

Exercise 3A

### Question 23:

On a graph paper, draw horizontal line X'OX and a vertical line YOY' as x-axis and y-axis respectively.

The given system of equations is 5x - y = 7, x - y + 1 = 0

## Graph of 5x - y = 7:

$$5x - y - 7 = 0 \Rightarrow y = 5x - 7 ---(1)$$

Thus, we have the following table for equation (1)

X	0	1	2
У	-7	-2	3

On the graph paper plot the points A (0, -7), B (1, -2) and C (2, 3)

Join AB and BC to get AC

Thus, AC line is the graph of 5x - y = 7

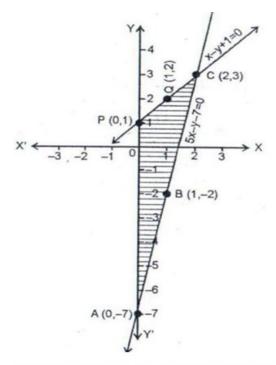
## Graph of x - y + 1 = 0:

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

thus, we have the table for following equation (2)

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X	0	1	2		
V	1	2	3		

On the same graph paper plot the points P(0,1) and Q(1,2). The other point C(2,3) has been already plotted. Join PA.



These lines cut the y-axis at (0, -7) (0, 1) intersecting at (2, 3) $\therefore$  x = 2, y = 3 is the solution of the given system of equations

Clearly, the vertices of  $\triangle$ APC formed by these lines and the y-axis are A (0, -7), P (0, 1) and C (2, 3)

Consider the triangle  $\triangle APC$ : height of the triangle = 2 units and base(AP) = 8 units

# Area of triangle AAPC:

Area of 
$$\triangle APC = \left(\frac{1}{2} \times Base \times Height\right)$$
  
=  $\left(\frac{1}{2} \times 8 \times 2\right)$  sq.units = 8 sq.units

#### Ouestion 24:

On a graph paper, draw horizontal line X'OX and a vertical line YOY' as x-axis and y-axis respectively.

The given system of equations is x - 2y = 2, 4x - 2y = 5

## Graph of x - 2y = 2:

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

Thus, we have following table for equation (1)

X	0	2	1
У	-1	0	-0.5

On graph paper plot the points A (0, -1), B (2, 0) and C (1, -0.5) Join AC and BC to get AB

Thus line, AB is the graph of equation x - 2y = 2

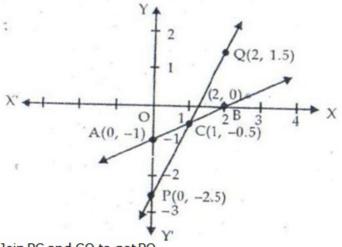
## Graph of 4x - 2y = 5:

$$4x - 2y = 5 \Rightarrow y = \frac{4x - 5}{2} - --(2)$$

Thus, we have following table for equation (2)

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X	0	1	2		
У	-2.5	-0.5	1.5		

On graph paper plot the points P (0, -2.5) and Q (2, 1.5). The point C (1, -0.5) has already been plotted



Join PC and CQ to get PQ Then line PQ is the graph of equation 4x - 2y = 5

Thus, we find that two graph lines intersect at (1, -0.5) Hence, the given system of equations is consistent.

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