



Q1. Find the coordinates of points whose

(i) abscissa is 3 and ordinate -4.

(ii) abscissa is $-3/2$ and ordinate 5.

(iii) whose abscissa is $-1 \frac{2}{3}$ and ordinate is $-2 \frac{1}{4}$.

(iv) whose ordinate is 5 and abscissa is -2

(v) whose abscissa is -2 and lies on the x-axis.

(vi) whose ordinate is $3/2$ and lies on the y-axis.

Answer:

Abscissa is the x-coordinate and ordinate is the y-coordinate of a point.

(i) The coordinate of the point whose abscissa is 3 and ordinate is -4 is (3,-4).

(ii) The coordinate of the point whose abscissa is $-3/2$ and ordinate is 5 is $(-3/2, 5)$.

(iii) The coordinate of the point whose

abscissa is $-1 \frac{2}{3}$ and ordinate is $-2 \frac{1}{4}$ is $(-1 \frac{2}{3}, -2 \frac{1}{4})$.

(iv) The coordinate of the point whose ordinate is 5 and abscissa is -2 is (-2,5).

(v) The coordinate of the point whose abscissa is -2 and lies on the x-axis is (-2,0).

If a point lies on the x-axis, its y-coordinate is zero.

(vi) The coordinate of the point whose ordinate is $3/2$ and lies on the y-axis is $(0, 3/2)$.

If a point lies on the y-axis, its x-coordinate is zero.

Q2. In which quadrant or on which axis each of the following points lie?

(-3, 5), (4, -1) (2, 0), (2, 2), (-3, -6)

Answer:

In the first quadrant, both x and y coordinates are positive.

In the second quadrant, the x-coordinate is negative and the y-coordinate is positive.

In the third quadrant, the x-coordinate is negative and the y-coordinate is negative.



In the fourth quadrant, the x-coordinate is positive and the y-coordinate is negative.

$(-3,5)$ lies in the second quadrant.

$(4,-1)$ lies in the fourth quadrant.

$(2,0)$ lies on the x-axis. Here, the y-coordinate is zero.

$(2,2)$ lies in the first quadrant.

$(-3,-6)$ lies in the third quadrant.

Q3. Which of the following points lie on

(i) the x-axis? (ii) y-axis?

A $(0, 2)$, B $(5, 6)$, C $(23, 0)$, D $(0, 23)$, E $(0, -4)$, F $(-6, 0)$, G $(\sqrt{3}, 0)$

Answer:

Given points are A $(0, 2)$, B $(5, 6)$, C $(23, 0)$, D $(0, 23)$, E $(0, -4)$, F $(-6, 0)$, G $(\sqrt{3}, 0)$

(i) If the y-coordinate of a point is zero, then the point lies on the X-axis.

So C $(23,0)$, F $(-6,0)$ and G $(\sqrt{3},0)$ lies X-axis.

(ii) If the x-coordinate of a point is zero, then the point lies on the Y-axis.

So A $(0,2)$, D $(0,23)$ and E $(0,-4)$ lies Y-axis.

Section B

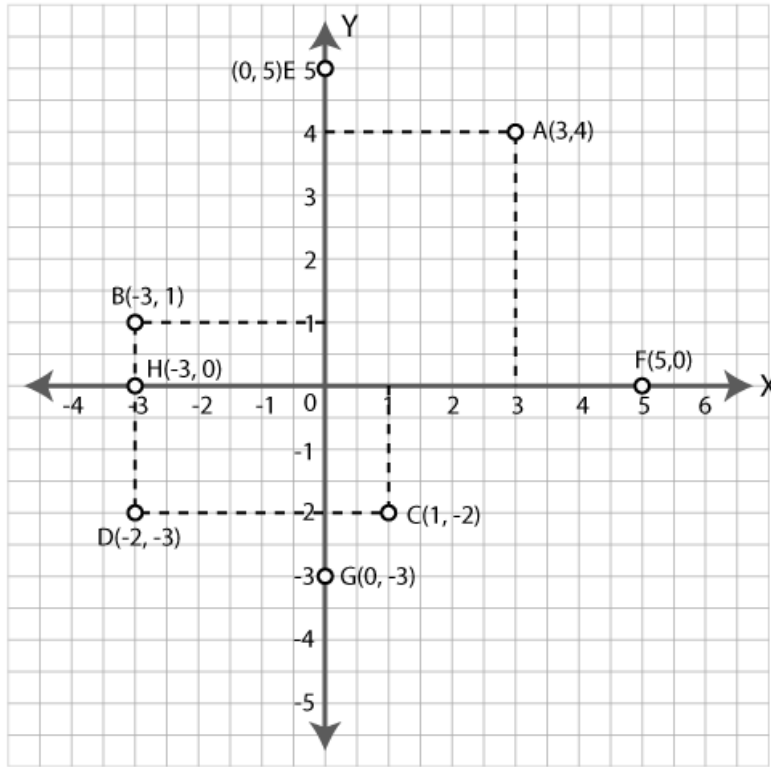
Q4. Plot the following points on the same graph paper:

A $(3, 4)$, B $(-3, 1)$, C $(1, -2)$, D $(-2, -3)$, E $(0, 5)$, F $(5, 0)$, G $(0, -3)$, H $(-3, 0)$.

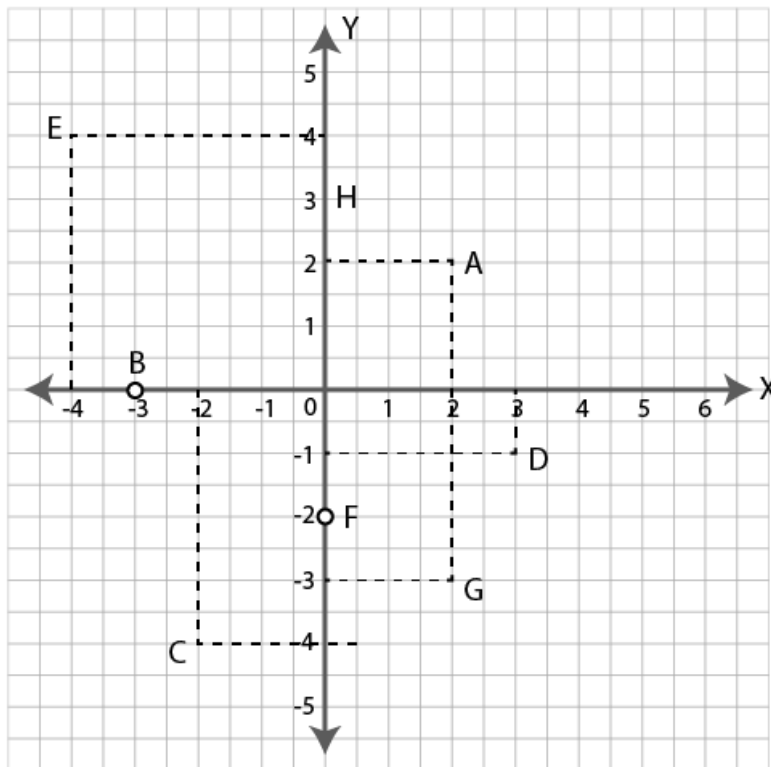
Answer:

Given points are A $(3, 4)$, B $(-3, 1)$, C $(1, -2)$, D $(-2, -3)$, E $(0, 5)$, F $(5, 0)$, G $(0, -3)$, H $(-3, 0)$.

The points are plotted in the graph below.



Q5. Write the coordinates of the points A, B, C, D, E, F, G, and H shown in the adjacent figure.





Answer:

The coordinate of point A is (2,2).

The coordinate of point B is (-3,0).

The coordinate of point C is (-2,-4).

The coordinate of point D is (3,-1).

The coordinate of point E is (-4,4).

The coordinate of point F is (0,-2).

The coordinate of point G is (2,-3).

The coordinate of point H is (0,3).

Section C

Q6. Plot the following points and check whether they are collinear or not:

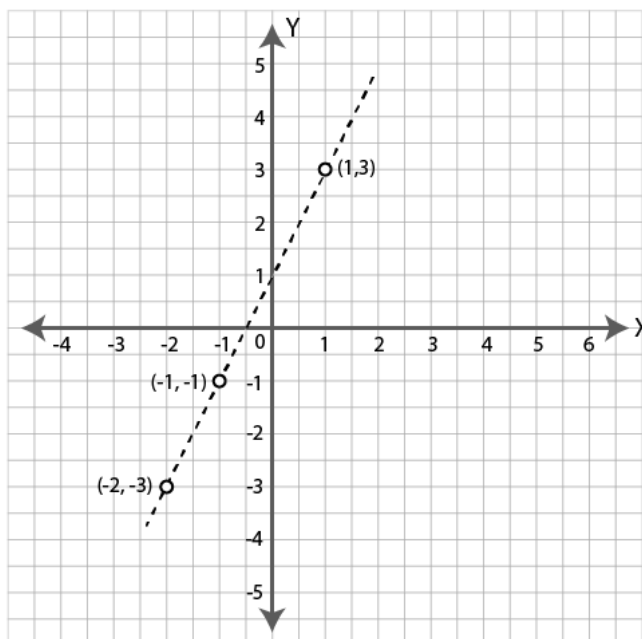
(i) (1,3), (-1,-1) and (-2,-3)

(ii) (1,2), (2,-1) and (-1, 4)

(iii) (0,1), (2, -2) and (2/3,0).

Answer:

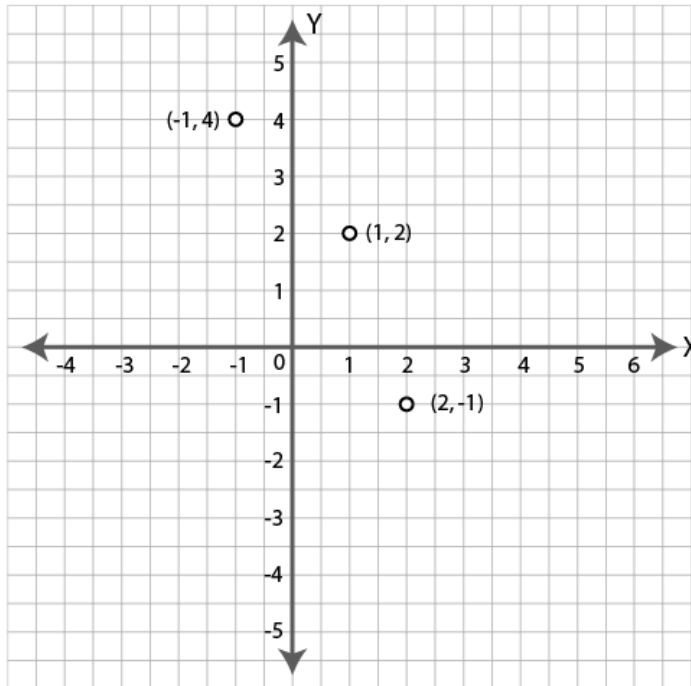
(i) (1,3), (-1,-1) and (-2,-3)





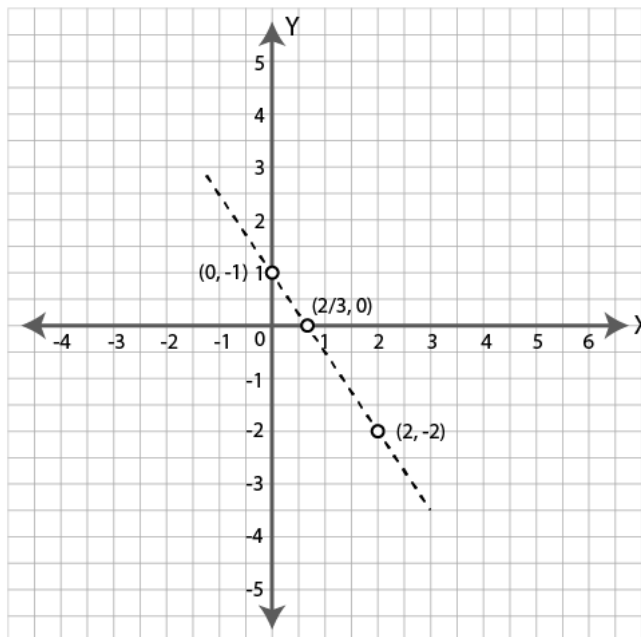
The given points lie on a line. So they are collinear.

(ii) $(1,2)$, $(2,-1)$ and $(-1, 4)$



The given points do not lie on a line. So they are not collinear.

(iii) $(0,1)$, $(2, -2)$ and $(2/3,0)$.



The given points lie on a line. So they are collinear.



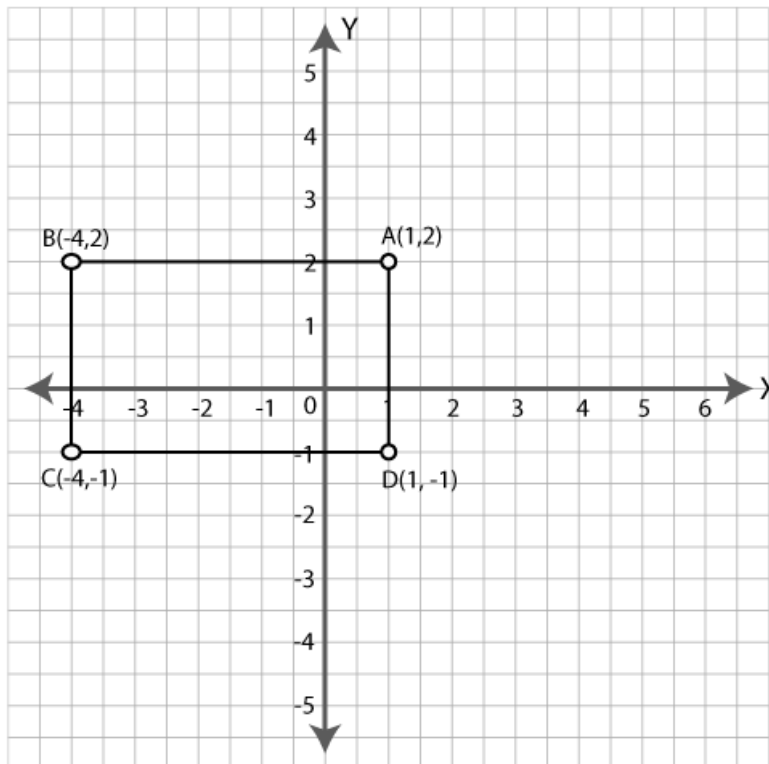
Section D

Q7. Plot points A (1,2), B (-4,2), C (-4, -1), and D (1, -1). What kind of quadrilateral is ABCD? Also, find the area of the quadrilateral ABCD.

Answer:

The points given are A (1,2), B (-4,2), C (-4, -1), and D (1, -1).

The points are plotted in the graph below.



ABCD is a rectangle.

Area of rectangle ABCD = length \times breadth

$$= AB \times AD$$

$$= (1 - (-4)) \times (2 - (-1))$$

$$= 5 \times 3$$

$$= 15 \text{ sq. units.}$$

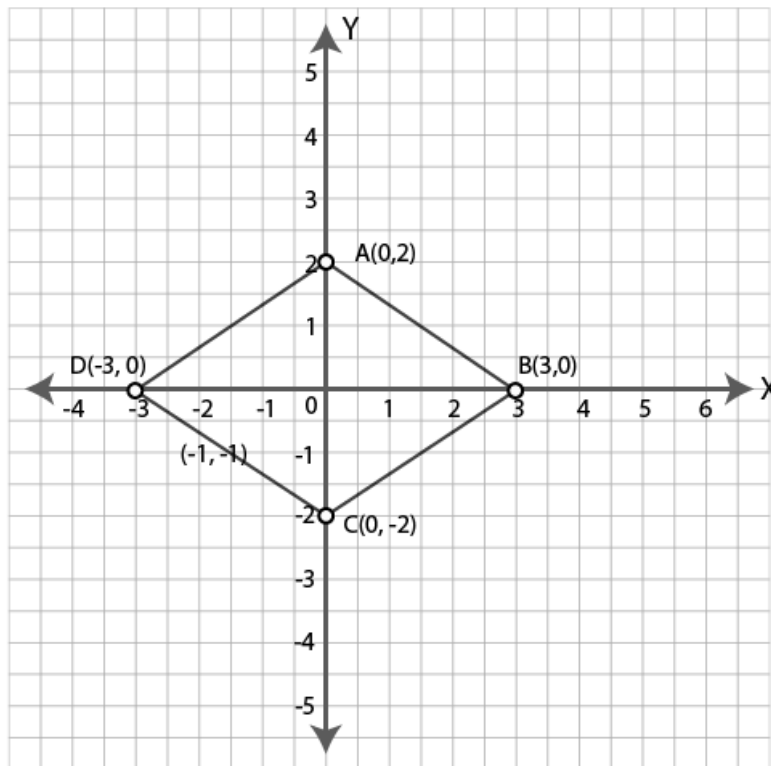


Q8. Plot the points (0,2), (3,0), (0, -2), and (-3,0) on graph paper. Join these points (in order). Name the figure so obtained and find the area of the figure obtained.

Answer:

Given points are (0,2), (3,0), (0,-2) and (-3,0).

The points are plotted in the graph below.



The quadrilateral obtained is a rhombus.

BD and AC are the diagonals of the rhombus.

Area of a rhombus = $\frac{1}{2} \times d_1 \times d_2$

Where d_1 and d_2 are the length of diagonals.

AC = 4 units [from graph]

BD = 6 units [from graph]

Area of rhombus ABCD = $\frac{1}{2} \times BD \times AC$

= $\frac{1}{2} \times 6 \times 4$

= 12 sq. units.

Hence the area is 12 sq. units.

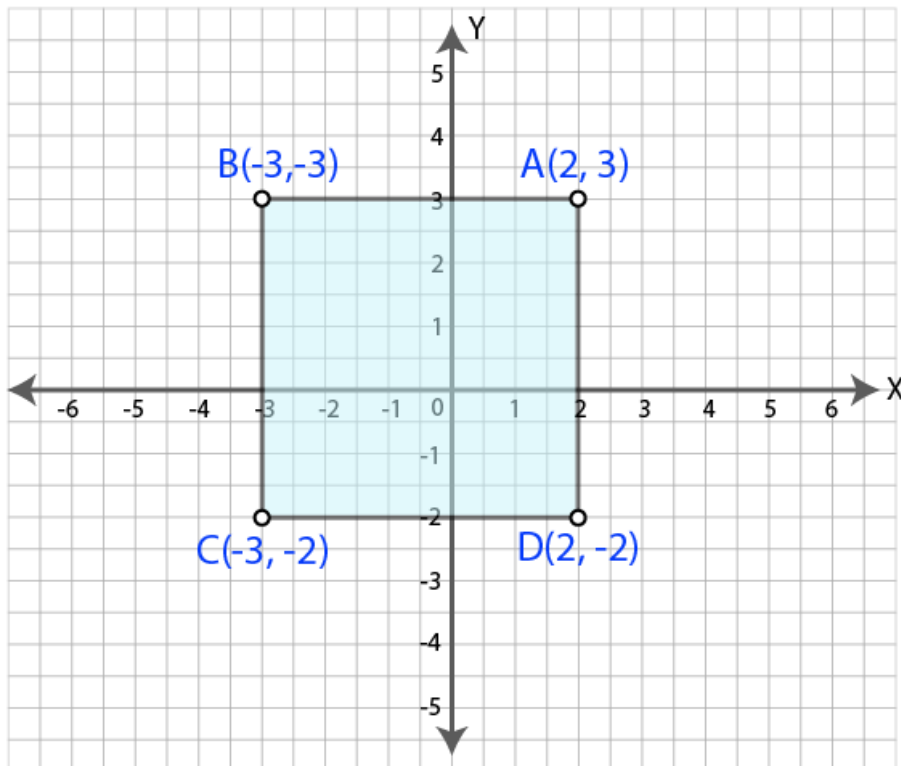


Q9. The three vertices of a square are A (2,3), B (-3, 3), and C (-3, -2). Plot these points on graph paper and hence use it to find the coordinates of the fourth vertex. Also, find the area of the square.

Answer:

The given points are A (2,3), B (-3, 3), and C (-3, -2).

The points are plotted on the graph below.



From the graph, the coordinates of point D are (2, -2).

Here AB = 5 units [from graph]

Area of the square = side \times side

Area of the square ABCD = AB \times AB

= 5 \times 5

= 25 sq. units.

Hence the area of the square is 25 sq. units.



Extra Innings:

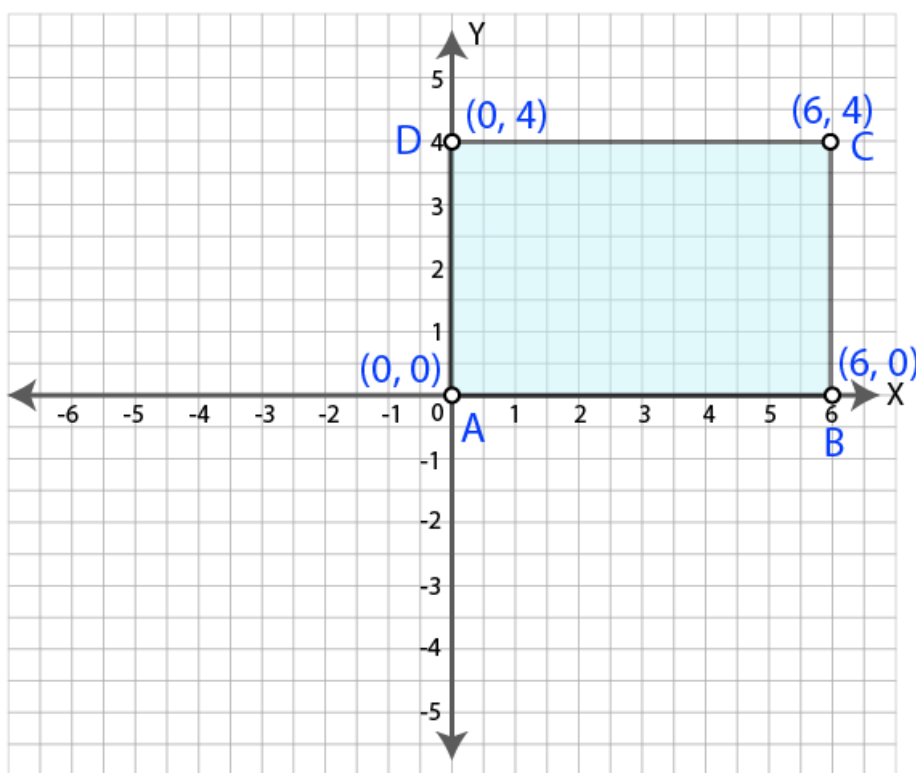
Q. Write the coordinates of the vertices of a rectangle which is 6 units long and 4 units wide if the rectangle is in the first quadrant, its longer side lies on the x-axis and one vertex is at the origin.

Answer:

The rectangle which is 6 units long and 4 units wide is shown in the graph.

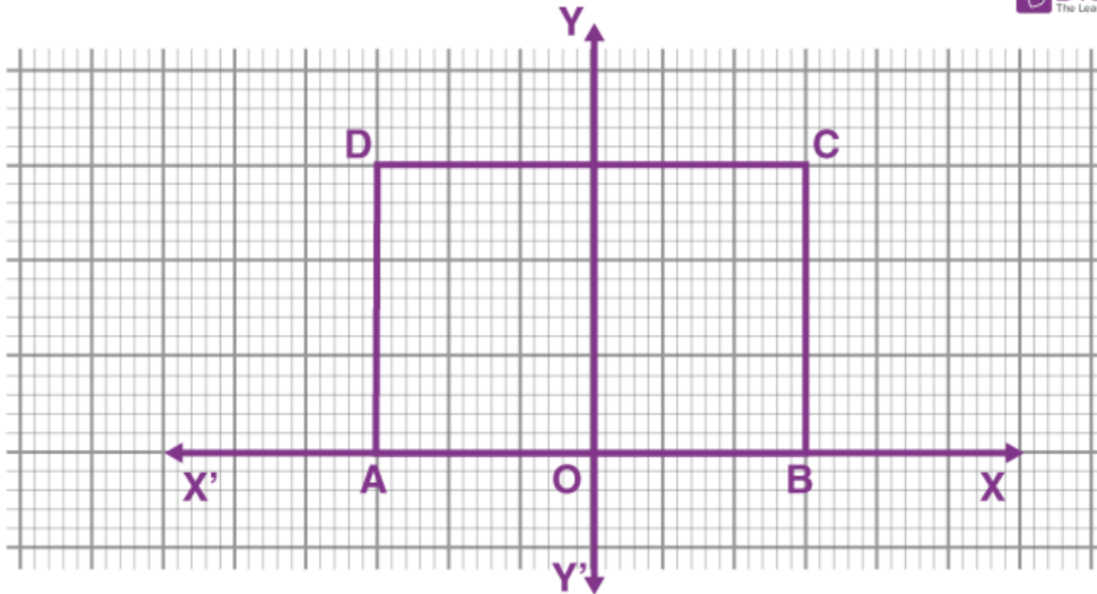
The rectangle is in the first quadrant.

The longer side lies on the x-axis and one vertex is at the origin.



The coordinates of the rectangle are A (0,0), B (6,0), C (6,4), and D (0,4).

Q. In the adjoining figure, ABCD is a rectangle with a length of 6 units and a breadth of 3 units. If O is the mid-point of AB, find the coordinates of A, B, C, and D.

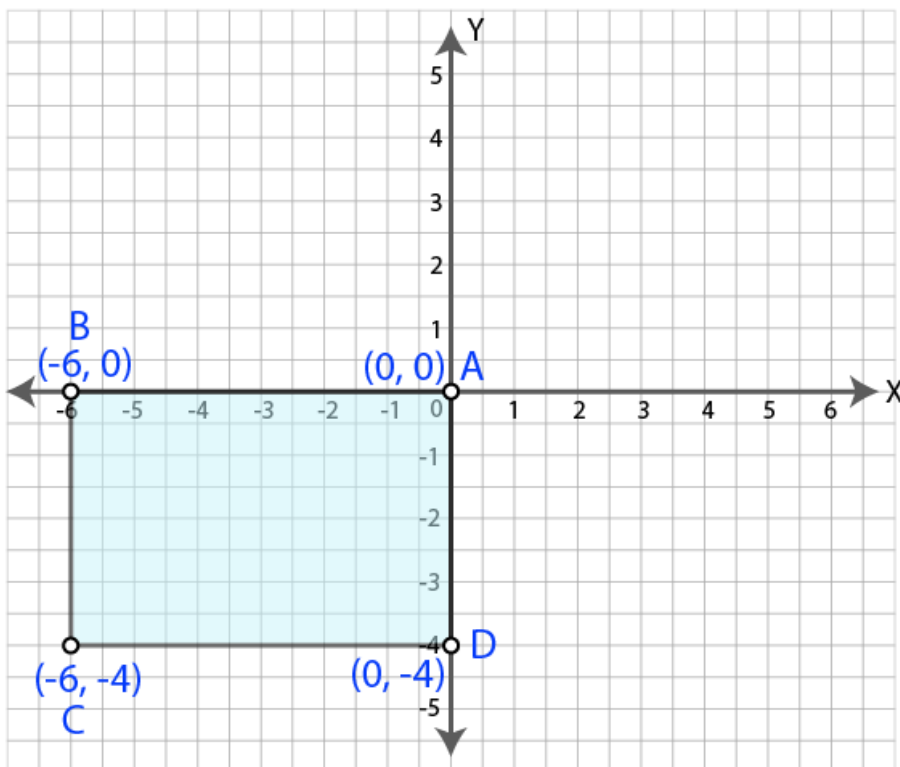


Answer:

The rectangle which is 6 units long and 4 units wide is shown in the graph.

The rectangle is in the third quadrant.

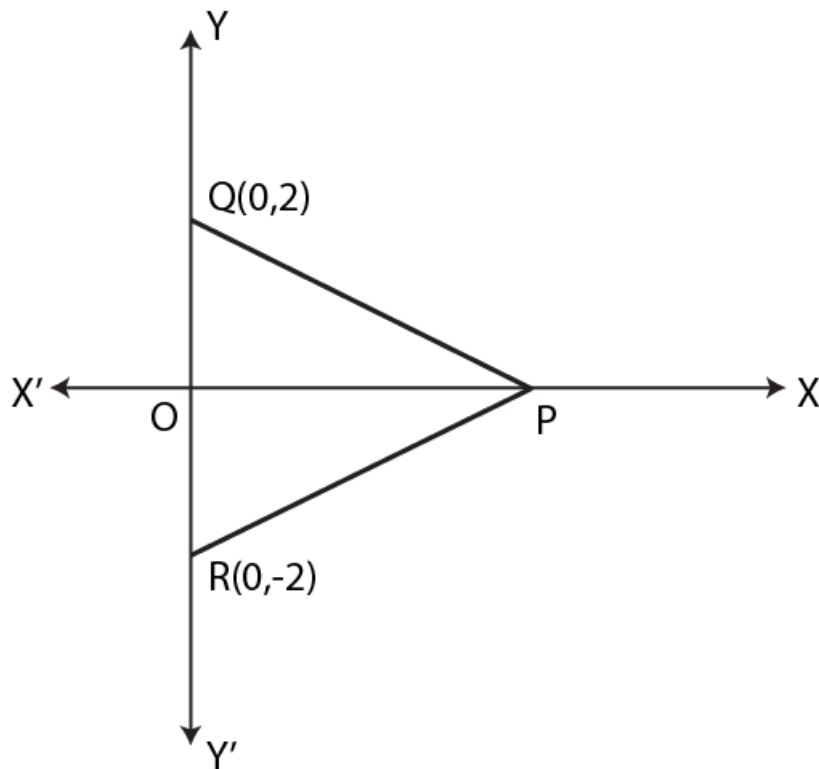
The longer side lies on x -the x-axis and one vertex is at the origin.



Coordinates of the rectangle are $A(0,0)$, $B(-6,0)$, $C(-6,-4)$ and $D(0,-4)$.



Q. In the given figure, PQR is equilateral. If the coordinates of the points Q and R are (0, 2) and (0, -2) respectively, find the coordinates of the point P.



Answer:

Given PQR is an equilateral triangle in which Q(0,2) and R(0,-2).

Let (x,0) be the coordinates of P. [\because P lies on the x-axis. So the y-coordinate is zero.]

$$PQ = PR = QR = 2+2 = 4$$

$$OQ = 2 \text{ [from figure]}$$

In POQ,

$$PQ^2 = OP^2 + OQ^2 \text{ [Pythagoras theorem]}$$

$$4^2 = OP^2 + 2^2$$

$$OP^2 = 4^2 - 2^2$$

$$OP^2 = 16 - 4$$

$$OP^2 = 12$$

$$OP = \sqrt{4 \times 3} = 2\sqrt{3}$$

Hence the coordinates of P are $(2\sqrt{3}, 0)$.