



## Linear Equations in Two Variables Ex 13.3 Q17

**Answer :**

We are given,

$$2x + 3y = 12$$

We get,

$$y = \frac{12 - 2x}{3}$$

Now, substituting  $x = 0$  in  $y = \frac{12 - 2x}{3}$ , we get

$$y = 4$$

Substituting  $x = 6$  in  $y = \frac{12 - 2x}{3}$ , we get

$$y = 0$$

Thus, we have the following table exhibiting the abscissa and ordinates of points on the line represented by the given equation

$x$	0	6
$y$	4	0

Plotting A(0,4) and E(6,0) on the graph and by joining the points, we obtain the graph of equation  $2x + 3y = 12$ .

We are given,

$$x - y = 1$$

We get,

$$y = x - 1$$

Now, substituting  $x = 0$  in  $y = x - 1$ , we get

$$y = -1$$

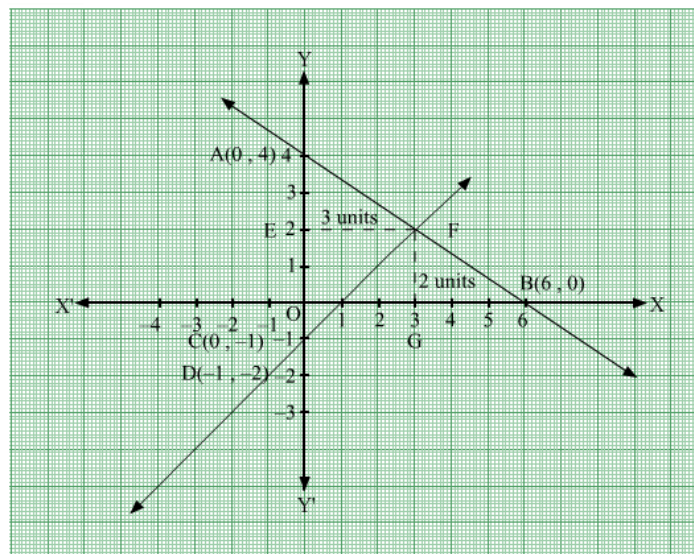
Substituting  $x = -1$  in  $y = x - 1$ , we get

$$y = -2$$

Thus, we have the following table exhibiting the abscissa and ordinates of points on the line represented by the given equation

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

Plotting D(0,-1) and E(-1,0) on the graph and by joining the points, we obtain the graph of equation  $x - y = 1$ .



By the intersection of lines formed by  $2x + 3y = 12$  and  $x - y = 1$  on the graph, triangle ABC is formed on  $y$  axis.

AC at y axis is the base of triangle ABC having AC = 5 units on y axis.

Draw FE perpendicular from F on y axis.

FE parallel to x axis is the height of triangle ABC having FE = 3 units on x axis.

Therefore,

Area of triangle ABC, say A is given by

$$A = \frac{1}{2} (\text{Base} \times \text{Height})$$

$$= \frac{1}{2} (\text{AC} \times \text{FE})$$

$$= \frac{1}{2} (5 \times 3)$$

$$= \frac{15}{2} \text{ sq. units}$$

\*\*\*\*\* END \*\*\*\*\*