Arithmetic Questions For RBI Grade B Phase I Exam 2026

Q1. The volume of a cube is 2744 m^3. A circle whose diameter is same as the side of the cube drawn on each face of the cube. The cost of painting the circular part with red and remaining part with blue at the cost of Rs. x per m^2 and Rs. (x – 5) per m^2 respectively. If the total cost of painting is Rs.6972, then find the value of x.

(A). 11
(B). 10
(C). 9
(D). 6
(E). 7

Ans. (e)

Sol.

Side of the cube = 14 m = diameter of the circle
Radius of the circle = 7 m
ATQ,

$$6\left(\left(\frac{22}{7}\times 7\times 7\times x\right)+\left((14\times 14)-\frac{22}{7}\times 7\times 7\right)\times(x-5)\right)=6972$$

$$154x+(196-154)(x-5)=1162$$
$$154x+42(x-5)=1162$$
$$196x-210=1162$$
$$196x=1372$$
$$x=7$$

Q2. A train is 'X' meter long crossed the 'Y' meter long platform in 48 second and it crossed a pole in 20 seconds. The speed train is 45 km/hr.
Pipe A can filled a tank in '10% of Y' hours and pipe B can filled the tank in five hours less than A. Find the time (in hours) taken by both the pipes together to fill the tank when they both worked with half of their efficiency (approx.).

(A). 38
(B). 29
(C). 25
(D). 35
(E). 32

Ans. (e)

Sol.

$$\frac{X+Y}{45\times\frac{5}{18}}=48$$
$$X+Y=600\ldots.(i)$$
And
$$\frac{X}{20}=45\times\frac{5}{18}$$
$$X=250$$
X value put in (i)
Y = 600 – 250 = 350

Pipe A can fill the tank in = $\frac{10}{100}\times 350=35$ hours
Pipe B can fill the tank in = 30 hours
Total capacity of the tank (LCM of (35 & 30) = 210 liters
Efficiency of pipe A = 6 liters/hour
Efficiency of pipe B = 7 liters/hour
Total time taken together = $\frac{210}{3.5+3}=\frac{210}{6.5}=32.30\approx 32$ hours

Q3. Two pipes P and Q can fill tank A in 28 minutes and 56 minutes respectively and empty pipe M can empty the tank in 42 minutes. Tank A have the capacity of 168 liters. If all three pipes opened in tank B for (x – 24) minutes together they filled 90 liter of the tank which is 25% of the quantity of tank B. Find in x minutes what portion of tank B filled, if all pipe P and Q and M opened alternatively in each minute starting with P, followed by Q and M respectively?

(A). 5/36
(B). 7/36
(C). 9/38
(D). 7/38
(E). 7/39

Ans. (b)

Sol.

ATQ

For tank A —

pipes	time	quantity	efficiency
P	28	168	6 unit/minutes
Q	56		3 unit/minutes
M	42		(–4) unit/minutes

ATQ

For tank B —

$6(x-24)+3(x-24)-4(x-24)=90$

$6x-144+3x-72-4x+96=90$

$5x=(90+144+72-96)$

$x=\frac{210}{5}=42$ minutes

Total quantity of tank B = 90 × 4 = 360 liter

Alternatively (P + Q – M) for 42 minutes, means each pipe for 14 minutes—

All three in 14 minutes

(P + Q – M) = 14 × 6 + 14 × 3 – 14 × 4=70 liter

Filled portion $=\frac{70}{360}=\frac{7}{36}$

Q4. There are four inlet pipes A, B, C and D are attached in a tank and they individually fill the tank in 40 minutes, 'n' minutes, 80 minutes and 'm' minutes respectively. Pipes A and B together fill the tank in 24 minutes, while pipes B and D together fill the tank in 40 minutes. If pipe B opened for 0.5n minutes and pipe B was replaced by pipe D and opened for 0.25m minutes, then find how much percentage of the tank was filled.

(A). 90%
(B). 75%
(C). 60%
(D). 80%
(E). 50%

Ans. (b)

Sol.

Given, pipe A can fill the tank in 40 minutes and pipe B can fill the tank in 'n' minutes

Also given, pipe A and B together fill the tank in 24 minutes

So, $n=\frac{40\times24}{40-24}=60$

Given, pipe B can fill the tank in 60 minutes and pipe D can fill the tank in 'm' minutes

Also given, pipe B and D together fill the tank in 40 minutes

So, $m=\frac{60\times40}{60-40}=120$

Let capacity of tank = 240 unit

Efficiency of pipe B $=\frac{240}{60}=4$ unit/minute

Efficiency of pipe D $=\frac{240}{120}=2$ unit/minute

Required percentage $=\frac{60\times\frac{1}{2}\times4+120\times\frac{1}{4}\times2}{240}\times100=75\%$

Q5. Arjun invests Rs _____ at simple interest for four years and receives a total amount of Rs 6300. Simran invests the same amount at compound interest, compounded annually for two years at the same rate of interest as Arjun. If the difference between interest received by Arjun and Simran is Rs _____, Find which of the following value comes in the place of blank.

(i) 4500, 855
(ii) 5000, 629
(iii) 3500, 1260
(A). All (i), (ii) & (iii)
(B). Both (i) & (iii)
(C). Both (ii) & (iii)
(D). Both (i) & (ii)
(E). None of the above

Ans. (b)

Sol.

Information Given:

Arjun invests some amount at simple interest for four years and receives a total amount of Rs 6300.
Simran invests the same amount at compound interest, compounded annually, for two years at the same rate of interest as Arjun.

Formulas Used:

Simple interest = $\frac{\text{Principal} \times \text{Rate of interest} \times \text{Time}}{100}$

Compound interest = $P(1+\frac{Rate\ of\ interest}{100})^{Time}$

Basic Explanation:

From (i) Amount invested by Arjun = Rs 4500
Let rate of interest be r% p.a.
ATQ,

$6300 = 4500 + \left(4500 \times \frac{r}{100} \times 4\right)$

6300 = 4500 + 180r
10 = r
Cumulative compound interest =

$\left(10 + 10 + \frac{10 \times 10}{100}\right)\% = 21\%$

Compound interest = 21/100×4500=Rs 945
The interest received by Arjun and Simran = (6300-4500) – 945 = Rs 855
So, (i) is possible to fill all the respective fillers
From (ii) Amount invested by Arjun = Rs 5000
Let rate of interest be r% p.a.
ATQ,

$6300 = 5000 + \left(5000 \times \frac{r}{100} \times 4\right)$

6300 = 5000 + 200r
6.5 = r
Amount received by Simran =

$5000(1+\frac{6.5}{100})^2$

= Rs 5671.125
Compound interest = 5671.125 – 5000 = Rs 671.125
The interest received by Arjun and Simran = (6300-5000) – 671.125 = Rs 628.875

So, (ii) is not to possible to fill all the respective fillers.
From (iii) Amount invested by Arjun = Rs 3500
Let rate of interest be r% p.a.
ATQ,
$6300 = 3500 + \left(3500 \times \frac{r}{100} \times 4\right)$

6300 = 3500 + 140r
20 = r
Cumulative compound interest =

$\left(20 + 20 + \frac{20\times20}{100}\right)\% = 44\%$

Compound interest = 44/100×3500=Rs 1540
The interest received by Arjun and Simran = (6300-3500) – 1540 = Rs 1260
So, (iii) is possible to fill all the respective fillers

Q6. A cube is cut into 3^3 equal pieces. On one face of each smaller cube, four identical circles of maximum radius are drawn. The sum of the diameters of three circles is 9 units. Find half of the maximum volume of a cylinder that can be fit in the original cube.
(A). 91.125 π cubic units.
(B). 191.25 π cubic units.
(C). 911.25 π cubic units.
(D). 9111.5 π cubic units.
(E). 921.125 π cubic units.
Answer: a
Sol.
The side length of the original cube by s.
The side length of each smaller cube by s/3.
Let the diameter of each circle be 'd'
3d = 9
3 = d
r = d/2 = 1.5
s/3 = 2r = 3 units
s = 3×3=9 units
For the maximum cylinder that can fit inside the cube, the radius r of the cylinder is half the side length of the cube:
r = s/2 = 9/2 = 4.5 units
And the height h of the cylinder is equal to the side length of the cube:
h = s = 9 units
Thus, the volume V of the cylinder
$V = \pi r^2 h = \pi(4.5)^2 \times 9 = 182.25\ \pi$ cubic units
Half of this maximum volume:
$V/2 = 182.25\ \pi/2 = 91.125\pi$ cubic unit

Q7. P and Q invested Rs Y−4000 and Rs Y+3000 respectively in a compound interest scheme for two years at the rates of X% p.a. and 1.5X% p.a., respectively. If the ratio of their investments is 4:5, then find the difference between the interest they earned.
(A). Rs 250
(B). Rs 120
(C). Rs 360
(D). None of these
(E). Can't be determined

Ans. (e)
Sol.
Information Given:
P and Q invested Rs Y-4000 and Rs Y+3000 in the compound interest scheme for two years at the rates of X% p.a. and 1.5X% p.a. respectively
Ratio of investments of P and Q is 4:5 respectively
Formulas Used:
Compound interest = $: P(1+\frac{Rate\ of\ interest}{100})^{Time}$
Basic Explanation:
ATQ,
(Y-4000)/(Y+3000)=4/5
5Y-20000=4Y+12000
Y=32000
Investment of A and B is Rs 28000 and Rs 35000 respectively.
We can't determine the value of X
So, can't be determined

Q8. An inlet pipe can fill a tank in 4 hours and an outlet pipe can empty the same tank in 30 hours, working individually. If n+2 minimum additional number of outlet pipes of the same capacity are required to be opened so that the tank never overflows, then find the value of 'n'?
(A). 6
(B). 5
(C). 8
(D). 7
(E). 9
Ans. (b)
Sol.
Information Given:
Inlet pipe fills the tank in 4 hours.
Outlet pipe empties the tank in 30 hours.
Additional n+2 outlet pipes are needed.
Formulas Used:
Work rate =1 / Time taken
Basic Explanation:
Inlet pipe's work rate =1/4 of the tank per hour.
Outlet pipe's work rate =1/30 of the tank per hour.
Let there be n+2 outlet pipes. Total outlet work rate =(n+3)/30.
For the tank not to overflow, the total outlet work rate must equal or exceed the inlet work rate:

$$\frac{1}{4} \leq \frac{n+3}{30}$$
$$30 \leq 4(n+3)$$
$$30 \leq 4n+12$$
$$18 \leq 4n \Rightarrow n \geq 4.5$$

Since n must be an integer, n=5. **Q9. Three partners A, B and C invested their amounts in ratio of 2 : 5 : 8. At the end of four months, A invests some amount such that, his total investment will be equal to C's initial investment and C withdraw some amount that its total investment will be equal to B's initial investment. If 10% of B's share in profit of one year is Rs 2550, then share of A and B in total annual profit will be?**
(A). 81500 Rs
(B). 61200 Rs
(C). 56100 Rs
(D). 75000 Rs
(E). 58100 Rs

Ans. (c)
Sol.
Information Given:
Initial investment ratio: A:B:C=2:5:8.
Changes after four months: A and C adjust their investments.
10% of B's share in profit = Rs. 2550
Formulas Used:
Profit is distributed based on the investment-time product.
Basic Explanation:
Let amount invested by A, B and C are 2x, 5x and 8x respectively.
⇒ At the end of 4th month A's investment 2x + 6x = 8x = C's initial invested
⇒ C's investment = 8x – 3x = 5x = B's initial investment

$$\text{Ratio of investment} = \begin{matrix} A & : & B & : & C \\ (2x \times 4 + 8x \times 8) & : & (5x \times 12) & : & (8x \times 4 + 5x \times 8) \\ 6 & : & 5 & : & 6 \end{matrix}$$

Let B's profit = 5y
Now ATQ
=(5y×10)/100=2550
y = 5100
Share of A and B = 5y + 6y = 11y = 11 × 5100 = 56100 Rs. **Q10. A mixture contains 120 liters of liquid A and X liters of liquid B. After adding X liters of liquid A and 40 liters of liquid B to the mixture, the ratio of liquids A to B becomes 5:3. Now 40% of the mixture is taken out and (X-Y) liters of liquid B are added such that the quantity of the liquids A and B in the resultant mixture becomes equal. Find X/Y.**
(A). 1.5
(B). 3.5
(C). 5.5
(D). 2.25
(E). 2.5
Ans. (e)
Sol.
Information Given:
Initial Mixture Composition:
Liquid A: 120 liters
Liquid B: X liters
After Adding More Liquids:
Additional liquid A: X liters
Additional liquid B: 40 liters
New quantity of liquid A = 120+X liters
New quantity of liquid B = X+40 liters
The ratio of A to B is now 5:3:
Basic Explanation:
Given,
(120+X)/(X+40)=5/3
360+3X = 5X+200
160 = 2X
80 = X
Now,
Quantity of liquid A = 120 + 80 =200 liters
Quantity of liquid B = 80 + 40 = 120 liters
ATQ,
200×60/100=120×60/100+(80-Y)

120=72+80-Y
Y=32
Required value = 80/32 = 2.5

Q11. In the question, two columns I and II are given and each of them has two statements. Statement from Column I is to be matched with the statement in Column II. Which of the following combinations is/are sufficient to answer the question.

What is the length of Tejas Express?

	Columns I		**Columns II**
X	Tejas Express overtakes Vande Bharat which coming from the opposite direction in 45 seconds.	**A**	Bharat can cross a man who running in the same direction at 324/5 km/hr in 22 2/9 seconds.
Y	The length of Vande Bharat is 25% more than that of Tejas Express.	**B**	The speed of Tejas Express is 40% less than that of Vande Bharat. Tejas Express crosses an OX who running in the opposite direction at 10 meters/sec. in 40 seconds while Vande Bharat crosses the same OX running in the same direction in 50 seconds.

(A). Only X and A
(B). Both X & A and X & B
(C). Only X and B
(D). Only Y and B
(E). Both X & B and Y & B

Ans. (e)

Sol.

From (X+A): We do not have individual speeds of either Tejas Express or Vande Bhart and also, we don't know combined speeds or the length of these two trains. So, this combination is not sufficient to find length of Tejas Express.
From (X+B): The speed of Vande Bharat = 5x meters/sec
So, the speed of Tejas Express

$$5x \times \frac{60}{100} = 3x \text{meters/sec}$$

So, speed of the OX = 10 m/s
We know, distance = Time × (Speed)
So, 45x (3x+5x) = 40 x (3x+10) + 50 x (5x-10)
360x = 120x + 400 + 250x – 500
10x = 100
x = 10
Speed of Tejas Express = 3x=3x10 = 30 m/s
So, the length of Tejas Express = (30+10) × 40 = 1600 meters
So, (X + B) together sufficient.
From (Y+ A): We do not have individual speeds of either Tejas Express or Vande Bhart and also, we don't know combined speeds or the length of these two trains. So, this combination is not sufficient to find length of Tejas Express.
From (Y+ B): The speed of Train B = 5x
So, the speed of Tejas Express

$$5x \times \frac{60}{100} = 3x \text{meters/sec}$$

Speed of the OX = 10 m/s
We know, distance = Time × (Speed)

$$\frac{(3x+10) \times 40}{(5x-10) \times 50} = \frac{100}{125}$$

60x + 200 = 100x – 200
40x =400

x =10
Speed of Tejas Express = 3x=3x10 = 30 m/s
So, the length of Tejas Express = (30+10) × 40 = 1600 meters
So, (Y+ B) together sufficient.

Q12. A train is 'X' meter long crossed the 'Y' meter long platform in 48 second and it crossed a pole in 20 seconds. The speed train is 45 km/hr.
Speed of a boat in still water is 12% of X. Speed of stream and downstream speed of the boat are in the ratio of 2:7 respectively. Find the time taken by boat to cover $\frac{Y}{5}+2$ km in upstream.

(A). $\frac{X+Y}{15}$
(B). $\frac{X}{20}-8.5$
(C). $(0.02Y+1)/2$
(D). Both (a) & (c)
(E). Both (b) & (c)
Ans. (e)
Sol.
$\frac{X+Y}{45\times\frac{5}{18}}=48$
$X+Y=600$ .... (i)
And
$\frac{X}{20}=45\times\frac{5}{18}$
$X=250$
X value put in (i)
$Y=600-250=350$
Speed of a boat in still water = $\frac{12}{100}\times 250=30$ km/hr
Let speed of stream be v km/hr.
$\frac{v}{v+30}=\frac{2}{7}$
$7v=2v+60$
$5v=60$
$v=12$
Required time = $\frac{\frac{350}{5}+2}{30-12}=\frac{72}{18}=4$ hours

Q13. The time taken by a boat to cover (0.5X-3) km upstream is 140% of time taken by the boat to cover X km downstream. The downstream speed of the boat is 60% more than the still water speed of the boat. If the difference between the time taken by the boat to travel (X-6) km upstream and (X-4) km downstream is 5 hours., then find the distance covered by the boat in still water in 4 hours?
(A). 48
(B). 40
(C). 36
(D). 20
(E). 24
Ans. (d)
Sol. Information Given:
The ratio of time taken by the boat to cover X km downstream to (0.5X+3) km upstream
= 100% : 140% 5 : 7
The ratio of still water speed to downstream speed of the boat = 100% : 160% = 5 : 8
The difference between time taken by the boat to cover (x-6) km upstream and downstream = 6 hours
Formula Used: Time = Distance/Speed
Speed of stream = Downstream speed – speed of boat in still water
Upstream speed = Speed of boat in still water - Speed of stream
Distance = speed ×time

Explanation: Let downstream speed & still water speed of the boat be 8m km/hr & 5m km/hr respectively
Speed of stream = 8m – 5m = 3m km/hr
Then, upstream speed of the boat = 5m – 3m = 2m km/hr
ATQ,

$$\frac{0.5X-3}{2\,m}=\frac{140}{100}\times\frac{X}{8m}$$

$$0.5X-3=\frac{7X}{20}$$

10X-60 = 7X
3X = 60
X = 20

$$\frac{(X-6)}{2x}-\frac{(X-4)}{8x}=5$$

x=1
Speed of boat in still water=5×1=5 km/hr
Required distance = 5×4 = 20 km

Q14. There are 18 students in the class having average weight x kg. Average weight of the class is increased by one kg when two new students A and B joined the class. If only A joined the class the average weight of the class is increased by two kg and ratio of the weight of A to B is 11: 4, then which of the following statement(s) is/are true?
(I) x > 55
(II) $x = 7^2 + 1$
(III) x < 70
(A). Only I
(B). Only II
(C). Only III
(D). Both II and III
(E). None of these
Ans. (d)
Sol. The class initially has 18 students with an average weight of x kg.
When two new students, A and B, join the class, the average weight increases by 1 kg.
If only A joins, the average weight increases by 2 kg.
The ratio of the weights of A to B is 11:4.
Basic Explanation:
Let the weight of A and B be 11y kg and 4y kg respectively
Total weight of the class initially = 18x
A and B joins the class

$$18x+11y+4y=20(x+1)$$

$$18x+15y=20x+20$$

$$15y=2x+20\ldots..(i)$$

And
A join the class

$$18x+11y=19(x+2)$$

$$18x+11y=19x+38$$

$$11y=x+38$$

$$11y-38=x$$

x value put in (i)

$$15y=2(11y-38)+20$$

$$15y=22y-76+20$$

$$56=7y$$

$$8=y$$

$$11y-38=x$$

$$11(8)-38=x$$

$$50=x$$

From I.
x = 50
So, x> 55 is false

From II.
$x = 50$
$x = 7^2 + 1$ (True)
From III.
$x < 70$ (True)

Q15. In these questions, there are two columns I and II are given and each column has two statements. The statement from column I is to be matched with the statement of column II. Which of the following combinations is/are required to answer the questions?
Three friends P,Q and R went to restaurant and spent certain amount on food. Find the amount spent by P?

Column I	Column II
A. The ratio of amount left with P to that of R is 7 : 8.	**X.** R spent Rs 40 and he left with Rs 160.
B. R spent 400% more than that of Q.	**Y.** P spent 20% less amount than R and Q spent 25% of amount spent by P.

(A). AX
(B). AY
(C). BX
(D). BY
(E). None of these
Ans. (e)
Sol.
From AX. Given, R spent Rs 40 and he left with Rs 160. So, initially R has amount of money
=40 + 160 = 200 Rs
Amount of money P left = $160 \times \frac{7}{8} = 140$ Rs
But we don't have any data about amount spent by P. So, this combination is not sufficient to find answer

From AY. No data given about amount. So, this combination is not sufficient to find answer

From BX. Amount spend by Q = $\frac{40}{500} \times 100 = 8$ Rs. But no data about P. So, this combination is not sufficient to find answer

From BY. No data given about amount. So, this combination is not sufficient to find answer
So, no combination is sufficient to find the answer of the question

Q16. Y liters of mixture contain milk and water. The ratio of water to mixture is 1 : 5. Follow the steps one after another in the given order.
I. 'x' liters of water is added, and the ratio of water to mixture becomes 1 : 4.
II. 'x' liters of water removed.
III. '1.5x' liters of milk are added.
Find the final quantity of the mixture after completing these three steps.
(A). 16.5x
(B). 18.5x
(C). 17.5x
(D). 12.5x
(E). 15.5x
Ans. (a)
Sol.
Let Y = 5a
Given, The ratio of water to mixture is 1 : 5

So, the quantity of milk and water is 4a and a liter respectively
Step I:
$\frac{4a}{a+x} = \frac{3}{1}$
4a=3a+3x
a=3x
Quantity of mixture after x liters added = 4a+a+x = 5a+x liters
Step II. 'x' liters of water is removed
So, Quantity of mixture = 5a+x-x=5a liters
Step III. 1.5x liters of milk are added.
So, Quantity of mixture = 5a + 1.5x
= 5(3x) + 1.5x
= 16.5x

Q17. A started a business with investment of Rs X and after six months, B joined him with investment of Rs (X + 5000). After one more year, C joined them with investment of Rs Y. At the end of two years, the profit share of A and C are equal and profit share of B is 9/8th of profit share of C. Find the value of Y?
(A). 25000
(B). 50000
(C). 20000
(D). 30000
(E). 40000
Ans. (e)
Sol.
Information Given:
A's investment = Rs. X, B joined after 6 months with Rs. X+5000.
After one more year C joined with Rs. Y.
A and C's profit shares are equal.
B's profit share is 9/8 of C's profit share.
Formulas Used:
Profit sharing formula: Profit share = Investment × Time.
Basic Explanation:
A's investment time =24 months.
B's investment time =18 months.
C's investment time =6 months.
Profit sharing ratio of A, B and C
= X×24:(X+5000)×18:Y×6
= 4X:3X+15000:Y
Given,
4X=Y
X/Y=1/4=a/4a
And
(3X+15000)=9/8×Y
3a+15000=9/8×4a
3a+15000=9a/2
6a+30000=9a
30000=3a
10000=a
Y = 4a = 40000
Final Calculation:
Correct answer: 40000.

Q18. A shopkeeper marked an article 50% above its cost price and allowed two successive discounts of 15% and Y%. The shopkeeper earned 20% profit. If the shopkeeper marked the article is 17Y% above its cost price and allowed a 25% discount, then find the profit percentage.

(A). 20%
(B). 75%
(C). 60%
(D). 25%
(E). 50%

Ans. (e)

Sol.

Information Given:

The shopkeeper marked an article 50% above its cost price.
Two successive discounts of 15% and Y% were given.
The shopkeeper earned a 20% profit.

Formulas Used:

Marked Price = Cost Price×(1+Percentage Increase/100)
SP=MP×(1-Discount 1/100)×(1-Discount 2/100)
Profit Percentage = (Selling Price - Cost Price)/Cost Price × 100

Basic Explanation:

Let cost price be Rs 100a
Marked price = Rs 150a
Selling price =

$$150a \times \frac{85}{100} \times \frac{100-Y}{100} = Rs\ \frac{127.5a(100-Y)}{100}$$

$$\text{And} = 100a \times \frac{120}{100} = Rs\ 120a$$

ATQ,

$$\frac{127.5a(100-Y)}{100} = 120a$$

$$1700 - 17Y = 1600$$

$$\frac{100}{17} = Y$$

Markup percentage = 17Y%=(17×100/17)%=100%
New marked price = 100a×200/100=Rs 200a
New selling price = 200a×3/4=150a

Profit percentage = $\frac{150a-100a}{100a} \times 100 = 50\%$

Q19. The average of eight numbers is 30. Average of first three numbers is 38 & average of last three numbers is 26. If 4th number is _____% more than the 5th number, then the 4th number is_____. Which of the following statement/s will satisfy the given blanks respectively

(i) $66\frac{2}{3}$, 30
(ii) 40, 28
(iii) 25, 20

(A). Only (iii)
(B). Only (i)
(C). Both (ii) and (iii)
(D). All of these above
(E). Both (i) and (ii)

Ans. (e)

Sol.

Sum of total number = $30 \times 8 = 240$

Sum of first three number = $38 \times 3 = 114$

Sum of last three number = $26 \times 3 = 78$

Sum of 4^{th} & 5^{th} number = $240 - 114 - 78 = 48$

From (i)

Let 5^{th} number be 3x

And 4^{th} number = $3x \times \frac{5}{3} = 5x$

ATQ,

$3x + 5x = 48$

$8x = 48$

$x = 6$

4^{th} number = $5 \times 6 = 30$

This satisfies

From (ii)

Let 5^{th} number be 5x

And 4^{th} number = $5x \times \frac{140}{100} = 7x$

ATQ,

$5x + 7x = 48$

$12x = 48$

$x = 4$

4^{th} number = $4 \times 7 = 28$

This satisfies

From (iii)

Let 5^{th} number be 4x

And 4^{th} number = $4x \times \frac{5}{4} = 5x$

ATQ,

$4x + 5x = 48$

$9x = 48$

$x = \frac{16}{3}$

4^{th} number = $5 \times \frac{16}{3} = 26\frac{2}{3}$

It does not satisfy

Q20. The ratio between marked price of article A to article B is 4 : 5 respectively. Shopkeeper allowed d% discount on article 'A' and (d + 18) % discount on article 'B', so selling price of both articles become equal. If shopkeeper made a profit of 20% on article A and 25% on article B and profit made on article B is Rs. 384 more than that of article A, then find the cost price of article 'A' and article 'B' respectively?

(A). 9000 Rs. 8400 Rs

(B). 9600 Rs. 9216 Rs.

(C). 9800 Rs. 9012 Rs.

(D). 9600 Rs. 8488 Rs.

(E). 9200 Rs. 9216 Rs.

Ans. (b)

Sol.

Let marked price of article A and B be 400x and 500x respectively

ATQ—

$400x \times \frac{(100-d)}{100} = 500x \times \frac{(100-d-18)}{100}$

$400 - 4d = 410 - 5d$

$d = 10\%$

Cost price of article A = $\frac{400x \times \frac{90}{100}}{120} \times 100 = 300x$ Rs.

Cost price of article B = $\frac{500x \times \frac{(100-28)}{100}}{125} \times 100 = 288x$ Rs.

ATQ—

$\left(500x \times \frac{72}{100} - 288x\right) - \left(400x \times \frac{90}{100} - 300x\right) = 384$

$72x - 60x = 384$

$x = 32$

Cost price of article A = 32×300 = Rs.9600

Cost price of article B = 32×288 = Rs.9216

Q21. There is a right cylindrical vessel filled 3/4th of its capacity, which is equal to _____ cm^3. The breadth of a rectangle is 10 cm more than the height and length of the rectangle is 4 cm more than the radius of the cylindrical vessel. The curved surface area of the cylindrical vessel is ___ cm^2. Find which of the following value/s is or are come in the blank place. (Note: The curved surface area of the cylindrical vessel is greater than twice the area of the rectangle)

I. 1155, 440
II. 3696, 704
III. 1386, 528
(A). All I, II and III
(B). Only I and II
(C). Only I
(D). Only III
(E). Both II and III

Ans. (e)

Sol.

Let the height and the radius of the cylindrical vessel be h and r cm respectively.

From I.

$\frac{3}{4} \times \frac{22}{7} \times r^2 \times h = 1155$

$r^2 \times h = 490 \ldots (i)$

And

$2 \times \frac{22}{7} \times r \times h = 440$

$r \times h = 70$

$h = \frac{70}{r}$

h value put in (i)

$r^2 \times \frac{70}{r} = 490$

$r = 7 \text{ cm}$

And h = 70/7 = 10 cm

Breadth of the rectangle = 10 + 10 = 20 cm

Length of the rectangle = 4 + 7 = 11 cm

Area of the rectangle = 20×11 = 220 cm^2

So, I is not possible to fill all the respective fillers

From II.

$\frac{3}{4} \times \frac{22}{7} \times r^2 \times h = 3696$

$r^2 \times h = 1568 \ldots (i)$

And

$2 \times \frac{22}{7} \times r \times h = 704$

$r \times h = 112$

$h = \frac{112}{r}$

h value put in (i)

$r^2 \times \frac{112}{r} = 1568$

$r = 14 \text{ cm}$

And h = 112/14 = 8 cm

Breadth of the rectangle = 10 + 8 = 18 cm

Length of the rectangle = 4 + 14 = 18 cm

Area of the rectangle = 18×18 = 324 cm^2

So, II is possible to fill all the respective fillers

From III.

$\frac{3}{4} \times \frac{22}{7} \times r^2 \times h = 1386$

$r^2 \times h = 588 \ldots (i)$

And

$2 \times \frac{22}{7} \times r \times h = 528$

$r \times h = 84$

$h = \frac{84}{r}$

h value put in (i)

$r^2 \times \frac{84}{r} = 588$

$r = 7\text{cm}$

And h = 84/7 = 12 cm

Breadth of the rectangle = 10 + 12 = 22 cm

Length of the rectangle = 4 + 7 = 11 cm

Area of the rectangle = 11×22 = 242 cm^2

So, III is possible to fill all the respective fillers

Q22. Present age of C is 25% of present age of A and after 12 years age of B will be twice of age C. At the time of birth of C, age of B was not more than 24 years old. Find the possible ratio of present age of A to that of B?

(i) 3:2

(ii) 6:5

(iii)5:3

(iv)4:3

(v) 5:4

(A). Only (ii), (iv)and (v)

(B). Only (i),(iii)and (v)

(C). Only (i) and (iii)

(D). Only (ii) and (v)

(E). Only (i),(ii) and (iii)

Ans. (a)

Sol.

Ratio of present age of A to C = 100 : 25 = 4 : 1

Let the present age of A and C be '4x' and 'x' years respectively.

Age of B after 12 years = 2(x + 12) years

Present age of B = 2x + 24 – 12 = (2x + 12) years

Age of B at the time of birth of C = (x + 12) years

Ratio of present age of A to the B = $\frac{4x}{(2x+12)} = \frac{2x}{(x+6)}$

From (i)

$\frac{2x}{x+6} = \frac{3}{2} \Rightarrow x = 18$

Age of B at the time of birth of C = x + 12 = 30 years

Similarly, for option (ii), (iv) and (v) B age at the time of birth of C is not more than 24 yrs.

Q23. There are two types of pipes P and Q. Certain number of pipes P can fill a tank in (n-4) hours, while some certain number of pipe Q can fill the same tank in 'n' hours. If time taken by a pipe Q is 200% more than that of pipe P, then find which one of the following ratio/s of number of pipe P to number of pipe Q can satisfy the above given condition, if 'n' is an integer?

(A) 6 : 11

(B) 2: 5

(C) 2: 3

(D) 1 : 2

(A). Only (B)

(B). Only (B) and (C)

(C). Only (A) and (C)

(D). Only (B), (C) and (D)

(E). All of the above

Ans. (d)

Sol.

Let a number of pipe P can fill the tank in (n− 4) hours
And b number of pipe Q can fill the tank in n hours
Given, time taken by a pipe P to a pipe Q to fill a tank = 100 : 300 = 1 : 3
So, the ratio of efficiency of pipe P to pipe Q = 3 : 1
$3a(n-4) = 1 \times b \times n$
Now value of n should be positive integer to satisfy the equation.
From (A): Let, a = 6p
b = 11p
$3\times6p(n-4) = 11pn$
$18n-72 = 11n$
$7n = 72$
$n = \frac{72}{7}$ it is not possible
From (B): Let, a = 2m
b = 5m
$3\times2m(n-4) = 5mn$
$6n - 24 = 5n$
n =24, it is possible
From (C): Let, a = 2x
b = 3x
$3\times2x(n-4) = 3xn$
$6n-24 = 3n$
n = 8, it is possible
From (D): Let, a = y
b = 2y
$3\times y(n-4) = 2yn$
3n − 12 = 2n
n = 12, it is possible

Q24. Two ships P and Q start from point M and N respectively. Ship P flows with the stream, and ship Q flows against the stream. The ratio of the speed of ship P to ship Q in still water is 5:3, respectively, and the speed of the current is _____ km/hr. The distance between point M and N is 15X km, and both ships meet after _____ hours. (Note: The speeds of ships P and Q in still water are integers and $X^2+45 = 945$)

(i) 3, 18.75
(ii) 5, 11.25
(iii) 4, 22.5
(A). Both (i) & (iii)
(B). Both (ii) & (iii)
(C). Both (i) & (ii)
(D). Only (ii)
(E). None of the above

Ans. (c)

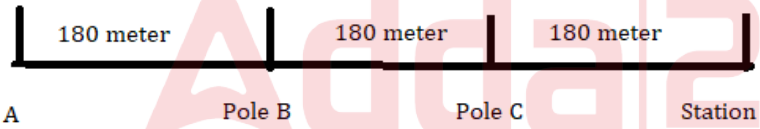
Sol.

Let the speed of the ships P and Q be 5a and 3a respectively.
Given, $X^2+45 = 945$
$X^2 = 900$
X = 30
Distance between M and N = 15X = 450 km
From (i) $\frac{450}{(5a+3)+(3a-3)} = 18.75$
450/8a=18.75
a=3
So, speed of the ships is 15 km/hr and 9 km/hr respectively.
From (ii) $\frac{450}{(5a+5)+(3a-5)} = 11.25$
450/8a=11.25

a=5
So, speed of the ships is 25 km/hr and 15 km/hr respectively.

From (i) $\frac{450}{(5a+4)+(3a-4)} = 22.5$
450/8a=22.5
a=2.5
So, speed of the ships is 12.5 km/hr and 7.5 km/hr respectively.
Only (i) & (ii) is possible to fill all the respective fillers.

Q25. A bridge exists between two stations A and D, and two poles, i.e., B and C, exist between these stations at an equal distance. Pole B exists near to station A and pole C exits near to station D. The distance between poles B and C is 180 meters, which is equal to distance between pole C & station D. Train P started from station A and crossed pole C in 20 seconds and a dog ran from station D and it crosses pole C in 45 seconds. If the speeds of the train and the dog are in the ratio of 7:1, respectively. Which of the statement/s given below can be determined from the above information.
A. The length of the train P.
B. The train P and the dog are running from stations A and D respectively at the same time. The speed of train P decreased by 50% and the speed of the dog increased by 50%. Time when will they meet?
C. Find time taken by the train Q to cross the station D.
(A). All (A), (B) & (C)
(B). Both (A) & (C)
(C). Only (C)
(D). Both (A) & (B)
(E). Only (B)
Ans. (d)
Sol.
The distance between poles B and C = 180 meters
The distance between pole C and station D = 180 meters
So, distance between station A and pole B = 180 meters



Let the length of the train P be 'l' meters
And the speed of the train P and the speed of the dog be 7x meter and x meters respectively.
ATQ,
$\frac{l+180+180}{7x} = 20$
$l + 360 = 140x..(i)$
And
$\frac{180}{x} = 45$
$x = 4$
x value put in (i)
$l + 360 = 140x$
$l + 360 = 140(4)$
$l + 360 = 560$
$l = 200$ meter
A. The length of the train P =200 meters.
B. New speed of the train P = $7x \times \frac{1}{2} = 7 \times 4 \times \frac{1}{2} = 14$ m/sec
New speed of the dog = $x \times \frac{3}{2} = 4 \times \frac{3}{2} = 6$ m/sec
Required time = $\frac{180+180+180}{14+6} = \frac{540}{20} = 27$ seconds
C. We have no data about the length of the station D
So, we can't determine.

Q26. Length of train A and train B is X meters and _____ meters respectively. Speed of train A is _____ m/sec and it crosses a tree in 16 ⅔ seconds. If train B can cross a 0.5X meters long bridge in _____ seconds, then which of the following values come in the place of blank (Note: Speed of train A is more than the speed of train B).

(i) 400, 27, 12.5
(ii) 300, 30, 22
(iii) 480, 36, 26
(A). Both (i) & (ii)
(B). Only (ii)
(C). Both (i) & (iii)
(D). Only (iii)
(E). Both (ii) & (iii)

Ans. (e)

Sol.

From (i) ATQ,

$\frac{X}{27} = \frac{50}{3}$

$X = 450$

Length of train A = 450 meters

Length of the bridge = $\frac{450}{2} = 225$ meters

Let speed of train B be b m/sec

$\frac{225 + 400}{b} = 12.5$

$b = 50$

Speed of train B = 50 m/sec

So, Speed of train A is not more than the speed of train B.

(i) can't fill all the respective fillers

From (ii) ATQ,

$\frac{X}{30} = \frac{50}{3}$

$X = 500$

Length of train A = 500 meters

Length of the bridge = $\frac{500}{2} = 250$ meters

Let speed of train B be b m/sec

$\frac{300 + 250}{b} = 22$

$b = 25$

Speed of train B = 25 m/sec

Speed of train A is more than the speed of train B

So, (ii) is possible to fill all the respective fillers

From (iii) ATQ,

$\frac{X}{36} = \frac{50}{3}$

$X = 600$

Length of train A = 600 meters

Length of the bridge = $\frac{600}{2} = 300$ meters

Let speed of train B be b m/sec

$\frac{300 + 480}{b} = 26$

$b = 30$

Speed of train B = 30 m/sec

Speed of train A is more than the speed of train B

So, (iii) is possible to fill all the respective fillers

Q27. A man has an amount of Rs 6A and he invested 1/3rd of amount in two different schemes X and Y in the ratio of 1 : 7 respectively. From remaining, he paid Rs 4200 to her maid and remaining Rs M he invested in post office. If A is 60% of M, then which of the following statement/s is or are correct?
I. Amount invested in scheme Y is more than the amount invested in post office
II. Amount spend on maid is more than the amount spend on scheme X
III. Amount invested in scheme Y equal to Amount spend on maid
(A). All I, II and III
(B). Both I and II
(C). Only I
(D). Only III
(E). Both I and III
Ans. (b)
Sol.
Amount invested in scheme X and Y together = 6A/3 = 2A Rs
Amount invested in post office = (6A-2A)-4200=M
= 4A – 4200 = M
Given, A is 60% of M
So, A : M = 3 : 5
Let A and M be 3x and 5x respectively
4(3x) - 4200 = 5x
12x – 5x = 4200
x = 600 Rs
A = 3x = 1800 Rs
M = 5x = 3000 Rs
So, Amount invested in scheme X and Y together = 2A = 3600 Rs
Amount invested in scheme X = 3600×1/8=450 Rs
Amount invested in scheme Y = 3600×7/8=3150 Rs
Amount invested in post office = Rs 3000
From I. Amount invested in scheme Y is more than the amount invested in post office. (it is correct)
From II. Amount spend on maid is more than the amount spend on scheme X (it is correct)
From III. Amount invested in scheme Y is less than Amount spend on maid (it is incorrect)
So, **Both I & II**

Q28. The time taken by a boat to cover 'x+y^2' km downstream is 50% less than the time taken by a boat to cover 'x+2y' km distance upstream. If 'y' be the smallest root of equation a^2 - 24a + 140 = 0 and the ratio between the speed of boat in still water to the speed of stream is 5 : 3, then find 'x'?
(A). 20
(B). 10
(C). 30
(D). 40
(E). 60
Ans. (e)
Sol.
Information Given:
Distance downstream = **x+y^2** km
Distance upstream = x+2y km
Time taken downstream is 100% less than time taken upstream.
The ratio of speed of boat in still water to speed of stream =5:3.
The smallest root of the equation a^2 - 24a + 140 = 0 is y.
Formulas Used:
Speed downstream = speed of boat in still water + speed of stream
Speed upstream = speed of boat in still water - speed of stream
Time = Distance Speed

Basic Explanation:
The speed of the boat in still water = 5s km/hr and speed of stream =3s km/hr
Speed downstream =5s+3s=8s km/hr
Speed upstream =5s - 3s = 2s km/hr
Time downstream = $(x+ y^2)/8s$
Time upstream =(x+2y)/2s
Given, Time downstream × 2 =Time upstream
Thus,

$\frac{x+y^2}{8s} \times 2 = \frac{x+2y}{2s}$ ---- (i)

For equation, a^2 - 24a + 140 = 0
a^2 – 10a – 14a + 140 = 0
(a-10) (a-14)
a = 10 & 14
Given, y be the smallest root
So, y = 10
Putting value of y in (i)
2x + 200 = 4x + 80
2x = 120
x = 60

Q29. Two containers, X and Y, contain a mixture of juice and water. Container X has juice and water in the ratio of 2:3, and juice in container Y is 60% of its mixture. The quantity in containers X and Y is _____ liters and _____ liters, respectively. If mixture Y is combined with mixture X, then the total quantity of juice is _____ liters. Find which of the values comes in place of the blanks.
I. 30, 20, 24
II. 50, 40, 44
III. 20, 40, 30
(A). Only II
(B). All I, II & III
(C). Both I & III
(D). Both II & III
(E). Both I & II
Ans. (e)
Sol.
From I. Quantity of juice in X = 2/5×30=12 litres
Quantity of water in X = 3/5×30=18 litres
Quantity of juice in Y = 60/100×20=12 litres
Total quantity of juice = 12 + 12 = 24 liters
So, I is fill all the respective fillers.
From II. Quantity of juice in X = 2/5×50=20 litres
Quantity of water in X = 3/5×50=30 litres
Quantity of juice in Y = 60/100×40=24 litres
Total quantity of juice = 20 + 24 = 44 liters
So, II is fill all the respective fillers.
From III. Quantity of juice in X = 2/5×20=8 litres
Quantity of water in X = 3/5×20=12 litres
Quantity of juice in Y = 60/100×40=24 litres
Total quantity of juice = 8 + 24 = 32 liters
So, III is not to fill all the respective fillers.

Q30. X and Y start a business together. X's investment is Rs 500 more than Y's, and X invests for 9 months while Y invests for a year. If at the end of the year, the total profit is Rs 8500 and the profit share of X is 50a, where $a^2+810=8910$, then find the investment of Y.

(A). Rs 1000
(B). Rs 1500
(C). Rs 1200
(D). Rs 1800
(E). Rs 2000

Ans. (a)

Sol.

Information Given:

X and Y start a business together.
X's investment is Rs 500 more than Y's, and X invests for 9 months while Y invests for a year. At the end of the year, the total profit is Rs 8500 and the profit share of X is 50a,
Given, $a^2+810=8910$

Formulas Used:

Profit share = Investment × Time

Basic Explanation:

Let the initial investment of X and Y be Rs P+500 and Rs P respectively.
Given, $a^2+810=8910$
$a^2 = 8100$
$a = 90$
Profit share of X = 50a = 50 × 90 = Rs 4500
Profit share of Y =8500 – 4500 = Rs 4000

$$\frac{(P+500)\times 9}{P\times 12}=\frac{4500}{4000}$$

$$\frac{(P+500)\times 9}{P\times 12}=\frac{9}{8}$$

$$\frac{P+500}{P\times 3}=\frac{1}{2}$$

$$2P+1000=3P$$

ATQ, $P = 1000$

Q31. The time taken by B alone to complete a work is 12.5% more than that of A, while C alone can complete the same work in X days and A is 25% less efficient than C. If C started the work alone and after working for 13 days, he left then the remaining work was completed by A and B together in (X - 18) days. find the value of X?

(A). 15
(B). 30
(C). 20
(D). 40
(E). 25

Ans. (b)

Sol.

Information Given

B takes 12.5% more time than A.
C takes X days to complete the work alone.
A is 25% less efficient than C.
C works alone for 13 days, then A & B together finish in (X–18) days.
Asked: Find value of X.

Formula Used
Efficiency = 1/(time taken)
Work = Rate × Time
Explanation
Let C's 1 day work = 1/X
A is 25% less efficient than C
Efficiency of A = 75% of C
So, A's 1 day work = (0.75)/X = 3/4X
A's time = $\frac{1}{\frac{3}{4X}} = \frac{4X}{3}$ days
Time taken by B = 12.5% more than A
12.5% = 1/8, so B's time = $\left(1 + \frac{1}{8}\right) \times$ A's time $= \left(\frac{9}{8}\right) \times \left(\frac{4X}{3}\right) = \frac{3X}{2}$
So, B's 1 day work = $\frac{1}{\frac{3X}{2}} = \frac{2}{3X}$
A + B, in one day:
= 3/4X +2/3X
= (9 + 8)/12X
= 17/12X
Work done by C in 13 days = 13 × (1/X) = 13/X
Remaining work = 1 -13/X = (X - 13)/X
A+B finish this in (X – 18) days
= [17/12X] × (X – 18) = (X - 13)/X
ATQ, 17(X – 18) = 12(X – 13)
17X – 306 = 12X – 156
17X – 12X = 306 – 156
5X = 150
X = 30

Q32. X and Y each spent 40% of their monthly income, and both saved the rest of the income. X saved Rs. 12000 and out of the total expenditure, X and Y spent 1/5 th and 3/10 th on food respectively, and they invested the remaining amount in fixed deposit (FD). If the monthly amount invested in the FD by Y is Rs. 3960 more than that of X, then find the difference between the monthly income of X and Y (in Rs)?
(A). 11000
(B). 13000
(C). 21000
(D). 17000
(E). 15000
Ans. (d)
Sol.
Information Given:
Total part of monthly income spends by X and Y each = 40%
Saving of X = Rs. 12000
Out of 40% of his monthly expenditure, X spends 1/5 th on food
Out of 40% of his monthly expenditure, Y spends 3/10 th on food
Rest expenditure after food, X and Y spend in FD
Amount spend by X in FD = amount spend by Y in FD + 3960 Rs.
Formula Used:
Basic percentage formula used
Income = expenditure + saving

Explanation: Let the monthly income of X and Y be Rs 100x and Rs 100y respectively
Saving of X =
ATQ,
60x = 12000
x = 200
Monthly income of X = 100×200= Rs 20000
Expenditure of X = 40% of 20000=Rs 8000
Amount spends on food by X = 8000×1/5=Rs 1600
Amount invested in FD by X = 8000-1600=Rs 6400
Amount spends by Y = 40% of 100y=Rs 40y
Amount invested by Y in FD
= (10-3)/10×40y=Rs 28y
Also,
28y – 6400 = 3960
28y = 10360
y = 370
Monthly income of Y = 100 ×370=37000 Rs
Required difference = 37000 – 20000 = Rs 17000

Q33. P, Q and R started a business, investment of Q is Rs.4500 more than that of P and investment of R is Rs.2500 less than that of Q. After eight months, R left the business and at the end of year profit share of Q is Rs.1160 out of the total profit of Rs.2600. The initial investment of R is Rs._____.
(A). 12000
(B). 14500
(C). 16000
(D). 20000
(E). 18000
Ans. (a)
Sol. Let initial investment of P be Rs. X
Initial investment of Q be Rs. (X+4500)
Initial investment of R be Rs. (X+2000)
Profit sharing ratio of P, Q & R
=X×12 :(X+4500) ×12 :(X+2000) ×8
=3X :3(X+4500) :2(X+2000)
ATQ,
3(X+4500)/(3X+2X+4000)=1160/1440
3(X+4500)/(3X+2X+4000)=29/36
108X+486000=145X+116000
370000=37X
X=10000
Initial investment of R = 10000+2000 = Rs.12000

Q34. R invested Rs X on compound interest at rate of (5a +b) % p.a. and received Rs 1.3225X as amount after two years. P invested Rs A on compound interest at rate of (2.5a +3b) % p.a. for two years and Q invested Rs (A + 400) on compound interest at rate of 5a% p.a. for two years. If interest received by P is Rs 376 more than that of by Q, then find A (Given, 'a' and 'b' are natural number & at least one of them being prime).
(A). 1000
(B). 2400
(C). 2000
(D). 3000
(E). 4000

Ans. (c)
Sol.

Let 5a + b be 'r'

Now, $X \times (1 + \frac{r}{100})^2 = 1.3225X$

$100 + r = 115$

$r = 15$

So, $5a + b = 15$

Only possible value a = 2 and b = 5

Interest rate p.a. for P = $(2.5 \times 2 + 3 \times 5) = 20\%$

Interest rate p.a. for Q = $5 \times 2 = 10\%$

Equivalent interest rate received by P after two years at rate of 20% p.a.

$= (20 + 20 + \frac{20 \times 20}{100})\% = 44\%$

Equivalent interest rate received by Q after two years at rate of 10% p.a.

$= (10 + 10 + \frac{10 \times 10}{100})\% = 21\%$

ATQ, $A \times \frac{44}{100} - (A + 400) \times \frac{21}{100} = 376$

$\frac{23A}{100} = 376 + 84$

$\frac{23A}{100} = 460$

A = 2000 Rs

Q35. The difference between the marked price and cost price of an article is Rs. ____, and the difference between the marked price and selling price is Rs. 720. If the shopkeeper allows a discount of _____% and also earns a profit of 20%, Find which of the following value comes in the place of blank.

(i) 1080, 25
(ii) 1000, 30
(iii) 990 , 40
(A). All (i), (ii) & (iii)
(B). Both (i) & (iii)
(C). Both (ii) & (iii)
(D). Both (i) & (ii)
(E). None of the above

Ans. (d)
Sol.
Information Given:
The difference between the marked price and selling price is Rs. 720.
Formulas Used:
Selling price = cost price × (1+profit percentage)/100
Discount = Marked price – selling price
Profit = Selling Price - Cost Price
Basic Explanation:
From (i) Given, difference between the marked price and selling price is Rs. 720
Discount percentage = 25%
Marked price = 720/25×100=Rs 2880
Selling price = 2880×75/100=Rs 2160
Cost price = 2160/120×100=Rs 1800
Difference between the marked price and the cost price = 2880-1800=Rs 1080
So, (i) is possible to fill all the respective fillers
From (ii) Given, difference between the marked price and selling price is Rs. 720
Discount percentage = 30%

Marked price = 720/30×100=Rs 2400
Selling price = 2400×70/100=Rs 1680
Cost price = 1680/120×100=Rs 1400
Difference between the marked price and the cost price = 2400-1400=Rs 1000
So, (ii) is possible to fill all the respective fillers
From (iii) Given, difference between the marked price and selling price is Rs. 720
Discount percentage = 40%
Marked price = 720/40×100=Rs 1800
Selling price = 1800×60/100=Rs 1080
Cost price = 1080/120×100=Rs 900
Difference between the marked price and the cost price = 1800-900=Rs 900
So, (iii) is not to possible to fill all the respective fillers

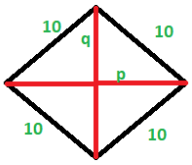
Q36. The present ages of A, B, C, and D are four consecutives even numbers same as in the order it is given (A<B<C<D). If twice the present age of A is '6a' years older than the present age of D, then find the present age of C (in years) (note: 1 < a < 4 and the present age of B is more than 22 years).
(A). 24
(B). 26
(C). 28
(D). 30
(E). 32
Ans. (c)
Sol.
Let the present ages of A, B, C and D be x, x+2, x+4 and x+6 years respectively.
a = 2 or 3
a = 2
ATQ,
$2x - x - 6 = 6(2)$
$x = 18$
The present age of B = x+2=20 years
Given, the present age of B is more than 22 years $a \neq 2$
a = 3
ATQ, $2x - x - 6 = 6(3)$
$x = 24$
The present age of B = x+2=26 years (which is more than 22 years old)
The present age of C = x+4= 28 years

Q37. A boat covers a distance of _____ km upstream in 14 hours. The ratio between the speed of the boat in still water and the speed of the current is 4:1, and the boat covers _____ km of distance in still water in five hours.
(i) 210, 75
(ii) 126, 60
(iii) 84, 40
(A). All (i), (ii) & (iii)
(B). Both (i) & (iii)
(C). Both (ii) & (iii)
(D). Both (i) & (ii)
(E). None of the above
Ans. (c)
Sol.Information Given:
The boat covers a certain distance upstream in 14 hours.
The ratio between the speed of the boat in still water and the speed of the current is 4:1.

Formulas Used: Upstream speed of the boat = speed of boat in still water – speed of the current
Time = Distance/speed
Basic Explanation: Let the speed of the boat in still water and speed of the current be 4a and a km/hr respectively
From (i) 210/14=3a
a=5
Distance cover by boat in five hours in still water = 5×(4×5)=100 km
So, (i) is not to possible to fill all the respective fillers.
From (ii) 126/14=3a
a=3
Distance cover by boat in five hours in still water = 5×(4×3)=60 km
So, (ii) is possible to fill all the respective fillers.
From (iii) 84/14=3a
a=2
Distance cover by boat in five hours in still water = 5×(4×2)=40 km
So, (iii) is possible to fill all the respective fillers. **Q38. When two trains A and B running in opposite direction, then they cross each other in 24 seconds. The sum of speed of trains A and B is 75 m/sec and speed of train A more than that of train B. If length of train A is 300 meters more than length of train B, then find which of following statement/s can be solved from this information.**
(i) Time taken by train B to cross a man who is running in opposite direction.
(ii) Time taken by train A to cross a bridge which is 50% of its length.
(iii) length of train C whose speed is equal to half of the average speed of train A and B., while train C cross a pole in 20 seconds.
(iv) The sum of length of train A and train B.
(A). Both (i) and (iii)
(B). (i), (ii) and (iii)
(C). Only (iii)
(D). All (i), (ii), (iii) and (iv)
(E). Both (iii) and (iv)
Ans. (e)
Sol.
Let length of train B be 'l' meters
So, length of train A be (l + 300) meters
(2l + 300) = 75 × 24
2l + 300 = 1800
2l = 1500
l = 750 meters
so, length of train A = 750 + 300 = 1050 meters
(i) Cannot be obtained because we don't know speed of train B and also speed of man is not given.
(ii) Cannot be obtained because we don't know speed of train A.
(iii) Length of train C = $\frac{75}{2} \times \frac{1}{2} \times 20 = 375$ meters
(iv) Sum of length of train A and B = 750 + 1050 = 1800 meters
Hence only (iii) and (iv) can be find out with the help of above information.

Q39. A park is shaped like a rhombus and has area 96 sq meter. If 40 m of fencing is needed to enclose the park. Find the cost (in Rs) of laying electric wires along its two diagonals, at the rate of Rs 125 per meter.
(A). 3500
(B). 1000
(C). 1200
(D). 3000
(E). CND

Ans. (a)
Sol. Rhombus = 4a = 40
10 = a



Area of each triangle in the rhombus = 96/4 = 24 sq meter.
p and q are the diagonal of the rhombus.
½ ×b×h=24
b×h=48 ...(i)
$100 = b^2 + h^2$
$100 - 2bh = b^2 + h^2 - 2bh$
$4 = (b-h)^2$
2 = b – h ....(ii)
Solving (i) and (ii)
b = 8 and h = 6
Two diagonals will be = 16 and 12
Required answer = (16+12)×125=3500 Rs

Q40. A work can be done by three person A, B, C in 2, x, y hours respectively and efficiency of doing the work is same as that of destroying the work for each person. Time taken be A (doing the work) & C (destroying the work) together to complete the work is $66\frac{2}{3}\%$ less than time taken by B (doing the work) & C (destroying the work) together. If A & B together destroying the work, then they destroy the work in 1 hours 12 minutes. B & C together complete the work in ____ hours.
(A). 13/7
(B). 17/7
(C). 11/7
(D). 15/7
(E). 12/7
Ans. (e)

Sol. One hours work of A & B when both destroying the work $\frac{60}{72} = \frac{1}{2} + \frac{1}{x}$
x = 3 hours

One hour work of A (doing the work) & C (destroying the work) together = $\frac{1}{2} - \frac{1}{y} = \frac{y-2}{2y}$ units

So, time taken by A & C to complete the work $= \frac{2y}{y-2}$ hours

One hour work of B (doing the work) & C (destroying the work) together = $\frac{1}{3} - \frac{1}{y} = \frac{y-3}{3y}$ units

So, time taken by B & C to complete the work = $\frac{3y}{y-3}$ hours

ATQ, $\frac{2y}{y-2} = \frac{1}{3} \times \frac{3y}{y-3}$
y = 0, 4 (y can never be zero)
y = 4 hours

One hour work of B & C = $\frac{1}{3} + \frac{1}{4} = \frac{7}{12}$ units

Required time = $\frac{\frac{1}{7}}{\frac{12}{12}} = \frac{12}{7}$ *hours*