DATE: 11th Jan, 2024 Test - 3 DAY: Saturday

General Science And Ability

Question - 2

A- Two numbers are in the ratio 3 : 5. If 9 is substracted from each, ... The smaller number is ?

Solution :

let, the two numbers are $3x$ and $5x$. Then according to given condition

$$\frac{3x-9}{5x-9} = \frac{12}{23}$$

$$23(3x-9) = 12(5x-9)$$

$$69x - 207 = 60x - 108$$

$$69x - 60x = 207 - 108$$

$$9x = 99$$

$$x = 11$$

The smaller number is

$$3x = 3(11) = \boxed{33 \text{ Answer}}$$

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B- Three partness shared the profit in a business in the ratio 5 : 7 : 8 ------ What was the ratio of their investment ?

Solution :

let, the investment of three partness is x, y, z.

According to their business month, the profit ratio is

$5 : 7 : 8$

$$14x : 8y : 7z = 5 : 7 : 8$$

$$\frac{14x}{5} = \frac{8y}{7} = \frac{7z}{8} = k$$

$$\frac{14x}{5} = k \Rightarrow x = \frac{5k}{14} \rightarrow (1)$$

$$\frac{8y}{7} = k \Rightarrow y = \frac{7k}{8} \rightarrow (2)$$

$$\frac{7z}{8} = k \Rightarrow z = \frac{8k}{7} \rightarrow (3)$$

Equating equ. (1), (2), (3)

$$x : y : z = \frac{5}{14} : \frac{7}{8} : \frac{8}{7}$$

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The least common factor of denominator is 56

$$x : y : z = \frac{5 \times 4}{56} : \frac{7 \times 7}{56} : \frac{8 \times 8}{56}$$

$$x : y : z = 20 : 49 : 64$$

The ratio of their investments is

20 : 49 : 64

C- The average weight of A, B and C is 45 kg ------ then the average weight of B is?

Solution:

let, the weights of A, B, C is a, b, c respectively

The average weight is 45 kg

$$\frac{a+b+c}{3} = 45$$

$$a+b+c = 45 \times 3$$

$$a+b+c = 135 \rightarrow (1)$$

The average weight of A and B is 40kg

$$\frac{a+b}{2} = 40$$

$$a+b = 40 \times 2$$

$$a+b = 80 \quad \rightarrow (2)$$

The average weight of B and C is 43kg

$$\frac{b+c}{2} = 43$$

$$b+c = 43 \times 2$$

$$b+c = 86 \quad \rightarrow (3)$$

From equ. (1) and (2)

$$a+b+c = 135$$

putting $(a+b)$

$$80 + c = 135$$

$$c = 135 - 80$$

$$c = 55$$

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Now, putting 'c' in equ. (3)

$$b + 55 = 86$$

$$b = 86 - 55$$

$$b = 31$$

So,

> the average weight of B = 31

D- Find a positive number which when increased by 17 is equal to 60 times the reciprocal of the number.

Solution:

According to the given condition

$$x + 17 = \frac{60}{x}$$

Multiplying equ. by 'x'

$$x^2 + 17x = 60$$

$$x^2 + 17x - 60 = 0$$

$$x^2 + 20x - 3x - 60 = 0$$

$$x(x + 20) - 3(x + 20) = 0$$

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$(x+20)(x-3) = 0$

$x+20 = 0$, $x-3 = 0$

$x = -20$, $x = 3$

So,

The positive number is 3

Question - 3

A - The percentage profit earned by selling ------- make 25 % profit ?

Solution :

let, the cost price of article is 'x'

→ Profit percentage when sold for Rs. 1920

→ Loss percentage when sold for Rs. 1280

According to given condition

$1920 - x = x - 1280$

$1920 + 1280 = 2x$

$3200 = 2x$

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$x = 1600$

Cost Price of Article is 1600

Now, for 25% profit, the selling price

Selling Price = CP + 25% of CP

$$SP = 1600 + \frac{25}{100}(1600)$$

$$SP = 1600 + 400$$

$$SP = 2000$$

So,

To make 25% profit, the article should be sold at 2000

B- A can do work in 15 days and B in 20 days ------ then the fraction of work that is left is ?

Solution:

According to given condition

A's fraction of work = $\frac{1}{15}$

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B's fraction of work = $\frac{1}{20}$

Total fraction of work

$= \frac{1}{15} + \frac{1}{20}$

$= \frac{4+3}{60} = \frac{7}{60}$

In 4 days, the work done by A and B is

$= 4 \times \frac{7}{60}$

$= \frac{28}{60} \Rightarrow = \frac{7}{15}$

Total work is 1, After 4 days work left is

$= \frac{1 - 7}{15}$

$= \frac{15-7}{15} = \frac{8}{15}$

So,

the fraction of work left is $\frac{8}{15}$