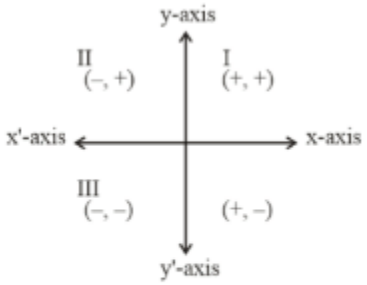
Exercise 3.1: Multiple Choice Questions (MCQs)

Q1: Point (-3, 5) lies in the
(a) first quadrant **(b)** second quadrant
(c) third quadrant **(d)** fourth quadrant

Thinking Process
(i) Firstly, check the sign of each coordinate of a point.
(ii) If both coordinates x and y has same positive sign i.e., (+, +), then the point lies in first quadrant.
(iii) If x-coordinate has negative sign and y-coordinate has positive sign i.e., (-, +), then the point lies in second quadrant.
(iv) If both coordinate x and y has negative sing i.e, (-, -), then the point lies in third quadrant.
(v) If x-coordinate has positive sign and y-coordinate has negative sign i.e., (+, -), then the point lies in fourth quadrant

Answer:
(b) In point (-3, 5), x-coordinate is negative and y-coordinate is positive. So, the point lies in the second quadrant.



We know that in

First quadrant : (+, +)

Second quadrant : (–, +)

Third quadrant : (–, –)

Fourth quadrant : (+, –)

Thus the value of x is –3 and y is 5

So that point (–3, 5) lies in the second quadrant.

Therefore option (B) is correct

2. Signs of the abscissa and ordinate of a point in the second quadrant are, respectively

A. +, +
B. –, –
C. –, +
D. +, –

Answer: C. –, +

Explanation: Signs of the abscissa and ordinate of a point in the second quadrant is –, +.

Q3: Point (0, – 7) lies
(a) on the X-axis **(b)** in the second quadrant
(c) on the Y-axis **(d)** in the fourth quadrant

Thinking Process

(i) Firstly, check whether any coordinate of point is zero or not.
(a) If x-coordinate is zero and y-coordinate is non-zero, then the point lies on Y-axis.
(b) If y-coordinate is zero and x-coordinate is non-zero, then the point lies on X- axis.
(c) If x-coordinate and y- coordinate are zero, then the point lies on origin (or on both the axes).
(d) If none of the coordinates is zero, then the point lies in any one of the four quadrants
Answer: (c)

In point (0, -7) x-coordinate is zero, so it lies on Y-axis and y-coordinate is negative, so the point (0, – 7) lies on the Y-axis in the negative direction.

Q4: Point (- 10,0) lies
(a) on the negative direction of the X-axis
(b) on the negative direction of the Y-axis
(c) in the third quadrant
(d) in the fourth quadrant
Answer:(a) In point (-10, 0) y-coordinate is zero, so it lies on X-axis and its x-coordinate is negative, so the point (-10, 0) lies on the X-axis in the negative direction.

Q5. Abscissa of all the points on the x-axis is

A. 0
B. 1
C. 2
D. any number

Solution: D. any number

Explanation: Abscissa of all the points on the x-axis can be any number.

Hence, (D) is the correct option.

Q6. Ordinate of all points on the x-axis is

A. 0
B. 1
C. – 1
D. any number

Answer: A. 0

Explanation: The ordinate of all the points on the x-axis is 0.

Q7. The point at which the two coordinate axes meet is called the

A. abscissa
B. ordinate
C. origin
D. quadrant

Answer: C. origin

Explanation: The points at which the two coordinate axes meet are called the origin.

Q8. A point both of whose coordinates are negative will lie in

A. I quadrant
B. II quadrant
C. III quadrant
D. IV quadrant

Answer: C. III quadrant

Explanation: A point whose both of the coordinates are negative will lie in the III quadrant.

Q9. Points (1, – 1), (2, – 2), (4, – 5), (– 3, – 4)

A. lie in II quadrant
B. lie in III quadrant
C. lie in IV quadrant
D. do not lie in the same quadrant

Answer: D. do not lie in the same quadrant

Explanation: Points (1, – 1), (2, – 2), (4, – 5) lie in IV quadrant and (– 3, – 4) lie in III quadrant.

Q10. If y coordinate of a point is zero, then this point always lies

A. in I quadrant

B. in II quadrant

C. on x-axis

D. on y-axis

Answer C. on x-axis

Explanation**:** We know that if the y-coordinate of a point, i.e., the ordinate is zero, then this point always lies on x-axis.

11. The points (–5, 2) and (2, – 5) lie in the

A. same quadrant
B. II and III quadrants, respectively
C. II and IV quadrants, respectively
D. IV and II quadrants, respectively

Answer: C. on x-axis

Explanation: **(**5,2) is of the form (-x,y) so it lies in the II quadrant.

(2,-5) is of the form (x,-y) so it lies in IV quadrant.

(C) II and IV quadrants, respectively

Q12. If the perpendicular distance of a point P from the x-axis is 5 units and the foot of the perpendicular lies in the negative direction of the x-axis, then point P has

A. x – coordinate = – 5
B. y – coordinate = 5 only
C. y – coordinate = – 5 only
D. y – coordinate = 5 or –5

Answer: D. y – coordinate = 5 or –5

Explanation: Perpendicular distance from x-axis = Ordinate = 5

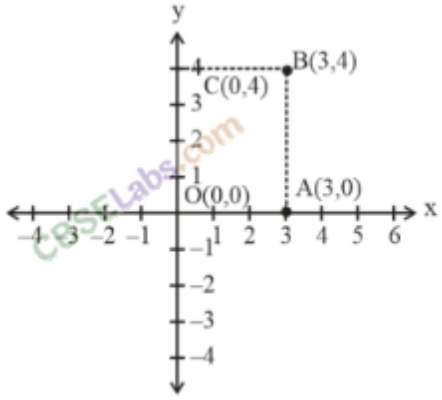
The negative direction of the x-axis doesn't decide the sign of the ordinate.

(D) y-coordinate = 5 or -5.

Q13: On plotting the points 0(0, 0), A(3, 0), 5(3, 4), C(0, 4) and joining OA, AB, BC and CO. Which of the following figure is obtained?
(a) Square **(b)** Rectangle
(c) Trapezium **(d)** Rhombus

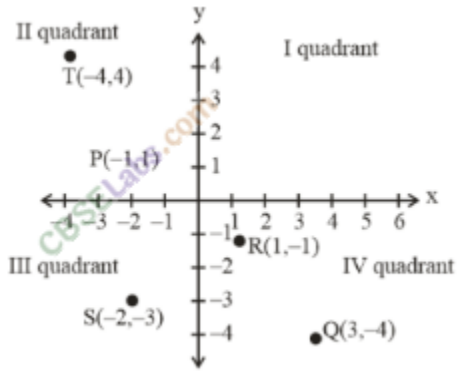
Answer: (b)

Here, point 0 (0, 0) is the origin. A(3, 0) lies on positive direction of X-axis, B (3, 4) lies in 1st quadrant and C (0, 4) lines on positive direction of Y-axis. On joining OA AB, BC and CO the figure obtained is a rectangle.



Q14: If P(-l, 1), Q(3, -4), R(1, -1), S(-2, -3) and T(-4, 4) are plotted on the graph paper, then the point(s) in the fourth quadrant is/are
(a) P and **(b)** Q and R
(c) Only S **(d)** P and R
Answer: (b)

In point P (-1, 1), x-coordinate is -1 unit and y-coordinate is 1 unit, so it lies in llnd quadrant.
Similarly, we can plot all the points Q (3, -4), R (1, -1), S (-2, -3) and T (-4, 4),
It is clear from the graph that points R and Q lie in fourth quadrant.

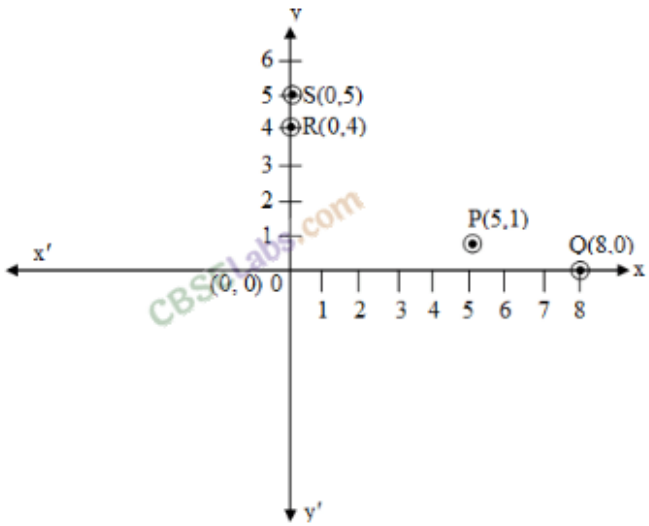


Q15: If the coordinates of the two points are P(-2, 3) and Q(-3, 5), then (Abscissa of P) – (Abscissa of Q) is
(a)-5 **(b)** 1 **(c)**-1 **(d)** -2

Answer: (b)

We have, points P(- 2, 3) and Q(- 3, 5)
Here, abscissa of Pi.e., x-coordinate of Pis -2 and abscissa of Q i.e., x-coordinate of Q is -3. So, (Abscissa of P) – (Abscissa of Q) = – 2 – (-3) =-2 + 3=1.

Q16: If P(5,1), Q(8, 0), R(0, 4), S(0, 5) and O(0, 0) are plotted on the graph paper, then the points) on the X-axis is/are
(a) P and R **(b)** R and S **(c)** Only Q **(d)** Q and O
Answer:(d) We know that, a point lies on X-axis, if its y-coordinate is zero. So, on plotting the given points on graph paper, we get Q and O lie on the X-axis.



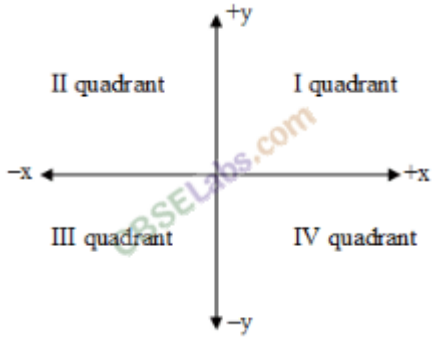
Q17: Abscissa of a point is positive in

(a) I and II quadrants **(b)** I and IV quadrants

(c) I quadrant **(d)** II quadrant

Answer: (b)

Abscissa of a point is positive in I and IV quadrants.



Q18: The points whose abscissa and ordinate have different signs will lie in

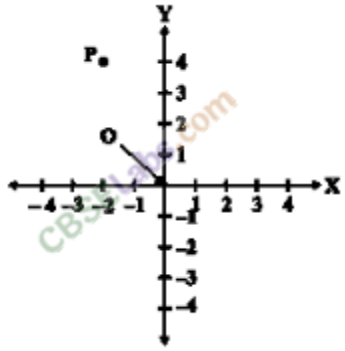
(a) I and II quadrants **(b)** II and III quadrants

(c) I and III quadrants **(d)** II and IV quadrants

Answer: (d)

The points whose abscissa and ordinate have different signs will be of the form (-x, y) or (x, – y)and these points will lie in II and IV quadrants.

Q19: In following figure, coordinates of P are



(a) (-4,2)

(b) (-2,4)

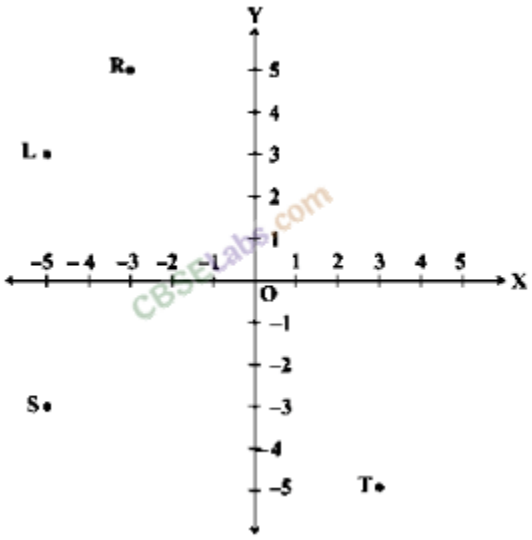
(c) (4,-2)

(d) (2, -4)

Answer: (b)

Here, given point P lies in II quadrant, so its abscissa will be negative and ordinate wilt be positive. Also, its perpendicular distance from X-axis is 4, so y-coordinate of P is 4 and its perpendicular distance from Y-axis is 2, so x-coordinate is -2. Hence, coordinates of P are (-2, 4).

Q20: In following figure, the point identified by the coordinates (-5, 3) is



(a) T **(b)** R **(c)** L **(d)** S

Answer:(c)

In point (-5, 3), x-coordinate is negative and y-coordinate is positive, so it will lie in II quadrant. Now, we see that perpendicular distance of L from V-axis is 5 and from X-axis is 3. So, the required point is L.

Q21: The point whose ordinate is 4 and which lies on K-axis is
(a) (4,0) **(b)** (0,4) **(c)** (1,4) **(d)** (4,2)

Answer:(b)
Given ordinate of the point is 4 arid the point lies on Y-axis, so its abscissa is zero. Hence, the required point is (0, 4).

Q22: Which of the points P(0, 3), Q(l, 0), R(0, – 1), S(-5, 0) and T(1, 2) do not lie on the X-axis?
(a) P and R only **(b)**Q and S only **(c)**P,R and T **(d)** Q,S and T

Answer: (c)
We know that, if a point is of the form (x, 0)i.e., its y-coordinate is zero, then it will lie on X-axis otherwise not. Here, y-coordinates of points P(0, 3), R (0, -1) and T (1,2) are not zero, so these points do not lie on the X-axis.

Q23: The point which lies on Y-axis at a distance of 5 units in the negative direction of Y-axis is

(a) (0,5) **(b)** (5,0) **(c)** (0,-5) **(d)**(-5,0)

Answer: (C)

Given the point lies on X-axis this shows that its ^-coordinate is zero. Also, it is at a distance of 5 units in negative direction of X-axis, so its y-coordinate" is negative. Hence, the required point is (0, – 5).

Q24: The perpendicular distance of the point P(3, 4) from the Y-axis is

(a) 3 **(b)** 4 **(c)** 5 **(d)** 7

Answer: (a)

We know that, abscissa or the x-coordinate of a point is its perpendicular distance from the Y-axis. So, perpendicular distance of the point P(3, 4)from Y-axis = Abscissa = 3

Exercise 3.2: Very Short Answer Type Questions

1. Write whether the following statements are True or False? Justify your answer.

(i) Point (3, 0) lies in the first quadrant.

(ii) Points (1, –1) and (–1, 1) lie in the same quadrant.

(iii) The coordinates of a point whose ordinate is – ½ and abscissa is 1 are – ½, 1.

(iv) A point lies on the ***y***-axis at a distance of 2 units from the ***x***-axis. Its coordinates are (2, 0).

(v) (–1, 7) is a point in the II quadrant.

Answer:

(i) Point (3, 0) lies in the first quadrant.

False

Justification: The ordinate of the point (3, 0) is zero.

Hence, the point lies on the x-axis

(ii) Points (1, –1) and (–1, 1) lie in the same quadrant.

False

Justification:

(1, -1) lies in IV quadrant

(-1, 1) lies in II quadrant.

(iii) The coordinates of a point whose ordinate is – ½ and abscissa is 1 are – ½ , 1.

F**alse**

Justification: The coordinates of a point whose ordinate is – ½ and abscissa is 1 is (1, -1/2).

(iv) A point lies on the *y*-axis at a distance of 2 units from the *x*-axis. Its coordinates are (2, 0).

False

Justification: A point lies on the *y*-axis at a distance of 2 units from the *x*-axis. Its coordinates are (0, 2).

(v) (–1, 7) is a point in the II quadrant.

True

Justification: (–1, 7) is a point in the II quadrant.

Exercise 3.3: Short Answer Type Questions

Q1. Write the coordinates of each of the points P, Q, R, S, T and O from Fig. 3.5.

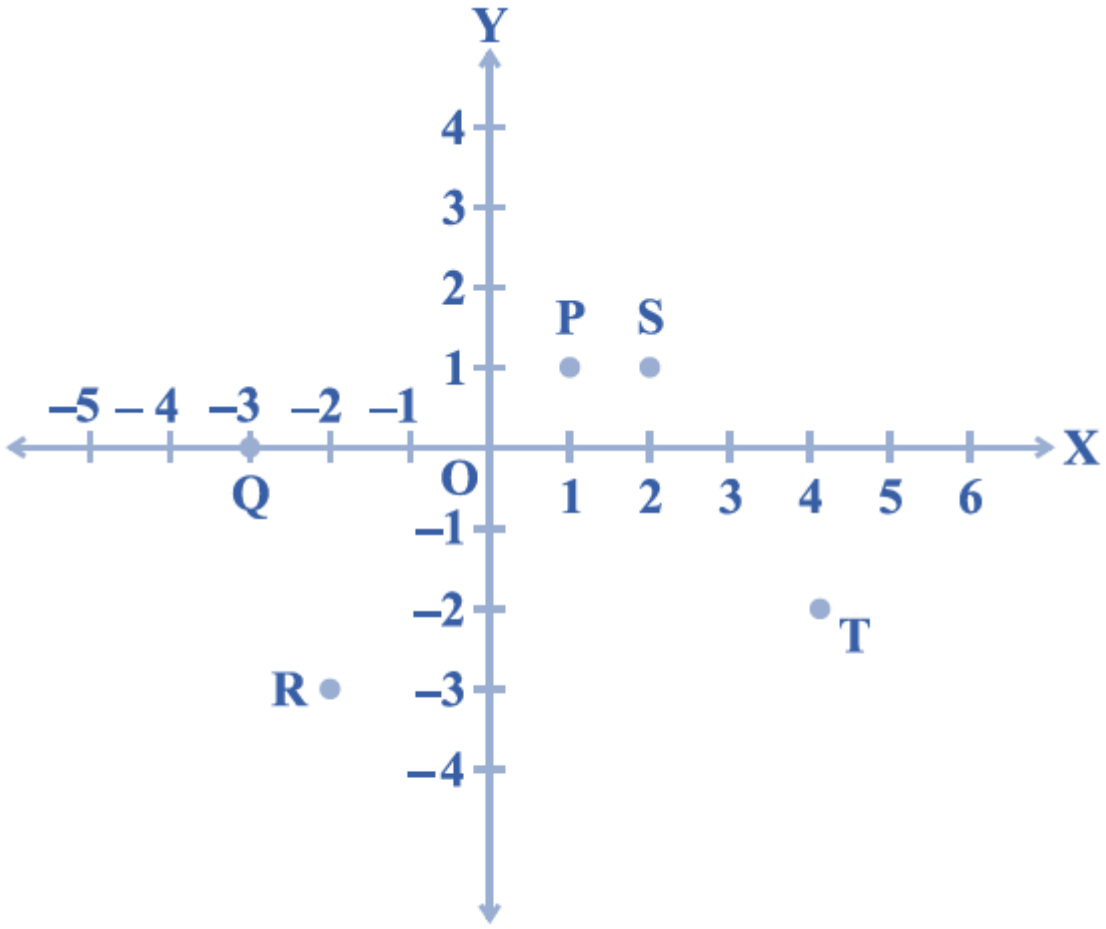


Fig. 3.5

Answer:

The coordinates of the points P, Q, R, S, T and O are as follows:

P = (1, 1)

Q = (-3, 0)

R = (-2, -3)

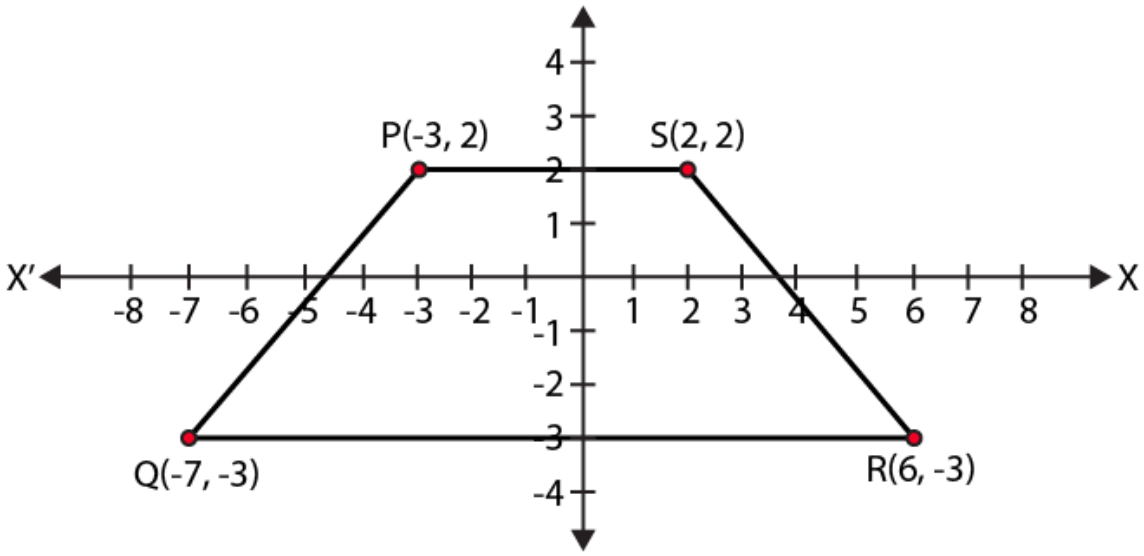
S = (2, 1)

T = (4, -2)

O = (0, 0)

Q2. Plot the following points and write the name of the figure obtained by joining them in order: P(– 3, 2), Q (– 7, – 3), R (6, – 3), S (2, 2)

Answer:

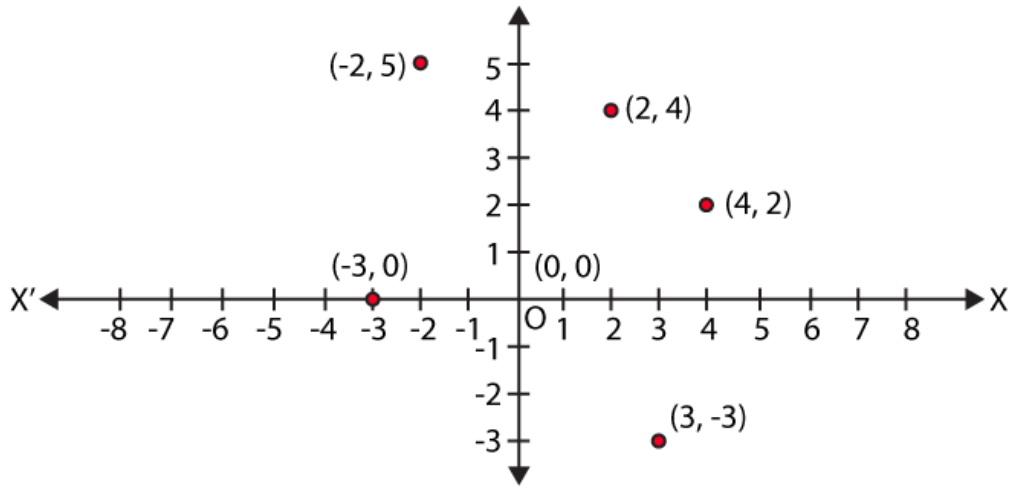


The figure obtained is a Trapezium.

Q3. Plot the points (x, y) given by the following table:

x	2	4	– 3	– 2	3	0
y	4	2	0	5	– 3	0

Answer:



4. Plot the following points and check whether they are collinear or not:

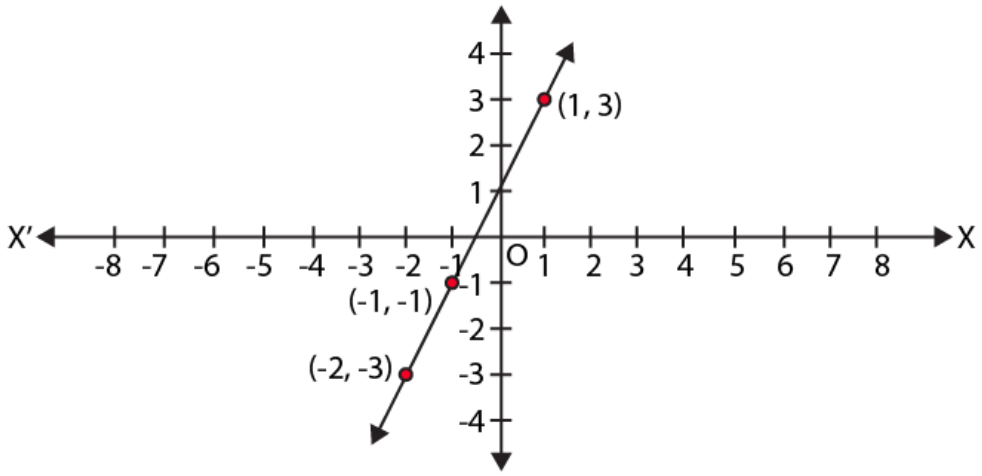
(i) (1, 3), (– 1, – 1), (– 2, – 3)

(ii) (1, 1), (2, – 3), (– 1, – 2)

(iii) (0, 0), (2, 2), (5, 5)

Answer:

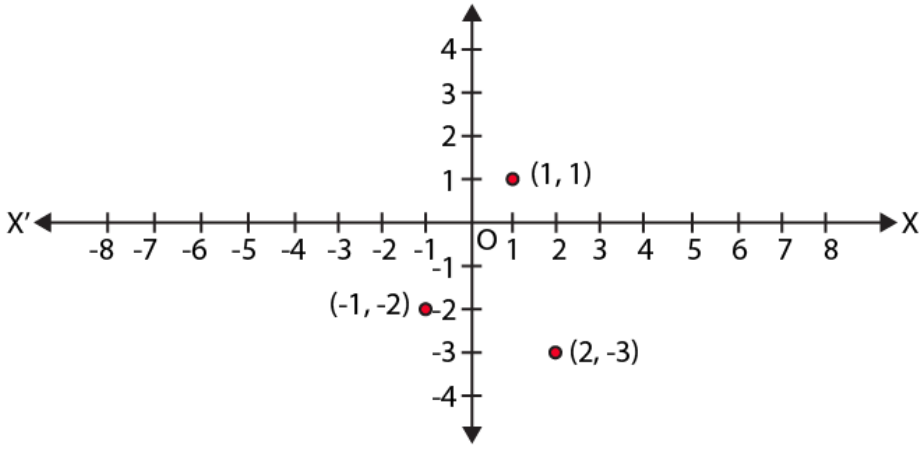
(i)



The points (1, 3), (– 1, – 1), (– 2, – 3) lie in a straight line,

Hence, the points are collinear.

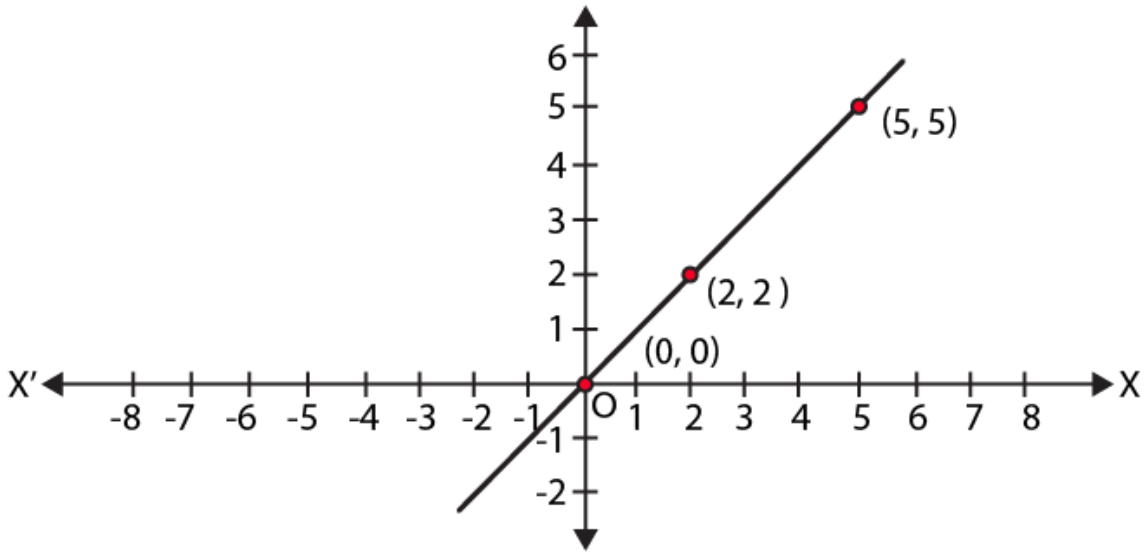
(ii)



The points (1, 1), (2, – 3), (– 1, – 2) lie in a straight line,

Hence, the points are not collinear.

(iii)



The points (0, 0), (2, 2), (5, 5) lie in a straight line,

Hence, the points are collinear.

Q5: Without plotting the points indicate the quadrant in which they will lie, if
(i) ordinate is 5 and abscissa is – 3.
(ii) abscissa is – 5 and ordinate is – 3.
(iii) abscissa is – 5 and ordinate is 3.
(iv) ordinate is 5 and abscissa is 3.

Thinking Process
(i) Firstly, write the giver) coordinates in a point form and check the sign of each coordinate of a point.
(ii) Signs of the coordinates of a point in first quadrant are (+, +) in the second quadrant (-, +), in the third quadrant and in the fourth quadrant (+,-).

Answer:
(i) The given point is (- 3, 5). Here, abscissa is negative and ordinate is positive, so it lies in II quadrant.
(ii) The given point is (-5, – 3). Here, abscissa and ordinate both are negative, so it lies in III quadrant.

(iii) The given point is (-5, 3). Here, abscissa is negative and ordinate is positive, so it lies in II quadrant.
(iv) The given point is (3, 5). Here, abscissa and ordinate both are positive, so it lies in I quadrant.

Q6. In Fig. 3.6, LM is a line parallel to the y-axis at a distance of 3 units.

(i) What are the coordinates of the points P, R and Q?
(ii) What is the difference between the abscissa of points L and M?

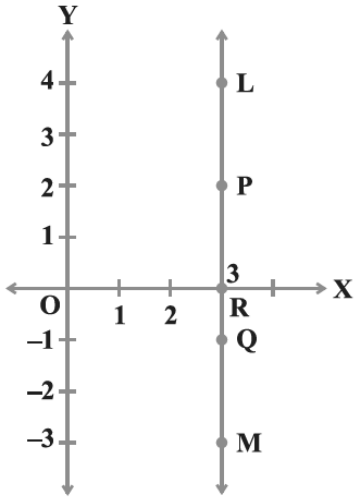


Fig. 3.6

Answer:

(i) The coordinates are:

P = (3,2)

R = (3,0)

Q = (3,-1)

(ii) Since, all the points on the line have the same abscissa = 3.

The difference in abscissa of L and M = 0.

Q7: In which quadrant or on which axis each of the following points lie?
(-3, 5), (4,-1), (2,0), (2, 2), (-3,-6)
Answer:
(i) In point (-3, 5), x-coordinate is negative and y-coordinate is positive, so it lies in

II quadrant.

(ii) In point (4,-1), x-coordinate is positive and y-coordinate is negative, so it lies in IV quadrant.

(iii) In point (2,0), x-coordinate is positive and y-coordinate is zero, so it lies on X-axis.

(iv) In point (2,2), x-coordinate and y-coordinate both are positive, so it lies in I quadrant.

(v) In point (-3, – 6), x-coordinate and y-coordinate both are negative, so it lies in III quadrant.

Q8: Which of the following points lies on the Y-axis?

A(l, 1), B(1, 0), C(0, 1), D(0, 0), E(0, -1), F(-1, 0), G(0, 5), H(-7, 0) and I(3 ,3).

Thinking Process

The point lies on the Y-axis means the x-coordinate of the point will be zero. Check this condition for every given point and find out the correct point.

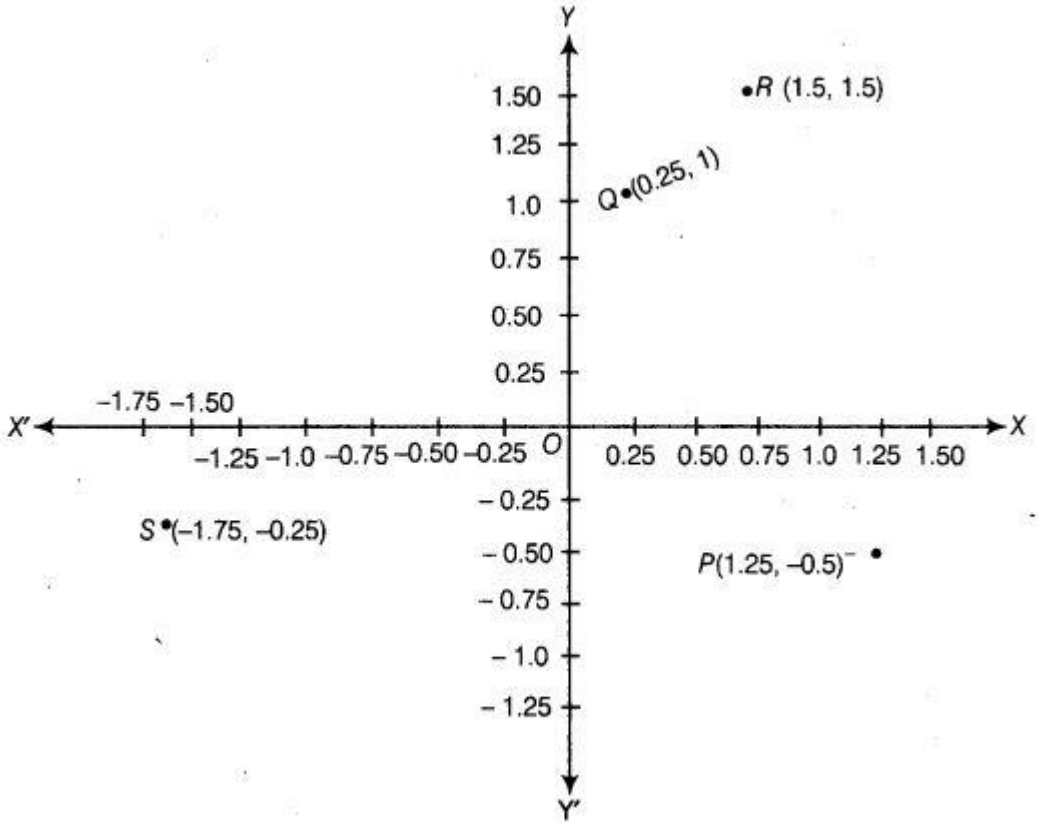
Answer:

We know that a point lies on the Y-axis if its x-coordinate is zero. Here, x-coordinate of points C(0, 1), D(0, 0), E(0,-1) and G(0, 5) are zero. So, these points lie on the Y-axis. Also, D(0, 0) is the intersection point of both. the axes, so we can consider that it lies on the Y-axis as well as on the X-axis.

Q9. Plot the points (x, y) given by the following table. Use scale 1 cm = 0.25 units.

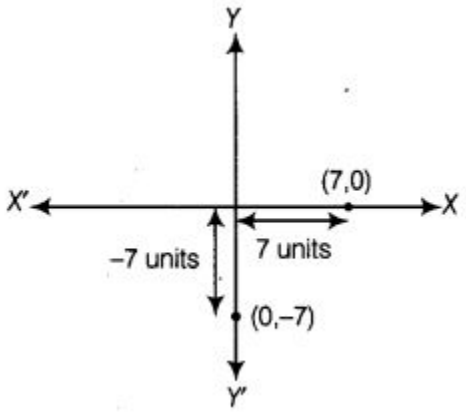
x	1.25	0.25	1.5	-1.75
Y	-0.5	1	1.5	-0.25

Answer: Let X'OX and Y' OY be the coordinate axes. Plot the given points (1.25, – 0.5), (0.25, 1), (1.5, 1.5) and (-1.75, – 0.25) on the graph paper as shown below:



Q10. A point lies on the x-axis at a distance of 7 units from the y-axis. What are its coordinates? What will be the coordinates, if it lies on y-axis at a distance – 7 units from x-axis?

Answer: The given point lies on x-axis at a distance of 7 units from the y-axis, so its coordinates are (7, 0). If it lies on y-axis and at a distance -7 units from x-axis, then its coordinates are (0, -7).

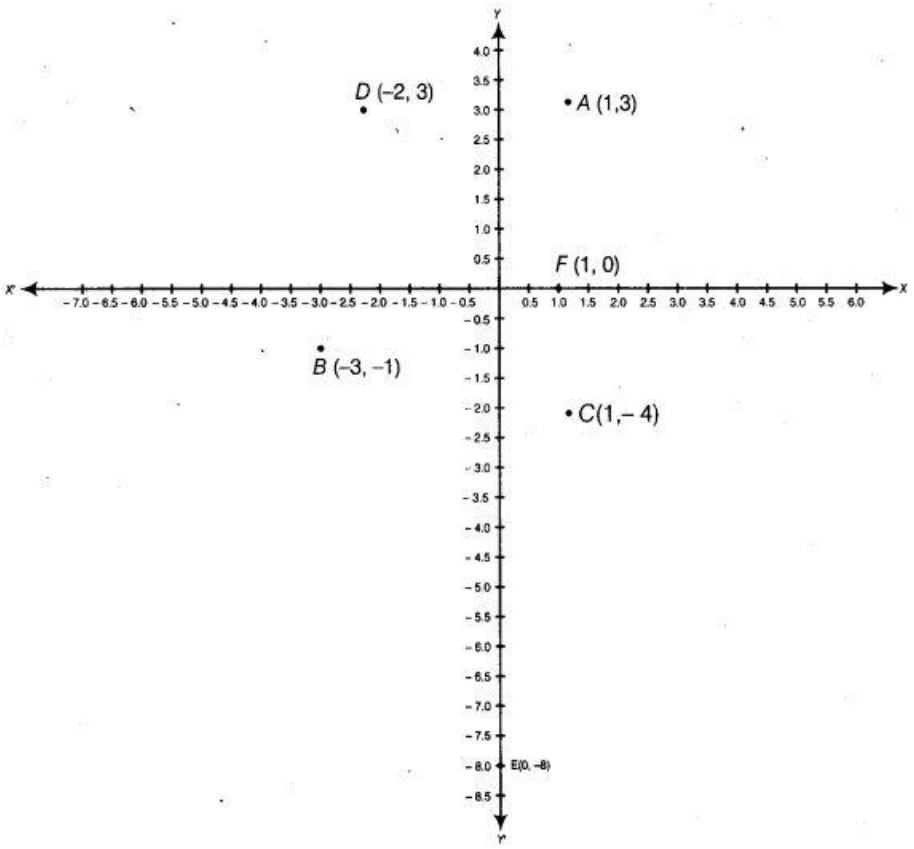


Q11. Find the coordinates of the point
(i) which lies on x and y-axes both.
(ii) whose ordinate is – 4 and which lies on y-axis.
(iii) whose abscissa is 5 and which lies on x-axis.

Answer:
(i) The point which lies on both x and y-axes is origin whose coordinates are (0, 0).
(ii) The point whose ordinate is -4 and which lies on y-axis is (0, – 4).
(iii) The point whose abscissa is 5 and which lies on x-axis is (5, 0).

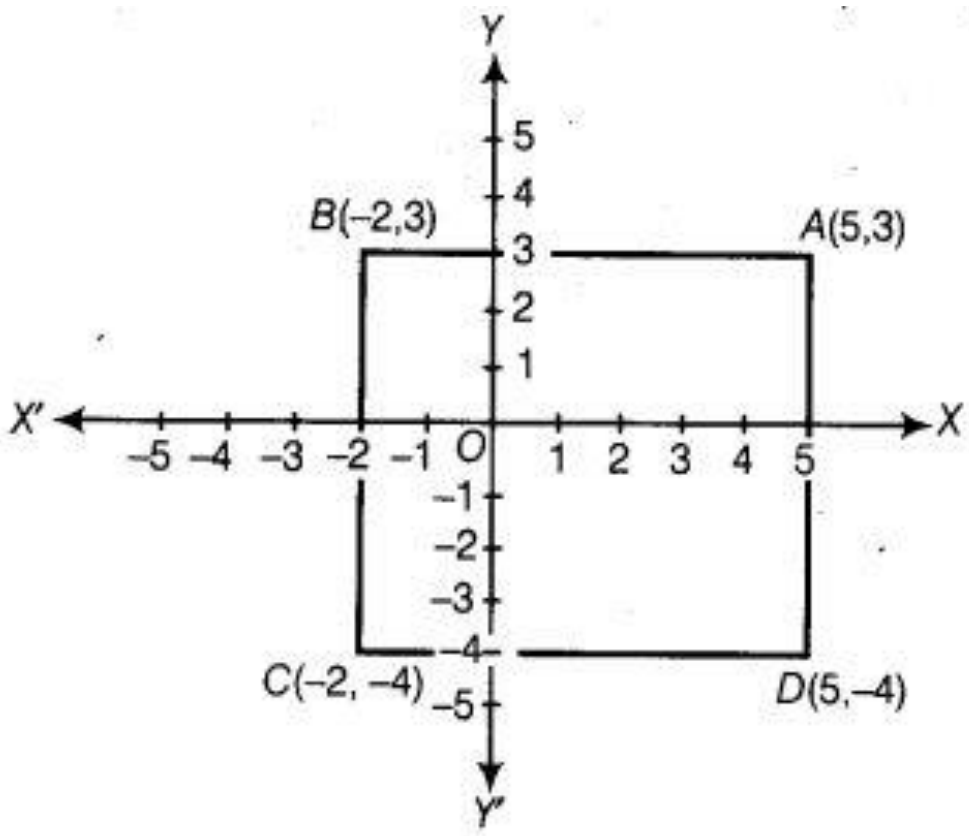
Q12. Taking 0.5 cm as 1 unit plot the following points on the graph paper: A(1, 3), B(-3, -1), C(1, – 4), D(-2, 3), E(0, -8), F(1, 0).

Answer: Here, in point A(1, 3) both x and y-coordinates are positive, so it lies in I quadrant. In point B(-3, -1), both x and y-coordinates are negative, so it lies in III quadrant. In point C(1, -4), x-coordinate is positive and y-coordinate is negative, so it lies in IV quadrant. In point D(-2, 3), x-coordinate is negative and y-coordinate is positive, so it lies in II quadrant. Point E(0, -8) lies on negative y-axis and point F(1,0) lies on positive x-axis. On plotting the given points, we get the following graph:



Exercise 3.4

Q1.Points A(5, 3), B(-2, 3) and O(5, – 4) are three vertices of a square ABCD. Plot these points on a graph paper and hence find the coordinates of the vertex C.
Answer:
The graph obtained by plotting the points A, B, C, and D is given below. Take a point C on the graph such that ABCD is a square i.e., all sides AB, BC, CD, and DA are equal. Hence, the abscissa of C should be equal to the abscissa of B i.e., -2 and the ordinate of C should be equal to the ordinate of D i.e., -4. Therefore, the coordinates of C are (-2, -4).

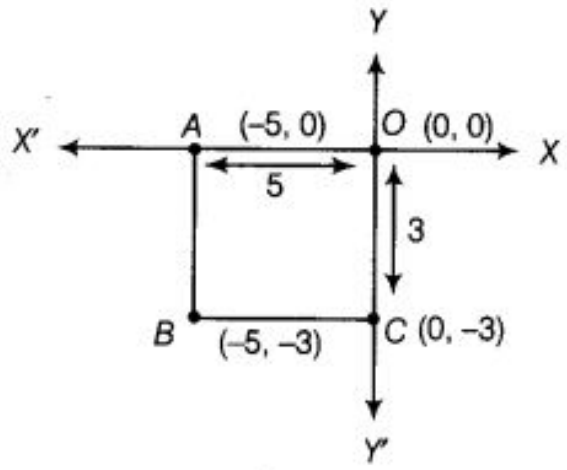


Q2.Write the coordinates of the vertices of a rectangle whose length and breadth are 5 and 3 units respectively, one vertex at the origin, the longer side lies on the x-axis and one of the vertices lies in the third quadrant.

Answer: We have, the length of a rectangle = 5 units and the breadth of the rectangle – 3 units.

One vertex is at the origin i.e., (0, 0) and one of the other vertices lies in the III quadrant. So, the length of the rectangle is 5 units in the negative direction of the x-axis and then the vertex is A(-5, 0). Also, the breadth of the rectangle is 3 units in the negative

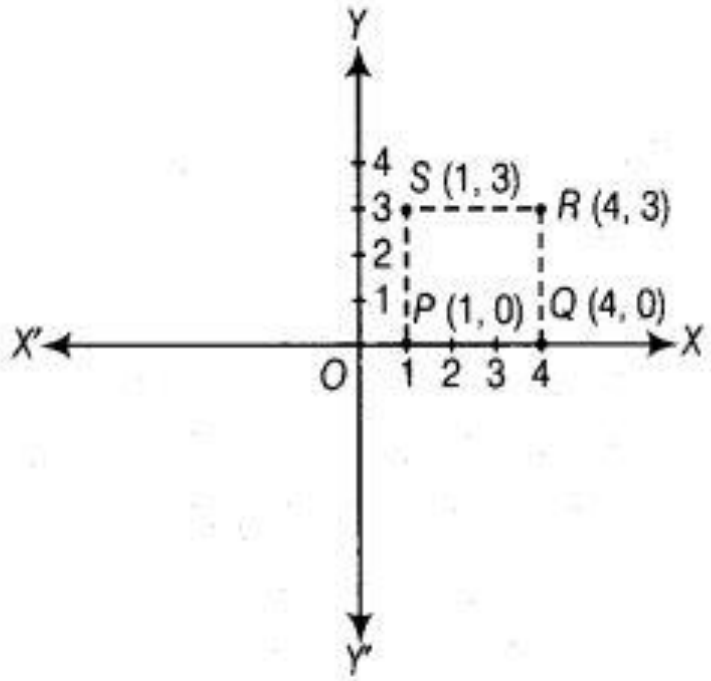
direction of the y-axis and then the other vertex is C(0, -3). The fourth vertex B is (-5, -3).



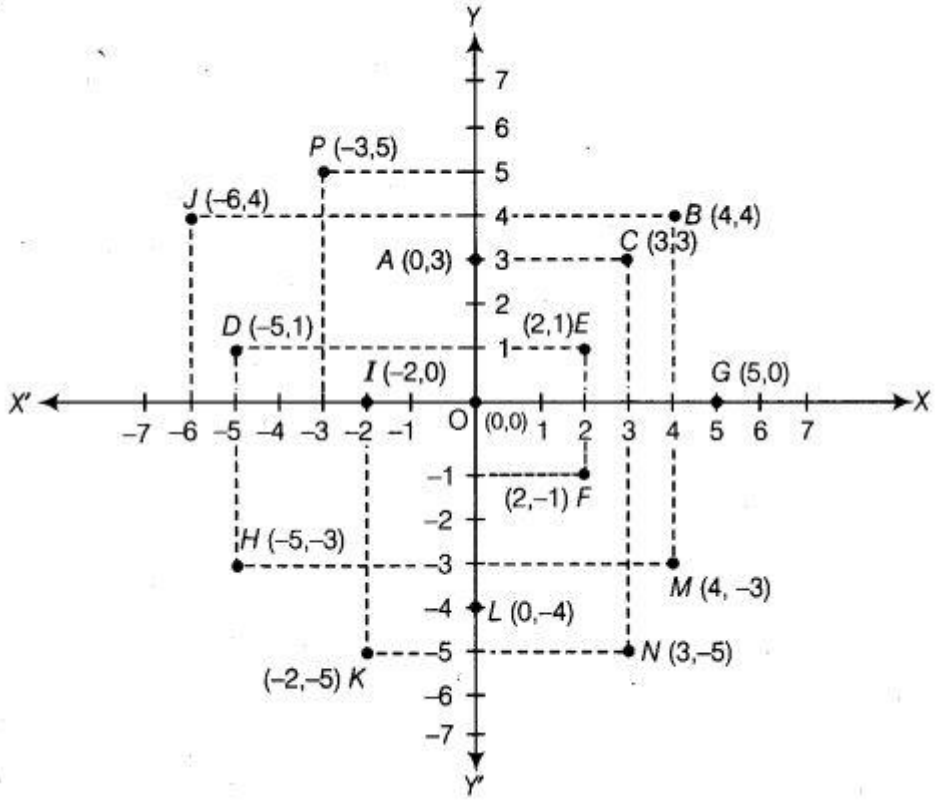
Q3. Plot the points P(1, 0), Q(4, 0) and S(1, 3). Find the coordinates of the point R such that PQRS is a square.

Answer: In both points P(1, 0) and Q(4, 0), the y-coordinate is zero so they lie on the x-axis. In point S(1, 3), both coordinates are positive, so it lies in I quadrant.

Now take a point R on the graph such that PQRS is a square. Then, all sides will be equal i.e., PQ = QR = RS = PS. So, the abscissa of R should be equal to the abscissa of Q i.e., 4 and the ordinate of R should be equal to the ordinate of S i.e., 3. Hence, the coordinates of R are (4, 3). On plotting these points, we get the graph as shown below:



Q4.From the given figure, answer the following:



(i) Write the points whose abscissa is 0.
(ii) Write the points whose ordinate is 0.
(iii) Write the points whose abscissa is – 5.

Answer:

(i) As we know, the point whose abscissa is 0 will lie on the y-axis. So, the required points whose abscissa is 0 are A, L, and O.
(ii) Since the point whose ordinate is 0 will lie on the x-axis. Therefore, the required points, whose ordinate is 0 are G, I, and O.
(iii) Here, points with abscissa -5 will lie in the II and III quadrants. So, the required points whose abscissa is -5, are D and H.

Q5. Plot the points A(1, – 1) and B(4, 5).

(i) Draw the line segment joining these points. Write the coordinates of a point on this line segment between points A and B.

(ii) Extend this line segment and write the coordinates of a point on this line that lies outside the line segment AB.

Answer:

In point A(1, -1), the x-coordinate is positive and the y-coordinate is negative, so it lies in the IV quadrant. In point B(4, 5), both coordinates are positive, so it lies in I quadrant. On plotting these points, joining the points A and B, we get the line segment AB. Now, to find the coordinates of a point on this line segment between A and B, draw a perpendicular to the x-axis from x = 2 and 3.

Let it intersect line segment AB at P and P'. Also, draw a perpendicular to the y-axis from P and P', they intersect the y-axis at y = 1 and 3, respectively. Hence, we get points (2, 1) and (3, 3) which lies between line segment AB. Extend the line segment AB. Now, draw a perpendicular to the x-axis from x = 5. Let it intersect the extended line segment at Q. Also, draw a perpendicular to the y-axis from Q and it intersects the y-axis at y = 7. Hence, we get the point Q(5, 7) which lies outside the line segment AB.