Zarghuna

GSA Test 4.

Question #2.

Asked: Quantity of water to be added.

Given: Ratio of milk to water = 2:1

If new ratio is 1:2 Total mixture = 60 l.

then let $\underline{x}$ be the total amount of mixture and $\underline{y}$ be the amount of water to be added.

Solution

$2x + x = 60$

$3x = 60$

$x = 20$.

The mixture was in ratio $2(20) : 1(20) = 40 : 20$.

After adding y liters of water the ratio becomes

$40 : (20 + y) = 1 : 2$.

$$\frac{40}{20+y} = \frac{1}{2}$$

$80 = 20 + y$.

$y = 80 - 20$

$y = 60$.

Total volume of water becomes $= 60 + 20 = 80$.

Thus new ratio is $40 : 80 = 1 : 2$.

Therefore further amount of water added was 60 l to make ratio 1:2.

b. Given: Age of father after 10 years will be twice age of son.

Age of father 10 years ago was thrice the age of his son.

Asked: The ratio of present ages.

Solution let Father present age be x.

let son's present age be y.

	Present age	Past age	Future age
Father	x	$x-10$	$x+10$
Son	y	$y-10$	$y+10$

$x-10 = 3(y-10)$

$x-10 = 3y-30$.

$x = 3y-30+10$

$x = 3y-20 \rightarrow (1)$.

$x+10 = 2(y+10)$.

$x = 2y+20-10$

$x = 2y+10 \rightarrow (2)$.

Equating both equations to one another

$2y+10 = 3y-20$.

$10+20 = 3y-2y$

$y = 30$.

Putting $y = 30$ in equation (2).

5|70
5↓
20

$x = 2(30) + 10$.

$x = 60 + 10$

$x = 70$.

Ratio of Father to Son = 70 : 30

14 : 6.

7 : 3

Conclusion: Father : Son = 7 : 3

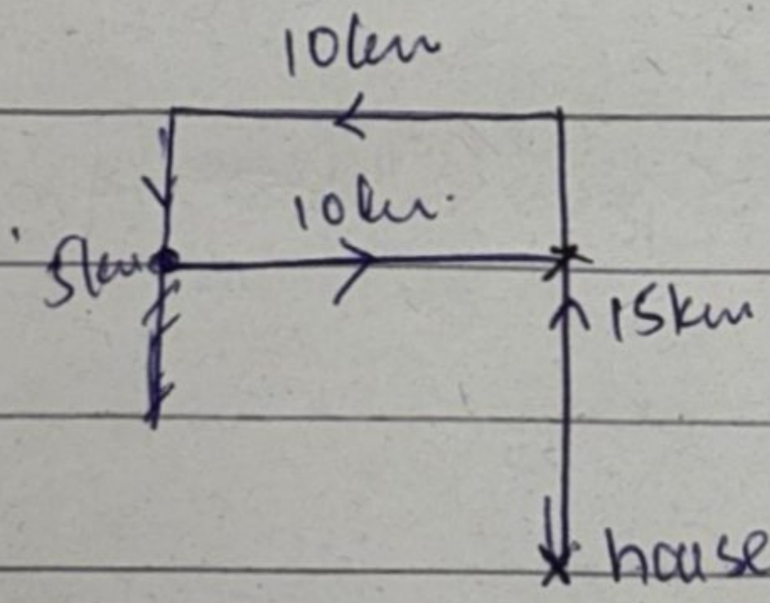
c) Given: Rehman walks 15km to North

Then turns left and walks 10km

Then again turns left and covers 5km.

Finally turning left he walks 10km.

Diagram:



Asked:

1. Which direction he is from home?

He is towards North from his house.

2. How far he is from home?

He is 15 − 5 = 10km away from home.

3. How much distance he covered?

Total distance = 15 + 10 + 5 + 10

= 40 km

D. Given: Ratio between speeds of trains = 7:8

Second train runs 400km in 4 hours

Asked: Speed of train 1?

Solution:

Formula of Speed

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}.$$

7 + 8 = 15

Speed of Train 2.

$$\text{Speed} = \frac{400}{4} = 100\ \text{km h}^{-1}$$

let x be the ~~boat~~ speed of ~~both~~ trains.

$$\frac{8x}{15} = 100$$

$$x = \frac{100 \times 15}{8}$$

$$x = 150\ \text{km h}^{-1}$$

Speed of Train 1 = $\frac{7(150)}{15} = 70$ 150 − 100

Speed of Train 1 = 50 km h^{-1}

Question 3

a) Given: Ratio of profit = 5:7:8

Time of partnership = 14month, 8months and 7 months

Asked: Ratio of their investments

Solution:

formula for profit

Profit = Investment x time.

5x14 : 7x8 : 8x7

70 : 56 : 49

35 : 28 : 24.5

b) Given: Average of 3 consequtive odd numbers = 91.

Ashed: Find numbers.

Solution

let 1st odd number = x.

2nd odd number = x+2.

3rd odd number = x+4

Sum of 3 consecutive odd numbers

x + x+2 + x+4 =

3x +6.

Formula of Average.

$$\text{Average} = \frac{\text{Sum of numbers}}{\text{Total number of numbers}}$$

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

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

$$\frac{3(x+2)}{3} = 91.$$

$$x+2 = 91.$$

$$x = 91-2.$$

$$x = 89.$$

Conclusion:

1st odd number = 89.

2nd odd number = 91.

3rd odd number = 93

c) Given: If 40% of number equal to two-third of another number

Asked: Ratio of 1st number to second

Solution: let unknown number = x and y.

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

$$\frac{2\cancel{40}}{5\cancel{100}} x = \frac{2}{3} y$$

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

$$6x = 10y.$$

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

∴ ratio of 1st number x to 2nd number y is 5 : 3.

d) Given: Distance between source of light and tree = 4m.

- height of building = 50 m

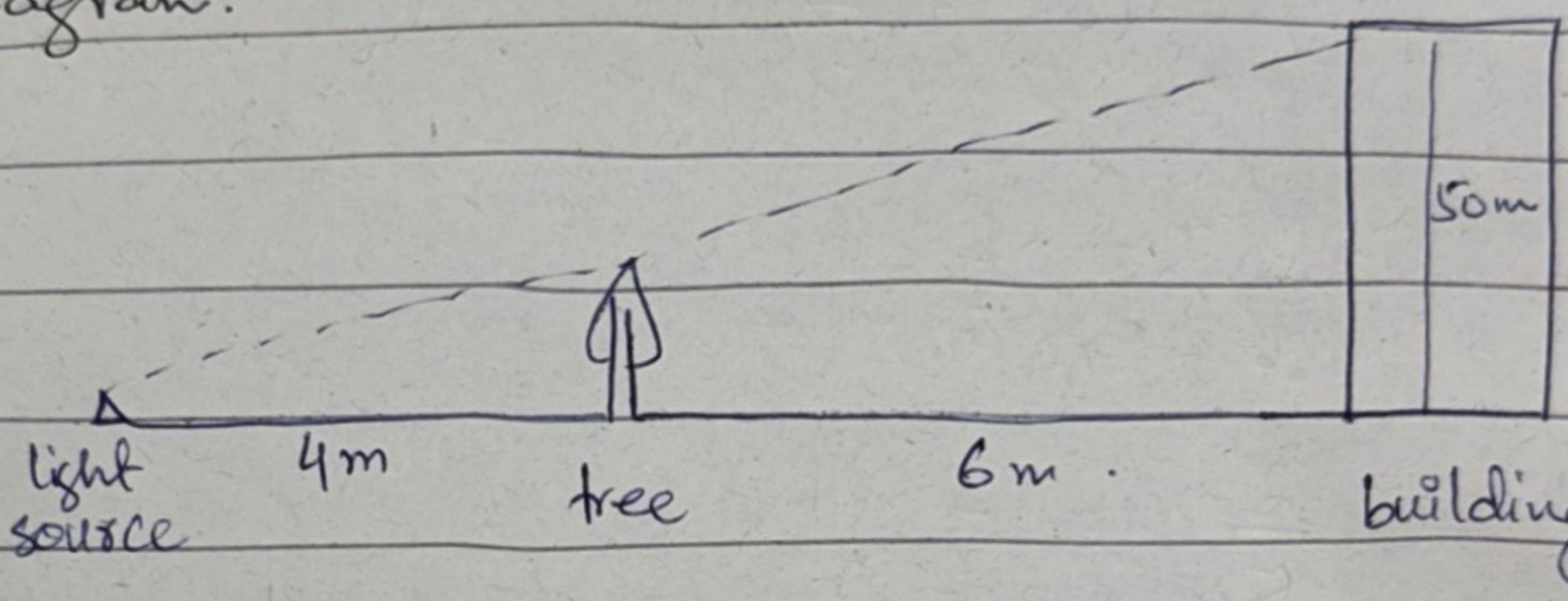
Distance between tree and building = 6m

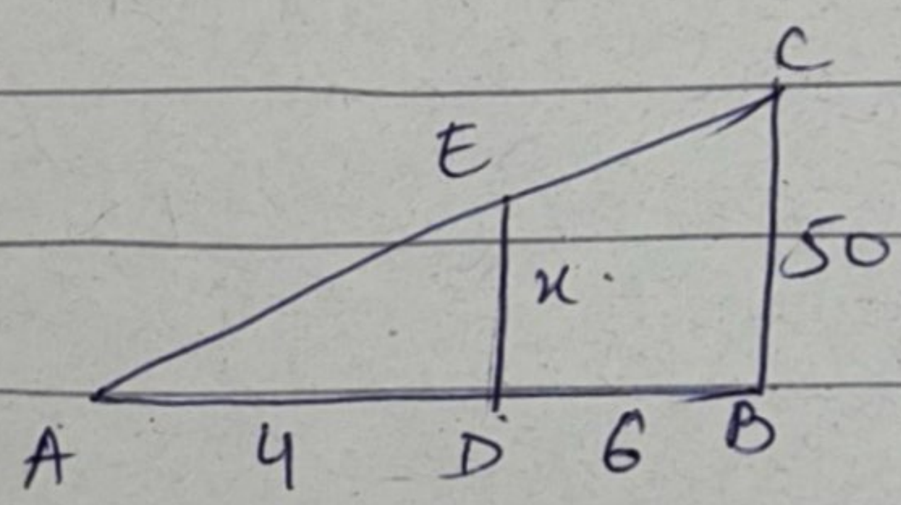
Asked Height of tree

Solution:

let height of tree = x.

Diagram.





Using similarity of triangles. ABC and ADE

$$\frac{4}{4+6} = \frac{x}{50}$$

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

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

$$x = 20$$

Hence height of tree = 20m.