Exercise 3A

Question 13:
On a graph paper, draw horizontal line X'OX and a vertical line YOY' as x-axis and y-axis respectively.

Graph of 3x + 5y = 15:

For the graph of 3x + 5y = 15 or $y = \frac{-3x+15}{5}$

We have the following table for 3x + 5y = 15

x	0	5	-5
y	3	0	6

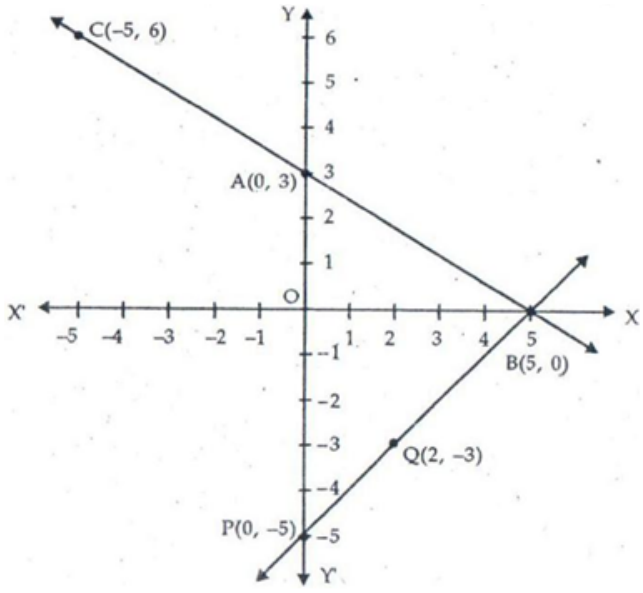
Plot the points A (0, 3), B (5, 0) and C (-5, 6).
Join AB and AC to get BC.
Extend it on both ways.
The line BC is the graph of the equation 3x + 5y = 15

Graph of x - y = 5:

x - y = 5 ⇒ y = x- 5

We have the following table x - y = 5

x	0	5	2
y	-5	0	-3



On the same graph paper, plot the points P(0, -5) and Q(2, -3).
The point B (5, 0) has already been plotted.
Join PQ and QB to get PB
The line PB is the graph of the equation x - y = 5

It is clear from the graph that the given system of equations is consistent.

The lines 3x + 5y = 15 and x - y = 5 meet the y-axis at A (0, 3) and P(0, -5) respectively.

Question 14:

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

Graph of x + 2y = 5:

$x + 2y = 5 \Rightarrow y = \frac{5-x}{2}$

thus, we have the following table for x + 2y = 5.

x	1	3	5
y	2	1	0

On the graph paper, plot the points A (1, 2), B (3, 1) and C (5, 0)
Join AB and BC to get AC
Thus, line AC is the graph of the equation x + 2y = 5

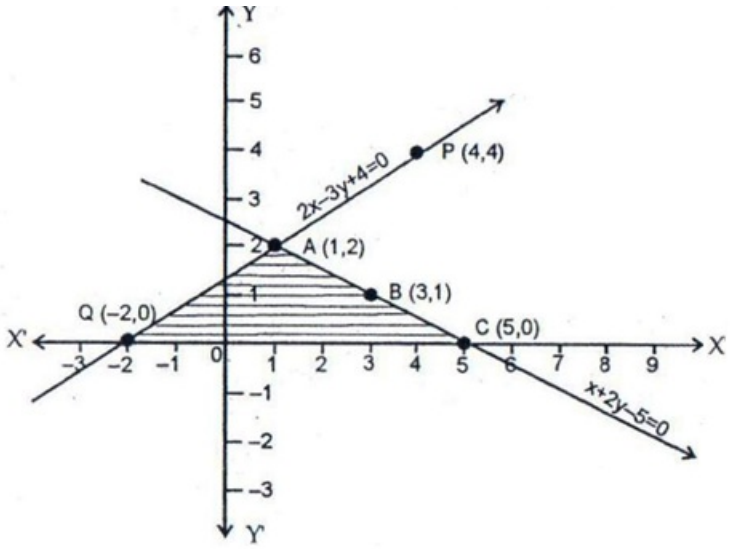
Graph of 2x - 3y = -4:

For graph of 2x - 3y = -4

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

Thus, we have the following table for 2x - 3y = -4

x	1	-2	4
y	2	0	4



On the same graph paper, plot the points P (4,4) and Q (-2, 0).
The point A (1, 2) has been already plotted.
Join PA and QA to get PQ
The line PQ is the graph of the equation 2x - 3y = -4

The two graph lines intersect at point A (1, 2)
∴ x = 1, y = 2 is the solution of the given system of equations
The region bounded by these lines and x-axis has been shaded.

On extending the graph lines on both sides, we find that these graph lines intersect the x-axis at points Q (-2, 0) and C (5, 0)

********** END **********