

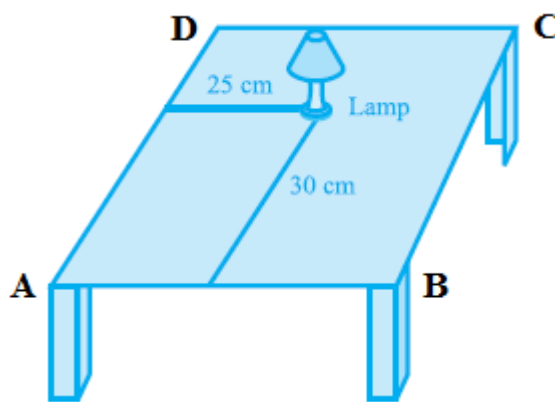
**NCERT Solutions for Class 9<sup>th</sup> Mathematics**

**Chapter 3 – COORDINATE GEOMETRY**

**EXERCISE 3.1**

1. How will you describe the position of a table lamp on your study table to another person?

**Ans**



Consider the lamp as a point and table as a plane. Choose any two perpendicular edges of the table. Measure the perpendicular distance of the lamp from the longer edge i.e. AD, suppose it is 25 cm. Again, measure the perpendicular distance of the lamp from the shorter edge i.e. AB, and suppose it is 30 cm. The position of the lamp can be written as (30, 25) or (25, 30), depending on the order you fix.

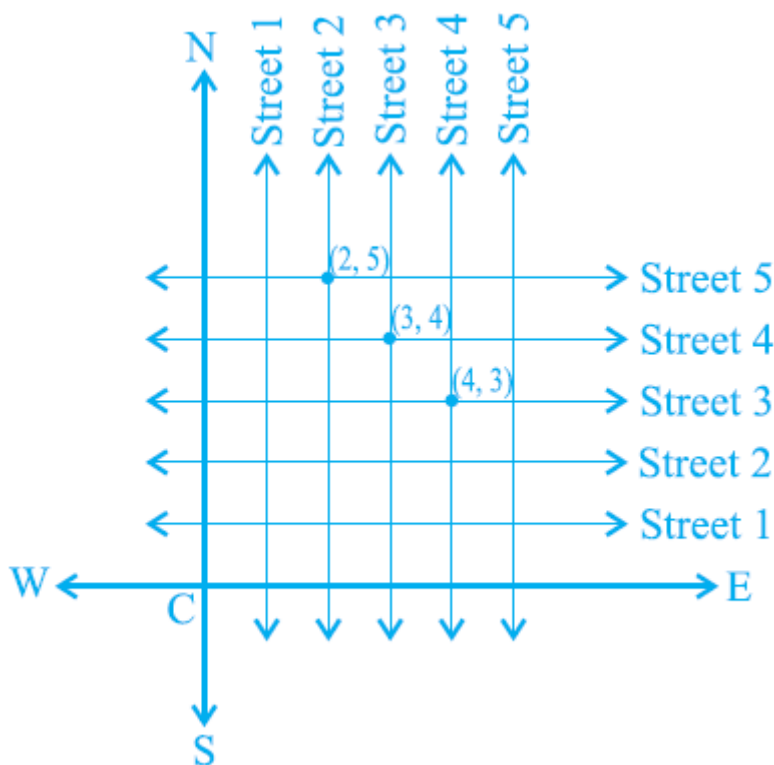
## *Egyanbodh by Kishan Rawat* **An Enlightening Path of Knowledge**

2. **(Street Plan)** : A city has two main roads which cross each other at the centre of the city. These two roads are along the North-South direction and East-West direction. All the other streets of the city run parallel to these roads and are 200 m apart. There are 5 streets in each direction. Using 1 cm = 200 m, draw a model of the city on your notebook. Represent the roads/streets by single lines.

There are many cross- streets in your model. A particular cross-street is made by two streets, one running in the North - South direction and another in the East - West direction. Each cross street is referred to in the following manner : If the 2nd street running in the North - South direction and 5th in the East - West direction meet at some crossing, then we will call this cross-street (2, 5). Using this convention, find:

- (i) how many cross - streets can be referred to as (4, 3).
- (ii) how many cross - streets can be referred to as (3, 4).

**Ans** The model or plan of the city can be drawn as below:



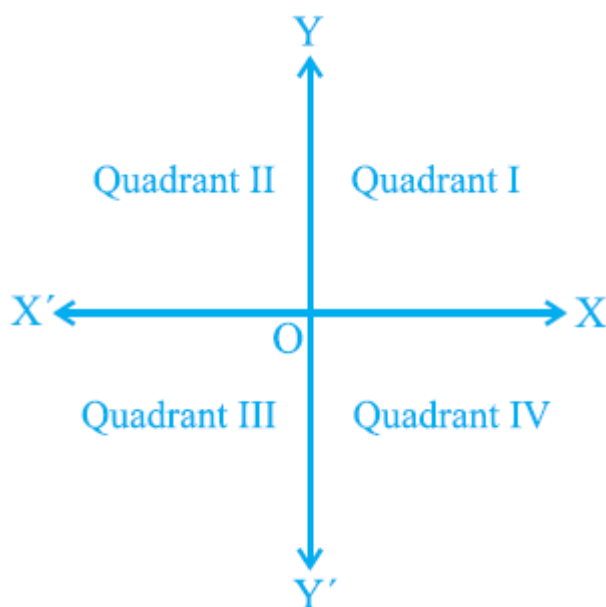
Both the cross-streets are marked in the figure above. It can be clearly seen that each cross-street is unique i.e. there is only one cross-street which can be referred to as (4,3) and again, only one which can be referred to as (3,4).

**EXERCISE 3.2**

1. Write the answer of each of the following questions:

- (i) What is the name of horizontal and the vertical lines drawn to determine the position of any point in the Cartesian plane?
- (ii) What is the name of each part of the plane formed by these two lines?
- (iii) Write the name of the point where these two lines intersect.

**Ans**



(i) In the Cartesian plane, the lines are represented as:

Horizontal line : **X – axis**

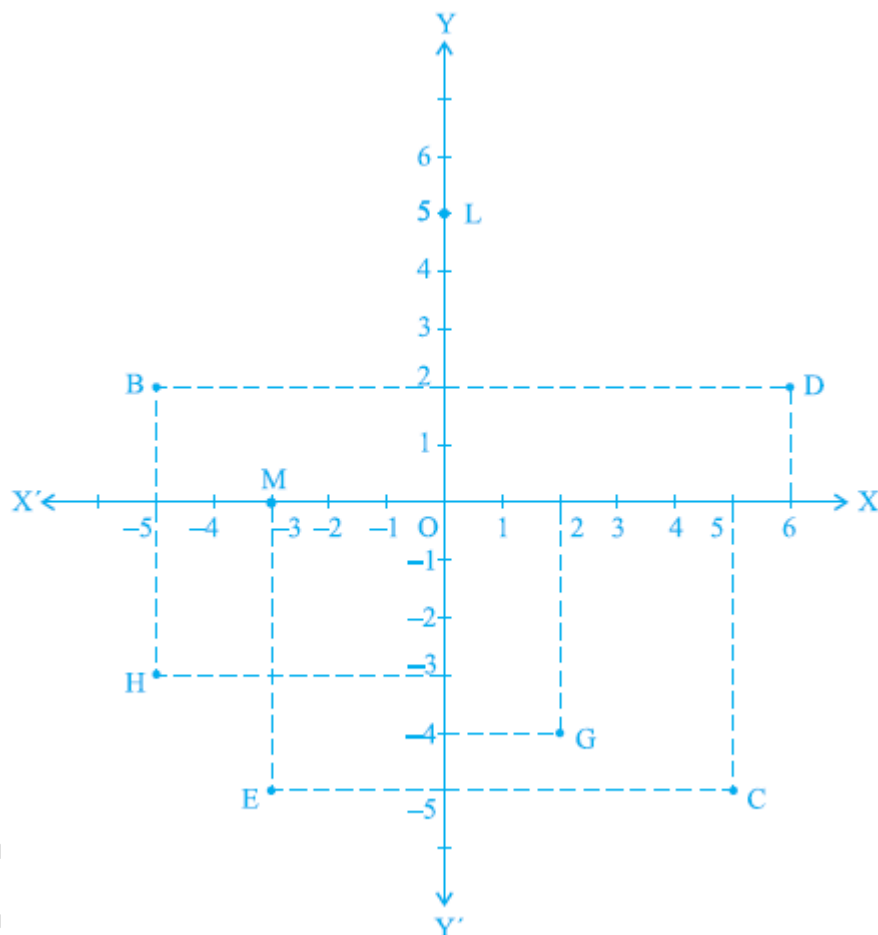
Vertical line : **Y – axis**

(ii) The name of the each part formed by these two lines (X-axis and Y-axis) is called **Quadrant**. They are four in numbers.

(iii) These two lines (X-axis and Y-axis) intersect at **Origin** (0,0).

2. See Fig.3.14, and write the following:

- (i) The coordinates of B.
- (ii) The coordinates of C.
- (iii) The point identified by the coordinates  $(-3, -5)$ .
- (iv) The point identified by the coordinates  $(2, -4)$ .
- (v) The abscissa of the point D.
- (vi) The ordinate of the point H.
- (vii) The coordinates of the point L.
- (viii) The coordinates of the point M.



- Ans**
- (i) x-coordinate and y-coordinate of point B are -5 and 2 respectively. Hence coordinates of point B are  $(-5, 2)$ .
  - (ii) x-coordinate and y-coordinate of point C are 5 and -5 respectively. Hence coordinates of point C are  $(5, -5)$ .
  - (iii) The point identified by the coordinates  $(-3, -5)$  is E.



- (iv) The point identified by the coordinates  $(2, -4)$  is G.
- (v) The abscissa or x-coordinate of the point D is 6.
- (vi) The ordinate or y-coordinate of the point H -3.
- (vii) x-coordinate of point L is 0 as it lies on y-axis, whereas its y-coordinate is 5. Hence coordinates of point L are  $(0,5)$ .
- (viii) x-coordinate of point M is -3, whereas its y-coordinate is 0 as it lies on x-axis. Hence coordinates of point M are  $(-3,0)$ .

### EXERCISE 3.3

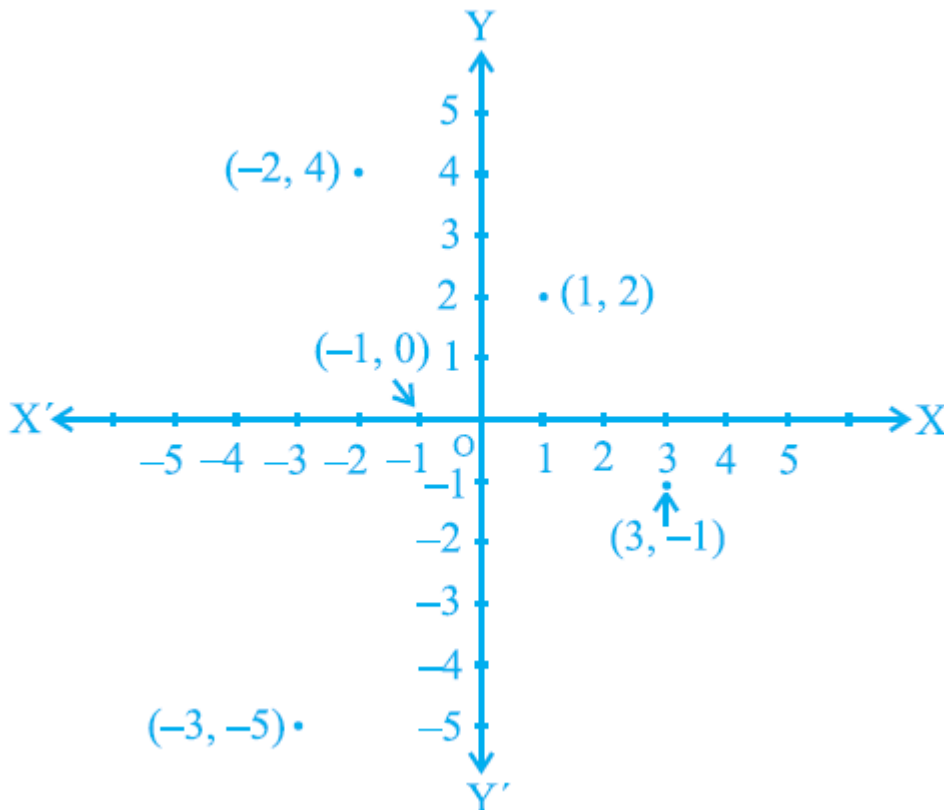
1. In which quadrant or on which axis do each of the points  $(-2, 4)$ ,  $(3, -1)$ ,  $(-1, 0)$ ,  $(1, 2)$  and  $(-3, -5)$  lie? Verify your answer by locating them on the Cartesian plane.

**Ans** The sign of  $(x, y)$  coordinates on the Cartesian plane can be tabulated as below:

	1 <sup>st</sup> quadrant	2 <sup>nd</sup> quadrant	3 <sup>rd</sup> quadrant	4 <sup>th</sup> quadrant
x	Positive (+ve)	Negative (-ve)	Negative (-ve)	Positive (+ve)
y	Positive (+ve)	Positive (+ve)	Negative (-ve)	Negative (-ve)

Clearly, The point  $(-2, 4)$  lies in quadrant II, the point  $(3, -1)$  lies in the quadrant IV, the point  $(-1, 0)$  lies on the negative x – axis (as y-coordinate is zero), the point  $(1, 2)$  lies in the quadrant I and the point  $(-3, -5)$  lies in the quadrant III.

Locations of the points are shown in the figure below.



2. Plot the points  $(x, y)$  given in the following table on the plane, choosing suitable units of distance on the axes.

<b>x</b>	-2	-1	0	1	3
<b>y</b>	8	7	-1.25	3	-1

**Ans** The pairs of numbers given in the table can be represented by the points  $(-2, 8)$ ,  $(-1, 7)$ ,  $(0, -1.25)$ ,  $(1, 3)$  and  $(3, -1)$ . The locations of the points are shown by dots in the figure below.

