Pair of Linear Equations in Two varibles Ex 3.9 Q6

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 years more than three times the age of the son. Thus, we have

$x = 3y + 3$

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

After 3 years, father's age will be $(x+3)$ years and son's age will be $(y+3)$ years.

Thus using the given information, we have

$x + 3 = 2(y+3) + 10$

$\Rightarrow x + 3 = 2y + 6 + 10$

$\Rightarrow x - 2y - 13 = 0$

So, we have two equations

$x - 3y - 3 = 0$

$x - 2y - 13 = 0$

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

By using cross-multiplication, we have

$$\frac{x}{(-3)\times(-13)-(-2)\times(-3)} = \frac{-y}{1\times(-13)-1\times(-3)} = \frac{1}{1\times(-2)-1\times(-3)}$$

$$\Rightarrow \frac{x}{39-6} = \frac{-y}{-13+3} = \frac{1}{-2+3}$$

$$\Rightarrow \frac{x}{33} = \frac{-y}{-10} = \frac{1}{1}$$

$$\Rightarrow \frac{x}{33} = \frac{y}{10} = 1$$

$\Rightarrow x = 33, y = 10$

Hence, the present age of father is $\boxed{33}$ years and the present age of son is $\boxed{10}$ years.

Pair of Linear Equations in Two varibles 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 $\boxed{36}$ years and the present age of son is $\boxed{12}$ years.

********** END **********