

## Pair of Linear Equations in Two varibles Ex 3.8 Q3 Answer:

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

If 1 is subtracted from both numerator and the denominator, the fraction becomes  $\frac{1}{3}$ . Thus, we have

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

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

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

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

If 1 is added to both numerator and the denominator, the fraction becomes  $\frac{1}{2}$  . Thus, we have

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

$$\Rightarrow 2(x+1) = y+1$$

$$\Rightarrow 2x + 2 = y + 1$$

$$\Rightarrow 2x - y + 1 = 0$$

So, we have two equations

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

$$2x - y + 1 = 0$$

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

By using cross-multiplication, we have

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

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

$$\Rightarrow \frac{x}{-3} = \frac{-y}{7} = \frac{1}{-1}$$

$$\Rightarrow \frac{x}{3} = \frac{y}{7} = 1$$

$$\Rightarrow x = 3, y = 7$$

Hence, the fraction is  $\frac{3}{7}$ 

## Pair of Linear Equations in Two varibles Ex 3.8 Q4

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

If 1 is added to the numerator and 1 is subtracted from the denominator, the fraction becomes  $\mathbf{1}$ . Thus, we have

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

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

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

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

If 1 is added to the denominator, the fraction becomes  $\frac{1}{2}$ . Thus, we have

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

$$\Rightarrow 2x = y + 1$$

$$\Rightarrow 2x - y - 1 = 0$$

So, we have two equations

$$x - y + 2 = 0$$

$$2x - y - 1 = 0$$

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

$$\frac{x}{(-1)\times(-1)-(-1)\times2} = \frac{-y}{1\times(-1)-2\times2} = \frac{1}{1\times(-1)-2\times(-1)}$$

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

$$\Rightarrow \frac{x}{3} = \frac{-y}{-5} = \frac{1}{1}$$

$$\Rightarrow \frac{x}{3} = \frac{y}{5} = 1$$

$$\Rightarrow x = 3, y = 5$$

Hence, the fraction is  $\frac{3}{5}$ .

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