Pair of Linear Equations in Two varibles Ex 3.7 Q3

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 5. Thus, we have $x+y=5$

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

The number obtained by interchanging the digits is greater by 9 from the original number. Thus, we have

$$10x+y=10y+x+9$$
$$\Rightarrow 10x+y-10y-x=9$$
$$\Rightarrow 9x-9y=9$$
$$\Rightarrow 9(x-y)=9$$
$$\Rightarrow x-y=\frac{9}{9}$$
$$\Rightarrow x-y=1$$

So, we have two equations

$$x+y=5$$
$$x-y=1$$

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

Adding the two equations, we have

$$(x+y)+(x-y)=5+1$$
$$\Rightarrow x+y+x-y=6$$
$$\Rightarrow 2x=6$$
$$\Rightarrow x=\frac{6}{2}$$
$$\Rightarrow x=3$$

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

$$3+y=5$$
$$\Rightarrow y=5-3$$
$$\Rightarrow y=2$$

Hence, the number is $10\times 2+3=\boxed{23}$.

Pair of Linear Equations in Two varibles Ex 3.7 Q4

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 15. Thus, we have $x+y=15$

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

The number obtained by interchanging the digits is exceeding by 9 from the original number. Thus, we have

$$10x+y=10y+x+9$$
$$\Rightarrow 10x+y-10y-x=9$$
$$\Rightarrow 9x-9y=9$$
$$\Rightarrow 9(x-y)=9$$
$$\Rightarrow x-y=\frac{9}{9}$$
$$\Rightarrow x-y=1$$

So, we have two equations

$x+y=15$

$x-y=1$

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

Adding the two equations, we have

$(x+y)+(x-y)=15+1$

$\Rightarrow x+y+x-y=16$

$\Rightarrow 2x=16$

$\Rightarrow x=\frac{16}{2}$

$\Rightarrow x=8$

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

$8+y=15$

$\Rightarrow y=15-8$

$\Rightarrow y=7$

Hence, the number is $10\times 7+8=\boxed{78}$.

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