Pair of Linear Equations in Two varibles Ex 3.9 Q9

Answer :

Let the present age of father be x years and the present age of his son be y years.
After 2 years, father's age will be $(x+2)$ years and the age of son will be $(y+2)$ years. Thus using the given information, we have

$$x+2=3(y+2)+8$$
$$\Rightarrow x+2=3y+6+8$$
$$\Rightarrow x-3y-12=0$$

Before 2 years, the age of father was $(x-2)$ years and the age of son was $(y-2)$ years. Thus using the given information, we have

$$x-2=5(y-2)$$
$$\Rightarrow x-2=5y-10$$
$$\Rightarrow x-5y+8=0$$

So, we have two equations

$$x-3y-12=0$$
$$x-5y+8=0$$

Here x and y are unknowns. We have to solve the above equations for x and y.
By using cross-multiplication, we have

$$\frac{x}{(-3)\times 8-(-5)\times(-12)}=\frac{-y}{1\times 8-1\times(-12)}=\frac{1}{1\times(-5)-1\times(-3)}$$
$$\Rightarrow \frac{x}{-24-60}=\frac{-y}{8+12}=\frac{1}{-5+3}$$
$$\Rightarrow \frac{x}{-84}=\frac{-y}{20}=\frac{1}{-2}$$
$$\Rightarrow \frac{x}{84}=\frac{y}{20}=\frac{1}{2}$$
$$\Rightarrow x=\frac{84}{2}, y=\frac{20}{2}$$
$$\Rightarrow x=42, y=10$$

Hence, the present age of father is $\boxed{42}$ years and the present age of son is $\boxed{10}$ years.

Pair of Linear Equations in Two varibles Ex 3.9 Q10

Answer :

Let the present age of Nuri be x years and the present age of Sonu be y years.
After 10 years, Nuri's age will be$(x + 10)$ years and the age of Sonu will be$(y + 10)$ years. Thus using the given information, we have

$$x+10=2(y+10)$$
$$\Rightarrow x+10=2y+20$$
$$\Rightarrow x-2y-10=0$$

Before 5 years, the age of Nuri was$(x – 5)$years and the age of Sonu was$(y – 5)$years. Thus using the given information, we have

$$x-5=3(y-5)$$
$$\Rightarrow x-5=3y-15$$
$$\Rightarrow x-3y+10=0$$

So, we have two equations

$$x-2y-10=0$$
$$x-3y+10=0$$

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

By using cross-multiplication, we have

$$\frac{x}{(-2)\times 10-(-3)\times(-10)}=\frac{-y}{1\times 10-1\times(-10)}=\frac{1}{1\times(-3)-1\times(-2)}$$

$$\Rightarrow \frac{x}{-20-30}=\frac{-y}{10+10}=\frac{1}{-3+2}$$

$$\Rightarrow \frac{x}{-50}=\frac{-y}{20}=\frac{1}{-1}$$

$$\Rightarrow \frac{x}{50}=\frac{y}{20}=1$$

$$\Rightarrow x=50, y=20$$

Hence, the present age of Nuri is $\boxed{50}$ years and the present age of Sonu is $\boxed{20}$ years.

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