

Test 3.

Question 2.

Part a.

Ratios :

$$3:5$$

$$12:23$$

Subtracted from them "9"

So, let the unknown be 'n'

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

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

$$69n - 207 = 60n - 108$$

$$69n - 60n = +207 - 108$$

$$9n = 99$$

$$n = \frac{99}{9}$$

$$n = 11$$

$$3n = 3 \times 11 = 33$$

$$5n = 5 \times 11 = 55$$

So, the smallest number is 33

$$\begin{array}{r} 207 \\ -108 \\ \hline 99 \end{array}$$

Part B.

3 partners shared the profit ratio

5:7:8.

Partnered for 14 months, 8 months and 7 months.

Let the investment be Rs x, y, z

So,

for 14 months it is $14x$

8 months it is $8y$

7 months it is $7z$

and the ratio will be

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

Now simplifying it.

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

$$14x \times 7 = 5 \times 8y$$

$$98x = 40y$$

$$\text{So } y = \frac{98x}{40} = \frac{49x}{20}$$

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

$$8 \times 14x = 5 \times 7z$$

$$112x = 35z$$

$$z = \frac{14x}{35} = \frac{26x}{5}$$

$$\text{So } x:y:z = x : \frac{49x}{20} : \frac{16x}{5}$$

Now multiply it by 20.

$$\text{So, } x = 20$$

$$y = \frac{49 \times 20}{20} = 49$$

$$z = \frac{16 \times 20}{5} = 64$$

and ratio of the investment will be
 $x:y:z = 20:49:64$.

Part C

Average weight of A, B, C = 45 kg.

Average weight of A and B = 40 kg.

Average weight of B and C = 43 kg.

Now, the total weight of

$$A+B+C = 45 \times 3 = 135 \text{ kg.}$$

$$A+B = 40 \times 2 = 80 \text{ kg.}$$

$$B+C = 43 \times 2 = 86 \text{ kg.}$$

Add the weights of A and B, and B and C, then subtract the total weight.

$$(A+B) + (B+C) = 80 + 86 = 166 \text{ kg.}$$

$$\begin{aligned} [(A+B) + (B+C) - (A+B+C)] &= 166 - 135 \\ &= 31 \text{ kg.} \end{aligned}$$

So, the weight of B is 31 kg.

Part D

Let the positive integer be 'x'

$$\text{So, } x + 17 = \frac{60}{x}$$

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

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

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

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

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

$$x - 3 = 0$$

$$x = 3$$

$$x + 20 = 0$$

$$x = -20$$

So, the answer is 3.

Question 3.

Part A

The profit Percentage:

$$\text{Profit} = \text{Selling Price} - \text{Cost price.}$$

$$\text{Profit percentage} = \frac{\text{Profit}}{\text{Cost Price}} \times 100.$$

The loss Percentage:

$$\text{Loss} = \text{Cost Price} - \text{Selling Price}$$

$$\text{loss percentage} = \frac{\text{Loss}}{\text{Cost Price}} \times 100.$$

$$\frac{(1920 - \text{Cost Price})}{\text{Cost Price}} \times 100 = \frac{(\text{Cost Price} - 1280)}{\text{Cost Price}} \times 100.$$

$$\frac{(1920 - \text{Cost})}{(\text{Cost} - 1280)} = 1.$$

$$1920 - \text{Cost} = \text{Cost} - 1280.$$

$$1920 + 1280 = \text{Cost} + \text{Cost}$$

$$3200 = 2C.$$

$$\frac{3200}{2} = C$$

$$C = 1600$$

$$\begin{array}{r} 1920 \\ 1280 \\ \hline 3200 \end{array}$$

$$\begin{array}{r} 1 \\ 2 \overline{) 3600} \\ \underline{2} \\ 16 \end{array}$$

So, the cost price of the article is Rs 1600

To make profit of 25%, the selling price should be. Rs. 2000.

$$\begin{array}{r} 13 \\ 125 \\ \hline 16 \\ \hline 1750 \\ 125 \times \\ \hline 2000 \end{array}$$

$$\begin{array}{cc} 1600 & 100\% \\ x & 125\% \end{array}$$

$$\frac{1600 \times 125}{100} = x$$

$$\boxed{x = 2000}$$

Part B

$$\boxed{A = RT}$$

for the work.

$$R = \frac{A}{T} = \frac{1}{15} \quad \text{for A.}$$

$$R = \frac{A}{T} = \frac{1}{20} \quad \text{for B.}$$

$$\begin{aligned} \cancel{1} \quad \cancel{R} \quad R_{A+B} &= R_A + R_B \\ &= \frac{1}{15} + \frac{1}{20} \end{aligned}$$

$$R_{A+B} = \frac{7}{60}$$

For 4 days.

$$R_{A+B} = \frac{7}{60} \times 4 = \frac{28}{60} = \frac{7}{15}.$$

Remaining work - = $1 - R_{A+B}$.

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

$$= \frac{8}{15}.$$

Hence, the fraction of work that is left is $\frac{8}{15}$.

Part C

Current Age:

The age of mother be 'x' $m = x$

The person's age is ' $\frac{2}{5}x$ ' $p = \frac{2}{5}x$.

After 8 years.

The age of mother will be ' $x+8$ ' = m

The person's age will be " $\frac{1}{2}(x+8)$ " = p.

So after 8 years The person's age is

is

$$P = \frac{1}{2}(x+8)$$

where " $\frac{2}{5}x + 8$ " is now equals to

P.

$$\frac{2}{5}x + 8 = \frac{1}{2}(x+8)$$

$$\frac{2x+40}{5} = \frac{x+8}{2}$$

$$2(2x+40) = 5(x+8)$$

$$4x+80 = 5x+40$$

$$80-40 = 5x-4x$$

$$40 = x$$

So the current age of the mother is 40 years-

Part D

Let the number of percentage be 'x'

$$= \frac{\text{Difference}}{\text{Original}} \times 100$$

$$= \left(\frac{5x}{3} - \frac{3x}{5} \right) \times 100$$

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

$$\frac{5x}{3} - \frac{3x}{5x} = \frac{25x - 9x}{15} = \frac{16}{15}$$

$$= \frac{\frac{16x}{15}}{\frac{5x}{3}} = \frac{16x}{15} \times \frac{3}{5x} = \frac{48x}{75x} = \frac{16}{25}$$

$$= \frac{16}{25} \times 100$$

$$= 64\%$$

The percentage of error is 64%.