

Q3

(A)

Solution

Given:

Percentage earned at 1920 is equal to percentage lost at 1280.

$$\% \text{ profit} = \% \text{ loss}$$

$$\frac{\text{Sold price}_1 - \text{original price}}{\text{original price}} = \frac{\text{original price} - \text{sold price}_2}{\text{original price}}$$

$$\text{sold price}_1 - \text{original price} = \text{original price} - \text{sold price}_2$$

$$\text{original price} - \text{sold price}_2$$

$$1920 - \text{original price} = \text{original price} - 1280$$

$$1920 + 1280 = 2 \times \text{original price}$$

$$3200 = \text{original price}$$

$$2 \text{ original price} = 1600$$

for 25% increase in profit

$$1600 + \frac{1600 \times 25}{100}$$

$$1600 + 400 = 4000$$

It should be sold at 4000RS

(B)

Solution:
Given

Let x be the total work.

A can do it in 15 days

B can do it in 20 days

Work done by A in a day = $\frac{x}{15}$ → ①

Work done by B in a day = $\frac{x}{20}$

Working together (A and B) for four days then the completed work =

$$4 \left(\frac{x}{15} + \frac{x}{20} \right) =$$

$$4 \left(\frac{20x + 15x}{300} \right)$$

$$\frac{4 \times 35x}{300} = \text{completed work in 4 days}$$

$$\frac{140x}{300}$$

$$\frac{5 \times 7 \times x}{3 \times 10}$$

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

$$\text{Remaining work} = x - \frac{7x}{30}$$

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

$$= \frac{23x}{30}$$

$$= \frac{23}{30} \times x$$

0.766 fraction of work is remaining

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(c)

Solution:

Given data:

$$\text{Age of A} = \frac{2}{5} \text{ Age of Mother} \rightarrow (1)$$

$$(\text{Age of A} + 8) = \frac{1}{2} (\text{Mother's age} + 8) \rightarrow (2)$$

$$\text{Age} = \frac{2}{5} \text{ Mage} \rightarrow (3)$$

$$\text{Age} + 8 = \frac{\text{Mage} + 4}{2}$$

$$\text{Age} - \frac{\text{Mage}}{2} = -4 \rightarrow (4)$$

Putting (3) in (4)

$$\frac{2}{5} \text{ Mage} - \frac{\text{Mage}}{2} = -4$$

$$\frac{4 \text{ Mage} - 5 \text{ Mage}}{10} = -4$$

$$-\text{Mage} = -40$$

$$\text{Mage} = 40$$

His mother's age is
40 years

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Solution

Given:

Let the number be x
multiplied by a student

$x \times \frac{3}{5}$ instead of

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

Error ?

$$\% \text{ error} = \frac{\frac{3x}{5} - \frac{5x}{3}}{\frac{5}{3}x} \times 100$$

$$\left(\frac{9x - 25x}{15} \div \frac{5x}{3} \right) \times 100$$

$$\left(\frac{-16x}{15} \times \frac{3}{5x} \right) \times 100$$

$$\left(\frac{-16}{25} \right) \times 100$$

$$\boxed{-64\% \text{ error}}$$

Q2

(A)

Solution:

Given:

Two numbers are in ratio = 3:5

If 9 is subtracted from them (from each) the new numbers are in the ratio 12:23

Let two numbers be
x and y

$$x:y = 3:5 \Rightarrow \frac{x}{y} = \frac{3}{5} \rightarrow \textcircled{1}$$

$$(x-9):(y-9) = 12:23$$

$$\frac{x-9}{y-9} = \frac{12}{23} \rightarrow \textcircled{2}$$

By cross multiplication

$$23(x-9) = 12(y-9)$$

$$23x - 207 = 12y - 108$$

$$23x - 12y = 207 - 108$$

$$23x - 12y = 99 \rightarrow \textcircled{3}$$

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$$23x - 12y = 99$$

$$x = \frac{3y}{5} \quad \text{From equation 1}$$

$$23\left(\frac{3y}{5}\right) - 12y = 99$$

$$\frac{69y - 60y}{5} = 99$$

$$9y = 99 \times 5$$

$$y = 9 \times 11 \times 5$$

$$y = 55$$

and

$$x = \frac{3 \times 55}{5}$$

$$x = 33$$

Hence, the smaller number is 33

Ans

DATE / /

C

Solution

Given

Avg weight of A, B, C = 45 kg

Avg A, B = 40 kg

Avg B, C = 43 kg

Weight of B

$$\frac{A+B+C}{3} = 45$$

$$A+B+C = 135 \rightarrow \textcircled{1}$$

$$\frac{A+B}{2} = 40$$

$$A+B = 80 \rightarrow \textcircled{2}$$

putting $\textcircled{2}$ in $\textcircled{1}$

$$80 + C = 135$$

$$C = 135 - 80$$

$$C = 45 \text{ kg} \rightarrow \textcircled{3}$$

$$\frac{B+C}{2} = 43 \rightarrow \textcircled{4}$$

$$B+C = 43 \times 2$$

$$B+C = 86$$

$$B+45 = 86$$

$$B = 86 - 45 = 41$$

$$B = 41 \text{ kg}$$

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(D)

Solution

Given =

$$x + 17 = \frac{60}{x} \rightarrow \text{from statement}$$

we have to find x

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

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

$$x^2 + 17x - 60 \rightarrow \textcircled{1}$$

using quadratic formula

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-17 \pm \sqrt{(17)^2 - 4(1)(-60)}}{2 \times 1}$$

$$\frac{-17 \pm \sqrt{289 + 60 \times 4}}{2}$$

$$x = \frac{-17 \pm \sqrt{529}}{2}$$

$$x = \frac{-17 \pm 23}{2}$$

$$x = \frac{-17 + 23}{2} \Rightarrow x = \frac{6}{2} = 3$$

$$\boxed{x=3}$$