

# Question 2.

## Part A

$$\text{Mixture} = 60 \text{ litres.}$$

$$\text{Milk} = \frac{2}{3}$$

$$\text{Water} = \frac{1}{3}$$

$$\text{milk} = \frac{20}{60} \times \frac{2}{3}$$

$$= 40 \text{ litres.}$$

$$\text{Water} = \frac{20}{60} \times \frac{1}{3}$$

$$= 20 \text{ litres.}$$

If the ratio is to be 1:2.

So, the ratio of milk will be ~~the~~ same  
and water ~~is~~ will be  $\frac{40}{20+x}$

$$\text{So } \frac{40}{20+x} = \frac{1}{2}$$

$$80 = 20 + x$$

$$x = 60 \text{ litres}$$



## Part B

Let the ages of son and father be  $x$  and  $y$  at the present.

$$\text{son} = x$$

$$\text{father} = y$$

**10 years ago.**

$$\text{son} = x - 10$$

$$\text{father} = y - 10$$

$$\text{father} = 3 \text{ son}$$

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

$$y - 10 = 3x - 30$$

$$y = 3x - 20$$

**After 10 years**

$$\text{son} = x + 10$$

$$\text{father} = y + 10$$

$$\text{father} = 2 \times \text{sons}$$

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

$$y + 10 = 2x + 20$$

$$y = 2x + 10$$

So, now simplify it.

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

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

$$x = 30 \text{ years}$$

So son is 30 years.



$$y = 2x + 10$$

$$y = 2(30) + 10$$

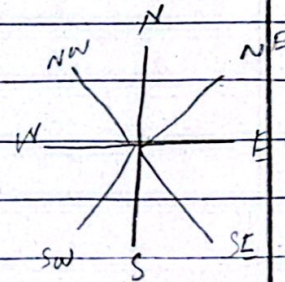
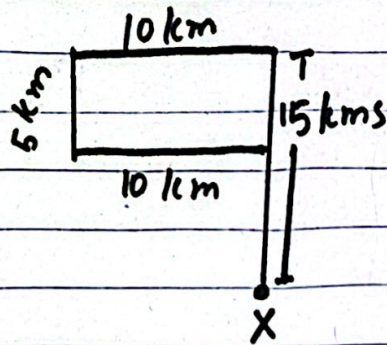
$$y = 70 \text{ years}$$

So the ages of father and son at the present is 70 years and 30 years, in the ratio will be

$$70:30 = 7:3.$$

So the answer in the ratio is **7:3**

### Part C



1 - North

2 -  $15 \text{ km} - 5 \text{ km} = 10 \text{ km}$ , Rehman is 10 km away from his house.

3 -  $15 \text{ km} + 10 \text{ km} + 5 \text{ km} + 10 \text{ km} = 40 \text{ km}$ .

Rehman in total travelled 40 kms, from his the house till his last stop.



## Part D

ratio between the speed of two trains = 7:8  
Second train runs = 400 km in 4 hours.

$$\text{Distance} = \text{Speed} \times \text{time}$$

$$400 \text{ km} = x \times 4 \text{ hrs}$$

$$x = 100 \text{ km/hr}$$

Let the speed be  $7x : 8x$ .

So the speed of 2<sup>nd</sup> train is

$$8x = 100$$

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

$$x = 12.5 \text{ km/hr}$$

Now, we can find the speed of 1<sup>st</sup> train

$$x = 12.5 \text{ km/hr}$$

$$7x = 7 \times 12.5 \text{ km/hr}$$

$$= 87.5 \text{ km/hr}$$

$$\begin{array}{r} 12.5 \\ \hline 87.5 \end{array}$$



# Question 3

## Part A

Three Partners =  $x, y, z$  investments.  
Partner their investments,  $14x, 7y, 8z$ .

and the ratios are.

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

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

$$~~35y~~ 40y = 98x$$

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

$$\text{now, } \frac{8z}{14x} = \frac{8}{5}$$

$$35z = 196x$$

$$z = \frac{112x}{35} = \frac{16x}{5}$$

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

multiply by 20.

$$x = 20$$



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

$$\frac{16}{5} \times \frac{4}{20} = 64 - y$$

So  $x:y:z = 20:49:64$ , are the investment ratio of the three partners respectively.

## Part B

Avg of 3 consecutive odd number = 91

~~total value~~

$$\text{Average} = \frac{\text{Sum of values}}{3}$$

$$91 = \frac{\text{odd}(n+n+2+n+4)}{3}$$

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

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

$$91 = n+2$$

$$n = 89$$

$$n = 89, \quad n+2 = 89+2 = 91, \quad n+4 = 89+4 = 93.$$

So, the three odd numbers are 89, 91 and 93

## Part C

Let the numbers be  $x$  and  $y$ .

$$40\% \text{ into ratio} = \frac{40}{100} = \frac{2}{5}$$

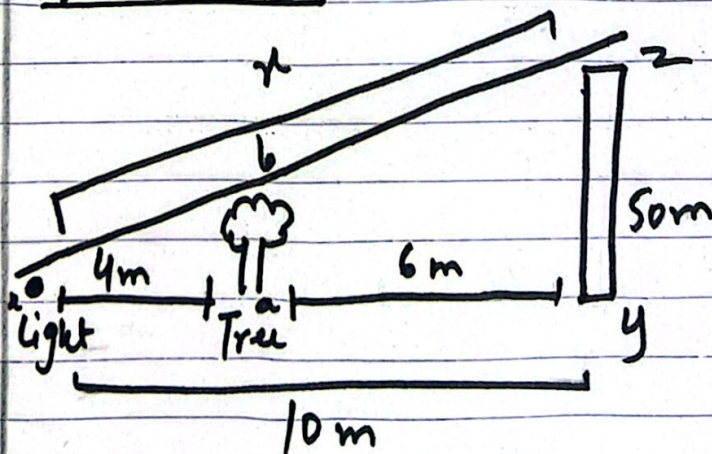
$$\frac{2}{5}x = \frac{2}{3}y$$

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

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

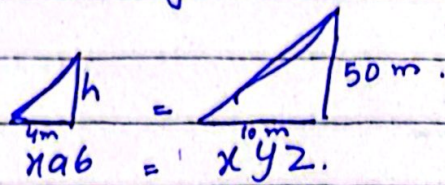
$x:y = 5:3$ , The ratio of the numbers to each other.

## Part D





two triangles.



Height of the tree = Height of the building  
Distance from light to tree = Distance from light to building

let the height of the tree be  $h$

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

$$h = 4 \times 5$$

$$h = 20 \text{ metres}$$

So, the height of the tree is 20 metres.