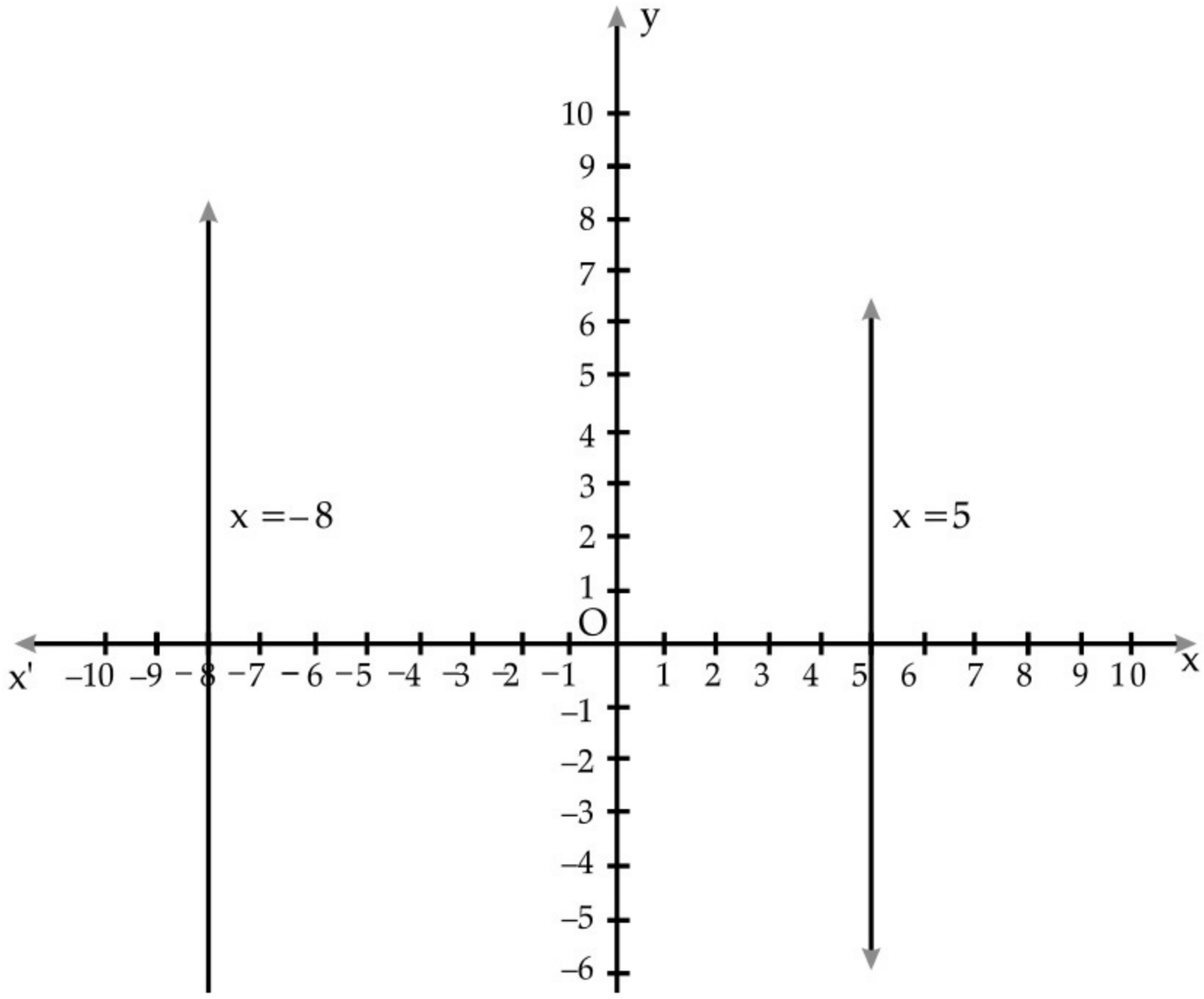
CHAPTER 4 : Linear Equations in Two Variables

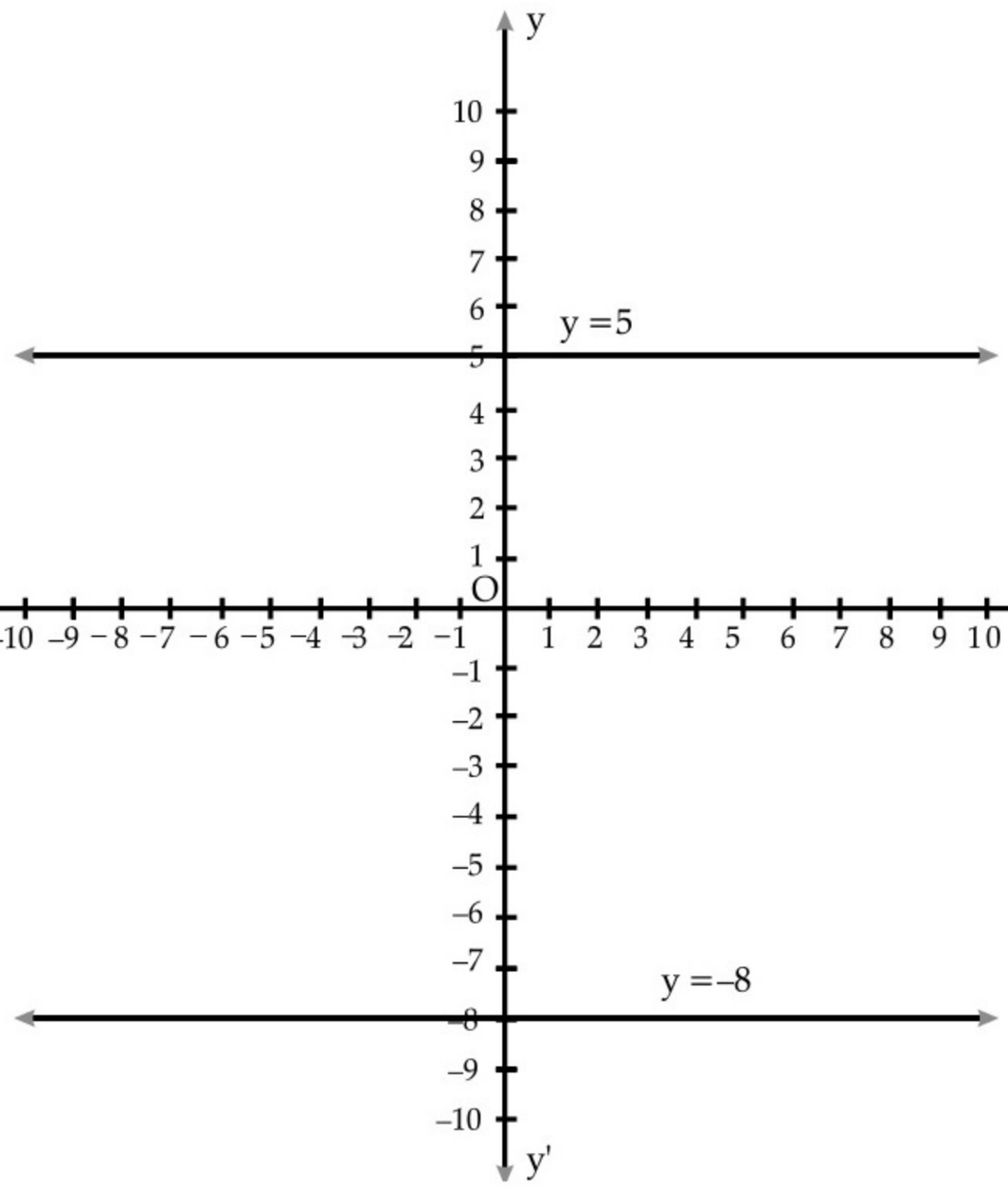
- A linear equation in two variables has infinitely many solutions.
- Standard form of a linear equation in two variables is $ax + by + c = 0$, where a and b are coefficients of x and y respectively and c is a constant.
- The values of x and y which satisfy the equation is known as the solution of the equation.
- The graph of every linear equation in two variables is a straight line.
- $x = 0$ is the equation of the y-axis.
- $y = 0$ is the equation of the x-axis.

Types of Graph :

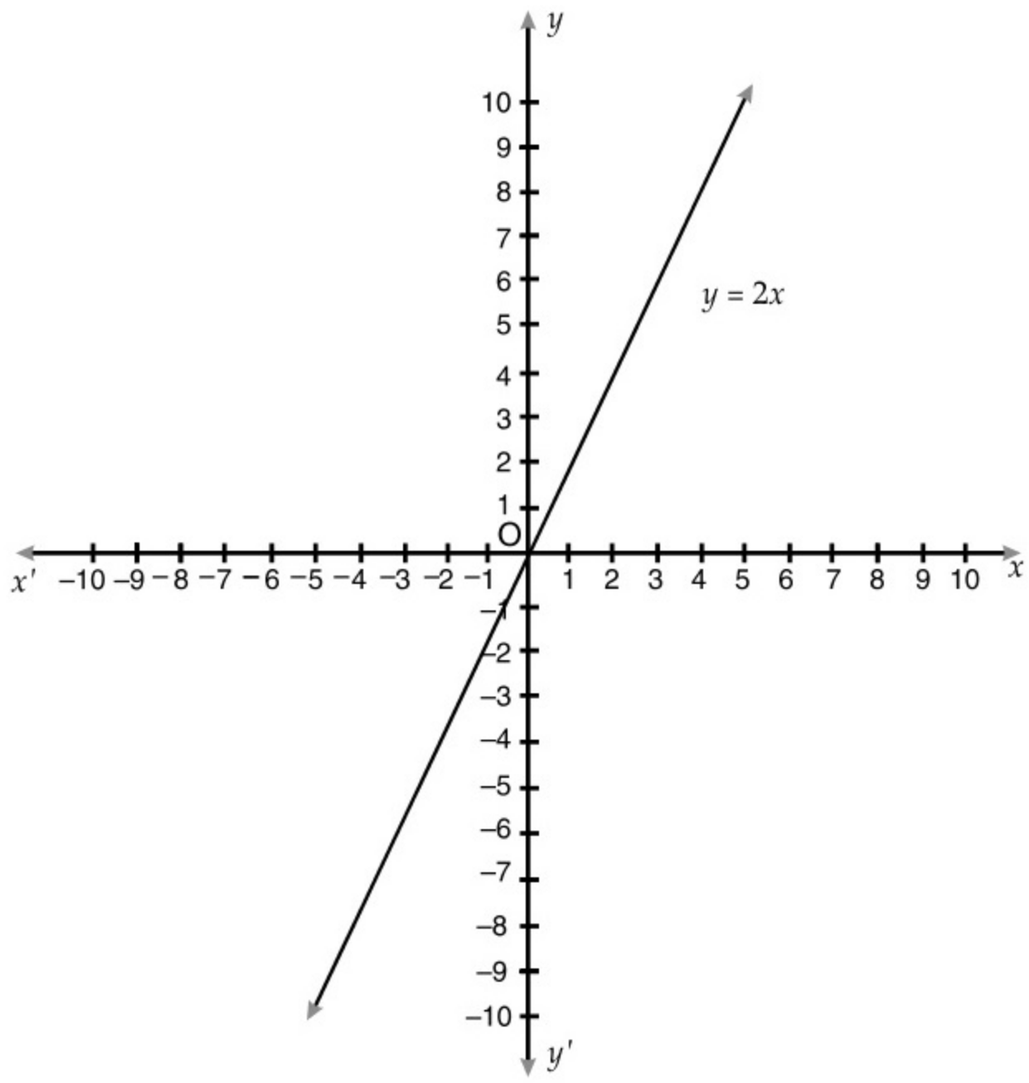
- The graph of $x = k$ is a straight line parallel to the y-axis, for example $x = 5$ and $x = -8$, are shown below :



- The graph of $y = k$ is a straight line parallel to the x-axis, for example $y = 5$ and $y = -8$, are shown below :



- Whenever equation is of the form $y = mx$, the line will pass through the origin, for example $y = 2x$ is shown below :



How to plot graphs ?

- To plot any graph, minimum two points are required, the best way to find out two points is to put $x = 0$ to find y and then put $y = 0$ to find x.
- Two points are sufficient, but if you need more accuracy, put some random value of x to find y or vice versa.
- Make a table of all the points and then draw the graph.
- Example : To draw a graph of : $3x + 4y = 12$.
  - Put $x = 0$, we get $y = 3$
  - Put $y = 0$, we get $x = 4$
  - If you want, find one more random point like put $x = 2$ to get $y = 1.5$
  - Now make a table

x	0	4	2
y	3	0	1.5

  - Now simply plot these points on the graph.