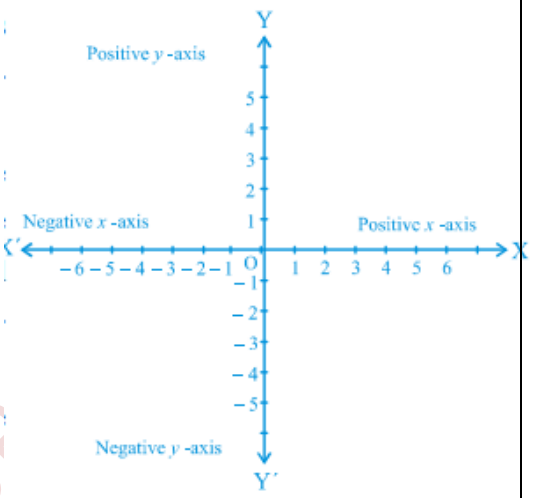
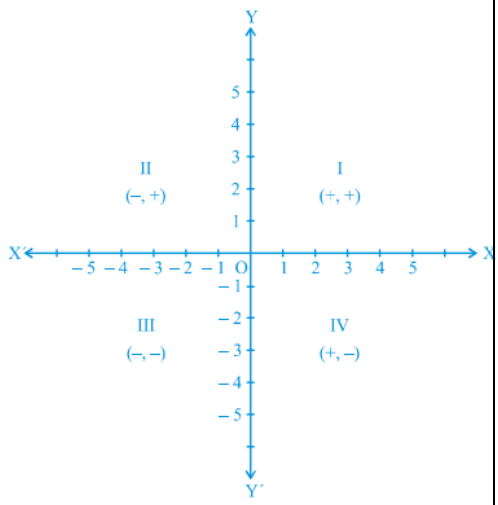
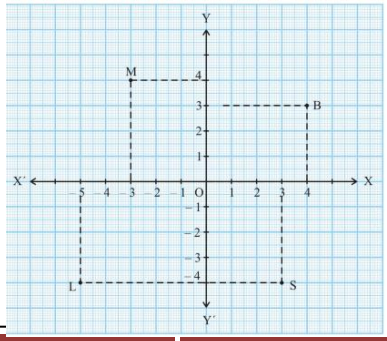
1. COORDINATE GEOMETRY was initially developed by the French philosopher and mathematician **René Déscartes**.
2. In honour of Déscartes, the system used for describing the position of a point in a plane is also known as the Cartesian system
3. The horizontal line X′X is called the x - axis and the vertical line YY′ is called the y – axis.
4. The point of intersection of the axes is called the origin, and is denoted by O
5. The positive numbers lie on the directions OX and OY are called the positive directions of the x - axis and the y - axis
6. The negative numbers lie on the directions OX′ and OY′ are called the negative directions of the x - axis and the y - axis
7. The coordinate axes divide the plane into four parts called **quadrants.**
8. 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
9. If the abscissa of a point is x and the ordinate is y, then (x, y) are called the coordinates of the point.
10. 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)
11. The coordinates of the origin are (0, 0).
12. 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.
13. If x ≠ y, then (x, y) ≠ (y, x), and (x, y) = (y, x), if x = y.
14.





Example 1 : See Fig. 3.11 and complete the following statements:



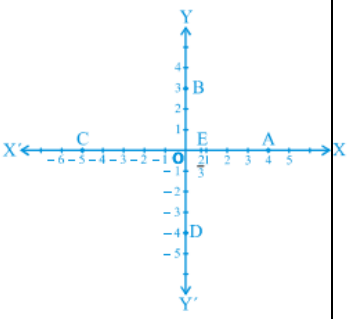
(i) The abscissa and the ordinate of the point B are **4** and **3** respectively. Hence, the coordinates of B are (**4,3**).

(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.

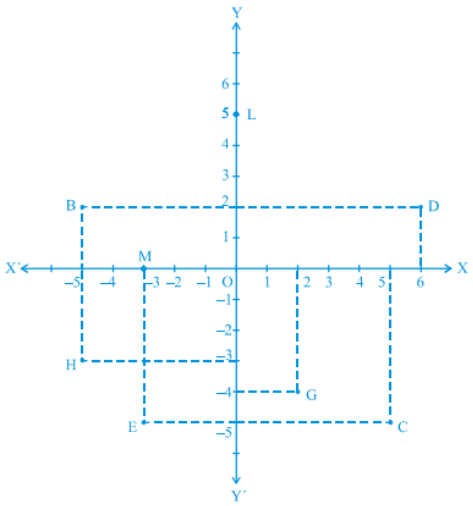
(ii) **What is the name of each part of the plane formed by these two lines?**

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: $M = (-3,0)$