



Pair of Linear Equations in Two variables Ex 3.7 Q1

Answer :

Let the numbers are x and y . One of them must be greater than or equal to the other. Let us assume that x is greater than or equal to y .

The sum of the two numbers is 8. Thus, we have $x + y = 8$

The sum of the two numbers is four times their difference. Thus, we have

$$x + y = 4(x - y)$$

$$\Rightarrow x + y = 4x - 4y$$

$$\Rightarrow 4x - 4y - x - y = 0$$

$$\Rightarrow 3x - 5y = 0$$

So, we have two equations

$$x + y = 8$$

$$3x - 5y = 0$$

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

Multiplying the first equation by 5 and then adding with the second equation, we have

$$5(x + y) + (3x - 5y) = 5 \times 8 + 0$$

$$\Rightarrow 5x + 5y + 3x - 5y = 40$$

$$\Rightarrow 8x = 40$$

$$\Rightarrow x = \frac{40}{8}$$

$$\Rightarrow x = 5$$

Substituting the value of x in the first equation, we have

$$5 + y = 8$$

$$\Rightarrow y = 8 - 5$$

$$\Rightarrow y = 3$$

Hence, the numbers are 5 and 3.

Pair of Linear Equations in Two variables Ex 3.7 Q2

Answer :

Let the digits at units and tens place of the given number be x and y respectively. Thus, the number is $10y + x$.

The sum of the digits of the number is 13. Thus, we have $x + y = 13$

After interchanging the digits, the number becomes $10x + y$.

The difference between the number obtained by interchanging the digits and the original number is

45. Thus, we have

$$(10x + y) - (10y + x) = 45$$

$$\Rightarrow 10x + y - 10y - x = 45$$

$$\Rightarrow 9x - 9y = 45$$

$$\Rightarrow 9(x - y) = 45$$

$$\Rightarrow x - y = \frac{45}{9}$$

$$\Rightarrow x - y = 5$$

So, we have two equations

$$x + y = 13$$

$$x - y = 5$$

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

Adding the two equations, we have

$$(x + y) + (x - y) = 13 + 5$$

$$\Rightarrow x + y + x - y = 18$$

$$\Rightarrow 2x = 18$$

$$\Rightarrow x = \frac{18}{2}$$

$$\Rightarrow x = 9$$

Substituting the value of x in the first equation, we have

$$9 + y = 13$$

$$\Rightarrow y = 13 - 9$$

$$\Rightarrow y = 4$$

Hence, the number is $10 \times 4 + 9 = \boxed{49}$.

***** END *****