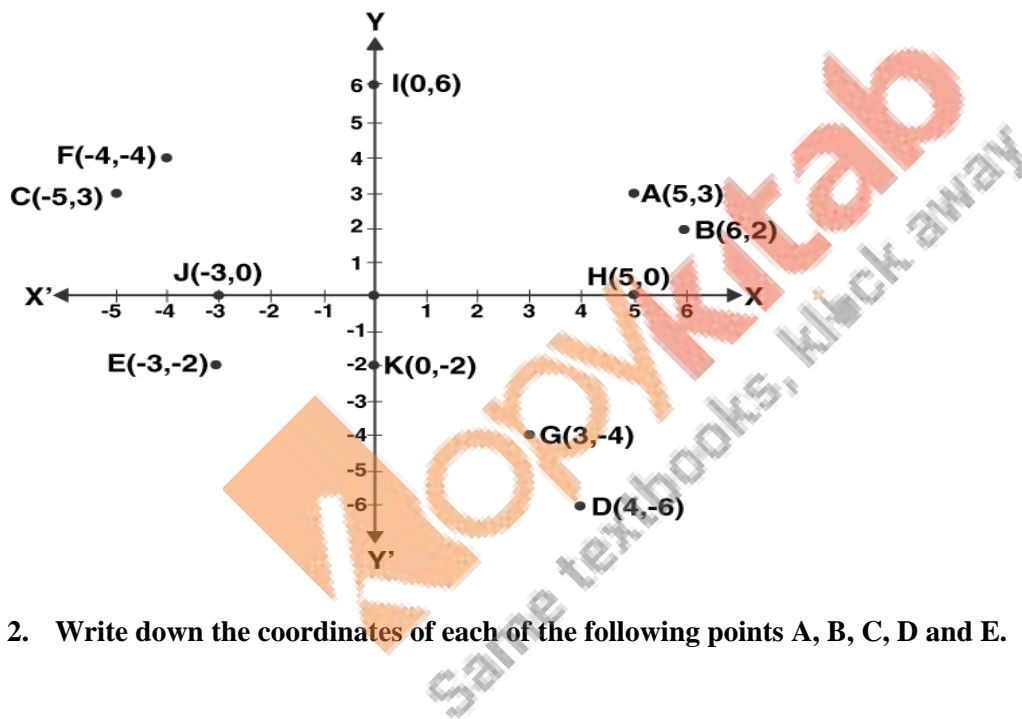EXERCISE 5   PAGE: 174
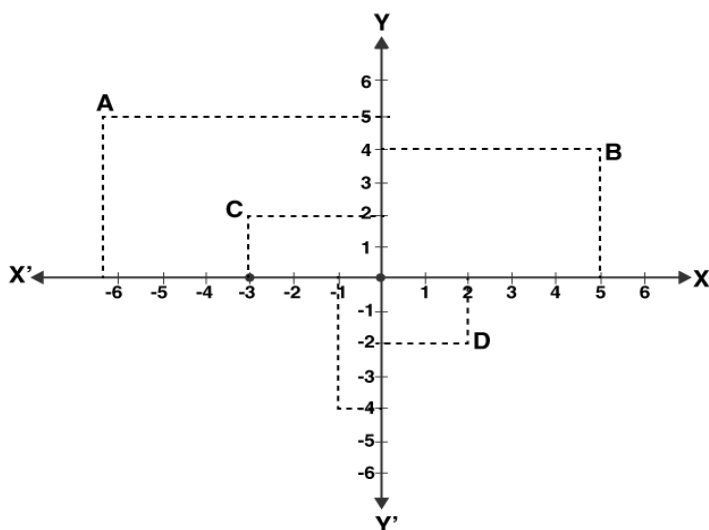
1. **On the plane of a graph paper draw X'OX and YOY' as coordinate axes and plot each of the following points.**

(i)   A (5, 3)
(ii)   B (6, 2)
(iii)   C (-5, 3)
(iv)   D (4, -6)
(v)   E (-3, -2)
(vi)   F (-4, 4)
(vii)   G (3, -4)
(viii) H (5, 0)
(ix)   I (0, 6)
(x)   J (-3, 0)
(xi)   K (0, -2)
(xii)   O (0, 0)

Solution:

2. **Write down the coordinates of each of the following points A, B, C, D and E.**

Solution:

From the coordinates draw perpendiculars on x-axis namely AF, BG, CH, DI and EJ

For point A
Distance from y-axis = OF = -6 units
Distance from x-axis = AF = 5 units
Therefore, the coordinates of point A are (-6, 5)

For point B
Distance from y-axis = OG = 5 units
Distance from x-axis = BG = 4 units
Therefore, the coordinates of point B are (5, 4)

For point C
Distance from y-axis = OH = -3 units
Distance from x-axis = HC = 2 units
Therefore, the coordinates of point C are (-3, 2)

For point D
Distance from y-axis = OI = 2 units
Distance from x-axis = ID = -2 units
Therefore, the coordinates of point D are (2, -2)

For point E
Distance from y-axis = OJ = -1 unit
Distance from x-axis = JE = -4 units
Therefore, the coordinates of point E are (-1, - 4)

3. For each of the following points, write the quadrant in which it lies.
(i) **(-6, 3)**
(ii) **(-5, -3)**
(iii) **(11, 6)**

(iv) (1, -4)
(v) (-7, -4)
(vi) (4, -1)
(vii) (-3, 8)
(viii) (3, -8)
Solution:

(i) For the coordinate (-6, 3)
-6 which is the x-coordinate is negative and 3 which is the y-coordinate is positive.
Therefore, (-6, 3) lies in the II quadrant.

(ii) For the coordinate (-5, -3)
-5 which is the x-coordinate is negative and -3 which is the y-coordinate is negative.
Therefore, (-5, -3) lies in the III quadrant.

(iii) For the coordinate (11, 6)
11 which is the x-coordinate is positive and 6 which is the y-coordinate is positive.
Therefore, (11, 6) lies in I quadrant.

(iv) For the coordinate (1, -4)
1 which is the x-coordinate is positive and -4 which is the y-coordinate is negative.
Therefore, (1, -4) lies in the IV quadrant.

(v) For the coordinate (-7, -4)
-7 which is the x-coordinate is negative and -4 which is the y-coordinate is negative.
Therefore, (-7, -4) lies in the III quadrant.

(vi) For the coordinate (4, -1)
4 which is the x-coordinate is positive and -1 which is the y-coordinate is negative.
Therefore, (4, -1) lies in the IV quadrant.

(vii) For the coordinate (-3, 8)
-3 which is the x-coordinate is negative and 8 which is the y-coordinate is positive.
Therefore, (-3, 8) lies in the II quadrant.

(viii) For the coordinate (3, -8)
3 which is the x-coordinate is positive and -8 which is the y-coordinate is negative.
Therefore, (3, -8) lies in the IV quadrant.

4. Write the axis on which the given point lies.
(i) (2, 0)
(ii) (0, -5)
(iii) (-4, 0)
(iv) (0, -1)
Solution:

(i) Since the point (2, 0) is of the form (x, 0) it lies on the x-axis.

(ii) Since the point (0, -5) is of the form (0, y) it lies on the y-axis.

(iii)   Since the point (-4, 0) is of the form (x, 0) it lies on the x-axis.

(iv)   Since the point (0, -1) is of the form (0, y) it lies on the y-axis.
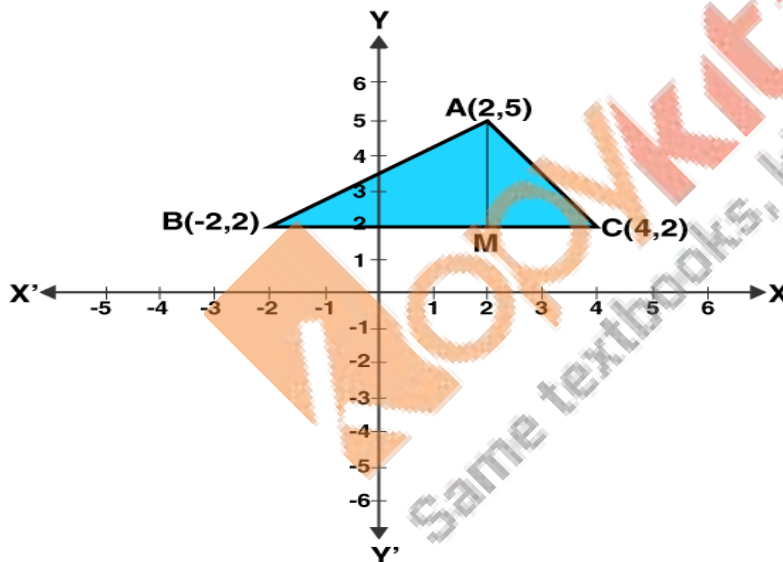
5. Which of the following points lie on the x-axis?
(i)   **A (0, 8)**
(ii)   **B (4, 0)**
(iii)   **C (0, -3)**
(iv)   **D (-6, 0)**
(v)   **E (2, 1)**
(vi)   **F (-2, -1)**
(vii)   **G (-1, 0)**
(viii)   **H (0, -2)**
Solution:

The points which lie on the x-axis are of the form (x, 0)
Therefore, the points which lie on the x-axis are B (4, 0), D (-6, 0) and G (-1, 0).

6. Plot the points A (2, 5), B (-2, 2) and C (4, 2) on a graph paper. Join AB, BC and AC. Calculate the area of △ ABC.
Solution:

Construct a line AM which is perpendicular to BC
Area of △ ABC = 1/2 × b × h
                        = 1/2 × BC × AM
So on further calculation we get
Area of △ ABC = 1/2 × 6 × 3
Area of △ ABC = 9 sq. units

7. Three vertices of a rectangle ABCD are A (3, 1), B (-3, -1) and C (-3, 3). Plot these points on the graph paper and find the coordinates of the fourth vertex D. Also, find the area of the rectangle ABCD.

Solution:
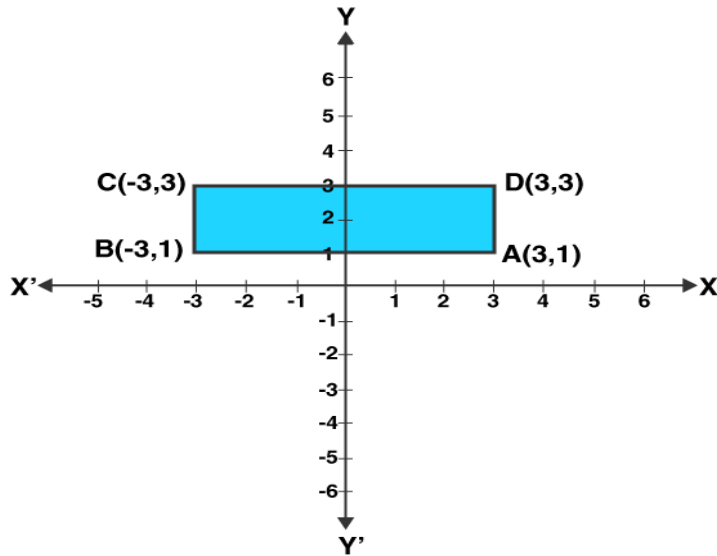
From the graph
The coordinates of point D are (3, 3)
Area of rectangle ABCD = l × b
$$= AB × BC$$
On further calculation we get
Area of rectangle ABCD = 6 × 2
Area of rectangle ABCD = 12 sq. units