

## Chapter 3

### Coordinate Geometry

#### Exercise 3.1

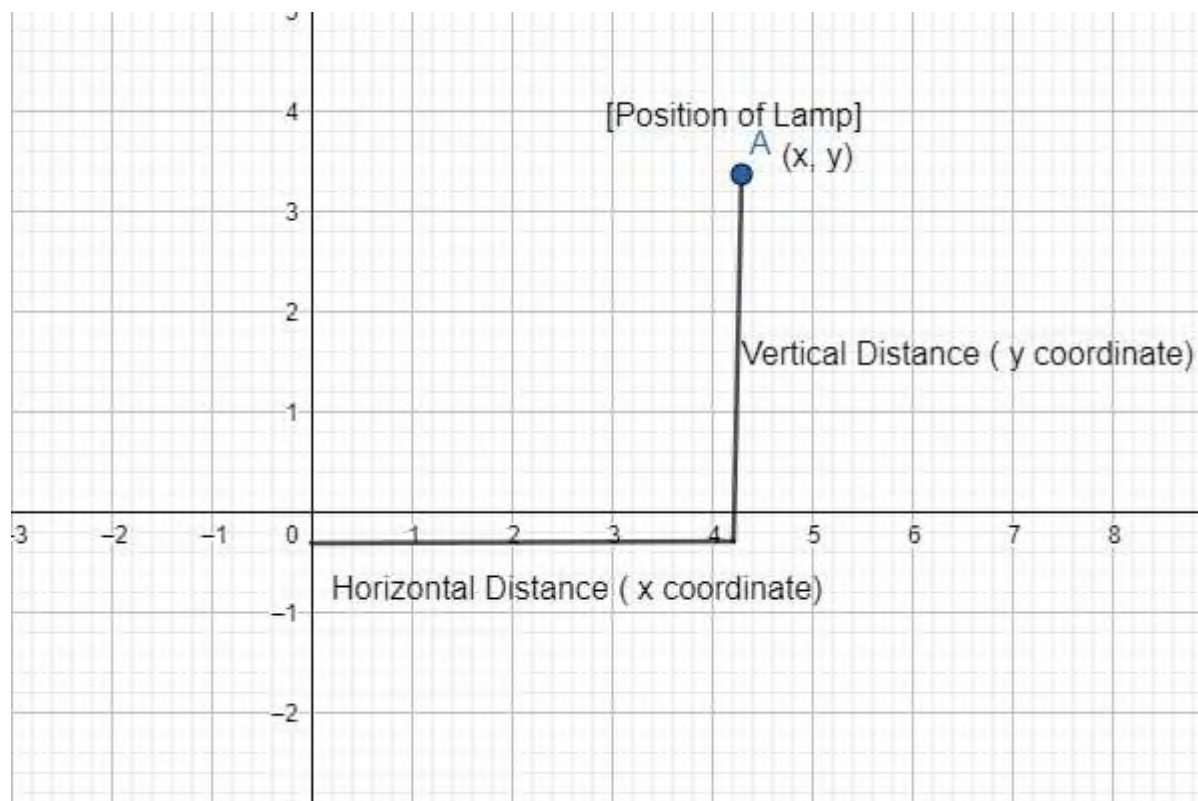
**Question:1** How will you describe the position of a table lamp on your study table to another person?

**Answer :**

In order to describe the position of a table lamp on the study table, we will take two lines, perpendicular and horizontal assuming the table as a plane and taking the perpendicular line as Y-axis and horizontal as X-axis. Now, take one corner of the table as origin where both X and Y axis intersect each other. Then, the length of table Y axis and breadth is X-axis from the origin.

Join the line to the lamp and mark a point. Calculate the distance of this point from both the X and Y axis and then write it in the form of coordinates.

Let the distance of the point from Y-axis is  $x$  and from X-axis is  $y$  then the position of the table lamp in terms of coordinates is  $(x, y)$



**Question: 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. Rene Descartes (1596 -1650)

All the other streets of the city run parallel to these roads and are 200 m apart. There are about 5 streets in each direction. Using  $1\text{cm} = 200\text{ m}$ , draw a model of the city on your notebook Represent the roads/streets by single lines.

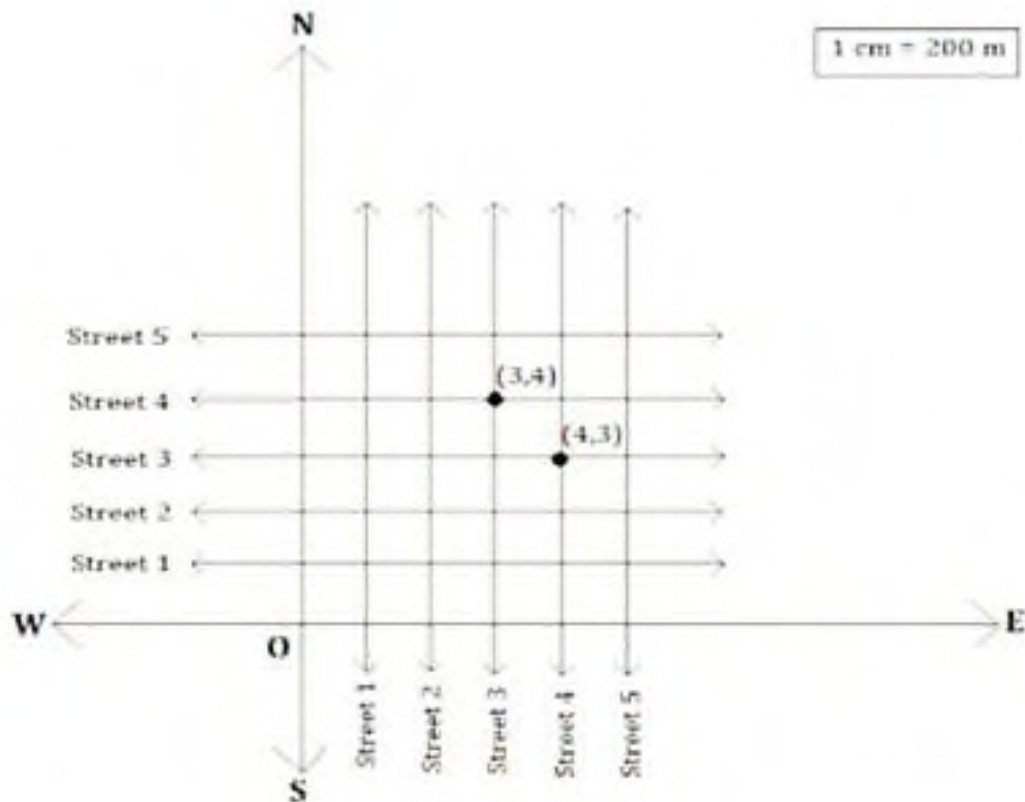
There are many cross- streets in your model. A particular cross-street is made by two streets, one running in the North - South direction and another in the East – West direction. Each cross street is referred to in the following manner: If the 2nd street running in the North - South direction and 5th in the East - West direction meets 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)

**Answer :**

(i) As we see from the figure only and only one street can be referred to as (4, 3)



(ii) As we see from the figure only one street can be referred to as (3, 4)

### **Exercise 3.2**

**Question: 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

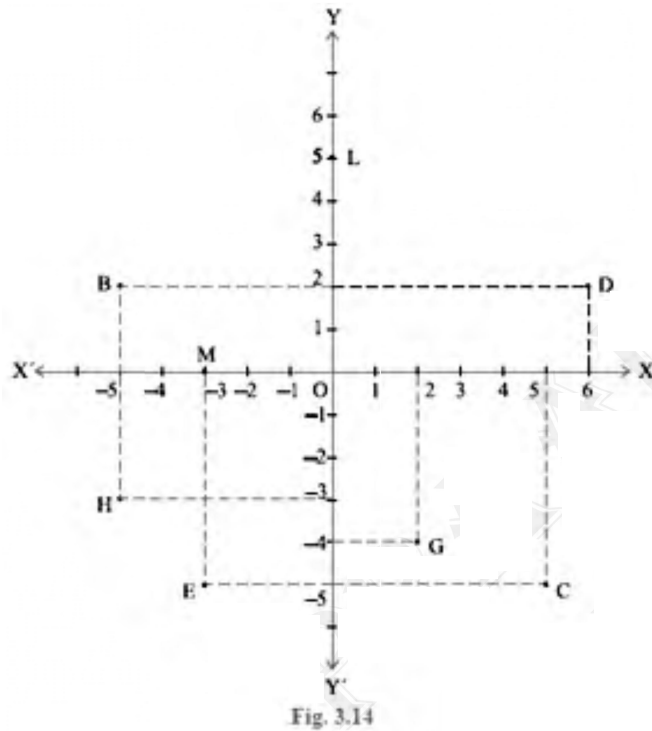
**Answer.:**

- (i) X-axis and Y-axis are the name of horizontal lines and vertical lines drawn to determine the position of any point in the Cartesian plane respectively.
- (ii) The name of each part of the plane formed by these two lines is:
  - a) 1st quadrant (+x, +y)
  - b) 2<sup>nd</sup> quadrant (-x, +y)
  - c) 3<sup>rd</sup> quadrant (-x, -y)
  - d) 4<sup>th</sup> quadrant (x, -y)
- (iii) origin is termed as the point of intersection of these two lines.

**Question: 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



**Answer:**

For notifying the points shown in the graph. First look at the horizontal distance of points from Origin.

Then look at the vertical distance of point from origin. Distance measured to the right of origin is positive x axis. And distance measured to the top of origin is positive y axis. And similarly left and bottom shows negative x axis and negative y axis respectively.

- (i) The coordinates of B are  $(-5, 2)$
- (ii)  $(5, -5)$  is the coordinate of C.
- (iii) E is identified by the coordinates  $(-3, -5)$ .
- (iv) G is the point identified by the coordinates  $(2, -4)$

(v) Abscissa means x coordinate of point D.

Hence, abscissa of the point D is 6

(vi) Ordinate means y coordinate of point H.

Hence, ordinate of point H is -3

(vii) The coordinates of the point L is (0, 5)

(viii) The coordinates of the point M is (-3, 0)

### Exercise 3.3

**Question: 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.

**Answer:**

The position of each point is as follows:

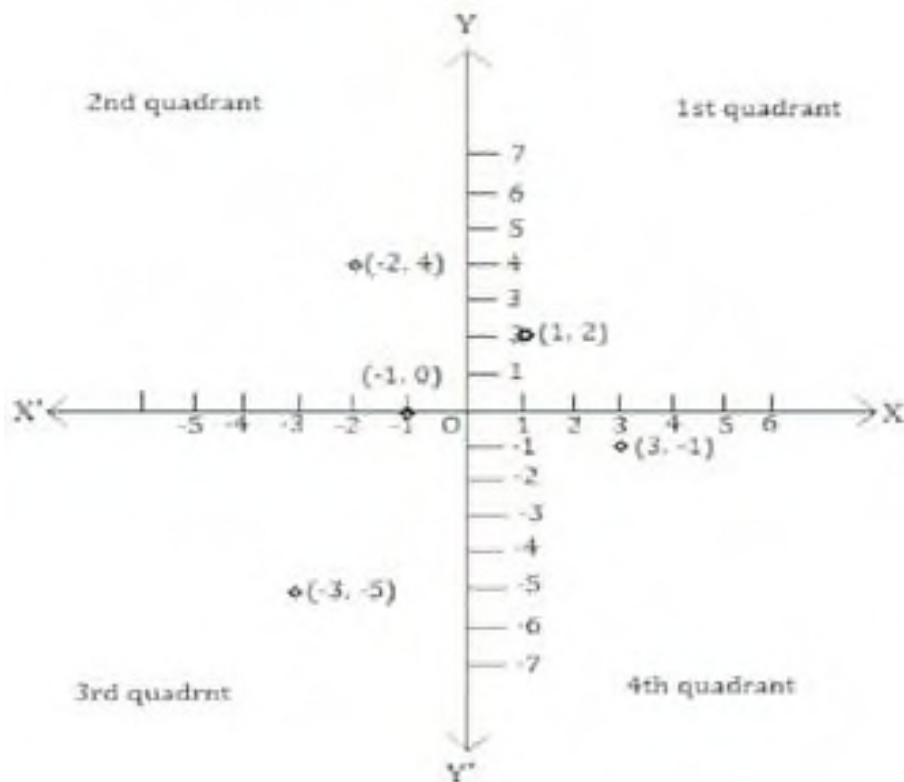
$(-2, 4)$  = Second quadrant

$(3, -1)$  = Fourth quadrant

$(-1, 0)$  = Second quadrant (negative x-axis)

$(1, 2)$  = First quadrant

$(-3, -5)$  = Third quadrant



**Question: 2**

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

X	-2	-1	0	1	3
Y	8	7	-1.25	3	1

**Answer:**

Points (x, y) are located on the plane.

1 unit = 1 cm

Points (x,y) on the plane. 1 unit = 1 cm

