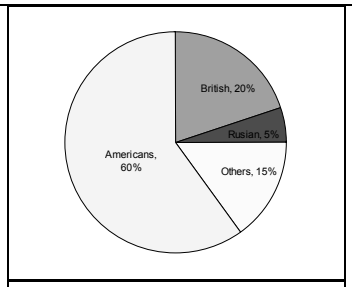
$= 34\% : (18+12)\%$

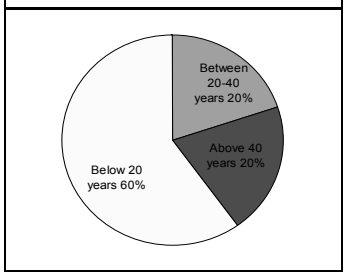
$= 34 : 30$

$= 17 : 15$

$= \frac{17}{15}$

22.





Below 20 years
Between 20-40 years
Above 40 years
The given figures depict the country-wise and age-wise distribution of the people who visit China for business setup.
If in a given year, 500,000 people visited China, then the ratio of the number of Americans with the age group between 20 and 40 years to the Russians with the age group below 20 years who visited China is:

(a) 4 : 1 (b) 1 : 2
(c) 2 : 1 (d) 1 : 4

RRB ALP & Tec. (31-08-18 Shift-III)

Ans : (a) Number of Americans $= 500000 \times \frac{60}{100}$
$= 300000$

American's number between 20 and 40 years old

$= 300000 \times \frac{20}{100} = 60000$

and

Russian numbers below 20 years of age

$= \left(500000 \times \frac{5}{100}\right) \times \frac{60}{100} = 15000$

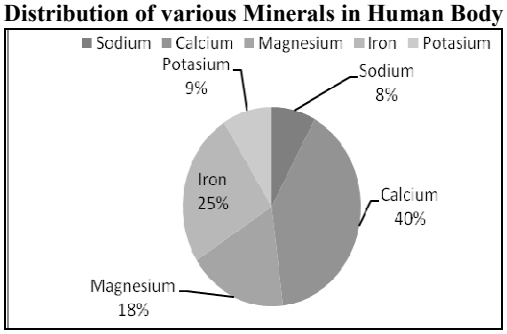
So

$\frac{\text{American between 20 and 40 years old}}{\text{Russian below 20 years of age}} = \frac{60000}{15000}$

$= \frac{4}{1} = 4:1$

23. The given graph shows the distribution of minerals in the human body. Based on the given data, what is the ratio of calcium to sodium found in the human body ?

Distribution of various Minerals in Human Body

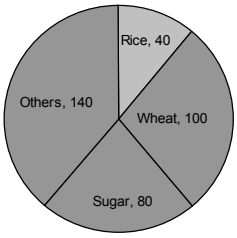


(a) 3 : 1 (b) 4 : 1
(c) 2 : 1 (d) 5 : 1

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

Ans : (d) Calcium = 40%
Sodium = 8%
So Calcium : Sodium = 40 : 8
= 5 : 1

24. In the following pie chart, annual production of some of the yield (in tonnes) is given.
If the total production is 9000 tonnes, then the yield of rice is _____ tonnes.



(a) 3000 (b) 1000
(c) 2000 (d) 1500

RRB ALP & Tec. (09-08-18 Shift-III)

Ans : (b) Rice production $= 9000 \times \frac{40°}{360°} = 1000$ tonnes

Type - 2

25. What is the total percentage (1 decimal point) of illiterate people in all 4 cities.....

City	Population	Literate	Illiterate	% of literate
A	200	150	50	–
B	300	200	100	66.6
C	150	50	100	–
D	120	–	90	25

(a) 44.1 (b) 44.3
(c) 44.5 (d) 44.2

RRB RPF Constable – 25/01/2019 (Shift-I)

Ans. (d) : Total population of four cities are = 200 + 300 + 150 + 120 = 770

Percentage of total illiterate people in the four cities

$$= (50 + 100 + 100 + 90)\ \frac{100}{770} = \frac{340 \times 100}{770}$$

$\boxed{x = 44.2\%}$ Almost/Approximate

26. If state N has a male population below the poverty line 2.6 million and for the state Q total population below the poverty line is 6 million. Then the total ratio of states N and Q is.

(a) 4.33 : 9 (b) 2.33 : 10
(c) 3 : 5.5 (d) 1 : 1

RRB RPF SI – 05/01/2019 (Shift-III)

Ans. (a) : Male population of state N below the poverty line = 2.6 million

$\therefore$ female population $= \frac{2}{3} \times 2.6 = \frac{5.2}{3}$

= 1.73 million

$\therefore$ total population below poverty line = 2.6 + 1.73

= 4.33 million

total population of N state $= \frac{4.33 \times 100}{30}$

$= \frac{433}{30}$ million

$\because$ poverty line of Q state = 6 million

total population of Q state $= \frac{6}{20} \times 100 = 30$ million

$\therefore$ total population ratio of state N and Q $= \frac{433}{30} : 30$

= 433 : 900

= 4.33 : 9

Note (27-29): The bracket below shows the percentage details of the total expenditure of the company Zeta interactive service under various heads during 2003.

Basic infrastructure	**20**
Transportation	**12.5**
Advertisement	**15**
Tax	**10**
R & D	**5**
Salary	**20**
Interest on debt	**17.5**

27. What is the ratio of Zeta interactive services of total expenditure on infrastructure and transportation against total cost of interest on tax and loans.

(a) 5:4 (b) 8:7
(c) 9:7 (d) 11:13

RRB RPF Constable – 20/01/2019 (Shift-II)

Ans. (d) : Zeta interactive services total tax expense and interest on loans = 10 + 17.5 = 27.5%

total expenditure on infrastructure and transportation = 20 + 12.5 = 32.5%

intended ratio = 27.5 : 32.5

= 11 : 13

28. If the amount of interest on loans is Rs. 2.45 crores, then what is the total amount spend on advertising, taxes and modification and development of won interactive services?

(a) 7 crore (b) 5.4 crore
(c) 4.2 crore (d) 3 crore

RRB NTPC 29.04.2016 Shift : 2

Ans. (c) : Let the above mentioned money to the total amount spent

and total expenditure on advertisement, tax and amendment and development

=(15+10+5)% = 30%

from the question-

$$\frac{17.5\%}{24500000} = \frac{30\%}{y}$$

$$\frac{24500000 \times 30}{17.5} = y$$

y = 4.2 crore

29. If the expenditure of Zeta interactive service is 2.10 crore on the advertisement, then what is the difference between taxes and households?

(a) 1.25 crore (b) 95 lakhs
(c) 65 lakhs (d) 35 lakhs

RRB NTPC 29.04.2016 Shift : 2

Ans. (d) :

Difference between transport and taxes% = 12.5–10 = 2.5

Advertising expenditure = 15%

$$\frac{15\%}{21000000} = \frac{2.5\%}{x}$$

$$\Rightarrow \frac{21000000 \times 2.5}{15} = x$$

$\Rightarrow$ x = 35 Lakh

30. CO_2 emissions in 3 years in the following municipality has given.

Year	CO_2 emission from house
2015	100
2016	110
2017	150

What is the percentage increase in CO_2 emission between 2016 and 2017?

(a) 63.63% (b) 36.36%
(c) 36.45% (d) 26.36%

RRB Group-D – 17/09/2018 (Shift-II)

Ans : (b) Increase in percentage of CO_2 emission between 2016 and 2017

$$= \frac{150 - 110}{110} \times 100 = \frac{40}{110} \times 100 = 36.36\%$$

31. The following table gives the details of 3 years of sales of the company.

	Sales in lakh (Area-1)	Sales in lakh (Area-2)
2014	7	3
2015	15	5
2016	18	7

What was the percentage difference of sales in the year 2014 and 2016?

(a) 1.5% increment (b) 1.5% increment
(c) 150% increment (d) 150% increment

RRB Group-D – 12/11/2018 (Shift-III)

Ans : (c) Difference % $= \frac{(18+7)-(7+3)}{(7+3)} \times 100$

$= \frac{25-10}{10} \times 100 = \frac{15}{10} \times 100$

= increase 150%

32. Uma is organizing a terrace party. She determines the total estimated expenditure according to the table given in the following five plants.

Estimate expenditure	% Expenditure
1	**30**
2	**20**
3	**10**
4	**25**
5	**15**

If she spends 850 on item 3, then what is the total expenditere on item 2 and 5.

(a) Rs. 1795 (b) Rs. 2975
(c) Rs. 1275 (d) Rs. 1175

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (b) : The total amount spent by Uma at item 3 is Rs. 850, which is 10% of the total amount

$\therefore$ total amount $= \frac{850 \times 100}{10}$ = Rs. 8500

$\therefore$ spent amount on item- 2 $= \frac{8500 \times 20}{100}$ = Rs. 1700

$\therefore$ spent amount on item- 5 $= \frac{8500 \times 15}{100}$ = Rs. 1275

total expenditure incurred by Uma on item-2 and item - 5 = 1700+1275 = Rs. 2975

33. Expense on various items of a company are shown below (in lakhs).

Year	Salary	Bonus	Tax	Interest on debt
year 1	200	10	70	20
year 2	200	10	70	22
year 3	450	10	120	20

What is the percentage of the total expenditure of year 12 of the total expenditure of year 3.

(a) 100% (b) 5%
(c) 0.5% (d) 50%

RRB Group-D – 19/09/2018 (Shift-II)

Ans. (d) : From the given table-

total expenditure of one year = 200+10+70+20 = 300 lakh rupees

total expenditure of three year = 450+10+120+20= 600 lakh rupees

$\therefore$ intended percentage = $\frac{300}{600} \times 100 = 50\%$

34. For 3 years of a special brand of sugar in three states sales data are given in the table below. Data are in lakh rupees.

	State 1	State 2	State 3
years 1	15	12	9
years 2	12	14	8
years 3	14	15	13

What is the percentage difference in sales for 1 year to 3 years.

(a) 18% (b) 16.67%
(c) 19.67% (d) 15.67%

RRB Group-D – 26/09/2018 (Shift-I)

Ans : (b) Total sales of one year = 15 + 12 + 9 = 36
total sales of three year = 14 + 15 + 13 = 42
difference = 6

intended % $= \frac{6}{36} \times 100 = 16.67\%$

35. The operating cost of a company is given below.

	2016	2017
Debt interest	25%	25%
Salary	50%	55%
Tax	25%	20%

Total money spent on operations in 2016 is 120 lakhs and total money spent in 2017 is 150 lakhs. How such was the salary higher in 2017 than in 2016 ?

(a) Rs. 20 lakhs (b) Rs. 10 lakhs
(c) Rs. 22.5 lakhs (d) Rs. 5 lakhs

RRB Group-D – 28/09/2018 (Shift-II)

Ans. (c) : Expenditure on salaries in 2016 = $120 \times \frac{50}{100}$ = 60 Lakhs rupees

expenditure on salaries in 2017 = $150 \times \frac{55}{100}$ = 82.5 Lakh rupees

increase in salary in 2017 compared to 2016 = 82.5-60 = 22.5 Lakh rupees

36. Based on the following table, in which months number of production of screues is greater than the overage number of production of screues in each months.

Months	The number of produced screws (In thousand)
January	**200**
February	**300**
March	**250**
April	**250**
May	**230**
June	**270**

(a) only June (b) February and June
(c) January and February (d) May and June

RRB Group-D – 05/10/2018 (Shift-II)

Ans. (b) : Average number of screws

$$= \frac{200+300+250+250+230+270}{6}$$

$$= \frac{1500}{6} = 250$$

Hence the months of production of screws above the average number of screw are February and June

37. The following table gives the average price per quarter of vegetables in 2 years. In which quarter the price difference was maximum?

	Price kg (Rs.) year 1	Price kg (Rs.) year 2
Qua-1	36	40
Qua-2	80	80
Qua-3	65	40
Qua-4	43	40

(a) quarter 4 (b) quarter 1
(c) quarter 2 (d) quarter 3

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (d) Difference in quarter 1 = 40 – 36 = 4
Difference in quarter 2 = 80 – 80 = 0
Difference in quarter 3 = 65 – 40 = 25
Difference in quarter 4 = 43–40 = 3
The difference of quarter 3 is the highest among the four quarters

38. According to the following table. Over a period of 2 years. for how many months the prices of vegetables remain the same ?

Month	Price per kg (Rs.) year-1	Price per kg (Rs.) 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

(a) 6 (b) 5
(c) 3 (d) 2

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (b) In a period of 2 years, the months in which the prices of vegetables were same-
April, May, June, July, October
So the price of vegetables the same for five months

39. What is his average score in a game based on the following table in a football team scoring the following goals in six matches?

Play	Number of goals
Game 1	**2**
Game 2	**1**
Game 3	**0**
Game 4	**4**
Game 5	**3**
Game 6	**2**

(a) 4 (b) 3
(c) 1 (d) 2

RRB Group-D – 22/10/2018 (Shift-II)

Ans : (d) Number of games = 6
total number of goals = 2 + 1 + 0 + 4 + 3 + 2
= 12
average score in game = 12/6
= 2

40. The monthly fees charged by a sports complex for various disciplines are as follows: Rs. 500 for gym, Rs. 1,500 for swimming pool and Rs. 2000 for tennis court. The list of consumers using these facilities is given below. How much does the gym earn from users who use it.

Facilities	Number of consumers
Gym	300
Swimming pool	200
Tennis court	100

(a) Rs. 1,50,000 (b) Rs. 15,000
(c) Rs. 25,000 (d) Rs. 50,000

RRB Group-D – 18/09/2018 (Shift-III)

Ans. (a) : Number of gym consumers = 300
gym fee = Rs. 500
per month earnings from gym =300× 500 = Rs.1,50,000

Note (41-43): Read the information given below and answer the questions given below.

The information of the number of sitting, answering and selected candidates from Delhi in competitive examination between 1997 and 2001 is given below.

Year	Sitting in examination	Passed	Selected
1997	8000	850	94
1998	4800	500	48
1999	7500	640	82
2000	9500	850	90
2001	9000	800	70

41. In which year was the minimum percentage of selected candidates among the candidates.

(a) 1998 (b) 2000
(c) 2001 (d) 1999

RRB NTPC 28.04.2016 Shift : 2

Ans.(c) Percentage of selected candidates in the year 1997

$$= \frac{94 \times 100}{8000} = 1.175\%$$

Percentage of selected candidates in the year 1998

$$= \frac{48 \times 100}{4800}$$
$$= 1\%$$

Percentage of selected candidates in the year 1999

$$= \frac{82 \times 100}{7500}$$
$$= 1.093\%$$

Percentage of selected candidates in the year 2000

$$= \frac{90 \times 100}{9500}$$
$$= 0.947\%$$

Percentage of selected candidates in the year 2001

$$= \frac{70 \times 100}{9000}$$
$$= 0.7778\%$$

So percentage of selected candidates in the year 2001 is minimum.

42. In which year the ratio of the number of selected candidates to the number of passed candidates was maximum.

(a) 1998 (b) 2000
(c) 2001 (d) 1999

RRB NTPC 28.04.2016 Shift : 2

Ans. (d) : Ratio in 1998 years $= \frac{48}{500} = 0.096$

Ratio in 2000 years $= \frac{90}{850} = 0.1058$

Ratio in 2001 years $= \frac{70}{800} = 0.0875$

Ratio in 1999 years $= \frac{82}{640} = 0.128$

The ratio of the number of selected candidates to the number of passed candidates in 1999 is the maximum.

43. What is the average number of selected candidates in the given interval.

(a) 79 (b) 77
(c) 76 (d) 74

RRB NTPC 28.04.2016 Shift : 2

Ans. (b) : Average number of selected candidates

$$= \frac{94 + 48 + 82 + 90 + 70}{5}$$

$$= \frac{384}{5} = 76.8 \approx 77$$

Note (44-45): The following table shows the population details based on poverty line and gender in 5 states M, N, O, P and Q.

State	Population of below poverty line %	The ratio of male (M) and female (F)	
		Below poverty line	Above poverty line
		M : F	M : F
M	40	7 : 6	8 : 7
N	30	3 : 2	6 : 5
O	26	1 : 1	4 : 3
P	17	1 : 2	4 : 5
Q	20	2 : 3	3 : 4

44. If the men population of state O above the poverty line is 1.7 million. The what will be the total population of state O.

(a) 4.62 million (b) 11.44 million
(c) 5.63 million (d) 4.02 million

RRB NTPC 28.04.2016 Shift : 1

Ans. (d) : $\because$ Male population above million the state O poverty line = 1.7 millions

$\therefore$ female population $= \frac{3}{4} \times 1.7 = \frac{5.1}{4}$

= 1.275 million

total population above the poverty line = 1.7 + 1.275

= 2.975

population (%) above the state O poverty = 100 – 26

= 74 %

$\therefore$ total population of state O $= \frac{2.975 \times 100}{74}$

= 4.02 million

45. What will be the female population above the poverty line of state P if it is known that the total population of state P is 9 million.

(a) 4.32 million (b) 5.32 million
(c) 4.15 million (d) 6.32 million

RRB NTPC 28.04.2016 Shift : 1

Ans. (c) : $\because$ Total population of P states = 9 million

$\therefore$ population of state P above the poverty line = 9 million's 83%

$$= 9 \times \frac{83}{100} = \frac{747}{100} = 7.47 \text{ million}$$

$\because$ ratio of male to female in population of state P above the poverty line = 4:5

$\therefore$ female population above poverty line $= \frac{5}{4+5} \times 7.47$

$= \frac{5}{9} \times 7.47 = \frac{37.35}{9} = 4.15$ million

Note (46) : The following table shows the record of a football team's performance in 7 tournaments played for 4 years.

Record of played tournaments	Won matches	Loose matches	The no. of total played matches
I	5	3	8
II	4	4	8
III	5	2	7
IV	6	3	9
V	4	2	6
VI	3	3	6
VII	2	4	6

46. In what percentage of the matches played the team won.

(a) 58% (b) 80%
(c) 75% (d) 52%

RRB NTPC 19.01.2017 Shift : 3

Ans. (a) : Total matches played = 50
total matches won = 29
$\frac{29}{50} \times 100$
$\Rightarrow$ 58%

Note (47- 49): Study the following tables and answer the questions based on it

The following tables gives the company's investment for a few years as a per year.

year	Expense of details				
	Salary	Fuel and Transport	Bonus	Interest on dept	Taxes
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

47. The company's total expenditure on goods during the year 2001 is.

(a) Rs. 590 lakhs (b) Rs. 598 lakhs
(c) Rs. 597 lakhs (d) Rs. 597.08 lakhs

RRB NTPC 11.04.2016 Shift : 1

Ans. (d) : Total expenditure of the company on goods during the year 2001 = 336 + 133 + 3.68 + 36.4 + 88
= Rs. 597.08 Lakh

48. What is the ratio between the total expenditure on tax for all the years and the total bonus for all the years in order.

(a) 9 : 40 (b) 25 : 13
(c) 451 : 17 (d) 1 : 25

RRB NTPC 11.04.2016 Shift : 1

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
$\therefore$ Intended ratio = 451 : 17

49. What is the percentage of expenditure on salary in the year 2001 on fuel and transport forms.

(a) 34.54% (b) 39.58%
(c) 33.57% (d) 37.58%

RRB NTPC 11.04.2016 Shift : 1

Ans. (b) : In year 2001,
expense on fuel and transport = 133 Lakh
expense on salary = 336 Lakh
$\therefore$ intended percentage $= \frac{133}{336} \times 100$
= 39.58%

Note (50-52): The following table shows the number of MSD, VK, RD and SR fans in different areas of the city. Consider the following information and answer the following question 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

50. What is the difference between total number of fans of SR and MSD?

(a) 1500 (b) 1600
(c) 3000 (d) 3200

RRB NTPC 19.04.2016 Shift : 2

Ans. (b) : Total number of SR fan's-
= 1500 + 4000 + 3500 + 2500 = 11500
total number of MSD fan's
= 3000 + 3000 + 4000 + 3100 = 13100
difference = 13100 – 11500
= 1600

51. Whose fans are largest?

(a) VK (b) MSD
(c) RD (d) SR

RRB NTPC 19.04.2016 Shift : 2

Ans. (c) : Number of VK fan's
= 2500 +1700+2300+5000 = 11500
number of MSD fan's
= 3000 + 3000 + 4000 + 3100 = 13100
number of RD fan's
= 1500 + 3500 + 4500 + 5200 = 14700
number of SR fan's
= 1500 + 4000 + 3500 + 2500 = 11500
So it is clear that maximum number of fan's (14700) is of RD

52. What is difference between number of fans in area 2 as compared to area 3.

(a) Area 2 to 2200 fans more
(b) Area 2 to 2100 fans less
(c) Area 2 to 2100 fans more
(d) Area 2 to 2200 fans less

RRB NTPC 19.04.2016 Shift : 2

Ans. (b) : Fan's number of area- 2
= 1700 + 3000 + 3500 + 4000 = 12200
fan's number of area-3 = 2300 + 4000 + 4500 + 3500
= 14300
difference = 14300–12200 = 2100
It is clear that in area-2 is minimum 2100 fan's as compare to area-3

Instruction (53-55): Study the given data and answer the question that follow (In lakh hectares)

State	2011	2012	2013
Punjab	220	256	264
Harayana	120	108	151
Uttar Pradesh	100	143	128
Madhya Pradesh	40	85	90
Maharastra	80	150	175
Rajasthan	30	26	24

53. What was the percentage of increase in agriculture land in Punjab in 2013 compared to year 2011?

(a) 20 (b) 16.36
(c) 25.8 (d) 22.33

RRB NTPC 18.01.2017 Shift : 2

Ans. (a) : % increament $= \frac{(264-220)\times 100}{220}$

$\Rightarrow \frac{44\times 100}{220} = 20\%$

54. What is the difference in the total agriculture area of lakh hectares of Maharastra and M.P. on a combined bares in all 3 years.

(a) 135 (lakh hectare) (b) 34 (lakh hectare)
(c) 190 (lakh hectare) (d) 174 (lakh hectare)

RRB NTPC 18.01.2017 Shift : 2

Ans. (c)
Total agriculture area in difference of Maharashtra and Madhya Pradesh
⇒ (80+150+175) – (40+85+90)
⇒ 405–215 = 190 (Lakh hectare)

55. What was the maximum agriculture area in U.P. as compared to Rajasthan in the year 2012.

(a) 35 (lakh hectare) (b) 117 (lakh hectare)
(c) 113 (lakh hectare) (d) 58 (lakh hectare)

RRB NTPC 18.01.2017 Shift : 2

Ans : (b) Agriculture area of 2012 Uttar Pradesh agriculture of 2012 Rajasthan
143–26 = 117 (Lakh hectare)

Instruction (56-58): Take of the following table and answer the question based on it.

The marks scored by the students in various subject in an examination are given below.

Student	Subject			
	Physics (In 120)	Chemistry (In 120)	Biology (In 120)	Mathematics (In 120)
Anil	95	53	61	70
Binu	105	84	42	80
Chirag	95	65	73	90
Dhawan	85	65	84	60
Alza	85	66	95	50
Farah	75	77	85	40
George	65	38	75	80

56. How many students have scored more than 60% in the exam.

(a) 7 (b) 6
(c) 5 (d) 4

RRB NTPC 04.04.2016 Shift : 3

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 marks of Binu

$= \frac{105+84+42+80}{460}\times 100$

$= \frac{311}{460}\times 100 = 67.60\%$

Chirag's percentage marks $= \frac{95+65+73+90}{460}\times 100$

$= \frac{323}{460}\times 100 = 70.21\%$

Dhawan's percentage marks

$= \frac{85+65+84+60}{460}\times 100 = \frac{294}{460}\times 100 = 63.91\%$

Alza's percentage marks

$= \frac{85+66+95+50}{460}\times 100 = \frac{296}{460}\times 100 = 64.34\%$

Farah's average marks

$= \frac{75+77+85+40}{460}\times 100 = \frac{277}{460}\times 100 = 60.21\%$

George percentage marks

$= \frac{65+38+75+80}{460}\times 100 = \frac{258}{460}\times 100 = 56.08\%$

Hence the remaining 6 students except George have scored more than 60%

57. Who is first in class in terms of total percentage mark in the exam.

(a) Binu (b) Chirag
(c) Dhawan (d) Alja

RRB NTPC 04.04.2016 Shift : 3

Ans. (b) : The percentage of Chirag is the highest in the class (70.21%). See the explanation of the above question.

58. What is the average of more marks by Dhawan in all 4 subjects?

(a) 65.3 (b) 71.3
(c) 68.3 (d) 73.5

RRB NTPC 04.04.2016 Shift : 3

Ans. (d) : Dhawan's average score $= \frac{85+65+84+60}{4}$

$= \frac{294}{4} = 73.5$

59. The following table gives the details of the number of students in Class 10, section A and B, who had taken their midterm and final exams.

Result	Section A 10 'A'	Section B 10 'B'
Total number students who failed in both the exams	**28**	**23**
Total number of students who failed in the midterm but passed in the final exam	**14**	**12**
Total number of students who passed in the midterm but failed in the final exam	**6**	**17**
Total Number of students who passed in both the exams	**64**	**55**

Based on the above data, what percentage of class 10 A students were successful final exam.

(a) 69.64 (b) 69.70
(c) 69.69 (d) 69.54

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) Passed students number in last year exam = 64+14=78
total number of students = 14+28+6+64= 112
succeed students percentage of 10 'A' in last year

$= \frac{78}{112} \times 100$

= 69.64

60.

Stu / Sub	P	C	B	M
W	**70**	**90**	**50**	**85**
X	**55**	**80**	**95**	**60**
Y	**60**	**20**	**90**	**40**
Z	**90**	**80**	**40**	**65**

The given table represents the marks obtained by four students W, X, Y and Z in four subjects P, C, B and M, with the maximum marks in each subject being 100.

Based on the given data, the student who got the lowest percentage in P, C, M and B combined is:

(a) Y (b) Z
(c) X (d) W

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) According to the question total score of P, C, B, M = 400
scored marks in P, C, B, M by W student
= 70+90+50+85=295

Percentage marks $= \frac{295}{400} \times 100$

= 73.75%

scored marks in P, C, B, M by X students
= 55+80+95+60
= 290

percentage mark $= \frac{290}{400} \times 100$

= 72.5%

scored marks in P, C, B, M by Y students
= 60+20+90+40
= 210

Percentage mark $= \frac{210}{400} \times 100$

= 52.5%

scored marks in P, C, B, M by Z students
= 90+80+40+65
= 275

Percentage mark $= \frac{275}{400} \times 100$

= 68.75%

So it is clear that minimum percentage marks scored by Y

61. Based on the given table, the percentage salary increase per year during the period 2001-2006 was _____ (round off to the nearest integer).

Year	Items of Expenditure			
	Salary	**Food**	**Medicine**	**Tax**
2001	Rs.1,500	Rs. 200	Rs. 500	Rs. 100
2002	Rs.2,600	Rs. 300	Rs. 600	Rs. 200
2003	Rs.3,200	Rs. 150	Rs. 700	Rs. 150
2004	Rs.4,100	Rs. 250	Rs. 650	Rs. 125
2005	Rs.5,000	Rs. 200	Rs. 800	Rs. 150
2006	Rs.5,200	Rs. 100	Rs. 750	Rs. 175

(a) 248 (b) 247
(c) 246 (d) 245

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (b) Salary in year 2001 = Rs.1500
Salary in year 2006 = Rs. 5200
profit = 5200 – 1500 ⇒ Rs. 3700

percentage profit $\Rightarrow \frac{3700 \times 100}{1500}$

⇒ 246.67 or Almost 247 percentage

62. The ratio of salary : expenditure per year during period 2001 : 2006 is :

	Items of Expenditure			
Year	**Salary**	**Food**	**Medicine**	**Tax**
2001	Rs.1,500	Rs.200	Rs.500	Rs. 100
2002	Rs.2,600	Rs.300	Rs.600	Rs. 200
2003	Rs.3,200	Rs.150	Rs.700	Rs. 150
2004	Rs.4,100	Rs.250	Rs.650	Rs. 125
2005	Rs.5,000	Rs.200	Rs.800	Rs. 150
2006	Rs.5,200	Rs.100	Rs.750	Rs. 175

(a) 71/108 (b) 71/105
(c) 105/71 (d) 216/61

RRB ALP & Tec. (21-08-18 Shift-I)

Ans : (d) Total salary till 2001 to 2006 = 1500 + 2600 + 3200 + 4100 + 5000 + 5200 = 21600,
similar
total expenditure till 2001 to 2006 =
2001 ⇒ 200 + 500 + 100 = 800
2002 ⇒ 300 + 600 + 200 = 1100
2003 ⇒ 150 + 700 + 150 = 1000
2004 ⇒ 250 + 650 + 125 = 1025
2005 ⇒ 200 + 800 + 150 = 1150
2006 ⇒ 100 + 750 + 175 = 1025

$$\frac{\text{salary}}{\text{expenditure}} = \frac{21600}{6100} = 216 : 61$$

63. The table gives the details of the number of students in Class 10 section A and B who had taken mid-term and final exams.
What is the pass percentage in at least one of the two exams for sections A (approximately of rounded)?

Result	Sec A	Sec B
Total number of students who failed in both exams	**28**	**23**
Total number of students who failed in mid-term but passed in finals	**14**	**12**
Totals number of students who passed in mid-term but failed in finals	**6**	**17**
Total number of students who passed in both the exams	**64**	**55**

(a) 80 (b) 75
(c) 65 (d) 70

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

Ans : (b) total number of students in section 'A' = (total pass + total failed) number of students = 28+14+6+64= 112
and total number of students passed in at least one examination = number of students passed in one examination + in both examination number of students passed = 14+6+64= 84
Hence the percentage of students passed in at least one examination in section 'A' = $\frac{84}{112} \times 100 = 75\ \%$

64.

City	Population	Literate	Illiterate	% of literates
A	200	150	50	–
B	–	200	100	66.6
C	150	50	100	–
D	120	–	90	25

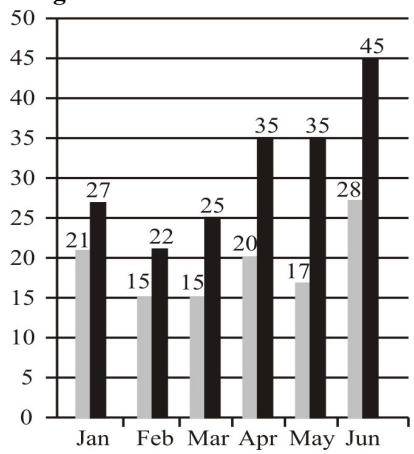
Based on the given data, the total percentage of literates in the four cities together, round to one decimal, is _____.
(a) 55.9 (b) 55
(c) 55.7 (d) 55.8

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

Ans : (d) Total population in city B =200+100 = 300
educated population in city D = 120–90 = 30
total population = 200+300+150+120= 770
total educated people = 150+200+50+30 = 430
total percentage of educated = $\frac{430 \times 100}{770} = 55.84$

Type - 3

65. The given graphics X shows the bike registration in the city in 6 months and total vehicles (in thousand) in the year 2017.
Note : The first column in the chart shows the bike (brown) and the second one shows the total vehicle (black).
What is the number of registered vehicles in addition to the bike in the March 2017 based on the given data.



(a) 15000 (b) 10000
(c) 9000 (d) 11000

RRB RPF Constable – 19/01/2019 (Shift-I)

Ans : (b) ∵ Bike's number in March 2017 = 15000
total transport number in march 2017 = 25000
so registered transport number as well bike
= 25000–15000 = 10000

66. In the following graph, income from the laundry and dry cleaner change of four different shop is given, its values are given in the form of Rupees.

What is percentage difference between month 1 and month 4.

(a) less than 20% (b) more than 25%
(c) mote than 50% (d) less than 25%

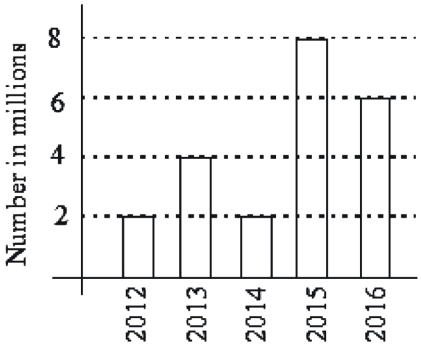
RRB RPF SI – 12/01/2019 (Shift-III)

Ans : (a) difference of one month and four month
= 25000-20000 = 5000

$$\text{difference } \% = \frac{5000}{25000} \times 100 = 20\%$$

So the income of month 4 is the income of 1 month less 20%

67. The figure below report the number of vehicle locomotives manufactured by the company 'ABC' in last 5 years.



In which year the highest number of engines have been made?

(a) 2015 (b) 2014
(c) 2016 (d) 2012

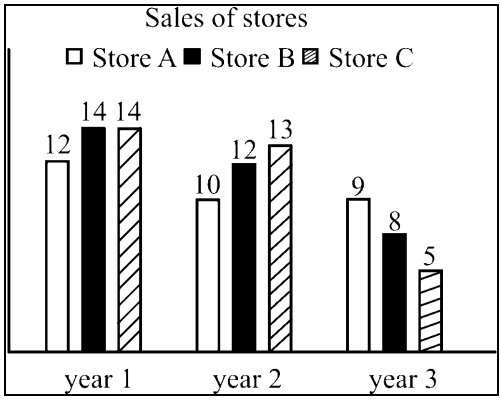
RRB Group-D – 19/09/2018 (Shift-II)

Ans. (a) : According to given graph-

year	Manufacture engines (Millions)
2012	2 Millions
2013	4 Millions
2014	2 Millions
2015	8 Millions
2016	6 Millions

It is clear from the table that the highest production of engines has been done (8 Millions) in this year 2015.

68.



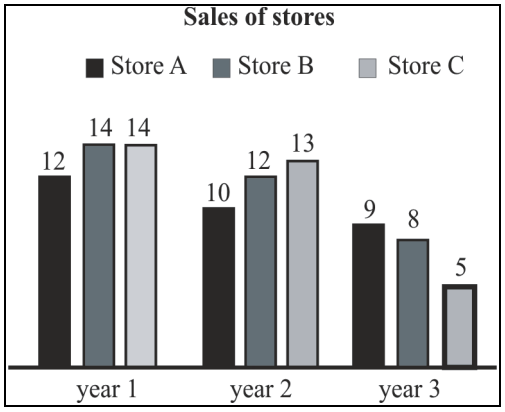
In which year sales of shop C is lower than other 2 years?

(a) year 3
(b) year 1
(c) Sales are same in 3 year
(d) year 2

RRB Group-D – 20/09/2018 (Shift-III)

Ans : (a) sales of C in year 1 = 14
sales of C in year 2 = 13
sales of C in year 3 = 5
Hence C's sales in year 3 were lower than other years:

69. According to the given chart, in which year sales of story B are more than 13 lakhs?



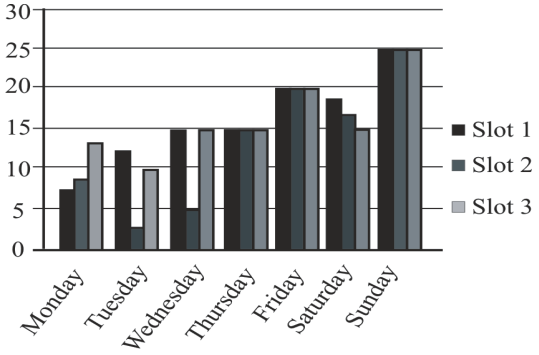
Note : Sales figures are in lakhs (Rs.)

(a) 2 year (b) 1 year and 2 year
(c) 1 year (d) 3 year

RRB Group-D – 23/09/2018 (Shift-I)

Ans : (c) After studying the given chart it is found that the sales of store B in year 1 = 14 Lakhs
the sales of store B in year 2 = 12 Lakhs
and sales of store B in year 3 = 8 Lakhs
So it is clear that in year 1 sales of store B are Rs. 13 Lakhs more.

70. A private gym can accommodate up to 25 people in a time slot. Its user has three different times slots and the following chart shows the average visitors a week. Is showing which day are they more can't accommodate members ?

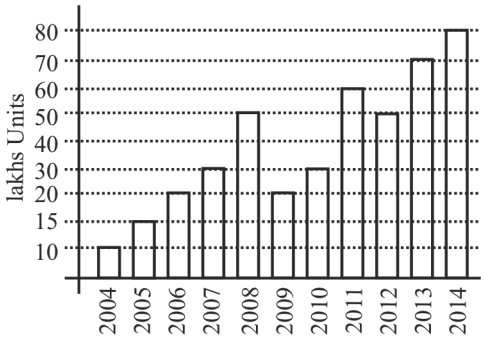


(a) Friday (b) Sunday
(c) Saturday (d) Thursday

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (b) According to the given chart on sunday the number of people in slot 1, slot 2, slot 3 = 25
So on Sunday they could not accommodate more members.

71. The graph below shows information on the personal computer sales over the 11 years by company XYZ.



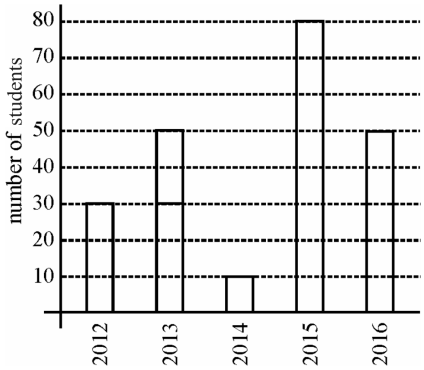
How many units of personal computer were sold by company XYZ in the year 2009. (in lakhs)

(a) 30 (b) 20
(c) 10 (d) 15

RRB Group-D – 10/10/2018 (Shift-II)

Ans : (b) The bar graph given above shows that the sales of private computers by the company XYZ in the year 2009 are 20 lakhs

72. The following bar graph gives information about the students who passed the institute ABC in the national level entrance examination in last 5 years.



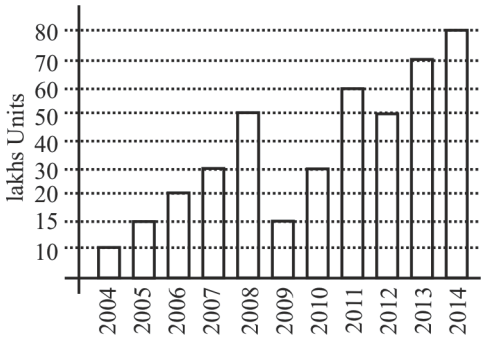
How many students passed from the institute in 2016?

(a) 40 (b) 50
(c) 30 (d) 60

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (b) It is clear from the given bar graph that the number of students passed from institute ABC in the year 2016 = 50

73. The following bar graph displays personal computer information sent by the computer XYZ over the last 11 years.



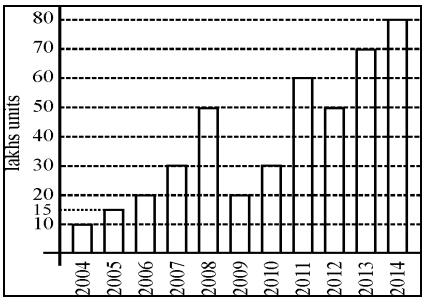
In which year was the lowest personal computer sold by the company XYZ.

(a) 2012 (b) 2014
(c) 2005 (d) 2004

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (d) In the given graph, 2004 graph is at the bottom of all other years. So it is clear from this in 2004 personal computer sales were the lowest at 10 lakhs.

74. The following bar graph displays personal computer information sent by the computer sold by company XYZ.



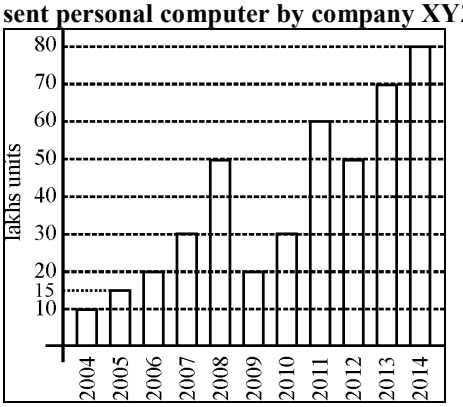
How many computers did XYZ sell in the year 2006?

(a) 10 (b) 15
(c) 20 (d) 30

RRB Group-D – 11/12/2018 (Shift-II)

Ans : (c) It is clear from the given bar graph that in the year 2006 the company XYZ sold 20 lakhs units of personal computers.

75. The following bar graph represent for 11 years, sent personal computer by company XYZ.



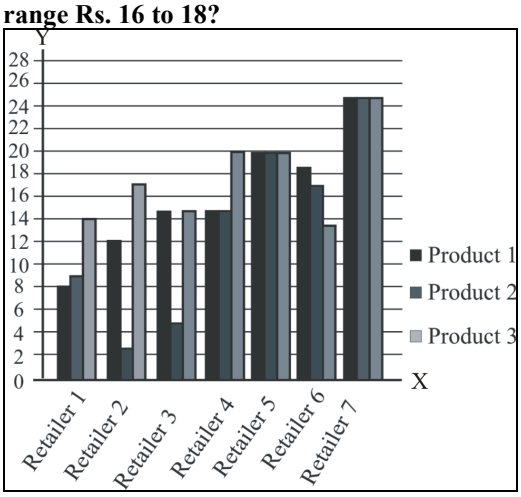
In which year were most computer sold by company XYZ. (in lakhs)

(a) 2014 (b) 2012
(c) 2013 (d) 2007

RRB Group-D – 22/10/2018 (Shift-III)

Ans : (a) Most personal computers (80 lakhs) have been sold by the company XYZ in the year 2014.

76. According to following chart, which retail salesperson provides product 2 in the price range Rs. 16 to 18?



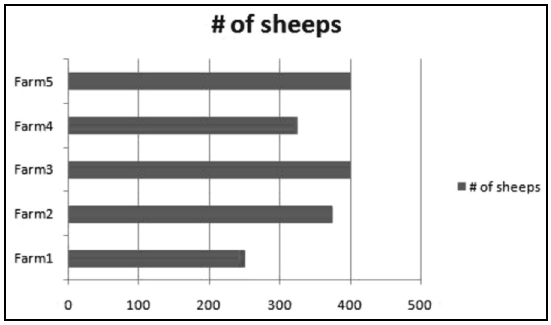
Note : Y axis indicates prize in rupees and X-axis represents the retailers.

(a) Retail Salesperson 1
(b) Retail Salesperson 6
(c) Retail Salesperson 7
(d) Retail Salesperson 2

RRB Group-D – 27/09/2018 (Shift-III)

Ans : (b) According to the chart, the price of Rs. 16 to Rs. 18 is available under the retailer 6

77. On the basis of graph given below which two farms show equal number of sheep?

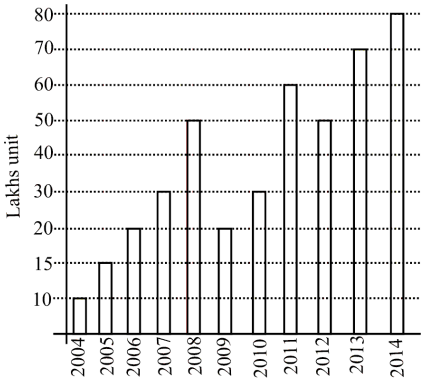


(a) Form 3 and Form 2
(b) Form 3 and Form 1
(c) Form 4 and Form 5
(d) Form 3 and Form 5

RRB Group-D – 10/10/2018 (Shift-I)

Ans : (d) The number of sheep in form 5 and form 3 in the given graph is same.

78. The following bar graph shows information on personal computers sold by the company 'XYZ' over the last 11 year.



Which year was the maximum sales during the year 2004 to 2010?

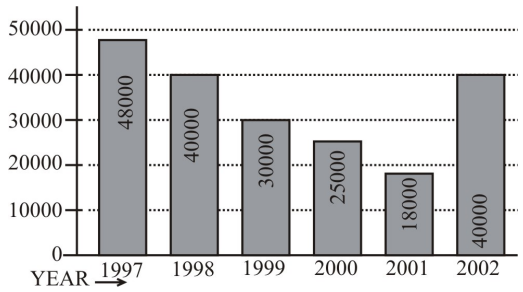
(a) 2010 (b) 2006
(c) 2008 (d) 2004

RRB Group-D – 24/10/2018 (Shift-III)

Ans. (c) : During the year 2004-10, the maximum sales were made in 2008, which was 50 lakh sales.

Note (79-81): This time, pay attention to charts and answer the following question.

following table shows the details of TV sets selling over the years.



79. What is the percentage increment of TV sets selling in years 2001 to 2002 ?

(a) 115% (b) 128%

(c) 122% (d) 118%

RRB NTPC 30.04.2016 Shift : 2

Ans. (c) : % increase in sales of TV sets from 2001 to 2002

$$= \frac{40000-18000}{18000} \times 100$$

$$= \frac{22000 \times 100}{18000} = 122.22\%$$

$\therefore$ % increase $\approx 122\%$

80. The sum of sales of TV sets held in the year 1999 and year 2001 is equal to the sales of which year?

(a) 1997 (b) 1993

(c) 2000 (d) 2002

RRB NTPC 30.04.2016 Shift : 2

Ans. (a) : The sum of sales of TV sets in the year 1999 and year 2001 = 30000 + 18,000 = 48000

Hence 48000 sales is equal to the year 1997 sales

81. The rate of sals for TV sets has been minimum between which two years?

(a) 1998 and 1999

(b) 1999 and 2000

(c) 1997 and 1998

(d) 2001 and 2002

RRB NTPC 30.04.2016 Shift : 2

Ans. (b) :

The difference of sales of TV sets between the year 1998 and 1999

40000 – 30000 = 10,000

the difference of sales of TV sets between the year 1999 and 2000

30000 – 25000 = 5,000

the difference of sales of TV sets between the year 1997 and 1998

48000 – 400000 = 8,000

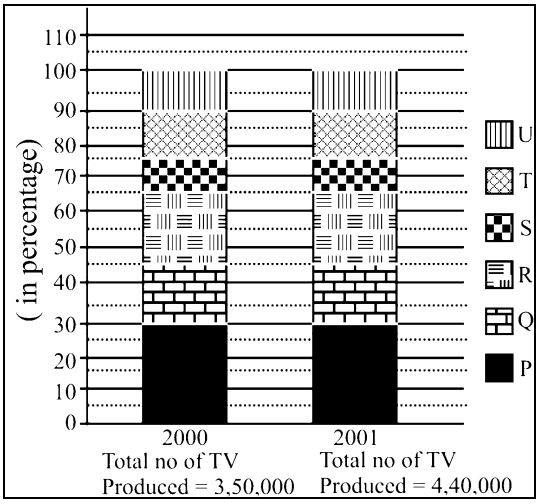
the difference of sales of TV sets between the year 2001 and 2002

40000 – 18000 = 22,000

Therefore between 1999 and 2000, the difference in sales of TV sets was minimum.

Note (82-84): Answer the following questions on the basis given information.

The bar graph below shows the percentage of distribution of the total production of various models of samsung TV company during the two years.



82. If percentage of production of Samsung TV in 2001 was same as the year 2000, what would be the number of production of p type Samsung TV in 2001?

(a) 1,40,000 (b) 1,32,000

(c) 1,17,000 (d) 1,05,000

RRB NTPC 30.04.2016 Shift : 1

Ans. (b) : Number of production P type Samsung TV in 2001

$$= 440000 \times \frac{30}{100}$$

$$= 132000$$

83. If the company had sold 85% of S type Samsung TV in each year, then how many glsry-type Samsung TV were not sold?

(a) 76,500 (b) 93,500

(c) 11,850 (d) 12,2500

RRB NTPC 30.04.2016 Shift : 1

Ans. (c) : Number of not sold S type Samsung TV

$$= 350000 \times \frac{10}{100} \times \frac{(100-85)}{100} + \frac{400000 \times (100-85)}{100} \times \frac{10}{100}$$

$$= 35000 \times \frac{15}{100} + \frac{40000 \times 15}{100}$$

$$= 5250 + 6600$$

$$= 11850$$

84. What is the total number of Samsung TV manufactured in P, Q and T models in the year 2000?

(a) 2,45,0000 (b) 2,27,5000
(c) 2,10,000 (d) 1,92,5000

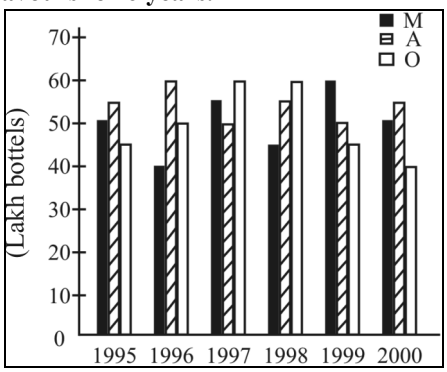
RRB NTPC 30.04.2016 Shift : 1

Ans. (c) : In year 2000 total number of manufactured Samsung TV of P(30%), Q (15%) and T(15%) models

$$= 350000 \times \frac{60}{100} = 210000$$

Note (85-87): Answer the following questions based on the information.

The Coca-Cola company makes drinks in three different flavour mint (M), Apple (A) and Orange (O). The bar graph below shows the production of the three flavours for 6 years.



85. What is the difference between the average production of flavour mint in years 1995, 1996 and 1997 and the average production of flavoure apples in the years 1998, 1999 and 2000.

(a) 5,000 bottles (b) 80,000 bottles
(c) 2,40,000 bottles (d) 5,00,000 bottles

RRB NTPC 29.04.2016 Shift : 3

Ans. (d) : Average production of flavour mint in year 1995, 1996 and 1997 $= \frac{50+40+55}{3} = \frac{145}{3}$ lakh bottles

average production of flavour apple in year 1998, 1999 and 2000

$$= \frac{55+50+55}{3} = \frac{160}{3} \text{ lakh bottles}$$

$\therefore$ Intended difference $= \frac{160}{3} - \frac{145}{3} = 5$ lakh bottles

= 5,00,000 bottles

86. The annual average production of which flavor in the given period is maximum?

(a) Flavour mint
(b) Flavour apple
(c) Flavour orange
(d) Mint and apple

RRB NTPC 29.04.2016 Shift : 3

Ans. (b) : Total annual production average of flavor mint

$$= \frac{50+40+55+45+60+50}{6}$$

$$= \frac{300}{6} = 50 \text{ lakh bottles}$$

total annual production average of flavor apple

$$= \frac{55+60+50+55+50+55}{6}$$

$$= \frac{325}{6} = 54.166 \text{ lakh bottles}$$

total annual production average of flavor orange

$$= \frac{45+50+60+60+45+40}{6}$$

$$= \frac{300}{6} = 50 \text{ lakh bottles}$$

So total annual production average of flavor apple is maximum

87. How much did the production of Orange flavour reduce in the year 2000 compared to in the year 1998 ?

(a) 50% (b) 42%
(c) 33% (d) 25%

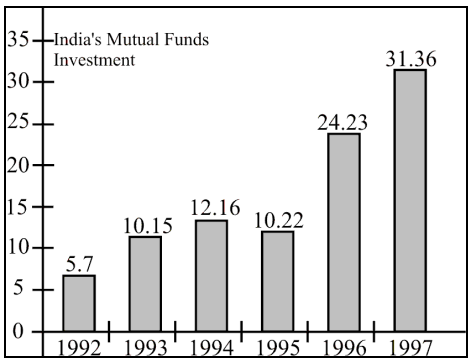
RRB NTPC 29.04.2016 Shift : 3

Ans. (c) : Intended loss $\% = \left(\frac{60-40}{60}\right) \times 100$

= 33.33% = 33%

Given the answer of the questions based on the following chart:

Following bar chart shows the polls of investment of mutual funds in India from all over the world.



88. If India's mutual fund investment was proportionately the same as that of the whole of the world mutual fund investment in 1992 and if mutual fund investment from these countries was 2 million euros in 1992, what was the amount of mutual fund investment from these countries in 1997.

(a) 11 (b) 0.72
(c) 11.28 (d) 11.5

RRB NTPC 27.04.2016 Shift : 1

Ans. (a) : Mutual fund investment ratio in 1992 and 1997 $= \frac{5.7}{31.66} = \frac{570}{3136} = \frac{285}{1568}$

Let mutual fund investment is 285x and 1568x million Euro year in 1992 and 1997

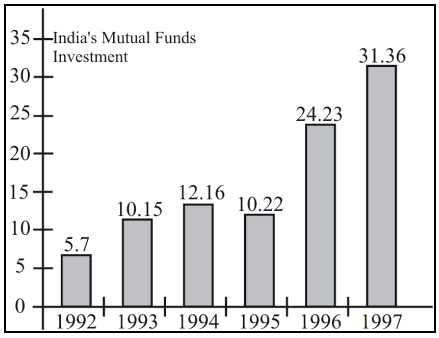
$\therefore$ 285x = 2 million euros

$$x = \frac{2}{285}$$

$\therefore$ quantity of mutual fund investment from the country in 1997

$$= 1568 \times \frac{2}{285} = 11.003 \approx 11 \text{ million euros}$$

The following bar charts refers to the trend of mutual fund's investment in India from around the world.



89. What was the net gap between 1996 and 1997 in investment of mutual fund in India.

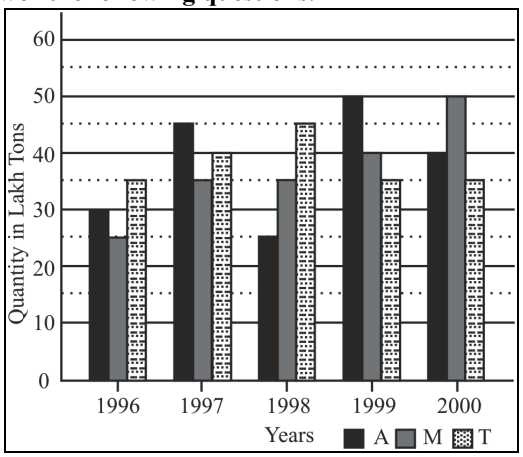
(a) 7.29 (b) 7.13
(c) 8.13 (d) 7.77

RRB NTPC 27.04.2016 Shift : 1

Ans. (b) : Difference in mutual fund's investment in India of year 1996 to 1997 = 31.36 – 24.23 = 7.13

Direction (90-92): The following bar diagram is given below in the last few years, three companies Amber paper mill, Mack paper mill and Tanveer paper mill, respectively shown from A, M, T

If the data produced by paper (in lakh tones) Answer the following questions.



90. Which company produces average in five years maximum ?

(a) Amber paper mill
(b) Mack paper mill
(c) Tanveer paper mill
(d) Both Amber paper mill and Tanveer paper mill

RRB NTPC 07.04.2016 Shift : 1

Ans. (d) : Production average of Amber paper mill

$$(A) = \frac{30+45+25+50+40}{5} = \frac{190}{5} = 38$$

Production average of Mack paper mill

$$= \frac{25+35+35+40+50}{5}$$

$$M = \frac{185}{5} = 37$$

Production average of Tanveer paper mill

$$= \frac{35+40+45+35+35}{5}$$

$$T = \frac{190}{5} = 38$$

So production average will be equal of Amber paper mill and Tanveer paper mill

91. In which year the production of Tanveer paper mill was maximum from Mack paper mill.

(a) 1996 (b) 1997
(c) 1998 (d) 1999

RRB NTPC 07.04.2016 Shift : 1

Ans. (a) : Tanveer's production in 1996 = 35

Mack is production in 1996 = 25

$$\text{Percentage} = \frac{35 \times 100}{25} = 140\%$$

Tanveer's production in 1997 = 40

Mack's production in 1997 = 35

$$\text{Percentage} = \frac{40 \times 100}{35} = 114.2\%$$

Tanveer's production in 1998 = 45

Mack's production in 1998 = 35

$$\text{Percentage} = \frac{45 \times 100}{35} = \frac{9 \times 100}{7} = 1.28 \times 100 = 128\%$$

So, in 1996 Tanveer's production percentage is maximum than Mack's production percentage

92. What is the ratio of average production of Amber paper mill and average production of a Mack paper mill from the time 1998-2000?

(a) 1 : 1 (b) 15 : 17
(c) 23 : 25 (d) 27 : 29

RRB NTPC 07.04.2016 Shift : 1

Ans. (c) : Production average of Amber paper mill

$$= \frac{25+50+40}{3}$$

$$= \frac{115}{3}$$

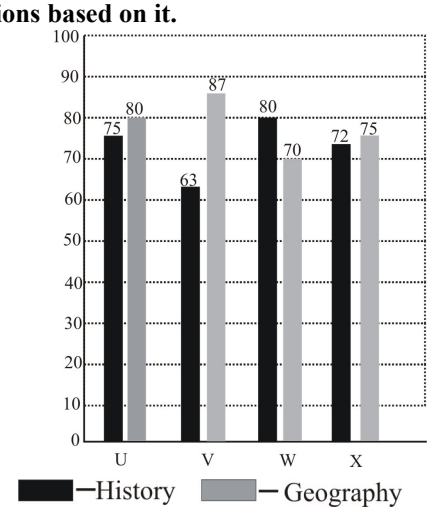
Production average of mack's paper mill

$$= \frac{35+40+50}{3} = \frac{125}{3}$$

intended ratio $= \frac{115}{3} : \frac{125}{3} = 23:25$

Note (93-95):

The bar chart represents percentage marks scored by four students U, V, W and X in History and Geography. Consider the bar chart and answer the questions based on it.



93. What is the percentage difference in the total marks obtained in Geography and History?

(a) 7.58% (b) 7%

(c) 4.13% (d) 5.5%

RRB NTPC 03.04.2016 Shift : 2

Ans. (d) : Scored total marks in Geography

= 80+87+70+75 =312

Scored total marks in history

=75+63+80+72= 290

Intended difference %

$$= \left(\frac{312}{4}\right)\% - \left(\frac{290}{4}\right)\% = \frac{22}{4}\% = 5.5\%$$

94. What is the average percentage marks obtained in History by all students?

(a) 78% (b) 75%

(c) 72.5% (d) 70%

RRB NTPC 03.04.2016 Shift : 2

Ans. (c) : Scored percentage marks in History by all students

$$= \left(\frac{75+63+80+72}{4}\right) = \frac{290}{4}\% = 72.5\%$$

95. Who scored the highest percentage in both the subjects combined?

(a) Both V and W (b) V

(c) W (d) U

RRB NTPC 03.04.2016 Shift : 2

Ans. (d) :

Got percentage marks in History and Geography of U

$$= \frac{(75+80)}{2}\%$$

$$= \frac{155}{2}\% = 77.5\%$$

got percentage marks in History and geography of V

$$= \left(\frac{63+87}{2}\right)\%$$

$$= \frac{150}{2}\% = 75\%$$

got percentage marks in History and Geography of W

$$= \left(\frac{80+70}{2}\right)\%$$

$$= 75\%$$

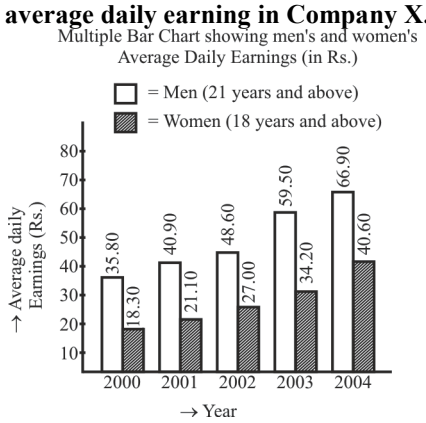
got percentage marks in History and Geography of X

$$= \left(\frac{72+75}{2}\right)\%$$

$$= 73.5\%$$

So percentage marks of U is maximum in both subjects.

96. The given chart shows men's and women's average daily earning in Company X.



Year -

Average daily earnings -

Men (21 years and above) -

Women (18 years and above)-

Based on the depicted data, in which year was the percentage increase of the average daily earning of men maximum over the preceding year ?

(a) 2003 (b) 2001

(c) 2002 (d) 2004

RRB ALP & Tec. (30-08-18 Shift-I)

Ans : (a)

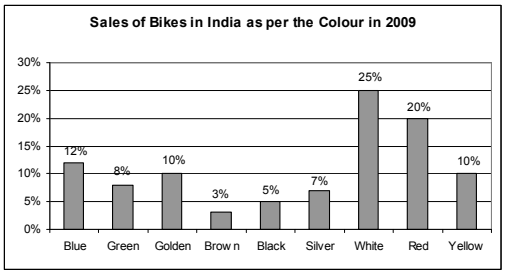
Average daily earning in year 2000 = ₹ 35.80

increase in average daily earning in year 2001 =40.90 – 35.80 = ₹ 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 = ₹ 7.4
So it is clear that average daily earning of males was increase maximum in year 2003

increase percentage $= \frac{10.9 \times 100}{48.60} = 22.43\%$

97. If the total number of bikes sold in 2009 was 50000, then by what number was the sales of white bikes less than that of yellow and red bikes put together?



Sales of bikes by color in Indian in 2009, blue, green, golden, brown, black, silver, white red and yellow.

(a) 5,000 (b) 2,500
(c) 10,000 (d) 3,000

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

Ans : (b) Number of yellow colour bikes

$= 50000 \times \frac{10}{100} = 5000$

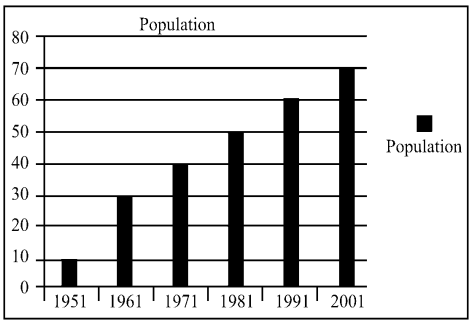
number of red colour bikes $= 50000 \times \frac{20}{100} = 10000$

sales of yellow and red colour bikes = 10000 + 5000
= 15000

number of white colour (sale) bikes $= 50000 \times \frac{25}{100}$
= 12500

intended loss in sales.
= 15000 – 12500 = 2500

98. The percentage increase in the population is highest as compared to that of the previous year in the year :



(a) 2001 (b) 1981
(c) 1971 (d) 1961

RRB ALP & Tec. (17-08-18 Shift-II)

Ans : (d) Population increase in year 2001

$= \frac{70-60}{60} \times 100$

$= \frac{10}{60} \times 100$

$= \frac{100}{6} = 16.66\%$

Population increase in year 1981 $= \frac{50-40}{40} \times 100$

$= \frac{10}{40} \times 100$

$= \frac{100}{4} = 25\%$

Population increase in year 1961 $= \frac{30-10}{10} \times 100$

$= \frac{20}{10} \times 100$

$= 200\%$

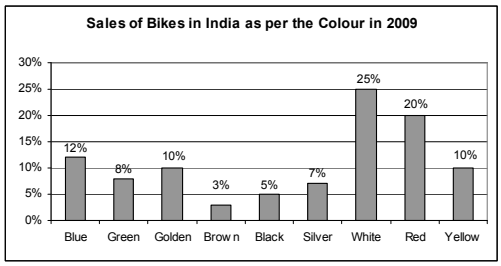
Population increase in year 1971 $= \frac{40-30}{30} \times 100$

$= \frac{10}{30} \times 100 = \frac{100}{3}$

$= 33.33\%$

So percentage increase is maximum compare to previous year in year 1961

99. Study the following graph and answer the question that follows.



If the total number of bikes sold in 2009 was 10000 how many more yellow bikes were sold than green ones?

(a) 200 (b) 2000
(c) 1000 (d) 800

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

Ans : (a) Total sales = 10000

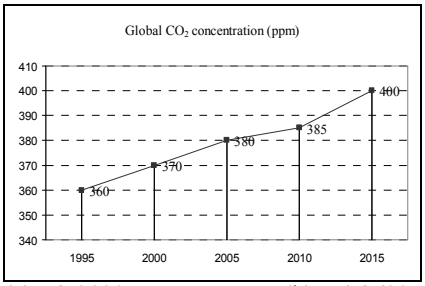
sales of green colour's bikes $= 10000 \times \frac{8}{100}$
= 800

sales of yellow colour's bikes $= 10000 \times \frac{10}{100}$
= 1000

intended difference = 1000 – 800 = 200

Type - 4

100. Based on the given graph, what percentage change in CO_2 concentration from year 2005 to 2015.



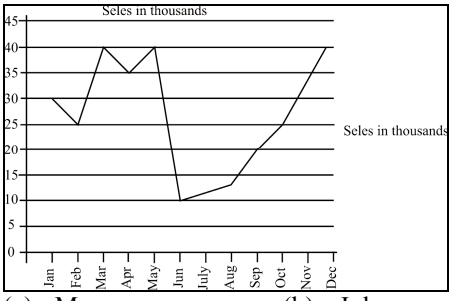
(a) 3.00% (b) 4.26%
(c) 5.00% (d) 5.26%

RRB RPF Constable – 24/01/2019 (Shift-III)

Ans. (d) : CO_2 concentration change from year 2005 to 2015 = 400 – 380 = 20
percentage increase in CO_2 concentration

$$= \frac{20}{380} \times 100 = 5.26\%$$

101. The shop of a sports game contains sales data in the following graphs. In which month has the least sales?

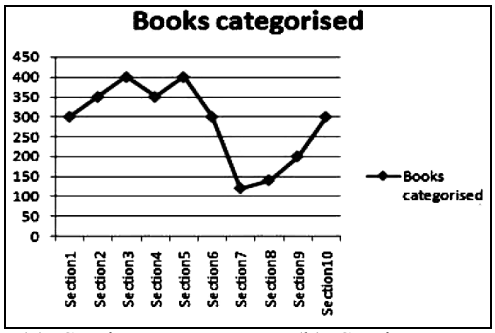


(a) May (b) July
(c) June (d) August

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (c) It is clear from the data given in the graph that the sales are lowest in June (10000)

102. A library has 10 different sections and the librarians verifies books for 20 days. Which section has the lowest number of books?

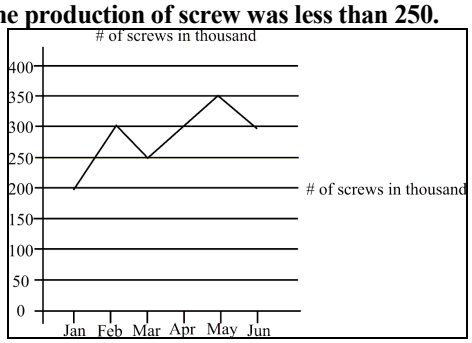


(a) Section 7 (b) Section 5
(c) Section 8 (d) Section 9

RRB Group-D – 18/09/2018 (Shift-II)

Ans. (a) : Given to the graph it is clear that minimum books (125) is in section 7

103. According to the following chart in which month the production of screw was less than 250.

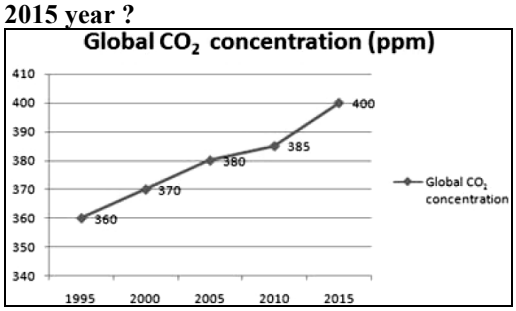


(a) May (b) June
(c) February (d) January

RRB Paramedical Exam – 21/07/2018 (Shift-II)

Ans : (d) It is clear from the chart 200 screws manufactured in January month which is less than 250 screws in March.

104. Based on the given graph, what percentage of a change in humidity of CO_2 from year 1995 to 2015 year ?



(a) 11.26% (b) 11.31%
(c) 11.00% (d) 11.11%

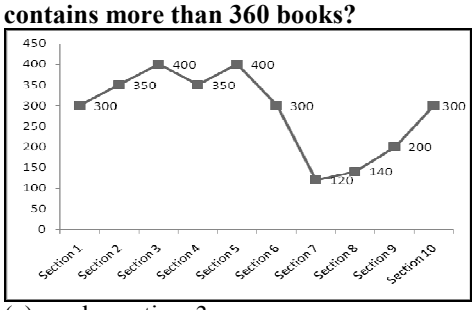
RRB Group-D – 26/09/2018 (Shift-II)

Ans. (d) : from the graph
in concentration percentage change of CO_2

$$= \frac{400-360}{360} \times 100 = \frac{40}{360} \times 100 = 11.11\%$$

So CO_2 in concentration is change 11.11%

105. Based on the graph below, which section contains more than 360 books?



(a) only section 3
(b) section 4 and section 5
(c) section 3 and section 5
(d) section 5 and section 6

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (c) According to the graph in section 3 and section 5 is 400 and 400 books respectively.
Which are maximum number of 360 books in the question.

29.

Miscellaneous

1. If a, b, c and d are in proportional, then find the middle ratio between $(a^2 + c^2)$ and $(b^2 + d^2)$

(a) ab + cd (b) ab - cd

(c) ad - bc (d) ad + bc

RRB JE - 31/05/2019 (Shift-II)

Ans : (a) Given-

$$a : b : c : d \Rightarrow \frac{a}{b} = \frac{c}{d}$$

$\therefore$ ad = bc ---- (i)

Let the middle ratio of $(a^2 + c^2)$ and $(b^2 + d^2)$ is x

$\therefore (a^2 + c^2) : x : (b^2 + d^2)$

$$\Rightarrow \frac{\left(a^2+c^2\right)}{x} = \frac{x}{\left(b^2+d^2\right)} \Rightarrow x^2 = \left(a^2+c^2\right)\left(b^2+d^2\right)$$

$$x = \sqrt{(a^2+c^2)(b^2+d^2)}$$

$$x = \sqrt{a^2b^2 + a^2d^2 + b^2c^2 + c^2d^2}$$

$$x = \sqrt{a^2b^2 + b^2c^2 + b^2c^2 + c^2d^2}$$

$$x = \sqrt{a^2b^2 + c^2d^2 + 2b^2c^2}$$

$$x = \sqrt{a^2b^2 + c^2d^2 + 2bc.bc}$$

$$x = \sqrt{a^2b^2 + c^2d^2 + 2ad.bc} \quad \{\text{from the equation (i)}\}$$

$$x = \sqrt{a^2b^2 + c^2d^2 + 2ab.cd}$$

$$x = \sqrt{(ab+cd)^2}$$

x = ab + cd

2. A series of The Kiosk that set up in different regions is sold for as shown in the following table-

	Sale in Lakh
Region 1	3
Region 2	5
Region 3	8
Region 4	12

Comparison region 3 to region 4 is

(a) 25% more sale (b) 50% more sale

(c) 25% less sale (d) 20% more sale

RRB Group-D – 23/10/2018 (Shift-I)

Ans. (b) :

$$\text{intended increase } \% = \frac{12-8}{8} \times 100 = \frac{4}{8} \times 100 = 50\%$$

= 50% more sale

3. The following table describes the 4 years of sales (in lakh) to the company.

	Sale in Lakh
year 1	35
year 2	80
year 3	90
year 4	100

What percentage difference in sale from year 2 to year 4.

(a) 25% decrease (b) 25% increase

(c) 20% increase (d) 20% decrease

RRB Group-D – 23/10/2018 (Shift-II)

Ans. (b) :

$$\text{Intended increase } \% = \frac{100-80}{80} \times 100$$

$$= \frac{20}{80} \times 100$$

= 25% increase

4. The salary of Q is 4/5 of salary of P which is Rs. 85,000 per month. Salary of R is 3/4 of Q. What is the per month salary of R.

(a) Rs. 68,000 (b) Rs. 61,000

(c) Rs. 51,000 (d) Rs. 45,000

RRB NTPC 05.04.2016 Shift : 2

Ans : (c) Salary of P = Rs. 85000

$$\text{salary of Q} = 85000 \times \frac{4}{5} = \text{Rs. } 68000$$

$$\text{salary of R} = \text{salary of Q } \frac{3}{4} = 68000 \times \frac{3}{4}$$

= Rs. 51000 per month

5. 250 grams of sweet has 20 grams of Cashew and 30 grams of Almonds. How many grams of this sweet will be 350 grams of Cashew and Almonds respectively.

(a) 28 and 42 (b) 21 and 28

(c) 40 and 60 (d) 25 and 45

RRB NTPC 19.01.2017 Shift : 2

Ans :(a) % of Cashew in 250 gram sweet

$$=\frac{20}{250}\times 100=8\%$$

% of Almond in 250 grams sweet $=\frac{30}{250}\times 100=12\%$

According to the question,

quantity of cashew in 350 gram sweet

$$=350\times\frac{8}{100}=28 \text{ gram}$$

quantity of almond in 350 gram sweet

$$=350\times\frac{12}{100}=42 \text{ gram}$$

6. A questions and three statements (I), (II) and (III) are given below. You have to decide which of the statement is/are sufficient to answer the question.

Que.- What is the 40% of a number.

Statement-

I. 25% of that number is 60 less than that number.

II. 20% of that number is an even number.

III. 5% of the twice of that number is 1/10 of that number.

Choose the correct option-

(a) only I is sufficient

(b) II and III both are sufficient

(c) only III or I and II are sufficient

(d) only III is sufficient

RRB NTPC 19.01.2017 Shift : 2

Ans : (a) The statement I is sufficient for answer the question.

considered number $= x$

According to the question-

$$x\times\frac{25}{100}=x-60\Rightarrow\frac{x}{4}=x-60$$

$$\frac{3x}{4}=60$$

$$\boxed{x=80}$$

then

$$x \text{ of } 40\% =80\times\frac{40}{100}=32$$

7. John won a lottery in which the government deducted 35% of the tax and gave 7/8 part to john and remaining to the ticket seller. If the ticket seller received Rs. 22,343.75. What was the amount of lottery?

(a) 2,23.437 (b) 275,000

(c) 264,384 (d) 178,750

RRB NTPC 28.04.2016 Shift : 1

Ans : (b) Assuming lottery amount $= x$ Rs.

governments tax $=\frac{x\times 35}{100}=\frac{35x}{100}$

remain amount $=x-\frac{35x}{100}=\frac{65x}{100}$

share of John $=\frac{65x}{100}\times\frac{7}{8}=\frac{91x}{160}$

remain amount $=\frac{65x}{100}-\frac{91x}{160}=\frac{520x-455x}{800}=\frac{65x}{800}$

$\because \quad \frac{65x}{800}=22343.75$

$$x=\frac{22343.75\times 800}{65}=275000$$

8. Consider the given question and decide which of the following statements is sufficient to answer the question.

How much did Mr. X earn in the year 2000?

Statements:

1. Mr. X earned Rs. 7,000 in 2003, which is 10% more than what he earned in 2000.

2. Mr. Y, Mr. X's wife, earned half of the amount Mr. X earned, and they together earned Rs. 9,000 in 2000.

(a) Either 1 or 2 is sufficient to answer the question

(b) Both 1 and 2 are sufficient to answer the question

(c) only 1 is sufficient while 2 is not sufficient to answer the question

(d) only 2 is sufficient while 1 is not sufficient to answer the question

RRB ALP & Tec. (29-08-18 Shift-III)

Ans : (a) From statement (1)-suppose if the amount earned by Mr. 'X' in the year 2000 is A.

amount earned by Mr. 'X' in the year 2003 = 7000Rs.

Now amount A earned by Mr. 'X' in the year 2000 $\Rightarrow$

$$A+\frac{A\times 10}{100}=7000$$

$$\text{or } \frac{11A}{10}=7000$$

$$\boxed{A=6363.6\,\text{Rs.}}$$

from statement (2)-

suppose amount A earned by Mr. 'X' in the year 2000

amount earned by Mrs. 'Y' in the year 2000 $=\frac{A}{2}$

$$A+\frac{A}{2}=9000$$

$\frac{3A}{2} = 9000$

A = 6000

amount earned by Mrs. 'Y' = 9000 − 6000

= 3000

which is less than half of the earned amount of 'X' in year 2000

Here either statement (1) or statement (2) is sufficient to answer the question.

9. Various bonds of chips are available in a kiosk 70% of the sales of the store come from selling potatoes 30% of sales are other chips and wafers. The average sales of the store in each quarter is Rs. 12,00,000. What is their estimated average monthly sales of potato chips?

(a) Rs. 5,00,000 (b) Rs. 2,50,000

(c) Rs. 3,00,000 (d) Rs. 2,80,000

RRB Group-D – 24/09/2018 (Shift-I)

Ans : (d) Let sales of stores = Rs. x

to sales potato chips $= \frac{x \times 70}{100} = \frac{7x}{10}$

sales of other chips and wafers $= \frac{x \times 30}{100} = \frac{3x}{10}$

sales of potato chips : sales of other chips and wafers $= \frac{7x}{10} : \frac{3x}{10} = 7:3$

∵ store's average sale in every quarter = Rs. 12, 00,000

∴ Store's average sale in every month $= \frac{12,00,000}{3}$

= Rs. 400000

estimated average monthly sales of potato chips $= \frac{400000 \times 7}{(7+3)} = \frac{400000 \times 7}{10}$

= 40000 × 7 = Rs. 2,80,000

10. Which of these deals will be the best in terms of percentage profits

(a) Cost price = 60, Profit = Rs. 32

(b) Cost price = 80, Profit = Rs. 44

(c) Cost price = 50 , Profit = Rs. 26

(d) Cost price = 70, Profit = Rs. 40

RRB NTPC 18.01.2017 Shift : 3

Ans : (d) From the option-

(a) $P\% = \frac{32 \times 100}{60} = 53.33\%$

(b) $P\% = \frac{44 \times 100}{80} = 55\%$

(c) $P\% = \frac{26 \times 50}{100} = 13\%$

(d) $P\% = \frac{40 \times 100}{70} = \boxed{57.14\%}$

So option (d) will be the best deal.

11. Govind buys a laptop in Rs. 40,000 five years ago. What is the profit/loss percentage if the annual rate of depreciation is 10% and has sold it at Rs. 25,000?

(a) neither profit nor loss (b) 25% loss

(c) profit 25% (d) 20% profit

RRB NTPC 30.04.2016 Shift : 1

Ans : (c) Purchase price of goods = 40000

price loss rate = 10%

time = 5 year

purchase price of goods = $\frac{40000 \times 10 \times 5}{100} = 20000$

after five years purchase price of goods = 40000–20000 = 20000

sale price of goods = 25000

profit = 25000 −20000 = 5000

profit % $= \frac{5000 \times 100}{20000} = 25\%$

12. Sunil bought a motorcycle at Rs. 30,000 five years ago. What is the profit/loss percentage (%) if the prescribed annual rate of depreciation is 5% and has sold it for Rs. 20,000

(a) neither gain nor loss (b) 25% loss

(c) 12.5% loss (d) 12.5% gain

RRB NTPC 30.04.2016 Shift : 2

Ans : (c) cost price = Rs. 30,000

after five years total loss = 5×5 = 25%

then after five year cost price $= 30000 \times \frac{(100-25)}{100}$

$= 30000 \times \frac{3}{4}$

= 22500

sale cost = 20,000

∴ loss % $= \left(\frac{22500 - 20,000}{20000} \times 100\right)\%$

$= \frac{2500}{20000} \times 100$

$= \frac{25}{2}\% = 12.5\%$

13. Ravi had Rs. 713.39 in his bank account he deposited some amount in his account and then withdraw the amount for 5 shirt. Cost of each shirt worth Rs. 123.79. If total balance in his account is Rs. 545.19. So how much amount did he deposit.

(a) Rs. 460.70 (b) Rs. 450.75
(c) Rs. 448 (d) Rs. 459.50

RRB Group-D – 03/10/2018 (Shift-III)

Ans : (b) Amount in Ravi's bank account = Rs. 713.39
withdraw money to buy five shirts
= Rs. 123.79 × 5
= Rs. 618.95
suppose deposited amount by Ravi = Rs. x
balance = Rs. 545.19
according to the question-
713.39 + x – 618.95 = 545.19
x + 94.44 = 545.19
x = 545.19 – 94.44
x = ₹ 450.75
So Ravi deposited Rs. 450.75

14. If you want to increase the size of a cubic box, for this you increase its dimensions by half more than that of original size. Which of the following statement is true regarding the volume of the newly formed box after the box size has been increased?

(a) It is 337.5% of the volume of the original box.
(b) It is 112.5% of the volume of the original box.
(c) It is 450% of the volume of the original box.
(d) It is 150% of the volume of the original box.

RRB Group-D – 11/10/2018 (Shift-II)

Ans : (a) Suppose cubic box dimension = a
According to the question-
increased size = 1.5a
volume of cubic box = a^3
and volume of cubic box with 1.5a dimensions = $(1.5a)^3$
$= 3.375a^3$
after the box size increase, this will be volume of the original box 3.375 double or (3.375 × 100)%
= 337.5%

15. Emma makes arrangements for a Kitty party she divides the total expected expenditure into five broad segment. The distribution has been given here.

Expense Segment	expense %
1	25
2	20
3	15
4	30
5	10

If she spends Rs. 3000 on segment 3. So what will be her total expenditure for segment 2 and segment 5.

(a) Rs. 2, 000 (b) Rs. 6, 000
(c) Rs. 3, 000 (d) Rs. 1, 000

RRB Group-D – 11/10/2018 (Shift-III)

Ans : (b) Spend percentage at segment 3 = 15
given 15% = 3000
and spend percentage of segment 2 and 5 = 20 + 10 = 30%
15% = 3000
$1\% = \frac{3000}{15}$
$30\% = \frac{3000 \times 30}{15} = 6000$
so 30% = Rs. 6000

16. A rich man divided his property among five sons. But later he withdraw his share of the youngest son and divided it into other sons, if the eldest son would now have 93..75m^2 land. How much land did the rich actually own.

(a) 375 m^2 (b) 395 m^2
(c) 315 m^2 (d) 275 m^2

RRB Group-D – 15/10/2018 (Shift-I)

Ans : (a) Considered the total wealth of rich man= x m^2
⇒ each son got share $= \frac{x}{5}$ part
⇒ the share of the younger son is shared by every four sons and the older son gets the share $= \frac{x}{5} + \frac{x}{20}$
According to the question.
⇒ $\frac{x}{5} + \frac{x}{20} = 93.75$
⇒ $4x + x = 93.75 \times 20$
⇒ $5x = 1875$
⇒ $x = 375$
⇒ $x = 375$ m^2
⇒ so the total wealth of the rich man was 375 m^2

17. 216 cards are distributed between A and B. First the cards are distributed between A and B respectively in 5:4 the ratio. After some times CARDS are recollected and distributed between A and B respectively in the ratio 11:13. How many card received from A to the second time than before?

(a) 3 less (b) 3 more
(c) 21 more (d) 21 less

RRB Group-D – 25/09/2018 (Shift-III)

Ans. (d) : Ratio of the card distributed between A and B
A : B = 5 : 4

Card received by $A = \frac{5}{9} \times 216 = 120$

Card received by $B = \frac{4}{9} \times 216 = 96$

Ratio of the distribution of recollected cards.

A : B = 11 : 13

Again card received by $A = \frac{11}{24} \times 216 = 99$

Again card received by $B = \frac{13}{24} \times 216 = 117$

∴ Card received by A as compared to second time
= 120 – 99
= 21 is less

18. A grasshopper of 63 grams can be eaten by three ants separately in 3, 4 and 6 days respectively if they eat the grasshopper together, find their share (in gram) till they finish it.

(a) 28, 21, 14 (b) 30, 21, 12
(c) 31, 20, 12 (d) 31, 21, 15

RRB Group-D – 27/11/2018 (Shift-III)

Ans. (a) Time = 3 : 4 : 6

Therefore part $= \frac{1}{3} : \frac{1}{4} : \frac{1}{6} = 4 : 3 : 2$

Suppose that their share is 4x, 3x and 2x

4x + 3x + 2x = 63
9x = 63
x = 7

∴ Shares of three = 28, 21, 14

19. Jane won the lottery and get 1/3 of the prize money she makes a donation of Rs. 6000 which is 1/6th part. The total amount of lottery is:

(a) 36000 (b) 18000
(c) 54000 (d) 108000

RRB NTPC 03.04.2016 Shift : 2

Ans : (d) Let the price of the lottery = Rs. x
From the question-

$$\left(\frac{x}{3}\right) \times \frac{1}{6} = 6000$$

$$\frac{x}{18} = 6000$$

x = Rs. 108000

20. Rani and Malika have a total of Rs. 227, Rani and Tamali have Rs. 273, while the Tamali and Malika have total Rs. 280 what is the amount of money Malika has?

(a) ₹ 113 (b) ₹ 123
(c) ₹ 127 (d) ₹ 117

RRB Group-D – 30/10/2018 (Shift-II)

Ans : (d) Malika + Rani = 227 -----(I)
Rani + Tamali = 273 -----(II)
Tamali + Malika = 280 -----(III)

On adding equation I, II, and III

2 (Malika + Rani + Tamali) = 227 +273 +280

Malika + Rani + Tamali = $\frac{780}{2}$ =390-----(IV)

Putting the value of eqn. II in eqn. IV

Malika + 273 = 390
Malika = 390 - 273 = Rs. 117

21. In a college of 420 students, each students reads 5 subject and 60 students read each subjects then what is the total number of subjects that was read.

(a) Approximately 35 (b) Approximately 25
(c) At least 50 (d) At most 30

RRB Group-D – 24/10/2018 (Shift-I)

Ans : (a)
No. of total students in college = 420

No. of subjects studied by 60 students $= \frac{420}{60} = 7$

∵ each students studies 5 subjects

∴ Total no. of subjects studied = 7 × 5 = 35

22. In group of boys, 22 like sweets, 10 like puff and 10 like cakes. Three of them like all three from the items, at least two items are liked by 7. How many of them like only one item?

(a) 38 (b) 24
(c) 25 (d) 35

RRB Group-D – 30/10/2018 (Shift-III)

Ans. (c) : No. of peoples who like only one item.
= 22+10+10-3-2× 7 = 42-17 = 25

23. Read the following table carefully and answer the question given below A classification of 100 students based on marks obtained in mathematics and science in engineering entrance exam.

marks obtained out of 50/ subject	40 and more	30 and more	20 and more	10 and more	0 and more
Maths	23	26	70	90	100
Science	15	36	75	95	100
Total Average	19	31	80	93	100

How many students scored less than 60% marks in total?

(a) 50 (b) 69
(c) 65 (d) 27

Ans : (b) No. of students who scored less than 60% = no. of total students − no. of students who scored less than 60% = 100 – 31 = 69

24. A man has a few small boxes to pack in the parcel. If he pack 3, 4, 5 or 6 boxes in the parcel, then he left 1 box. If he pack 7 parcel then there is no one left, what can be the number of packing boxes?

(a) 405 (b) 309
(c) 400 (d) 301

RRB Group-D – 30/10/2018 (Shift-I)

Ans : (d) No of parcels = 3 × 4 × 5 × 6 = 300
If he pack 3, 4, 5 or 6 boxes in the parcel, then he left 1 box.
then the number of packing boxes
3 × 4 × 5 × 6 + 1 = 300 + 1
= 301

25. The ratio of each interior angle of a regular heptagon and a regular dodecagon will be:

(a) 4:5 (b) 2:3
(c) 7:12 (d) 6:7

RRB Group-D – 20/09/2018 (Shift-I)

Ans. (d) : On taking out the ratio of all the interior angles of the regular heptagon and a regular dodecagon

Formula: $\frac{(x-2)\times 180}{x}$ from- where x is no. of sides

So, $\frac{(7-2)\times 180}{7} : \frac{(12-2)\times 180}{12}$

$= \frac{5}{7} : \frac{10}{12}$

12 × 5 = 10 × 7

= 6 : 7

26. How many millimeters in 10 km?

(a) 10^{10} (b) 10^{9}
(c) 10^{8} (d) 10^{7}

RRB NTPC 31.03.2016 Shift : 2

Ans : (d) 1 km = 1000 m
= 1000 × 1000 mm (1 m = 1000 mm)
= 10^6 mm
∴ 10 km = 10 × 10^6 = 10^7 mm

27. What will be the next set of numbers in given series.

(2, 3), (3, 5), (5, 7), (7, 11), (11, 13), _____

(a) (13, 15) (b) (15, 17)
(c) (13, 17) (d) (13, 19)

RRB NTPC 17.01.2017 Shift-1

Ans : (c) The above series is a set of prime numbers
(2,3), (3,5), (5,7), (7,11), (11,13), (13,17)
Therefore the next set of the series is (13, 17)

28. If W > X, X > Y and Y > Z then which of the following conclusion is definitely wrong?

(a) Z > W (b) W > Z
(c) W > Y (d) X > Z

RRB NTPC 16.04.2016 Shift : 2

Ans : (a) Given-
W > X, X >Y, Y > Z
On writing after including the above inequalities
W > X >Y > Z
Therefore it is clear that option (a) Z > W is wrong

29. Read the following and answer the question based on it. Puspa wanted to buy three shirts. He came to know of the following offers.

1. Super sale take 2 shirts at a price of Rs. 749 per shirt and get 30% off on the next shirt.
2. Hot sale : Take 2 shirts at a price of Rs. 799 per shirt and get a discount of 40% on the next shirt.
3. Mega sale : Take 2 shirts of Rs. 1999 and get 1 shirt free.
4. Big sale : Take 2 shirts at the cost of Rs. 999 per shirt and get a discount of 90% on the next shirt.

In the content of price which offer is best which Puspa should choose.

(a) big sale (b) mega sale
(c) super sale (d) hot sale

RRB NTPC 26.04.2016 Shift : 1

Ans : (b)
(1) Cost of 3 shirts according to the super sale

$$= 749 + 749 + 749 \times \frac{70}{100} = \text{Rs. } 2022.3$$

(2) cost of 3 shirts according to the hot sale

$$= 799 + 799 + 799 \times \frac{60}{100} = \text{Rs. } 2077.4$$

(3) cost of 3 shirts according to mega sale
$= 1999 + 0 = \text{Rs. } 1999$
(4) cost of 3 shirts according to big sale =

$$= 999 + 999 + \frac{999 \times 10}{100} = \text{Rs. } 2097.9$$

Therefore the best offer is at mega sale which Puspa should choose.

30. A monkey is climb on a 12 m long tree. If he climbs 2 m in first second. and in next second. he slip 1 m. He repeated this activity again and again. In which second. he climbs on the top of tree.
(a) 20 th (b) 21 st
(c) 22 nd (d) 24 th

RRB NTPC 29.04.2016 Shift : 3

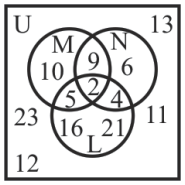
Ans. (b) ∵ The monkey climbs 2 m in first second. but next second. he slips 1 m. So he climbs only one meter in 2 second.
∴ He will climb 10 meter in 20 second.
and in 21 second. he will be able to climb 12 m means he will reach at the top.

31. A man climbs a 24 meter high palm tree. He climbs 4 metres in the first second. and slips 2 metres in the next second. This process is repeated again and again until he does not reaches the top. In which second. he will at the top?
(a) 20 th (b) 21 th
(c) 22 th (d) 24 th

RRB NTPC 30.04.2016 Shift : 1

Ans : (b) In 2 second the distance climbed at the palm tree = 2 m
distance climbed at the palm tree in 20 second. = 20 m
21st second. on means the distance climbed at the palm tree in the last = 20 + 4 = 24 m)
Therefore in 21st second he reaches at the top of 24m palm tree.

32. In the given diagram, Set U is the universal set and Set L, M and N represent students studying History, Geography and Language, respectively.
What is the total number of students studying History and Geography but NOT Language?

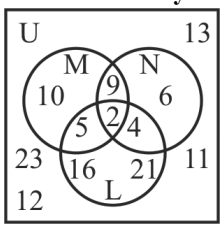


(a) 5 (b) 2
(c) 12 (d) 7

RRB ALP & Tec. (31-08-18 Shift-I)

Ans : (a) It is clear from the given figure-
Total 10 students are studying only geography. In this way
Total of 6 students only study language.
In this way total 5 students are studying History and Geography including 5 students while total of 4 students are studying language and History excluding 4 students of Geography.

33. In the following diagram, Set U is the universal set, and Set L, M and N represent students studying History, Geography and Language, respectively.
Based on the given data, what is the total number of students studying Language and Geography but not History?



(a) 9 (b) 11
(c) 19 (d) 2

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Ans : (a) L= students studying History
M= students studying Geography
N= students studying Language
Those students who study language and Geography but do not study history
No. of students (as per figure) = 9

34. Consider the given question and decide which of the following statements is/are sufficient to answer the question.
Is X – 5 even
X is a real number.
Statement:
1. X – 15 belongs to integer
2. X – 10 is an odd integer
(a) Statement 1 alone is sufficient while statement 2 alone is insufficient
(b) Statement 2 alone is sufficient while statement 1 alone is insufficient
(c) Both statements 1 and 2 are sufficient
(d) Neither statement 1 nor 2 is sufficient

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Ans : (b) Let x = 11
From statement (2)
11 – 10 = 1 (Odd Integer)
so 11 – 5 = 6 Even number and 6 is a real no. along with even no.
So, statement 2 is sufficient for answer the question.
So, option (b) is correct.