EXERCISE 3.1

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

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 the East-West direction. All 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 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)

EXERCISE 3.2

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

   (i) What is the name of the 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.

2. See figure, 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 point L.

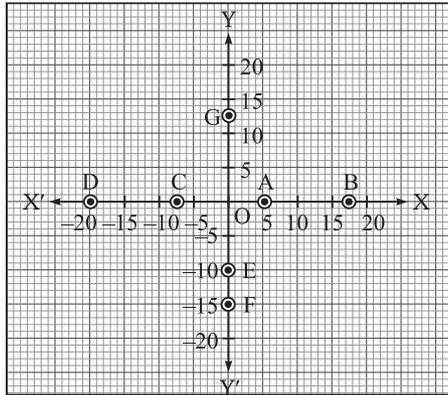   (viii) The coordinates of the point M.
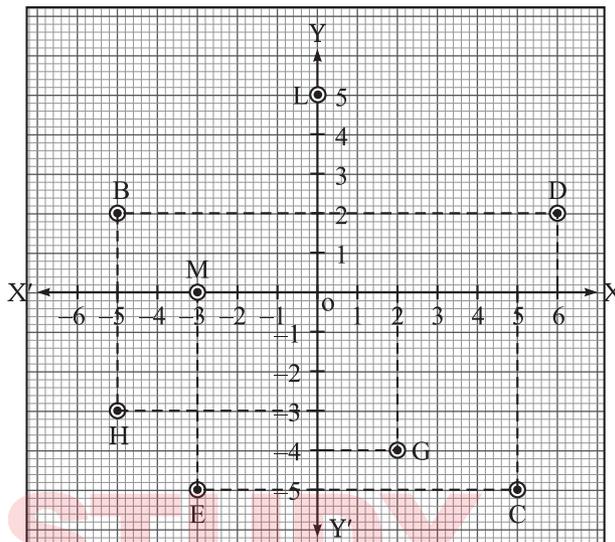
EXERCISE 3.3

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.

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

| x	-2	-1	0	1	3
y	8	7	-1.25	3	-1

TEST YOURSELF – CG 1

1. Find the value(s) of y in the equation $y = 5x - 3$ if
    (i) $x = 1$ (ii) $x = 2$
    (iii) $x = -1$

2. In which quadrant or on which axis do each of the points $(-3, 3)$, $(2, 1)$, $(2, 0)$, $(0, 6)$, $(-2, -3)$, $(4, -3)$ and $(0, 0)$ lie? Verify your answer by locating them on the Cartesian plane.

3. What is the name of the horizontal and vertical lines drawn in the Cartesian plane and the name of point of intersection and its coordinates.

4. Write the coordinates of the points marked on the axes.

5. Look in the given figure and write the following:

    (i)   The Coordinates of A   (ii)   The Coordinates of B

  (iii)   The point identified by the coordinates (– 2, – 3)

  (iv)   The point identified by the coordinates (3, – 3)

   (v)   Abscissa of the point C   (vi)   Ordinate of the point D

  (vii)   Coordinates of the point E   (viii)   Coordinates of the point F
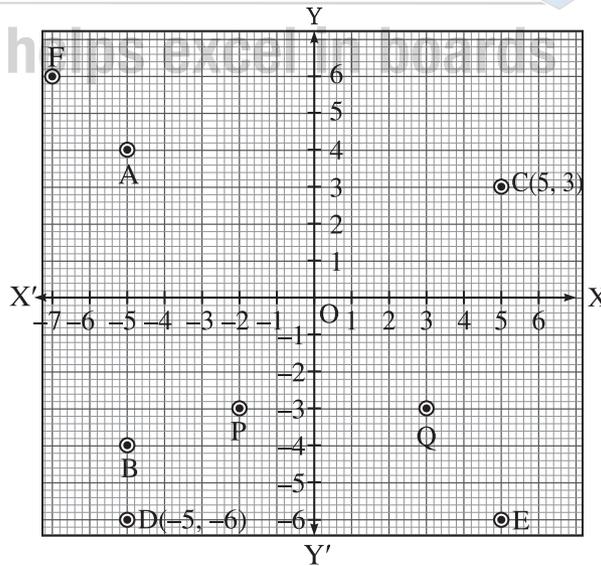
6. Plot the following ordered pairs of numbers (x, y) as points in the Cartesian plane. Use the scale 1 cm = 1 unit on the axes.

| x	−2	0	1	2	−3	2
y	5	3.5	3	2	−4	−1

7. Plot the points $(2, 0)$, $(2, 3)$, $(0, 6)$, $(-2, 3)$ and $(-2, 0)$ and join them in order. What figure do you obtain?

8.   (i) Name the quadrant in which the following points $(-3, -2)$, $(2, -3)$, $(2, 2)$, $(-5, 2)$ lie?

   (ii) Name the axis on which the following points i.e.?

   A $(0, 2)$, B $(5, 0)$, C $(4.5, 0)$, D $(0, 3.2)$

   (iii) Which of the following point do not lie in any quadrant and name there respective quadrant/axis?

   P $(3, 4)$, Q $(0, 3)$, R $(7, -5)$, S $(2, 0)$, T $(0, 0)$.

9. Find the distance of the following points from X - axis and Y - axis.

   (i) A $(6, 3)$ (ii) B $(2, -6)$

   (iii) C $(-5, -3)$ (iv) D $(-4, 5)$

10. What are the coordinates of following points ?

   (i) A point lies on the X - axis at a distance of 5 units from Y - axis.

   (ii) A point lies on the Y - axis at a distance of 6 units from X - axis.

ANSWERS

NCERT Exercises and Assignments

Exercise – 3.1

1. Consider the lamp as a point P and the table as a plane. Choose any two perpendicular edges of the table, say OX and OY. Measure the distance of the lamp *i.e.*, P from the longer edge OX, let it be 30 cm. Again, measure the distance of the lamp P from the shorter edge OY, let it be 20 cm. Thus, the position of the lamp P with respect to the edges OX and OY is (20, 30).
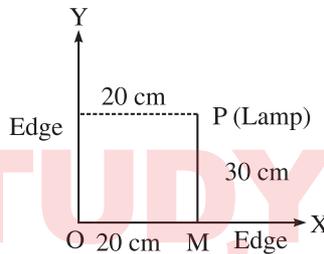

2. Street plan is as shown in the figure :
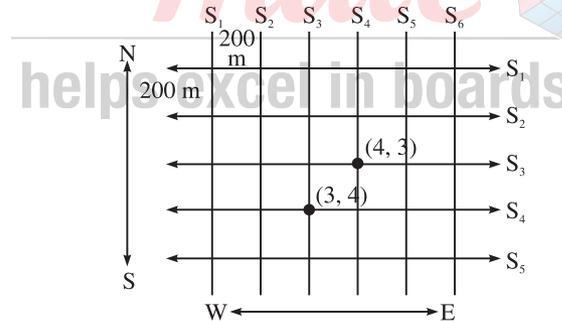
   (i) There is only one cross street, which can be referred to as (4, 3).
   (ii) There is only one cross street, which can be referred to as (3, 4).

Exercise – 3.2

1. (i) The name of the horizontal and vertical lines drawn to divide the plane into four parts is rectangular axes/coordinate axes.
   (ii) The name of each part of the plane divided by the axes is quadrant.
   (iii) The axes intersect at the origin.

2. Clearly, from the figure:

  (i)   The coordinates of B are (–5, 2).

 (ii)   The coordinates of C are (5, –5).

(iii)   The coordinates (–3, –5) are identified by the point E.

(iv)   The coordinates (2, –4) are identified by the point G.

 (v)   The abscissa of the point D is 6.

(vi)   The ordinate of the point H is – 3.

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

(viii) The coordinates of the point M are (–3, 0).
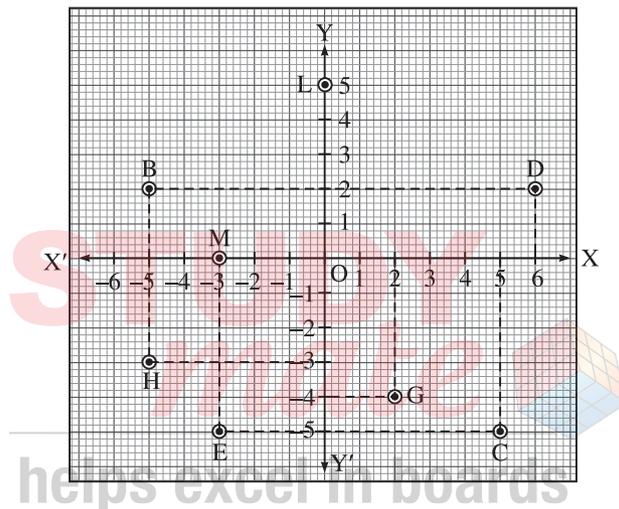

Exercise – 3.3

1. (i) In the point (–2, 4), abscissa is negative and ordinate is positive. So, it lies in the second quadrant.

   (ii) In the point (3, –1), abscissa is positive and ordinate is negative. So, it lies in the fourth quadrant.

   (iii) The point (–1, 0) lies on the negative x - axis.

   (iv) In the point (1, 2) abscissa and ordinate are positive, so it lies in the first quadrant.

   (v) In the point (–3, – 5) abscissa and ordinate are negative. Therefore, it lies in the third quadrant.

   Let us locate these points on the cartesian plane. Plot the points (–2, 4), (3, –1), (–1, 0), (1, 2) and (–3, –5) as shown.

   These points are respectively represented by A, B, C, D and E, which clearly verify their location.
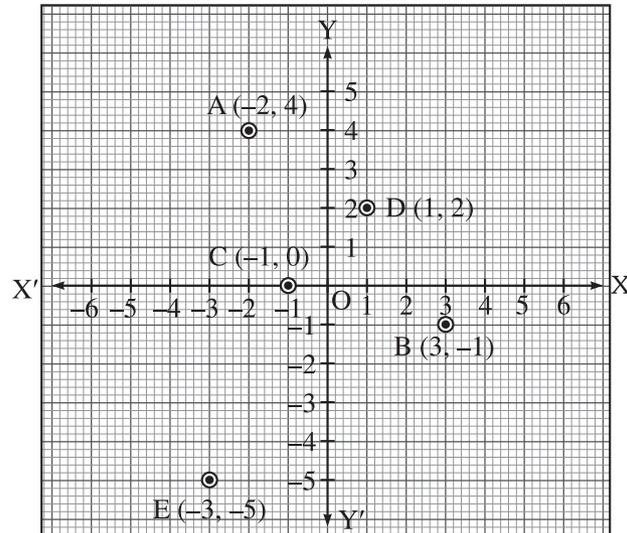
2. Draw X′OX and Y′OY as the coordinate axes and mark their point of intersection O as the origin (0, 0).

In order to plot the point (–2, 8), we take 2 units on OX′ and then 8 units parallel to OY to obtain the point A (–2, 8).

Similarly, we plot the point B (–1, 7).

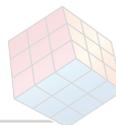In order to plot (0, –1.25), we take 1.25 units below x-axis on the y-axis to obtain C (0, –1.25).
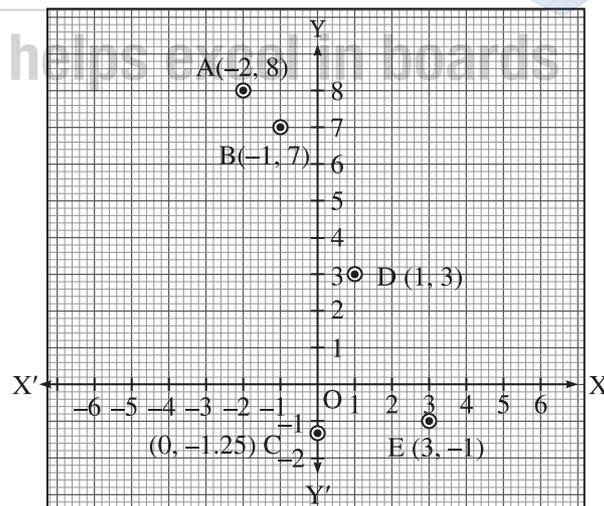
In order to plot (1, 3), we take 1 unit on OX and then 3 units parallel to OY to obtain the point D (1, 3).

In order to plot (3, –1), we take 3 units on OX and then move 1 unit parallel to OY′ to obtain the point E (3, –1).

Test Yourself – CG 1

1. (i) 2   (ii) 7
    (iii) – 8

2. II nd, Ist, X - axis, Y - axis, IIIrd, IV th, origin

3. X - axis, Y - axis, Quadrant, Origin (0, 0)

4. A(5, 0), B(17.5, 0), C(–7.5, 0), D(–20, 0), E(0, –10), F(0, –15), G(0, 12.5)

5. (i)   A (– 5, 4)   (ii) B (– 5, – 4)
    (iii) P   (iv) Q
    (v)   5   (vi) – 6
    (vii) (5, – 6)   (viii) (– 7, 6)

7. Pentagon

8. (i) IIIrd, IV th, Ist, IInd   (ii) X-axis → B, C ; Y-axis → A, D
    (iii) Q and S

9. (i) 3 and 6   (ii) 6 and 2
    (iii) 3 and 5   (iv) 5 and 4

10. (i) (±5, 0)   (ii) (0, ±6)