HOMEWORK : Linear Equation In Two Variable

1) Find the value of K, if $x = 2, y = 1$ is a solution of the equation $2x + 3y = K$.

Sub $2x + 3y = K$

Substituting x as 2 & y as 1.

$\Rightarrow 2 \times 2 + 3 \times 1 = K$

$\Rightarrow 4 + 3 = K$

$\Rightarrow 7 = K$

$\Rightarrow K = 7$.

2) Find the points where the graph of the equation $3x + 4y = 12$ cuts the x-axis & the y-axis.

$3x + 4y = 12$

the point on y axis : let x be 0

$\Rightarrow 3 \times 0 + 4y = 12$

$\Rightarrow 4y = 12$

$\Rightarrow y = \frac{12}{4}$

$\Rightarrow y = 3$

$\therefore$ The point is $(0, 3)$

the point on x axis : let y be 0

$\Rightarrow 3x + 4 \times 0 = 12$

$\Rightarrow 3x = 12$

$\Rightarrow x = \frac{12}{3}$

$\Rightarrow x = 4$

$\therefore$ the point is $(4, 0)$

3) At what point does the graph of the linear equation $x + y = 5$ meat a line which is parallel to the y-axis at a distance 2 units from the origin & in the positive direction of x-axis.

The coordinates of the points lying on the line parallel to the y-axis, at a distance 2 units from the origin & on the

positive direction of the x axis are of the form (2, y)

Putting $x = 2$ in the equation, we get:

$x + y = 5$

$\Rightarrow 2 + y = 5$

$\Rightarrow y = 5 - 2$

$\Rightarrow y = 3$

Thus the required point is (2, 3)

4. Determine the point on the graph of the equation $2x + 5y = 20$ whose x-coordinate is $\frac{5}{2}$ times its ordinate.

According to the question: $x = \frac{5y}{2}$

$2x + 5y = 20$

$\Rightarrow \frac{2 \times 5y}{2} + 5y = 20$

$\Rightarrow \frac{10}{2y} + 5y = 20$

$\Rightarrow \frac{10 + 10y}{2y} = 20$

$\Rightarrow 10 + 10y = 20 \times 2y$

$\Rightarrow 10 + 10y = 40y$

$\Rightarrow 10 = 40y - 10y$

$\Rightarrow 10 = 30y$

$\Rightarrow y = 3$

$2x + 5y = 20$

$\Rightarrow \frac{2x \times 5y}{x} + 5y = 20$

$\Rightarrow 5y + 5y = 20$

$\Rightarrow 10y = 20$

$\Rightarrow y = \frac{20}{10}$

$\Rightarrow y = 2$

So $x = \frac{5y}{2}$

$\Rightarrow x = \frac{5 \times 2}{2}$

$\Rightarrow x = 5$

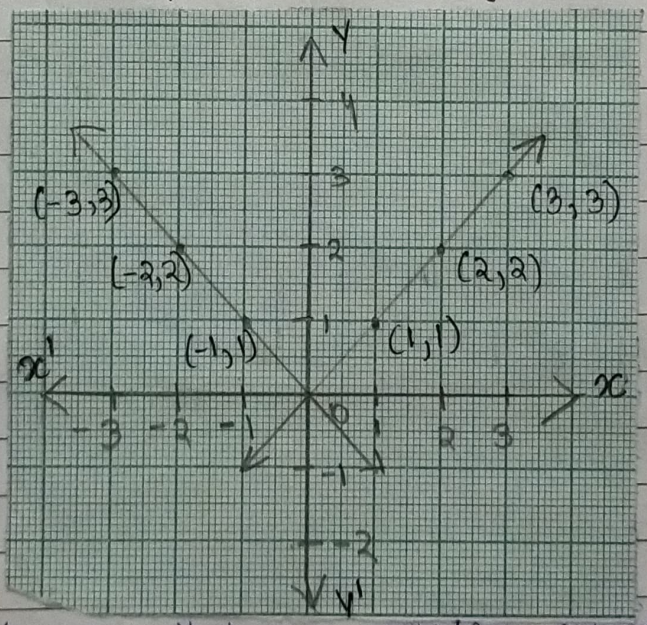
$\therefore$ the point is (5, 2).

5) Draw the graph of the equation represented by the straight line which is parallel to the x-axis & is 4 units above it.

Ans, $y = 4$

The graph :-

6) Draw the graphs of linear equation $y = x$ & $y = -x$ on the same cartesian plane - what do you observe ?



We observe that two equation intersect at the origin (0,0).