



Pair of Linear Equations in Two variables Ex 3.9 Q7

Answer :

Let the present age of father be x years and the present age of his son be y years.

The present age of father is three times the age of the son. Thus, we have

$$x = 3y$$

$$\Rightarrow x - 3y = 0$$

After 12 years, father's age will be $(x + 12)$ years and son's age will be $(y + 12)$ years. Thus using the given information, we have

$$x + 12 = 2(y + 12)$$

$$\Rightarrow x + 12 = 2y + 24$$

$$\Rightarrow x - 2y - 12 = 0$$

So, we have two equations

$$x - 3y = 0$$

$$x - 2y - 12 = 0$$

Here x and y are unknowns. We have to solve the above equations for x and y .

By using cross-multiplication, we have

$$\frac{x}{(-3) \times (-12) - (-2) \times 0} = \frac{-y}{1 \times (-12) - 1 \times 0} = \frac{1}{1 \times (-2) - 1 \times (-3)}$$

$$\Rightarrow \frac{x}{36 - 0} = \frac{-y}{-12 - 0} = \frac{1}{-2 + 3}$$

$$\Rightarrow \frac{x}{36} = \frac{-y}{-12} = \frac{1}{1}$$

$$\Rightarrow \frac{x}{36} = \frac{y}{12} = 1$$

$$\Rightarrow x = 36, y = 12$$

Hence, the present age of father is 36 years and the present age of son is 12 years.

Pair of Linear Equations in Two variables Ex 3.9 Q8

Answer :

Let the present age of father be x years and the present ages of his two children's be y and z years.

The present age of father is three times the sum of the ages of the two children's. Thus, we have

$$x = 3(y + z)$$

$$\Rightarrow y + z = \frac{x}{3}$$

After 5 years, father's age will be $(x + 5)$ years and the children's age will be $(y + 5)$ and $(z + 5)$ years.

Thus using the given information, we have

$$x + 5 = 2\{(y + 5) + (z + 5)\}$$

$$\Rightarrow x + 5 = 2(y + 5 + z + 5)$$

$$\Rightarrow x = 2(y + z) + 20 - 5$$

$$\Rightarrow x = 2(y + z) + 15$$

So, we have two equations

$$y + z = \frac{x}{3}$$

$$x = 2(y + z) + 15$$

Here x , y and z are unknowns. We have to find the value of x .

Substituting the value of $(y + z)$ from the first equation in the second equation, we have

By using cross-multiplication, we have

$$x = \frac{2x}{3} + 15$$

$$\Rightarrow x - \frac{2x}{3} = 15$$

$$\Rightarrow x\left(1 - \frac{2}{3}\right) = 15$$

$$\Rightarrow \frac{x}{3} = 15$$

$$\Rightarrow x = 15 \times 3$$

$$\Rightarrow x = 45$$

Hence, the present age of father is 45 years.

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