

Chapter 4 – Linear Equations in Two Variables

Exercise 4.1

Page: 57

1. The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.

(Take the cost of a notebook to be ₹ x and that of a pen to be ₹ y)

Solution:

Let the cost of a notebook be = ₹ x

Let the cost of a pen be = ₹ y

According to the question,

The cost of a notebook is twice the cost of a pen.

i.e., cost of a notebook = $2 \times$ cost of a pen

$$x = 2y$$

$$x = 2y$$

$$x - 2y = 0$$

$x - 2y = 0$ is the linear equation in two variables to represent the statement,

'The cost of a notebook is twice the cost of a pen.'

2. Express the following linear equations in the form $ax + by + c = 0$ and indicate the values of a , b and c in each case.

(i) $2x+3y = 9.3\bar{5}$

Solution:

$$2x+3y = 9.3\bar{5}$$

Re-arranging the equation, we get,

$$2x+3y-9.3\bar{5}=0$$

The equation $2x + 3y - 9.3\bar{5} = 0$ can be written as,

$$2x + 3y + (-9.3\bar{5}) = 0$$

Now comparing $2x + 3y + (-9.3\bar{5}) = 0$ with $ax + by + c = 0$

We get,

$$a = 2$$

$$b = 3$$

$$c = -9.3\bar{5}$$

(ii) $x - (y/5) - 10 = 0$

Solution:

The equation $x - (y/5) - 10 = 0$ can be written as,

$$1x + (-1/5)y + (-10) = 0$$

Now comparing $x + (-1/5)y + (-10) = 0$ with $ax + by + c = 0$

We get,

$$a = 1$$

$$b = -(1/5)$$

$$c = -10$$

(iii) $-2x+3y = 6$

Solution:

$$-2x+3y = 6$$

Re-arranging the equation, we get,

$$-2x+3y-6 = 0$$

The equation $-2x+3y-6 = 0$ can be written as,

$$(-2)x+3y+(-6) = 0$$

Now, comparing $(-2)x+3y+(-6) = 0$ with $ax+by+c = 0$

We get, $a = -2$

$$b = 3$$

$$c = -6$$

(iv) $x = 3y$

Solution:

$$x = 3y$$

Re-arranging the equation, we get,

$$x-3y = 0$$

The equation $x-3y=0$ can be written as,

$$1x+(-3)y+(0)c = 0$$

Now comparing $1x+(-3)y+(0)c = 0$ with $ax+by+c = 0$

We get $a = 1$

$$b = -3$$

$$c = 0$$

$$\text{(v) } 2x = -5y$$

Solution:

$$2x = -5y$$

Re-arranging the equation, we get,

$$2x + 5y = 0$$

The equation $2x + 5y = 0$ can be written as,

$$2x + 5y + 0 = 0$$

Now, comparing $2x + 5y + 0 = 0$ with $ax + by + c = 0$

We get $a = 2$

$$b = 5$$

$$c = 0$$

$$\text{(vi) } 3x + 2 = 0$$

Solution:

$$3x + 2 = 0$$

The equation $3x + 2 = 0$ can be written as,

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

Now comparing $3x + 0y + 2 = 0$ with $ax + by + c = 0$

We get $a = 3$

$$b = 0$$

$$c = 2$$

(vii) $y - 2 = 0$

Solution:

$$y - 2 = 0$$

The equation $y - 2 = 0$ can be written as,

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

Now comparing $0x + 1y + (-2) = 0$ with $ax + by + c = 0$

We get $a = 0$

$$b = 1$$

$$c = -2$$

(viii) $5 = 2x$

Solution:

$$5 = 2x$$

Re-arranging the equation, we get,

$$2x = 5$$

i.e., $2x - 5 = 0$

The equation $2x-5 = 0$ can be written as,

$$2x+0y-5 = 0$$

Now comparing $2x+0y-5 = 0$ with $ax+by+c = 0$

We get $a = 2$

$$b = 0$$

$$c = -5$$