Exercise 3A

Question 15:

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

Graph of 4x - 5y + 16 = 0:

$4x - 5y + 16 = 0 \Rightarrow \dfrac{4x + 16}{5} = y$ or $y = \dfrac{4x + 16}{5}$

Thus, we have the following table for 4x - 5y + 16 = 0

x	1	-4	6
y	4	0	8

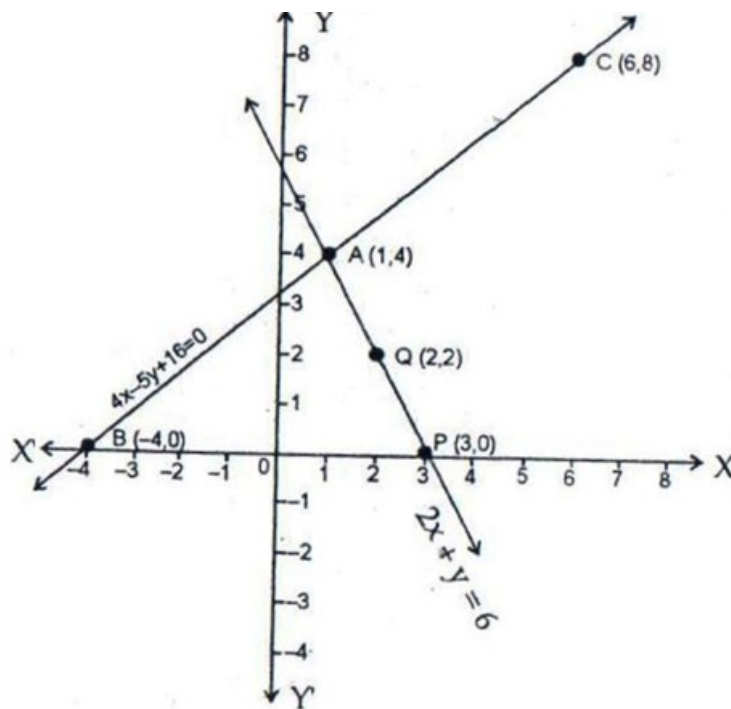On the graph paper plot the points A (1, 4), B (-4, 0) and C (6, 8)
Joint AB and AC to get BC
Thus, BC is the graph of the equation 4x - 5y + 16 = 0

Graph of 2x + y - 6 = 0:

$2x + y - 6 = 0 \Rightarrow y = -2x + 6$

Thus, we have the following table for 2x + y - 6 = 0

x	1	3	2
y	4	0	2

On the same graph as above, plot the points P (3, 0), Q (2, 2).
The third point A (1, 4) has been already plotted.
Join PQ and QA to get PA.
Thus, line PA is the graph of the equations $2x + y - 6 = 0$
The two graph lines intersect at A(1, 4)

$\therefore x = 1, y = 4$ is the solution of the given system of equations
Clearly, the given equations are represented by the graph lines BC
and PA respectively.

The vertices of $\triangle BAP$ formed by these lines and the x-axis are
B(-4, 0), A(1, 4) and P(3, 0)

Question 16:

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

Graph of 2x - 3y - 17 = 0:

$2x - 3y - 17 = 0, -3y = 17 - 2x$
$\Rightarrow y = \dfrac{-17 + 2x}{3}$ or $y = \dfrac{2x - 17}{3}$ ----(1)

Thus, we have the following table for $2x - 3y - 17 = 0$

x	1	4	7
y	-5	-3	-1

On the graph paper plot the points A (1, -5), B (4, -3) and
C (7, -1).
Join AB and BC to get AC
Thus, line AC is the graph of the equation $2x - 3y - 17 = 0$
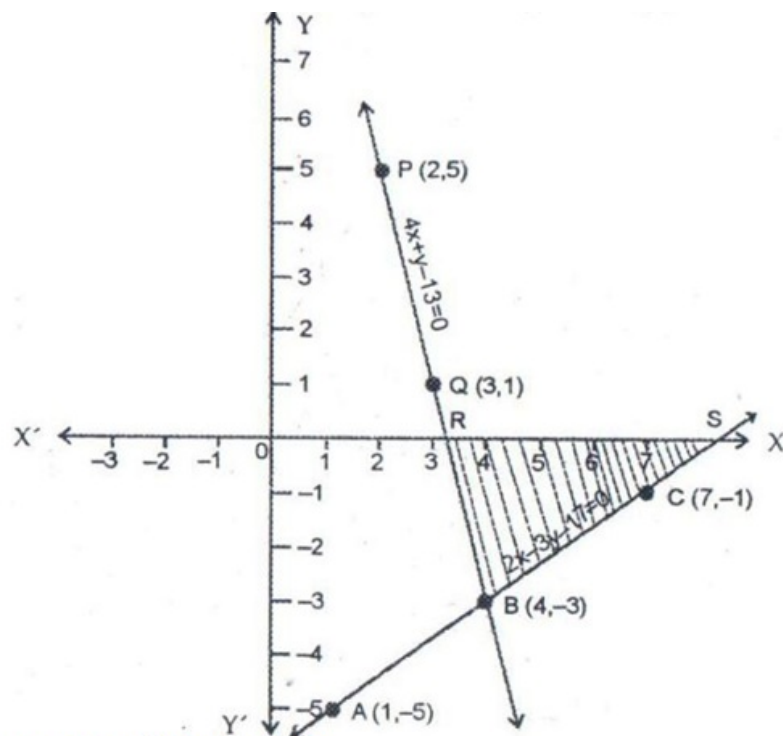
Graph of 4x + y - 13 = 0:

$4x + y - 13 = 0 \Rightarrow y = -4x + 13$ ---(2)
Thus, we have the following table for $4x + y - 13 = 0$

x	4	2	3
y	-3	5	1

On the same graph paper as above, plot the points P (2, 5) and
Q (3, 1)
The point B (4, -3) has been already plotted.

Joint PQ and QB to get PB.
Thus, line PB is the graph of equation 4x + y - 13 = 0
The two graph lines intersect at the point B (4, -3)
x = 4, y = -3 is the solution of the given system of equations

These graph lines intersect the x-axis at R and S
The region bounded by these lines and the x-axis has been shaded

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