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50+ Arithmetic Ques. PDF Asked in SSC CPO 2019/18/17

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1. If 45 persons can complete a work in 18 days, working 8 hours a day, then how many persons are required to complete two-thirds of the same work in 20 days, working 9 hours a day?
A. 24
B. 40
C. 36
D. 30
Ans. A
Sol.
$M_1D_1H_1 = M_2D_2H_2$

$$\frac{45 \times 18 \times 8}{1} = \frac{M_2 \times 20 \times 9}{\frac{2}{3}}$$

$M_2 = 24$.

2. A sum of Rs. x amounts to Rs. 12,777.60 in 2 years at 15%p.a., when the interest is compounded eight-monthly. The value of x is _____.
A. Rs. 9800
B. Rs. 10400
C. Rs. 10200
D. Rs. 9600
Ans. D
Sol.
R = 10%, T = 3 years

$$12777.60 = P\left(1+\frac{10}{100}\right)^3$$

$$12777.60 = P \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$$

P = Rs. 9600.

3. The marked price of an article is Rs.250. After allowing two successive discounts of 20% and x% on the marked price, it is sold for Rs. 185.60.What is the value of x?
A. 8.4%
B. 7.6%
C. 6.8%
D. 7.2%
Ans. D
Sol.

After first discount = $250 \times \frac{80}{100}$ = Rs. 200

Second discount $(x) = \frac{200-185.60}{200} \times 100$

x= 7.2%

4. A dealer allows 25% discount on the marked price of an article and gains 20%. If the cost price of the article increases by 20%, how much discount percentage should he allow on the marked price so as to earn the same percentage of profit as before?
A. 8.5%
B. 10%
C. 12%
D. 7.25%
Ans. B
Sol.
Let MP = Rs. 600

Then CP = $600 \times \frac{75}{100} \times \frac{100}{120}$ = Rs. 375

New CP = $375 \times \frac{120}{100}$ = Rs. 450

Then SP = $450 \times \frac{120}{100}$ = Rs. 540

New discount percentage = $\frac{600-540}{600} \times 100$

= 10%.

5. If Abhi travels a certain distance at 6km/h, he reaches his destination 12 minutes early, but if he travels at 4 km/h, he reaches his destination 10 minutes late. The speed (in km/h) at which he should travel to reach his destination on time is _____.
A. $4\frac{3}{7}$
B. $4\frac{5}{7}$
C. $5\frac{4}{4}$
D. $5\frac{1}{8}$
Ans. B
Sol.
A.T.Q.

$$6\times\left(t-\frac{12}{60}\right)=4\left(t+\frac{10}{60}\right)$$

$$6t-\frac{72}{60}=4t+\frac{40}{60}$$

$$2t=\frac{112}{60}$$

$$t=\frac{56}{60}$$ hr.

4 x (66/60) = s x (56/60)

So, speed = $4\frac{5}{7}$

6. Let x be the least number which when divided by 8, 9, 12, 14 and 36 leaves a remainder of 4 in each case, but x is divisible by 11. The sum of the digits of x is _____.

A. 5
B. 6
C. 9
D. 4

Ans. D

Sol.

LCM (8, 9, 12, 14, 36) = 504

A.T.Q.

$$=\frac{504x+4}{11}$$

Value of $x=2$

Number = 1012

Sum of digits = 1 + 0 + 1 + 2 = 4.

7. The sum of two numbers is 1215 and their HCF is 81. If the numbers are between 500 and 700, then the sum of the reciprocals of the number is _____.

A. $\frac{5}{1512}$
B. $\frac{5}{378}$
C. $\frac{5}{702}$
D. $\frac{5}{1188}$

Ans. A

Sol.

a + b = 1215

81a + 81b = 1215

a + b = 15

Possible value {a, b} = {11, 4}, {7, 8}, {2, 13}

Only {7, 8} satisfy the value

a = 7 × 81 = 567

b = 8 × 81 = 648

$$\frac{1}{a}+\frac{1}{b}=\frac{1}{567}+\frac{1}{648}$$

$$=\frac{8+7}{81\times7\times8}$$

$$=\frac{5}{1512}.$$

8. Two equal sums are lent at 10% and 8% simple interest p.a. respectively, at the same time. The first sum is received 2 years earlier than the second one and the amount received in each case was Rs.36,900. Each sum was _____.

A. Rs. 21,500
B. Rs. 20,500
C. Rs. 20,200
D. Rs. 18,100

Ans. B

Sol.

$$\frac{P\times10\times x}{100}=\frac{P\times8\times(x+2)}{100}$$

$5^x = 4^x + 8$

x = 8 years

$$P+\frac{P\times10\times8}{100}=36900$$

$$\frac{180P}{100}=36900$$

P = Rs. 20500.

9. The difference between the 38% of a number and 22% of that number is 3200. What is the $15\frac{1}{2}\%$ of that number?

A. 2800
B. 3000
C. 3100
D. 3200

Ans. C

Sol.

. Let the number = x

$$\frac{38-22}{100}x=3200$$

x = 20000

$15\frac{1}{2}$ of that number = 20000 × $\frac{31}{2\times100}$ = 3100.

10. The average of twelve numbers is 58. The average of the first five numbers is 56 and the average of the next four numbers is 60. The 10th number is 4 more than the 11th number and the 11th number is one less than the 12th number. What is the average of the 10th and 12th numbers?
A. 59.5
B. 58.5
C. 58
D. 59
Ans. A
Sol.
Total sum of 12 numbers = 58 × 12 = 696
Total sum of first five number = 56 × 5 = 280
Total sum of next four numbers = 4 × 60 = 240
Let the 11th number = x
10th number = x + 4
12th number = x + 1
$x + x + 4 + x + 1 = 696 - 280 - 240$
$3x + 5 = 176$
$x = \frac{171}{3}$
x = 57.
Required – 61+58/2 = 119/2 =59.5

11. The average age of 24 students is 15.5 years. The age of the teacher is 24 years more than the average age of all the students and teacher. What is the age (in years) of the teacher?
A. 40
B. 42
C. 41.4
D. 40.5
Ans. D
Sol.
Total age of students = 24 × 15.5 = 372
Let the age of teacher = x
$\frac{372+x}{25} + 24 = x$
$972 + x = 25x$
$972 = 24x$
x = 40.5

12. The population of town B is 300% more than that of town A. For the next two years, the population of A increases by x% per year and that of B decreases by the same percentage per year. After 2 years, if the population of A and B become equal, then the value of x is _____.
A. $30\frac{2}{3}$
B. 40
C. 25
D. $33\frac{1}{3}$
Ans. D
Sol.
Let the population of $A=b$
then the population of $B=4b$
A.T.Q.
$$b\times\frac{(100+x)}{100}\times\frac{(100+x)}{100}=4b\times\frac{100-x}{100}\times\frac{100-x}{100}$$
$$\frac{1}{4}=\left(\frac{100-x}{100+x}\right)^2$$
$$\frac{1}{2}=\frac{100-x}{100+x}$$
$$100+x=200-2x$$
$$3x=100$$
$$x=33\frac{1}{3}\%$$

13. A vessel contains a solution of two liquids A and B in the ratio 5 : 3. When 10 litres of the solution is taken out and replaced by the same quantity of B, the ratio of A and B in the vessel becomes 10 : 11. The quantity (in litres) of the solution, in the vessel was _____.
A. 44
B. 42
C. 48
D. 52
Ans. B
Sol.
A.T.Q.

$$\frac{5x-10\times\frac{5}{8}}{3x-10\times\frac{3}{8}+10}=\frac{10}{11}$$

$$\frac{\frac{40x-50}{8}}{\frac{24x-30+80}{8}}=\frac{10}{11}$$

$$\frac{40x-50}{24x+50}=\frac{10}{11}$$

$$440x-550=240x+500$$

$$200x=1050$$

$$x=5.25$$

Total quantity = 5.25 × 8 = 42 litre.

14. A person travelled from station A to station B at 40 km/h and from B to A at 30 km/h. The entire journey took 6.3 hours. What is the distance (in km) between A and B?

A. 117
B. 108
C. 99
D. 91
Ans. B
Sol.

Average speed $=\frac{2xy}{x+y}$

$=\frac{2\times40\times30}{40+30}=\frac{120}{7}$ km\hr

Distance = $\frac{120}{7}$ × 6.3 = 108km.

15. An article was sold at a certain price. Had it been at $\frac{4}{5}$ of that price, there would have been a loss of 10%. At what profit percentage was the article sold initially?

A. 10.5
B. 10
C. 12.5
D. 15
Ans. C
Sol.
Let the selling price = Rs. 450

New selling price = $\frac{4}{5}$ × 450 = Rs. 360

CP = $\frac{360}{90}$ × 100 = Rs. 400

Profit percentage = $\frac{450-400}{400}$ × 100 = 12.5%

16. A is twice efficient as B and C is thrice as efficient as B Working together, they can finish a certain work in 5 days. A and C worked together for 5 days. B alone would complete the remaining work in _____.

A. 8 days
B. 4 days
C. 6 days
D. 5 days
Ans. D
Sol.
Ratio of efficiency of A, B and C = 2 : 1 : 3
Total work = 5 × 6 = 30 units
Work done in 56 days = 5 × 5 = 25 units

Remaining done work by B = $\frac{30-25}{1}$ = 5 days.

17. Pipe A can fill a tank of capacity 350 litres in $3\frac{1}{2}$ minutes. Pipe B can fill a tank of capacity 780 litres in $8\frac{2}{3}$ minutes. How long (in min) will it take to fill a tank of capacity 1615 litres, if both pipes are opened together?

A. $7\frac{1}{2}$
B. $8\frac{1}{2}$
C. 9
D. 8
Ans. B
Sol.

Efficiency of A = $\frac{350}{7}$ × 2 = 100 litre/min

Efficiency of B = $\frac{780}{26}$ × 3 = 90 litre/min

If both pipes are opened together = $\frac{1615}{190}$

= $8\frac{1}{2}$ minute

18. Pipes A and B can fill a tank in 18 minutes and $22\frac{1}{2}$ minutes, respectively while pipe C can empty the full tank in 12 minutes. A and B are opened together for 6 minutes and then close D Now C is opened C alone will empty the tank in _____.

A. $7\frac{1}{5}$ minutes

B. $8\frac{2}{5}$ minutes

C. 6 minutes

D. 5 minutes

Ans. A

Sol.

$$\left.\begin{array}{ll} 10 & A \to 18 \\ 8 & B \to \frac{45}{2} \\ -15 & C \to 12 \end{array}\right\} 180$$

Work done in 6 minutes by A and B = 18 × 6 = 108 unit

C will empty in = $\frac{108}{15} = 7\frac{1}{5}$ minutes.

19. A person saves 25% of his income. His income increases by 20% and still he saves the same amount as before, the percentage increase in his expenditure is _____.

A. $25\frac{1}{3}$

B. 24

C. 25

D. $26\frac{2}{3}$

Ans. D

Sol.

Income	Expenditure	Saving
1000	750	250
↓20%↑	↓	↓
1200	950	250

Required % = $\frac{950-750}{750}$ × 100

= $\frac{2000}{75}$

= $26\frac{2}{3}$.

20. A, B and C started a business with their capitals in the ratio 1 : 4 : 4. At the end of every 3 months, A doubles his capital, B halves his capital and C leaves his capital unchanged At the end of the year, if B's share in the profit was Rs. 4,50,000, then the total profit (in Rs. lakhs) was _____.

A. 23.1

B. 32.4

C. 34.8

D. 24.2

Ans. A

Sol.

Ratio of investment

= x × 3 + 2^x × 3 + 4^x × 3 + 8^x × 3 : 4^x × 3 + 2^x × 3 + x × 3 + $\frac{x}{2}$ × 3 : 4^x × 12

= 30 : 15 : 32

Total proof = $\frac{450000}{15}$ × 77 = 23.1 Lakh.

21. The speed of two railway engines is in the ratio 5 : 4. If they move on parallel tracks in the same direction and if the slower engine is ahead of the faster engine by 8 km when the latter starts, then how far will the faster engine have to travel before it overtakes the slower one?

A. 32

B. 48

C. 40

D. 36

Ans. C

Sol.
The speed of two railway engines is in the ratio 5 : 4.
Let the faster train be A having speed = 5km/hr
Let the slower train be B having speed = 4km/hr
Distance between trains = 8 km
Relative speed = 5 – 4 = 1 km/hr
Time = $\frac{8}{1} = 8\ hrs$
For A the distance will be = speed × time = 8 × 5 = 40km/hr

22. Three pipes, A, B, C can fill an empty cistern in 2, 3 and 6 hours respectively. They are opened together. After what time should B be closed, so that the cistern gets filled in exactly 1 hr 15 min?
A. 20 mm
B. 45 min
C. 30 min
D. 15 min
Ans. C
Sol.
Given that :
Three pipes, A, B, C can fill an empty cistern in 2, 3 and 6 hours
Respectively.
So total capacity of three pipes = LCM (2 , 3 , 6) = 18
In 1 hour:
A fills = 18/2 = 9 units
B fills = 18/3 = 6 units
C fills = 18/6 = 3 units
For $1\ hr\ 15\ \text{min} = \frac{5}{4}\ hrs$ **A and C both are running**
And only B is closed,
A = 9 units and C = 3 units in 1 hour
⇒ 9 + 3 = 12 units in 1 hour
For $\frac{5}{4} hrs \Rightarrow 12 \times \frac{5}{4} = 15\ units$
Total capacity = 18 units
Left units = 18 – 15 = 3 units
Now B fills = 6 unit in 1 hr
So, 3 unit will be filled in 1/2 hr = 30 mins

23. At what percentage rate compound interest compounded annually for a sum of Rs. 40,000, will amount to Rs. 44,100 in two years?
A. 5
B. 2
C. 4
D. 7.5
Ans. A
Sol.
Here Principal = Rs 44100
Amount = Rs 40000
According to the formula of compound interest :

$$A = P\left(1 + \frac{r}{100}\right)^n$$

$$44100 = 40000\left(1 + \frac{r}{100}\right)^2$$

$$\Rightarrow \frac{21}{20} = 1 + \frac{r}{100}$$

$$\Rightarrow \frac{1}{20} = \frac{r}{100}$$

$$r = 5\%$$

24. While tabulation of marks scored in an examination by the students of a class, by mistake the marks scored by one student got recorded as 93 in place of 63, and thereby the average marks increased by 0.5. What was the number of students in the class?
A. 60
B. 20
C. 15
D. 30
Ans. A
Sol.
Here 63 marks were replaced by 93
Difference = 93 - 63 = 30 marks
Average marks increased by 0.5
Number of students in the class = 30/0.5 = 60

25. 4 boys from school A and 6 boys from school B together can set up an exhibition in 5 days. While 5 boys from school A and 10 boys from school C together can do in 4 days or 3 boys from school B and 4 boys from school C together can do in 10 days. Then how many boys from school A can set up the exhibition in one day?
A. 60
B. 40
C. 20
D. 80
Ans. B

Sol.
According to question:
Total work will be given by :
(4A + 6B) × 5 = 20A + 30B .....(1)
(5A + 10C) × 4 = 20 A + 40 C .....(2)
(3B + 4C) × 10 = 30B + 40 C .....(3)
Solving the equations:
From 1 and 2 we get :

$$20A + 30B = 20A + 40C$$
$$\Rightarrow \frac{B}{C} = \frac{4}{3}$$

From 2 and 3 we get :

$$20A + 40C = 30B + 40C$$
$$\Rightarrow \frac{A}{B} = \frac{3}{2} = \frac{6}{4}$$

So A : B : C = 6 : 4 : 3
Total work = 20 A + 30B = 20(6) + 30 (4)
= 120 + 120
= 240 unit
Number of boys from school A = 240/6 = 40 boys

26. Pipes A and B can fill an empty tank in 6 and 8 hours respectively, while pipe C can empty the full tank in 10 hours. If all three pipes are opened together, then the tank will get filled in:

A. $4\frac{4}{23}$ hrs
B. $6\frac{1}{5}$ hrs
C. $5\frac{5}{23}$ hrs
D. $7\frac{1}{2}$ hrs
Ans. C
Sol.
Here the capacity of A = 6 hrs
Capacity of B = 8 hrs
Capacity of C = 10 hrs
So the LCM = 6 , 8 , 10 = 120 units
In 1 hr
A can fill the tank with = $\frac{120}{6} = 20\ units$
B can fill the tank with = $\frac{120}{8} = 15\ units$
C can empty the tank with = $\frac{120}{10} = 12\ units$
If we open the pipes together then water filled in 1 hour = 20 + 15 – 12
= 23 units
So for 120 units tank it will take = $\frac{120}{23} = 5\frac{5}{23}\ hrs$

27. The ratio of two numbers is 3 : 5. If eight is added to the first, and seven to the second, then the ratio becomes 2 : 3. What will be the ratio become if six is added to each?
A. 9 : 14
B. 5 : 7
C. 5 : 9
D. 7 : 9
Ans. A
Sol.
The ratio of two numbers is 3 : 5.
Let the numbers be x and y so

$$\frac{x}{y} = \frac{3}{5}$$

According to question :

$$\frac{x+8}{y+7} = \frac{2}{3}$$
$$and\ x = \frac{3}{5}y$$
$$\Rightarrow 3x + 24 = 2y + 14$$
$$\Rightarrow 3 \times \left(\frac{3}{5}y\right) + 24 = 2y + 14$$
$$\Rightarrow 9y + 120 = 10y + 70$$
$$\Rightarrow \boldsymbol{y = 50}$$

Hence x = $\frac{3}{5} \times 50 = 30$
Ratio when 6 is added to the number:

$$\frac{30+6}{50+6} = \frac{36}{56} = \frac{9}{14}$$

Ratio = 9 : 14

28. A, B and C enter into a partnership with capitals in the ratio $\frac{2}{3} : \frac{3}{5} : \frac{5}{6}$. After 8 months, A increases his share of capital by 25%. If at the end of the year, the total profit earned is Rs. 5820, then the share of C in the profit is:
A. Rs. 2,050
B. Rs. 2,350
C. Rs. 2,450

D. Rs. 2,250
Ans. D
Sol.

A, B and C capitals in the ratio : $\frac{2}{3}:\frac{3}{5}:\frac{5}{6}$.
By taking LCM of these numbers we get :
$= \frac{20}{30}:\frac{18}{30}:\frac{25}{30}$
$Ratio = 20:18:25$
Now we know :
After 8 months A increases by 25% so
= (20 × 8) + (25 × 4)
For B = 18 × 12
For C = 25 × 12
Ratio = (160 + 100) : 216 : 300
= 260 : 216 : 300
= 65 : 54 : 75
Total profit = 65 + 54 + 75 = 194
According to question, profit = 5820 Rs
So 194 units = 5820
1 unit = $\frac{5820}{194} = 30$
Share of C = 75 × 30 = 2250Rs

29. Sudeep invested $\frac{1}{8}$ of a certain sum at 5% p.a. for two years and $\frac{3}{5}$ of the sum at 6% p.a. for two years and the remaining at 10% p.a. for two years. If the total interest received is Rs. 1,674, then the total sum invested is:
A. Rs. 13,000
B. Rs. 12,000
C. Rs. 10,500
D. Rs. 12,500
Ans. B
Sol.
Let the Principal amount be Rs 200
So 1/8 of 200 = Rs 25
Rate of interest for 1 year = 5%
Rate for 2 years = 5 × 2 = 10%
Also 3/5 of 200 = Rs 120
Rate = 2 × 6% = 12%
Remaining amount invested at 10% pa
Remaining amount = 200 – (25 + 120)
= 55
Rate = 20% for 2 years
Amount after 2 years =
$25 \times \frac{10}{100} + 120 \times \frac{12}{100} + 55 \times \frac{20}{100}$
$= 2.5 + 14.4 + 11 = 27.9$
So if 27.9 = 1674 Rs
So 1 unit = 1674/27.9 = 60
The value of 200 units = 200 × 60 = Rs 12000

30. IF the six-digit number 479 xyz is exactly divisible by 7, 11 and 13, then {(y + z) ÷ x} is equal to :
A. 4
B. $\frac{11}{9}$
C. $\frac{7}{13}$
D. $\frac{13}{7}$
Ans. A
Sol.
We know that if a number is divisible by 7 , 11 , 13 then it is of the form
abcabc
so here 479 xyz will be equal to x = 4 , y = 7 , z = 9
value of
$\{(y+z) \div x\}$
$= \frac{7+9}{4}$
$= \frac{16}{4} = 4$

31. The average run rate of a cricket team during the first 20 overs is 4.5. What should be the asking rate per over for the next 30 overs, if it has to chase a target of 282 runs in total?
A. 6.3
B. 6.0
C. 6.4
D. 6.8
Ans. C
Sol.
The average run rate of a cricket team during the first 20 overs is 4.5.
Total runs in 20 overs = 20 × 4.5 = 90
Target runs = 282
Remaining runs = 282 – 90 = 192
∴ 192 runs has to be chased in 30 overs
⇒ Asking rate per over = $\frac{192}{30} = 6.4$

32. I purchase 100 kg of tea and sell it for a profit to the extent of what I would have paid for 40 kg. What is my profit percentage?
A. 30%
B. 20%
C. 25%
D. 40%
Ans. D
Sol.
Let us suppose that 100 kg tea is bought at Rs 100
So 1 kg tea = 1 Rs
So 40 kg tea = Rs 40
We need to find the profit of tea when 100 kg of tea is sold at the extent of price of 40 kg of tea.
Hence Profit Percent = $\frac{40}{100} \times 100 = 40\%$

33. After allowing a 10% discount on the marked price of an article,a dealer makes a profit of 5%. What is the marked price, if the cost price of the article is Rs.300?
A. Rs. 400
B. Rs. 320
C. Rs. 375
D. Rs. 350
Ans. D
Sol.
Discount % = 10%
Let the marked price be Rs 100
So SP = 100 - $\frac{10}{100} \times 100 = 100 - 10 = Rs\,90$
Profit% = 5%
So cost price = $\frac{100\times90}{100+5} = \frac{9000}{105} = 85.71$
Cost price of the article = Rs 300
So if 1 unit = 85.71 = 300 Rs
Then 100 units = 100 × 300/85.71= Rs 350

34. If a sum becomes Rs. 1,460 in two years and Rs. 1,606 in three years due to the compound interest, then annual rate of interest is:
A. 10%
B. 9%
C. 8%
D. 11%
Ans. A
Sol.
In compound interest we know –

$$Amount = P\left(1+\frac{r}{100}\right)^t$$

Where, P = Principle Amount
r = rate of interest
t = time
A.T.Q.

$$P\left(1+\frac{r}{100}\right)^2 = 1460 \ldots.(i)$$

$$P\left(1+\frac{r}{100}\right)^3 = 1606 \ldots.(ii)$$

Divide equation (ii) by (i)

$$\frac{P\left(1+\frac{r}{100}\right)^3}{P\left(1+\frac{r}{100}\right)^2} = \frac{1606}{1460}$$

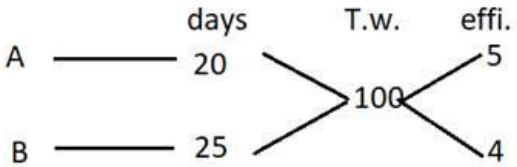
$$1+\frac{r}{100} = \frac{803}{730}$$

$$\frac{r}{100} = \frac{803}{730} - 1$$

$$\frac{r}{100} = \frac{73}{730}$$

$$r = 10\%.$$

35. A can do a work in 20 days, B can do the same work in 25 days. They started the work together. Few days later C also joined them and thus all of them completed the whole work in 10 days. All of them were paid total of Rs. 700. What the share of C?
A. Rs. 55
B. Rs. 65
C. Rs. 75
D. Rs. 70
Ans. D
Sol.
T.w. = Total work = LCM(20,25,10) = 100 units
Efficiency = Work / Time taken



Work done by A in one day = 5 unit
Work done by B in one day = 4unit

Work done by (A+B) in 10 days = (5+4) x 10 =90 unit
Remaining work done by C = (100 – 90) = 10 unit
Thus in 10 days working together (A+B) will complete 90% of work.
Hence, the remaining work will surely done by C which is 10%.
Thus, C will get 10% of Rs. 700, which is equal to Rs.10/100 x 700 = 70.

36. A number is first decreased by 10% and then increased by 10%. The number so obtained is 100 less than the original number. The Original number is:
A. 100000
B. 100
C. 1000
D. 10000
Ans. D
Sol.

Let the original no. be = x
A.T.Q.

$$x \times \frac{90}{100} \times \frac{110}{100} = x - 100$$
$$99x = 100x - 100 \times 100$$
$$x = 10000.$$

37. The speed of a car increases by 2 km/h after every one hour. If the distance travelled in the first one hour was 35km, what was the total distance travelled in 12 hours?
A. 560 km
B. 650 km
C. 558 km
D. 552 km
Ans. D
Sol.
A.T.Q.
Distance travelled in 1st hour = 35
Distance travelled in 2nd hour = 37
So, distance travelled in 12 hours-

$$S_{12} = 35 + 37 + 39 + ---- 12 terms$$
$$S_n = \frac{n}{2}[2a + (n-1)d]$$

Here $a = 35, d = 2, n = 12$

$$S_{12} = \frac{12}{2}[70 + 11 \times 2]$$
$$= 6 \times 92 = 552Km.$$

38. 3 men, 4 women and 6 children can complete a work in 7 days. A woman does double the work a man does and a child does half the work a man does. How many women alone can complete this work in 7 days?
A. 6
B. 7
C. 9
D. 8
Ans. B
Sol.
Efficiency

$$\frac{w}{m} = \frac{2}{1}$$
$$\frac{c}{m} = \frac{1}{2}$$

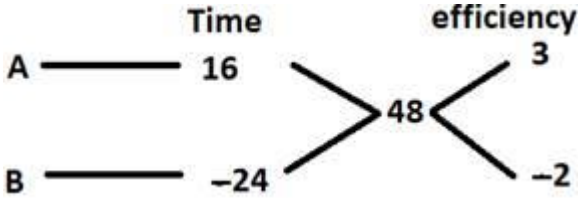
Efficiency m : w : c = 2 : 4 : 1

Total work $= [3 \times 2 + 4 \times 4 + 6 \times 1]$
$= 28 \times 7$

Let the number of woman required to complete the work in 7 days = x
Hence,

$$x \times 7 \times 4 = 28 \times 7$$
$$x = 7.$$

39. Pipe A can fill a tank in 16 minutes and pipe B empties it in 24 minutes. If both the pipes are opened together, after how many minutes should B be closed, so that the tank is filled in 30 minutes?
A. 21 minutes
B. 20 minutes
C. 18 minutes
D. 15 minutes
Ans. A
Sol.



Total capacity of tank = 48
Total work done by (A+B) in 1 minute = 3 – 2 = 1

Let the pipe B will be closed after x minute.

$x(A+B)+(30-x)A=48$

$x[1]+(30-x)3=48$

$x+90-3x=48$

$2x=42$

$x=21$

Hence, pipe B should be closed after 21 minute.

40. The LCM of two numbers is 168 and their HCF is 12. If the difference between the numbers is 60, what is the sum of the numbers?

A. 112
B. 164
C. 108
D. 122

Ans. C

Sol.

Let the number be $12x$ and $12y$ respectively.

$L.C.M \times H.C.F. = 12x \times 12y$

$168 \times 12 = 12 \times 12xy$

$xy = 14 \ldots . (i)$

Given

$12x - 12y = 60$

$x - y = 5$

$y = x - 5$

We put the value of y in equation (i).

$x(x-5)=14$

$x^2-5x-14=0$

$x^2-7x+2x-14=0$

$x(x-7)+2(x-7)=0$

$(x-7)(x+2)=0$

$x=-2,7$

We take the positive value of x which is 7 so $y=2$

Required $no. 12 \times 7 = 84$

$= 12 \times 2 = 24$

Hence, the sum of no $= 84 + 24$

$= 108$.

41. Seema purchased mobile and got 20% discount on it. Had she got 25% discount, she would have saved Rs. 1,000 more.

A. Rs. 25,000
B. Rs. 22,000
C. Rs. 24,000
D. Rs. 20,000

Ans. D

Sol.

Let the M.P. of mobile $= x$

If she got 20% discount-

$S.P._1 = x \times \frac{80}{100}$

In 2nd condition. When she got 25% discount-

$S.P._2 = x \times \frac{75}{100}$

A.T.Q.

$0.8x - 0.75x = 1000$

$0.05x = 1000$

$x = \frac{1000}{0.05}$

$x = 20000.$

42. The average of marks obtained by A and B is 15 less than that of average marks obtained by B and C, If the marks obtained by C is 65 , then what is the marks obtained by A?

A. 35
B. 50
C. 65
D. 80

Ans. A

Sol. Let average marks obtained by B and C=x

Then the average marks obtained by A and B =x-15

(B+C)/2=x

B+C = 2x

As C = 65(Given)

B=2x-65

Now,

(A+B)/2 = x-15

A+B=2x-30

A+2x-65=2x-30

A=35

43. A sum of Rs. 3100 is lent out at simple interest in two parts. One at 8% per annum and another at 6% per annum. If the total annual interest is Rs 212 then what it is the money (in Rs.) lent at rate of 8%?
A. 1000
B. 1250
C. 1300
D. 1400
Ans. C
Sol. Total interest earned =212
Principal amount =3100
Let Rs x is lent at 8% and 3100-x is lent at 6%
Then 8% of x +6% of (3100-x)=212
8x+18600-6x=21200
2x= 2600
X=1300
Hence Rs 1300 are lent at 8% interest rate

44. The ratio of marked price and cost price of an article is 6 : 5. If 15% discount is given, then how much is the profit percentage?
A. 4
B. -2
C. 2
D. 1
Ans. C
Sol. Marked price =600
And cost price =500
So selling price =600-15% of 600=85×6=510
Profit =510-500=10
So required percentage = $\frac{10}{500} \times 100 = 2\%$

45. Out of the following, which is the best discount for a customer?
I. 50% + 50% off
II. 60% + 40% off
III. 70% + 30% off
IV. Buy 1 get 4 free
A. Only I and IV
B. only II
C. Only I, II and III
D. Only IV
Ans. D
Sol. 50% + 50% off =50+50 -25=75%
Using the concept of succssive discounts
60% + 40% off =100-24=76% off
70% + 30% off = 100-21=79% off
Buy 1 get 4 free =80% off
So best discount is 80% off

46. A men rides his vehicles at the rate of 36 km/hr but stops for 12 minutes to change parts at the end of every14th km . what will be the time taken to cover a distance of 90 km?
A. 6 hour 12 minutes
B. 2 hours 30 minutes
C. 3 hours 42 minutes
D. 5 hours 32 minutes
Ans. C
Sol. Speed of vehicles =36km/hr
He stops at every 14^{th} km
So he stops for [90/14]= 6.428 times which means exactly 6 times.
Hence he stops for 6 times
Time taken to cover 90 km = 90/36 +6× 12= 2.5 hour + 1 hour 12 minutes
= 3 hour 42 minutes

47. In a mixture, milk and water are in ratio of 2 : 3. Some milk is added to the mixture because of which ratio of milk and water becomes 2:1. How much milk was added as a percentage of initial mixture?
A. 75
B. 60
C. 80
D. 50
Ans. C
Sol. Let the milk be 2x and water be 3x.
Let y litre milk be added
Then $\frac{2x+y}{3x} = \frac{2}{1}$
2x+y=6x
4x=y
Initial mixture volume =2x+3x=5x
Hence required percentage = $\frac{4x}{5x} \times 100 = 80\%$

48. Cost price and selling price of an article are in ratio 13 : 9. If the loss incurred on article is Rs. 320. What is the sum of cost price and selling price?
A. 1480

B. 1620
C. 1500
D. 1760
Ans. D
Sol. Let cost price be 13x and selling price be 9x
Then loss is 4x=320
X=80
Sum of selling price and cost price =13x+9x=22x=22× 80=1760

49. A misture contains 18% copper by weight. How much mixture (in kg) is required to obtain 81 kg of copper?
A. 350
B. 300
C. 450
D. 250
Ans. C
Sol. Let x kg of mixture required
Then 18% of x=81

$$\frac{18}{100} \times x = 81$$

X=450kg

50. P is 20% more efficient than Q. If Q alone can finish a work in 10 days, then in how many days P alone will finish the work?
A. 25/3
B. 8.5
C. 9
D. 12
Ans. A
Sol. Let the efficiency of Q be 5.
Then the efficiency of P = 120% of 5 = 6
Total work = Working efficiency × Number of days = 5×10 = 50 units
So time taken by P in finishing the work = 50/6 = 25/3 days

51. A walks at a uniform speed of 8 km/hr and 8 hours after his start, B starts on his cycle after him at speed of 24km/hr . How far from the starting point will B catch A?
A. 72
B. 96
C. 120
D. 144
Ans. B
Sol. Speed of A=8km/hr
Speed of B=24km/hr
Relative speed of B with respect to A=24-8=16km/hr
Distance covered by A in 8 hour =8× =64km
So time taken by B in catching the A= 64/16=4 hour
So required distance =4× 24=96km

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