Exercise 3A

Question 27:

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
$3x - y = 5, 6x - 2y = 10$

Graph of $3x - y = 5$:

$3x - y = 5 \Rightarrow y = 3x - 5$ ---(1)

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

x	1	0	2
y	-2	-5	1

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

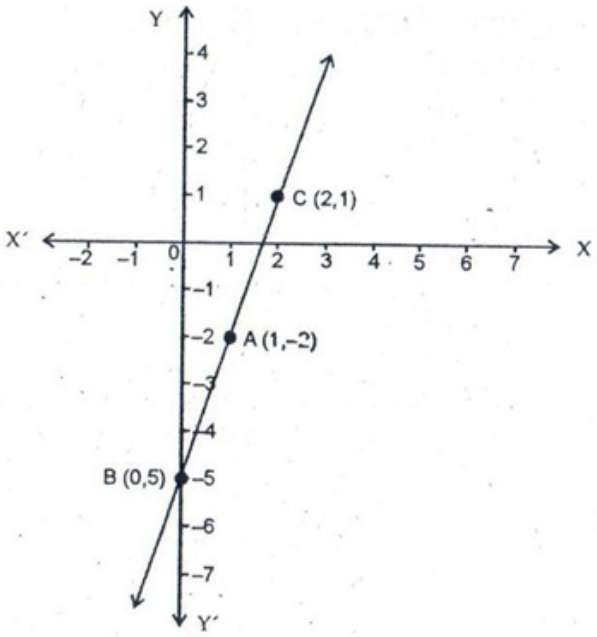
Graph of $6x - 2y = 10$:

$6x - 2y = 10 \Rightarrow y = \frac{6x - 10}{2}$

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

x	0	1	2
y	-5	-2	1

These points are the same as obtained above.



From the graph, it is clear that these two lines coincide.
Both equations represent same graph.
Hence, these lines have infinitely many solutions.

Question 28:

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
$2x + y = 6$, $6x + 3y = 18$

Graph of $2x + y = 6$:

$2x + y = 6 \Rightarrow y = -2x + 6$
Then, we have following table for equation (1)

x	3	1	2
y	0	4	2

On the graph A(3, 0), B(1, 4) and C(2, 2)
Joint AC and BC to get AB
The line AB is the graph of the equation on $2x + y = 6$

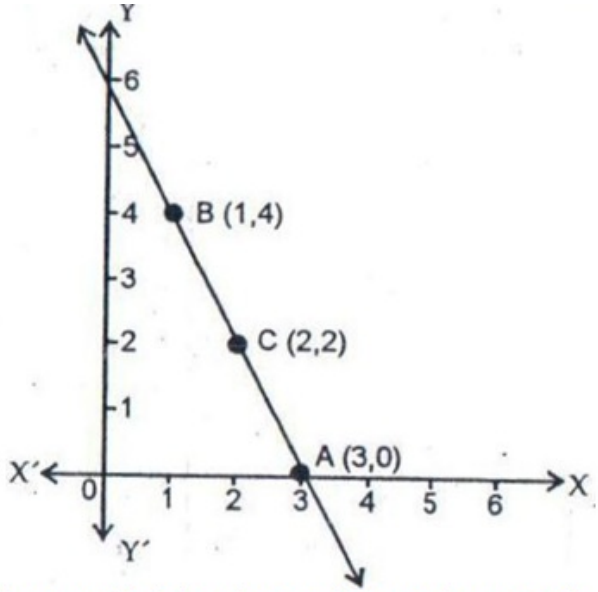
For graph of $6x + 3y = 18$

$$6x + 3y = 18 \Rightarrow y = \frac{-6x + 18}{3} - - - (2)$$

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

x	3	1	2
y	0	4	2

These points, A (3, 0), B (1, 4) and C (2, 2), are the same as obtained above.



Thus, we find that the two line graphs coincide.
Hence the given system of equations has infinitely many solutions.

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