

## Question # 2

25

9

Data:

Mixture = 60 liters

Ratio of milk and water = 2:1

New ratio of milk and water = 1:2

Quantity of water added = ?

Solution

$$\text{Milk} = \frac{60 \times 2}{2+1} = 40$$

$$\text{Water} = \frac{60 \times 1}{2+1} = 20$$

in old ratios = 2:1

quantity of ~~water~~ milk and water = 40:20

New ratio = 1:2

means water needs to be doubled in quantity as compare to milk

$$\text{water quantity} = 40 \times 2 = 80$$

$$\text{Need to add} = 80 - 20 = 60$$

Answer: In order to have 2:1 ratio of milk and water 60 liter water needs to be added further.

2b

Data:

	Present	10 years ago	10 years later
age of son	$x$	$x-10$	$x+10$
age of father	$y$	$3x-10$	$2(x+10)$

Solution:

$$3x-10 = 2x+20$$

$$3x-2x = 20+10$$

$$x = 30$$

Present Son age = 30

$$\begin{aligned} \text{Father age after 10 years} &= 2x+20 \\ &= 2(30)+20 \\ &= 60+20 \\ &= 80 \end{aligned}$$

$$\text{Father present age} = 80-10 = 70$$

$$\begin{aligned} \text{Ratio of son to father} &= 30:70 \\ \text{Simplify} &= 3:7 \end{aligned}$$

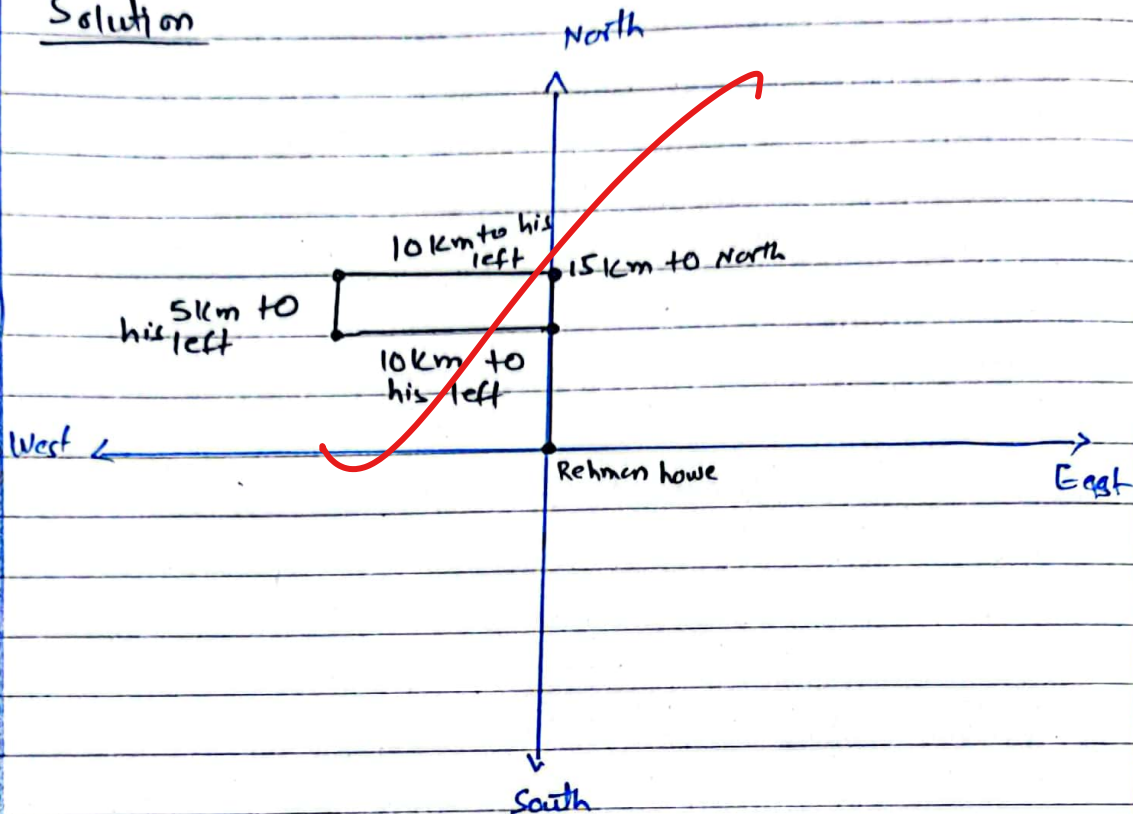
2c

Data

- First went 15 km to North from his house
- 2nd went to 10 km from his left
- 3rd went to 5 km from his left
- 4th went to 10 km from his left



## Solution



Q - How far

1 - In which direction is he from his house?

Answer = North direction from his house

2 - How far is he from his house?

Answer = 10 km from his house.

3 - How much distance he had travelled?

Answer: Total covered distance =  $15^{\text{km}} + 10^{\text{km}} + 5^{\text{km}} + 10^{\text{km}}$   
= 40 km

4d

Data:

Ratio of train 1 and 2 = 7:8

2nd train speed distance covered 400 km

time of 2nd train = 4 hours.

Speed of train one(1) = ?

Solution:

$$\text{Speed of 2nd train} = \frac{\text{Distance}}{\text{time}} = \frac{400}{4} \\ = 100 \text{ km}$$

$$\text{Ratio} = 7 : 8 \\ \text{Speed} = ? : 100 \text{ km}$$

$$1 \text{ part of speed of 2nd train} = \frac{100}{8} = 12.5$$

$$\text{Speed of 1st train} = 12.5 \times 7 = \\ = 87.5$$

or 87.5 or

$$\begin{array}{r} 8 \overline{) 100} 12.5 \\ \underline{8} \phantom{0} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

$$\begin{array}{r} 12.5 \\ \underline{7} \\ 87.5 \end{array}$$

Question # 3

3(a)

Data:-

$$\begin{array}{l} 3 \text{ partners} = x : y : z \\ \text{Profit ratios} = 5 : 7 : 8 \\ \text{Duration in months} = 14, 8, 7 \\ \text{Investment ratios} = ? : ? : ? \end{array}$$

Solution 1

$$\text{Investment ratios} = \text{Product of profit ratios and} \\ \text{investment ratio} \cdot \text{duration} \\ = 14 \times 5 : 8 \times 7 : 7 \times 8$$



$$= 70 : 56 : 56$$

$$= 10 : 8 : 8$$

$$= 5 : 4 : 4$$

Investment Ratios = ~~5 : 4 : 4~~

36

Data

average of 3 consecutive odd numbers = 91  
find the numbers = ?

Solution:

$$\text{Formula} = \text{average} = \frac{x + x+2 + x+4}{3}$$

$$= 91 = \frac{3x+6}{3}$$

$$91 \times 3 = 3x+6$$

$$273 = 3x+6$$

$$273-6 = 3x$$

$$279 = 3x$$

$$x = \frac{279}{3} = 93$$

$$264 = 3x$$

$$x = \frac{364}{3}$$

$$\begin{array}{r} 91 \\ \times 3 \\ \hline 273 \end{array}$$

First number = 93

Second number = ~~93+2 = 95~~

Third number = ~~93+4 = 97~~

3c

Data :

- 40% of a number is equal to  $\frac{2}{3}$  of another number
- find ratios of first number to 2nd.

Solution

First number =  $x$

Second number =  $y$

$$40\% \text{ of } x = \frac{2}{3} \text{ of } y$$

$$\frac{40}{100} x = \frac{2}{3} y$$

$$\frac{2x}{5} = \frac{2y}{3}$$

Cross multiplication =

$$6x = 10y$$

$$\frac{x}{y} = \frac{10}{6} = \frac{5}{3}$$

$$\text{Ratios} = x : y = 5 : 3$$

3d

Data ,

light distance from tree = 4m

Shadow of tree on building = building height = 50m

tree distance from building = 6m

tree height = ?

Solution:

Total distance of light from building

$$= 4m + 6m = 10m$$



Distance

light from tree

4 m

Height

50 = Building height.

light from building

10 m

x = Tree height.

$$\frac{x}{50} = \frac{4}{10}$$

cross multiplication  $10x = 200$

$$x = \frac{200}{10} = 20$$

Tree height = 20 meters.

