

## Pair of Linear Equations in Two varibles Ex 3.8 Q7 Answer:

Let the numerator and denominator of the fraction be x and y respectively. Then the fraction is  $\frac{x}{v}$ 

The sum of the numerator and the denominator of the fraction is 18. Thus, we have

$$x + y = 18$$

$$\Rightarrow x + y - 18 = 0$$

If the denominator is increased by 2, the fraction reduces to  $\frac{1}{2}$ . Thus, we have

$$\frac{x}{y+2} = \frac{1}{3}$$

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

$$\Rightarrow$$
 3x - y - 2 = 0

So, we have two equations

$$x + y - 18 = 0$$

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

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

By using cross-multiplication, we have

$$\frac{x}{1 \times (-2) - (-1) \times (-18)} = \frac{-y}{1 \times (-2) - 3 \times (-18)} = \frac{1}{1 \times (-1) - 3 \times 1}$$

$$\Rightarrow \frac{x}{-2-18} = \frac{-y}{-2+54} = \frac{1}{-1-3}$$

$$\Rightarrow \frac{x}{-20} = \frac{-y}{52} = \frac{1}{-4}$$

$$\Rightarrow \frac{x}{20} = \frac{y}{52} = \frac{1}{4}$$

$$\Rightarrow \frac{x}{20} = \frac{y}{52} = \frac{1}{4}$$
$$\Rightarrow x = \frac{20}{4}, y = \frac{52}{4}$$

$$\Rightarrow x = 5, y = 13$$

Hence, the fraction is  $\frac{5}{13}$ 

## Pair of Linear Equations in Two varibles Ex 3.8 Q8

Let the numerator and denominator of the fraction be x and y respectively. Then the fraction is  $\frac{x}{y}$ 

If 2 is added to the numerator of the fraction, it reduces to  $\frac{1}{2}$ . Thus, we have

$$\frac{x+2}{v} = \frac{1}{2}$$

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

$$\Rightarrow 2x + 4 = y$$

$$\Rightarrow 2x - y + 4 = 0$$

If 1 is subtracted from the denominator, the fraction reduces to  $\frac{1}{2}$ . Thus, we have

$$\frac{x}{y-1} = \frac{1}{3}$$

$$\Rightarrow 3x = y - 1$$

$$\Rightarrow$$
 3x - y + 1 = 0

So, we have two equations

$$2x - y + 4 = 0$$

$$3x - y + 1 = 0$$

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

$$\frac{x}{(-1)\times 1 - (-1)\times 4} = \frac{-y}{2\times 1 - 3\times 4} = \frac{1}{2\times (-1) - 3\times (-1)}$$

$$\Rightarrow \frac{x}{-1+4} = \frac{-y}{2-12} = \frac{1}{-2+3}$$

$$\Rightarrow \frac{x}{3} = \frac{-y}{-10} = \frac{1}{1}$$

$$\Rightarrow \frac{x}{3} = \frac{y}{10} = 1$$

$$\Rightarrow x = 3, y = 10$$

Hence, the fraction is  $\frac{3}{10}$ 

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