

CHAPTER

3

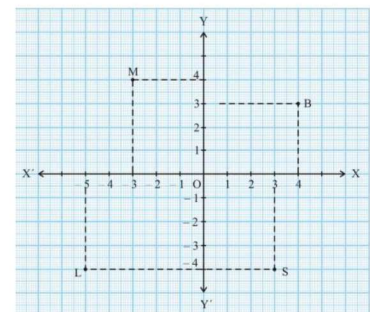
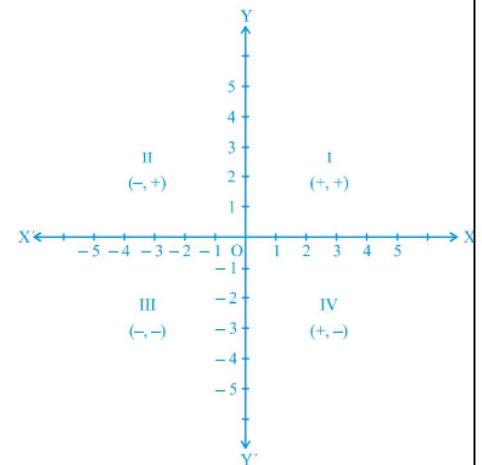
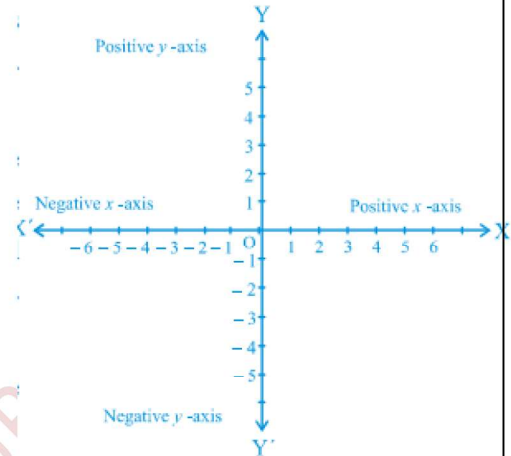
IX-MATHEMATICS-NCERT

3. COORDINATE GEOMETRY(NOTES)

<https://sureshmathsmaterial.com/>



- COORDINATE GEOMETRY was initially developed by the French philosopher and mathematician **René Descartes**.
- In honour of Descartes, the system used for describing the position of a point in a plane is also known as the **Cartesian system**
- The horizontal line **$X'X$** is called the **x - axis** and the vertical line **YY'** is called the **y - axis**.
- The point of intersection of the axes is called the origin, and is denoted by **O**
- The positive numbers lie on the directions **OX** and **OY** are called the positive directions of the x - axis and the y - axis
- The negative numbers lie on the directions **OX'** and **OY'** are called the negative directions of the x - axis and the y - axis
- The coordinate axes divide the plane into four parts called **quadrants**.
- The distance of a point from the y - axis is called its x-coordinate, or abscissa, and the distance of the point from the x-axis is called its y-coordinate, or ordinate
- If the abscissa of a point is x and the ordinate is y, then **(x, y)** are called the coordinates of the point.
- The coordinates of a point on the x-axis are of the form **$(x, 0)$** and that of the point on the y-axis are **$(0, y)$**
- The coordinates of the origin are **$(0, 0)$** .
- The coordinates of a point are of the form **$(+, +)$** in the first quadrant, **$(-, +)$** in the second quadrant, **$(-, -)$** in the third quadrant and **$(+, -)$** in the fourth quadrant, where **+** denotes a positive real number and **-** denotes a negative real number.
- If **$x \neq y$** , then **$(x, y) \neq (y, x)$** , and **$(x, y) = (y, x)$** , if **$x = y$** .
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Example 1 : See Fig. 3.11 and complete the following statements:

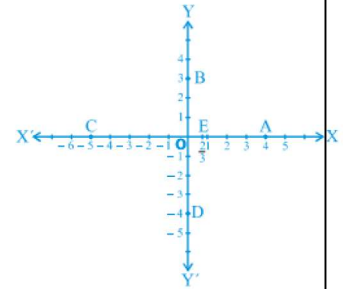
- The abscissa and the ordinate of the point B are **4** and **3**

respectively. Hence, the coordinates of B are (4,3).

- (ii) The x-coordinate and the y-coordinate of the point M are -3 and 4 respectively. Hence, the coordinates of M are (-3,4).
- (iii) The x-coordinate and the y-coordinate of the point L are -5 and -4 respectively. Hence, the coordinates of L are (-5,-4).
- (iv) The x-coordinate and the y-coordinate of the point S are 3 and -4 respectively. Hence, the coordinates of S are (3,-4).

Example 2 : Write the coordinates of the points marked on the axes .

Sol: $A = (4,0)$; $B = (0,3)$; $C = (-5,0)$; $D = (0,-4)$; $E = \left(\frac{2}{3}, 0\right)$



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?

Sol: The horizontal line is called the x-axis and vertical line is called the y-axis.

- (ii) What is the name of each part of the plane formed by these two lines?

Sol: Quadrant

- (iii) Write the name of the point where these two lines intersect.

Sol: Origin(O)

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

- (i) The coordinates of B.

Sol: $B = (-5,2)$

- (ii) The coordinates of C.

Sol: $C = (5, -5)$

- (iii) The point identified by the coordinates (-3, -5).

Sol: $(-3, -5) = E$

- (iv) The point identified by the coordinates (2, -4).

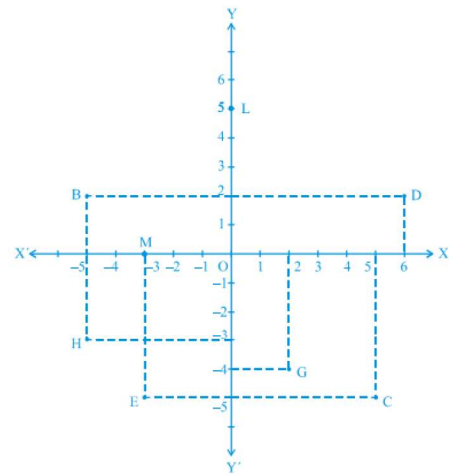
Sol: $(2, -4) = G$

- (v) The abscissa of the point D.

Sol: 6

- (vi) The ordinate of the point H.

Sol: -3



- (vii) The coordinates of the point L.

Sol: $L = (0,5)$

- (viii) The coordinates of the point M

Sol: $M = (-3,0)$

For practice:

