

LINEAR EQUATIONS IN 2 VARIABLES

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

Ans) $2x+3y=k$

(putting $x=2$ and $y=1$) we get

$\Rightarrow 2(2)+3(1)=k$

$\Rightarrow 4+3=k$

$\Rightarrow \boxed{k=7}$

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

Ans) Given equation is $3x+4y=12$

The point on y -axis :-

Let $x=0$, then $3x+4y=12$

$\Rightarrow 3(0)+4y=12$

$\Rightarrow 4y=12$

$\Rightarrow y=3 \quad \therefore$ The coordinate is $(0,3)$

The point on x -axis :-

Let $y=0$, then $3x+4y=12$

$\Rightarrow 3x+4(0)=12$

$\Rightarrow 3x=12$

$\Rightarrow x=4 \quad \therefore$ The coordinate is $(4,0)$

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

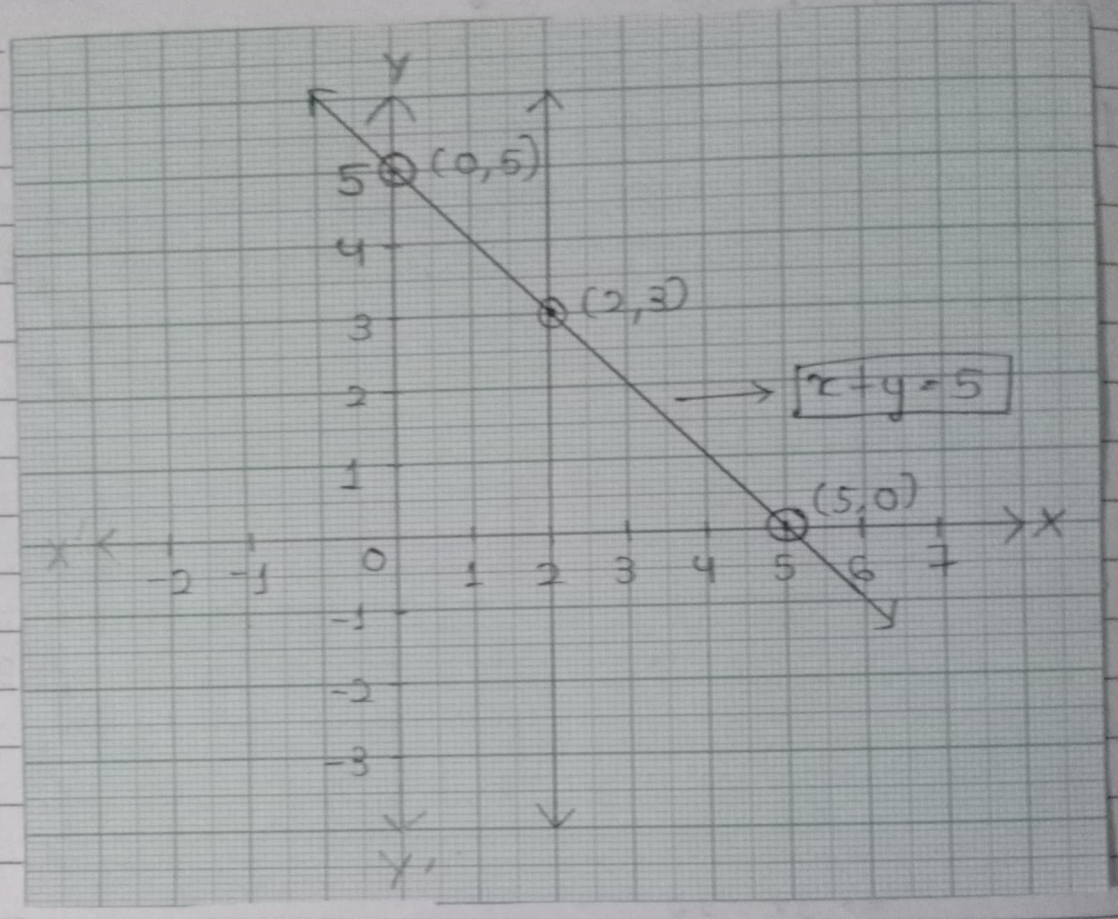
Ans) $\boxed{x+y=5}$

x	0	5
y	5	0

\therefore So, the coordinates are $(0,5)$ and $(5,0)$

Line parallel to y -axis at a distance of 2 units is $\boxed{x=2}$
 \therefore So, the point which meets the line $x+y=5$ and $x=2$ is $(2,3)$

∴ At (2, 3) coordinate, the graph of the linear equation $x + y = 5$ meet a line which is parallel to the y-axis, at a distance 2 units from the origin and in the positive direction of x-axis.

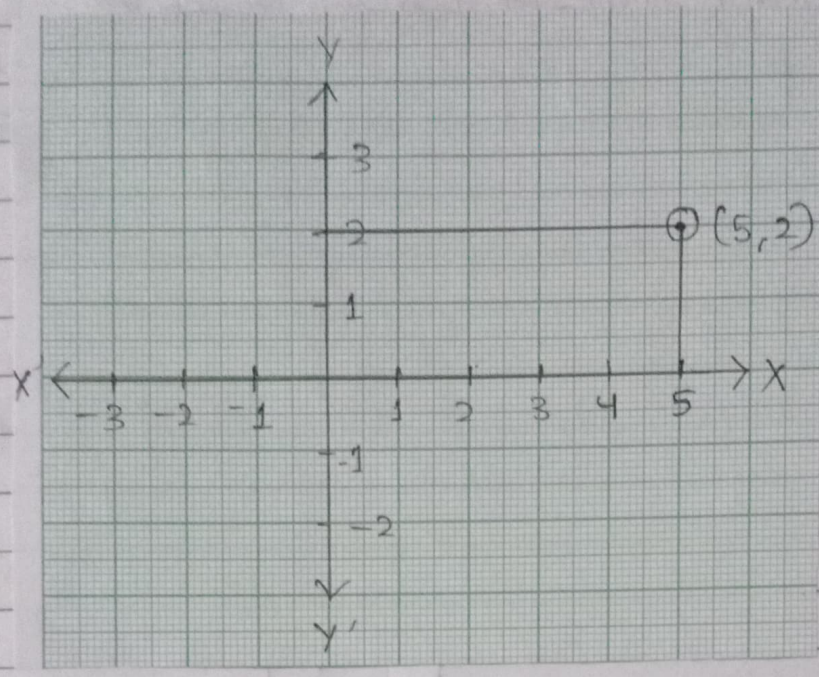


- Q) Determine the point on the graph of the equation $2x + 5y = 20$ whose x-coordinate is 5 times its ordinate.
- Ans) As the x-coordinate of the point is 5 times its ordinate, therefore, $x = 5y$

Now substituting $x = 5y$ in the given equation, we get
 $2\left(\frac{5}{2}y\right) + 5y = 20$

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

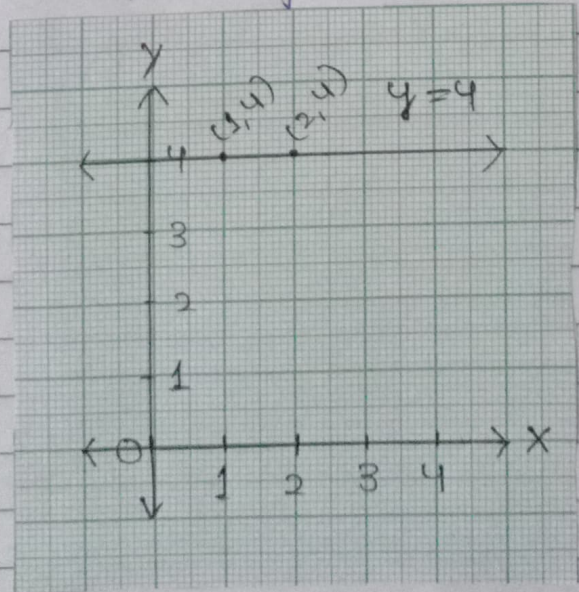
Thus, the required point or coordinate is $(5, 2)$



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

Ans) Any straight line parallel to x -axis is given by $y = k$, where k is the distance of the line from the x -axis.
Here $k = 4$.

Therefore, the equation of the line is $y = 4$.
To draw the graph of this equation, we have to plot the points $(1, 4)$ and $(2, 4)$ and join them.



Q) Draw the graph of linear equations $y=x$ and $y=-x$ on the same cartesian plane. What do you observe?

Ans) The given equation is $y=x$. To draw the graph of this equation, we need at least 2 points lying on the given line.

For $x=1, y=1$
 $(1,1)$ satisfies the linear equation $y=x$

For $x=4, y=4$
 $(4,4)$ satisfies the linear equation $y=x$

So, By plotting the points $(1,1)$ and $(4,4)$ on the graph paper and joining them by a line, we obtain the graph of $y=x$

Now,

For $x=3, y=-3$
 $(3,-3)$ satisfies the linear equation $y=-x$

For $x=-4, y=4$
 $(-4,4)$ satisfies the linear equation $y=-x$

So, By plotting the points $(3,-3)$ and $(-4,4)$ and joining them by a line, we obtain the graph of $y=-x$.

∴ ~~The line~~ we observe that, the line $y=x$ and $y=-x$ intersect at the point $O(0,0)$.

