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Coordinate Geometry

Checkpoint _____ (Page 37)

1. The x -coordinate of every point on y -axis is

(a) 0 (b) 1
(c) 2 (d) None of these

Sol. (a) 0

Since $x = 0$ is the equation of y -axis, hence the x -coordinate of every point on the y -axis is 0.

2. A point whose y -coordinate is zero, will lie on

(a) y -axis
(b) x -axis
(c) line parallel to x -axis
(d) line parallel to y -axis

Sol. (b) x -axis

Since the equation of x -axis is $y = 0$, hence the y -coordinate of every point on the x -axis is zero.

3. Points whose x and y coordinates are equal, lie on a line

(a) x -axis
(b) y -axis
(c) $y = x$
(d) None of these

Sol. (c) $y = x$

We know that the equation of a line whose x -coordinate and y -coordinate are equal is $y = x$.

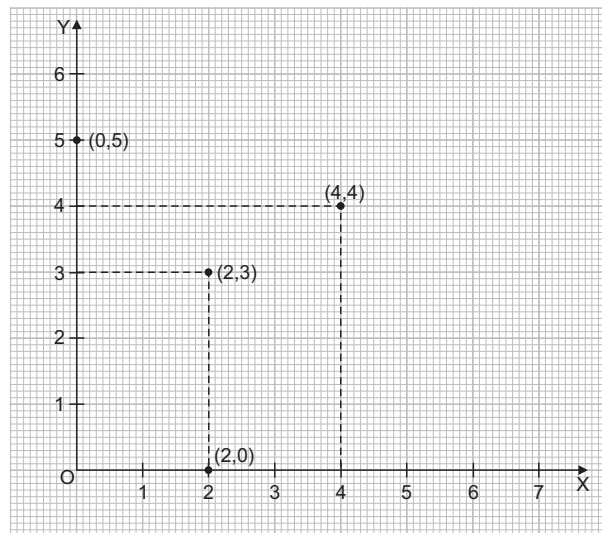
4. Write the coordinates of origin.

Sol. The coordinates of the origin are clearly $(0, 0)$.

5. Plot the following points on the graph sheet.

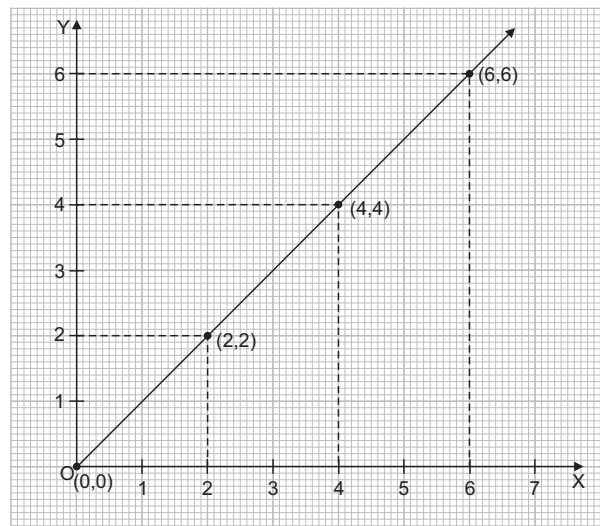
(a) $(0, 5)$
(b) $(2, 0)$
(c) $(4, 4)$
(d) $(2, 3)$

Sol. The given points are shown in the graph paper.



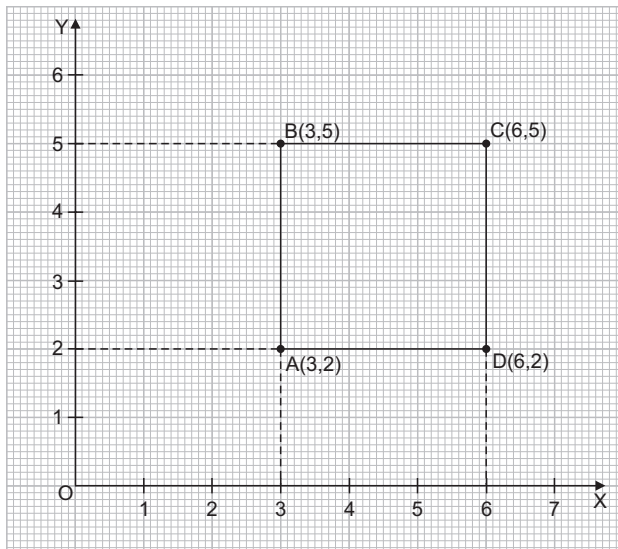
6. Plot the points $(0, 0)$, $(2, 2)$, $(4, 4)$ and $(6, 6)$ on the graph sheet. Do they lie on a line?

Sol. The given points are plotted in the given graph paper. Yes, all these points lie on a line.



7. Plot the points A(3, 2), B(3, 5), C(6, 5) and D(6, 2). Name the figure formed by joining points A, B, C and D. Find its area.

Sol. From the graph



We see that $AD = (6 - 3) \text{ units} = 3 \text{ units}$

and $AB = (5 - 2) \text{ units} = 3 \text{ units}$

$\therefore AB = AD$

Similarly, $BC = (6 - 3) \text{ units} = 3 \text{ units}$

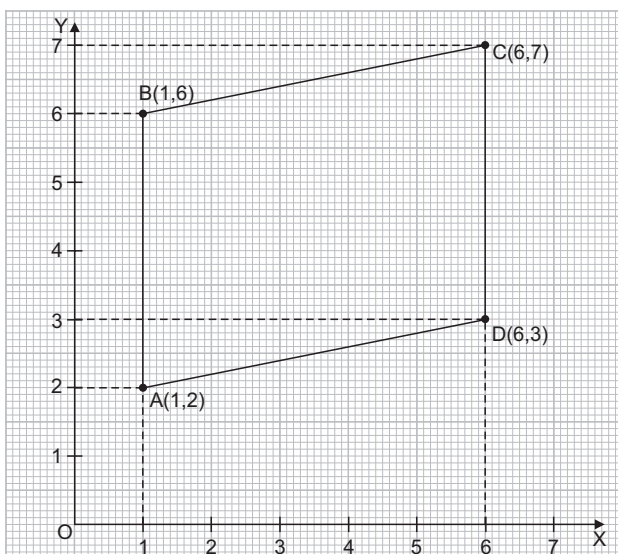
and $CD = (5 - 2) \text{ units} = 3 \text{ units}$

$\therefore AB = BC = CD = AD = 3 \text{ units}$ and each of the angles A, B, C and D is 90° .

\therefore The figure is a square with area $3 \times 3 \text{ sq units}$ i.e. 9 sq units.

8. Name the figure formed by joining points A(1, 2), B(1, 6), C(6, 7) and D(6, 3).

Sol. The given points are plotted in the graph paper.

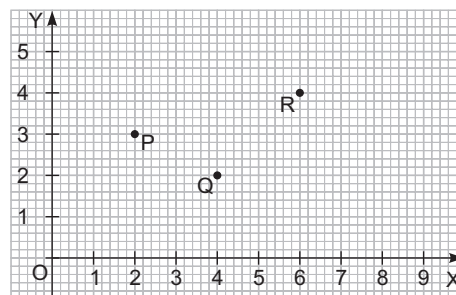


From the figure we see that

$$AB \parallel CD \text{ and } BC \parallel AD.$$

\therefore The figure ABCD is a parallelogram.

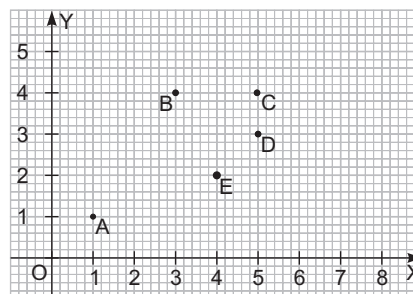
9. From the graph, write coordinates of points P and Q.



Sol. From the graph, we see that x -coordinate of P is 2 and its y -coordinate is 3. Hence, coordinates of P are (2, 3).

Similarly, the coordinates of Q are (4, 2).

10. From the graph, choose the letters that correspond to points whose coordinates are (1, 1) and (5, 4).



Sol. We see from the graph that the x and y coordinates of the point A are 1 and 1 respectively. Hence, A is the point (1, 1). Similarly, C is the point (5, 4).

Check Your Progress

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Multiple-Choice Questions

1. Equation of x -axis is

(a) $y = 0$ (b) $x = 0$
(c) both (a) and (b) (d) None of these

Sol. (a) $y = 0$

We know that the y -coordinate of every point on the x -axis is zero. Hence, the equation of x -axis is $y = 0$.

2. In which quadrant does the point $(-3, -4)$ lies?

(a) Quadrant I (b) Quadrant II
(c) Quadrant III (d) Quadrant IV

Sol. (c) Quadrant III

We know that in the quadrant III, both x and y coordinates are negative.

$\therefore (-3, -4)$ lies in the quadrant III.

3. If the ordinate of a point is 0, it will lie on

- (a) x -axis (b) y -axis
(c) Quadrant III (d) Quadrant IV

Sol. (a) x -axis

We know that the ordinate of every point on the x -axis is 0.

4. The distance of point $(-3, -5)$ from y -axis is

- (a) -3 units (b) 5 units
(c) 3 units (d) -5 units

Sol. (c) 3 units

We know that the point $(-3, -5)$ lies in the quadrant III and its distance from the y -axis is 3. (Since distance cannot be negative)

5. If abscissa of a point is 7 and ordinate is -8, the point is

- (a) $(-8, 7)$ (b) $(8, -7)$
(c) $(-7, 8)$ (d) $(7, -8)$

Sol. (d) $(7, -8)$

We know that if (a, b) is a point, then ' a ' is called its abscissa and ' b ' is called its ordinate.

Hence, the coordinates of the given point will be $(7, -8)$

6. In a Cartesian plane, find the coordinates of a point A which is 4 units to the right of origin and 3 units below the origin?

- (a) $(4, 3)$ (b) $(4, -3)$
(c) $(-4, 3)$ (d) $(-4, -3)$

Sol. (b) $(4, -3)$

7. Coordinates of a point $P\left(\frac{17}{2}, 4\right)$ and

$Q\left(7, \frac{-3}{11}\right)$. The value of

(abscissa of P) - (ordinate of Q) is

- (a) $\frac{193}{22}$ (b) $-\frac{193}{22}$
(c) $\frac{181}{22}$ (d) $-\frac{181}{22}$

Sol. (a) $\frac{193}{22}$

8. A point $A(x, y)$ is such that $x < 0$ and $y > 0$. In which quadrant does the point A lie?

- (a) Quadrant I (b) Quadrant II
(c) Quadrant III (d) Quadrant IV

Sol. (b) Quadrant II

In Quadrant II, $x < 0$ and $y > 0$.

Very Short Answer Type Questions

9. The perpendicular distance of the point $P(x, 2y)$ from the x -axis is 8 units. In which quadrant will the point Q with coordinates $(y + 2, x)$ will lie if it is given that $x < 0$ and $y > 0$.

Sol. The perpendicular distance of the point $P(x, 2y)$ from x -axis = 8 units.

$$\Rightarrow 2y = 8$$

$$\Rightarrow y = 4$$

Coordinates of point Q = $(y + 2, x) = (6, x)$

Given that $x < 0$, the point Q will lie in the third quadrant.

10. Write the sign of coordinates of a point in

- (a) Quadrant III (b) Quadrant IV

Sol. (a) We know that in quadrant III both x -coordinate and y -coordinate are negative. Hence, the required sign of coordinates of a point is $(-, -)$.

(b) In quadrant IV, x -coordinate is positive and y -coordinate is negative. Hence, the required sign of coordinates of a point is $(+, -)$.

11. Locate two points on x -axis whose distance from origin is 10 units?

Sol. We know that the y -coordinate of every point on the x -axis is zero. So, the two points on the x -axis, which are at a distance of 10 units from the origin are $(10, 0)$ and $(-10, 0)$.

12. Name the axis on which $(0, -5)$ lie?

Sol. Since the x -coordinate of every point on the y -axis is 0, hence, $(0, -5)$ will lie on the y -axis in the negative direction of this axis.

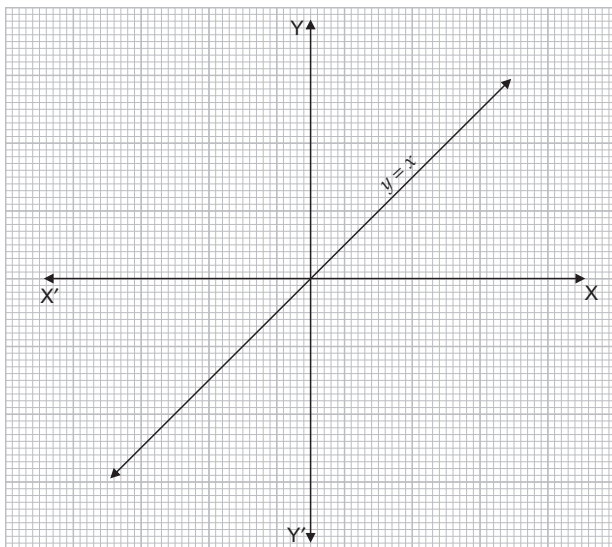
13. Find the distance of $P(-3, 8)$ from x -axis?

Sol. We know that the distance of a point $P(a, b)$ from the x and y axes are respectively $|b|$ and $|a|$ units.

Hence, the required distance of the point $(-3, 8)$ from the x -axis is 8 units.

14. Draw the line $x = y$. Name the point at which the line drawn cuts x -axis and y -axis.

Sol. We know that the line $x = y$ will cut the x -axis at the point where $y = 0$ and cut the y -axis at the point where $x = 0$. So, this line will cut both x and y axes at the point where both $x = 0$ and $y = 0$ i.e. at the origin $(0, 0)$.



15. In which quadrant do the following points lie?

- (a) (5, 3) (b) (-5, 4)
(c) (-6, -7) (d) (8, -3)

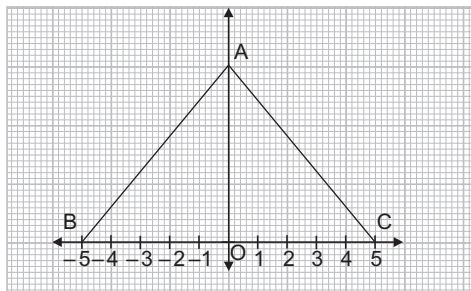
Sol. (a) Here both abscissa and ordinate are positive. Hence, this point lies in the quadrant I.

(b) Here the abscissa is negative and ordinate is positive. Hence, this point lies in the quadrant II.

(c) Here both the abscissa and ordinate are negative. Hence, this point lies in the quadrant III.

(d) Here the abscissa is positive and ordinate is negative. Hence, this point lies in the quadrant IV.

16.



ABC is an equilateral triangle. The coordinates of points B and C are (-5, 0) and (5, 0) respectively. Find the coordinates of point A.

Sol. Since ABC is an equilateral triangle, therefore $AB = BC = CA = 10$ units.

$\triangle AOC$ is a right-angled triangle.

$$\Rightarrow AC^2 = AO^2 + OC^2$$

$$\Rightarrow AO^2 = AC^2 - OC^2$$

$$\Rightarrow AO^2 = 100 - 25$$

$$\Rightarrow AO^2 = 75$$

$$\Rightarrow AO = 5\sqrt{3}$$

The coordinates of point A = (0, $5\sqrt{3}$)

Short Answer Type Questions

17. Find the coordinates of the point

- (a) which lies on x and y axes both.
(b) whose abscissa is 4 and which lies on x-axis.
(c) whose ordinate is -5 and which lies on y-axis.

Sol. (a) (0, 0) (b) (4, 0)
(c) (0, -5)

18. The point P(a, a - 2) lies in the first quadrant. The point P does not lie on any of the axis. Another point Q(b, 2b - 5) is such that b is the least possible integer value of a. In which quadrant does the point Q lies.

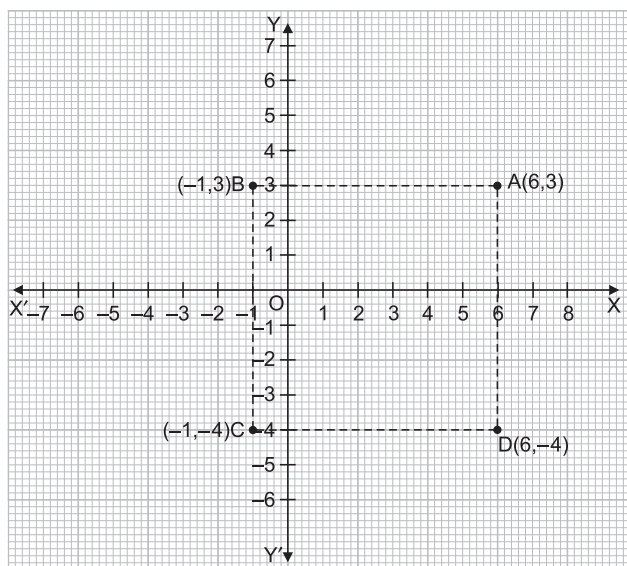
Sol. The point P(a, a - 2) lies in the first quadrant. Since the point P does not lie on any of the axis, the least possible value of a = 3, as $a - 2 \neq 0$. Therefore point Q (b, 2b - 5) = Q (3, 1).

Point Q (3, 1) lies in the first quadrant.

Long Answer Type Questions

19. Points A(6, 3), B(-1, 3) and D(6, -4) are three vertices of a square ABCD. Plot these on a graph paper and hence find the coordinates of point C. Also, find its area.

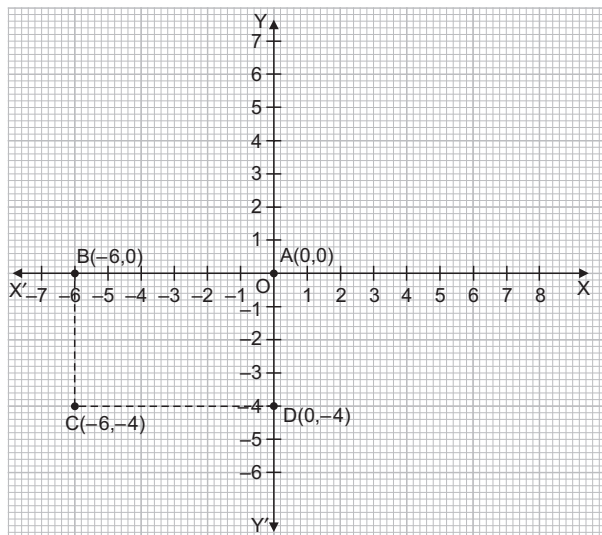
Sol. If we join the points B, A; A, D and then draw a line CD through D parallel to AB and another line BC parallel to AD so that ABCD is a square, then the coordinates of C will be (-1, -4). Also, the area of the square of side 7 units is 7×7 sq units i.e. 49 sq units.



\therefore The coordinates of point c is (-1, -4) and the area of square ABCD is 49 sq units.

20. Write the coordinates of the vertices of a rectangle whose length is 6 units and breadth is 4 units and one vertex is at the origin and longer side lie on x -axis and one of the vertices lie in the third quadrant. Also find its area.

Sol. A rectangle ABCD with A (0, 0), B(-6, 0), C(-6, -4) and D(0, -4) is shown in the adjoining graph. Its length and breadth are AB = 6 units and BC = 4 units respectively. Hence, the required area of the rectangle is 6×4 sq units i.e. 24 sq units.

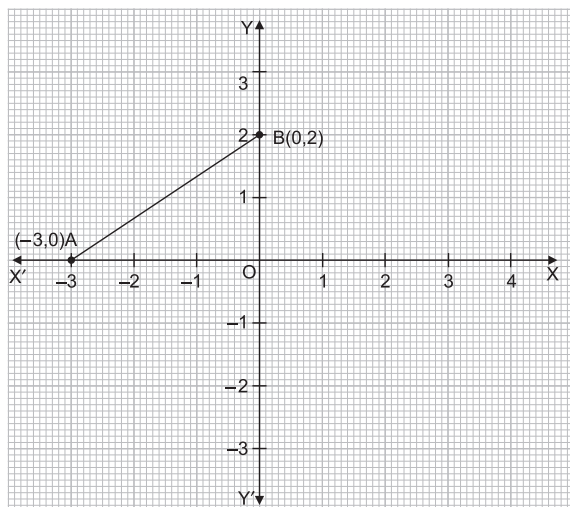


Higher Order Thinking Skills (HOTS) Questions

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1. Find the area of the triangle formed between the line $x = 0$, $y = 0$ and $2x - 3y + 6 = 0$ by using graph method.

Sol. In the given equation, if we put $y = 0$, then we get $x = -3$ and if we put $x = 0$, then we get $y = 2$.



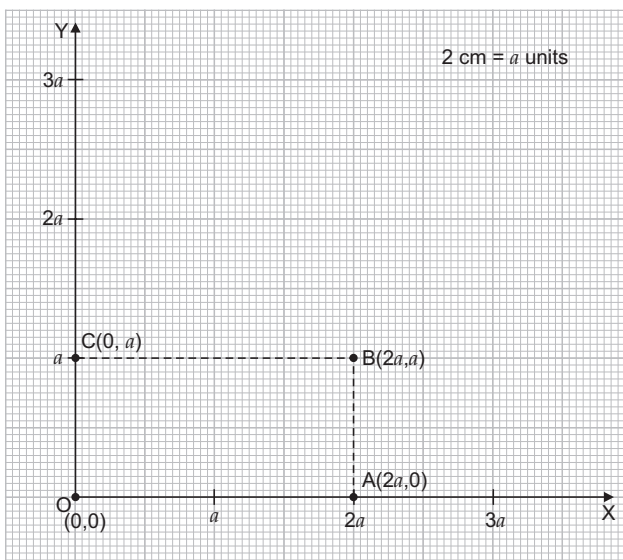
\therefore In the figure, $\triangle OAB$ is the required triangle, O being the origin. The required area of $\triangle OAB$ is $\frac{1}{2} \times 3 \times 2$ sq units i.e. 3 sq units.

2. Find the equation of line parallel to x -axis and at a distance of 3 units below x -axis.

Sol. The given line is parallel to x -axis and cuts the y -axis at the point (0, -3). Hence, the equation of a line is $y = -3$.

3. Draw a rectangle of length $2a$ units and breadth a units taking length and breadth on positive direction of x -axis and y -axis respectively. Also, write the coordinates of its vertices with one vertex at origin.

Sol. The coordinates of the vertices of a rectangle is O(0, 0), A(2a, 0), B(2a, a) and C(0, a).



Self-Assessment

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Multiple-Choice Questions

1. The point which lie on y -axis at a distance of 6 units in the negative direction of y -axis is
 (a) (0, 6) (b) (6, 0)
 (c) (0, -6) (d) (-6, 0)

Sol. (c) (0, -6)

The point which lie on y -axis at a distance of 6 units in the negative direction of y -axis is (0, -6).

2. If the coordinates of the two points are P(-3, 2) and Q(-5, 3), then abscissa of P - abscissa of Q is,
 (a) -3 (b) 2
 (c) -2 (d) -1

Sol. (b) 2

We see that the abscissa of P(-3, 2) is -3, and abscissa of Q (-5, 3) is -5. $\text{Abscissa of P} - \text{Abscissa of Q} = -3 - (-5) = 5 - 3 = 2$.

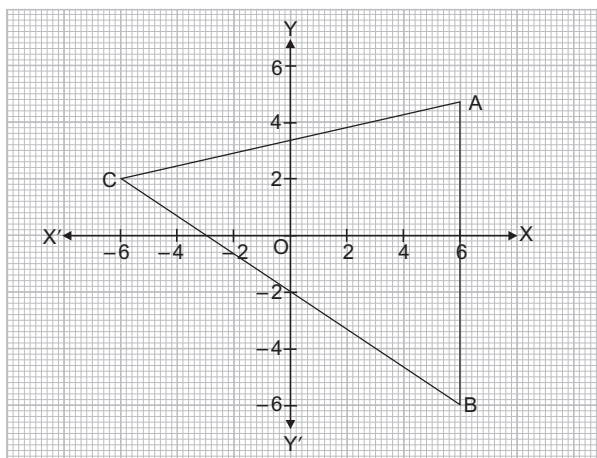
3. Signs of abscissa and ordinate of a point in the second quadrant are

- (a) (+, +) (b) (-, -)
(c) (+, -) (d) (-, +)

Sol. (d) (-, +)

We know that in quadrant II, abscissa is negative and the ordinate is positive. Hence, signs of abscissa and ordinate of a point in quadrant II will be (-, +) respectively.

4.



Identify the coordinates of point C.

- (a) (-6, -2) (b) (6, 2)
(c) (-6, 2) (d) (6, -2)

Sol. (d) (-6, 2)

5. In which quadrant does the point (-6, -8) lie?

- (a) First quadrant (b) Second quadrant
(c) Third quadrant (d) Fourth quadrant

Sol. (c) Third quadrant

Fill in the Blanks

- The point of intersection of the coordinate axes is called the **origin**.
- The coordinate axes divide the Cartesian plane into four parts known as the **quadrants**.
- The coordinates of the origin are **(0, 0)**.
- The y -coordinate of every point on the x -axis is **zero** and the x -coordinate of every point on the y -axis is **zero**.

Assertion-Reason Type Questions

Directions (Q. Nos. 10 to 13): Each of these questions contains an assertion followed by reason. Read them

carefully, and answer the question on the basis of the following options, select the one that best describes the two statements.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is true but Reason (R) is false.
(d) Assertion (A) is false but Reason (R) is true.

10. **Assertion (A):** (2, -3) belongs to the third quadrant.

Reason (R): In the third quadrant, both x and y are negative.

Sol. (d)

In 3rd quadrant, both x and y are negative. So, (2, -3) does not belong to 3rd quadrant. Hence assertion is incorrect but reason is correct.

11. **Assertion (A):** For the point (6, 7), ordinate is 7.

Reason (R): The coordinates of a point is written as (abscissa, ordinate)

Sol. (a)

The coordinates of a point is written as (abscissa, ordinate). Thus 7 is ordinate of point (6, 7).

Therefore, both assertion and reason are correct and reason is correct explanation of assertion.

12. **Assertion (A):** The point (3, 0) lies on the x -axis.

Reason (R): On y -axis, the value of abscissa is 0.

Sol. (b)

y -coordinate of point (3, 0) is zero. So, (3, 0) lies on x -axis. Also, on y -axis abscissa is 0.

\therefore Both assertion and reason are correct and the reason is not a proper explanation of the assertion.

13. **Assertion (A):** (-3, 4) and (3, -4) lie on adjacent quadrants.

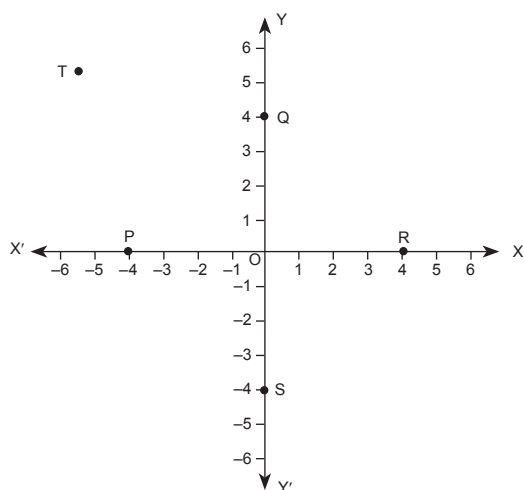
Reason (R): (-3, 4) lies on 2nd quadrant and (3, -4) lies on 4th quadrant.

Sol. (d)

(-3, 4) lies on 2nd quadrant and (3, -4) lies on 4th quadrant which are diagonally opposite. Therefore, assertion is wrong but reason is correct.

Case Study Based Questions

14. Four students Aditya, Ankit, Gaurav and Pranav are standing at different positions P, Q, R, and S in their school playground for a drill practice as shown on the graph. Teacher is standing at position T.



Observe the given graph and answer the following questions.

(a) What are the coordinates of P?

Ans. $(-4, 0)$

(b) Name the points whose y -coordinate is zero.

Ans. P and R

(c) (i) Name the closed figure obtained by joining the points P, Q, R and S.

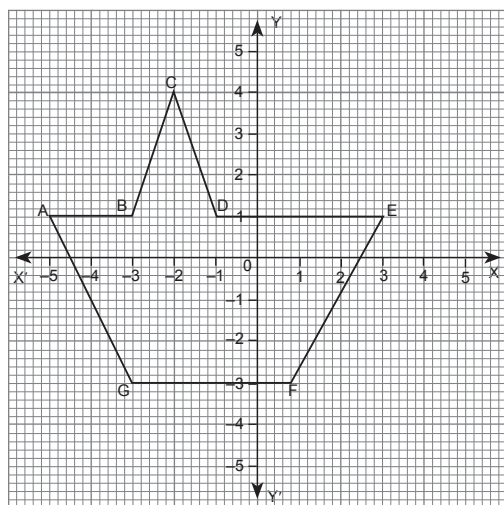
Ans. Quadrilateral

or

(ii) What are the coordinates of the point of intersection of PR and QS?

Ans. $(0, 0)$

15. Rohit draws a boat on the graph paper. A, B, C, D, E, F and G are the points of the boat drawn.



Observe the given graph and answer the following questions.

(a) In which quadrant does the point G lie?

Ans. Third quadrant

(b) What are the coordinates of D?

Ans. $(-1, 1)$

(c) (i) What is the ordinate of point B?

Ans. 1

or

(ii) What is the abscissa of point C?

Ans. -2

Very Short Answer Type Questions

16. Without plotting the points, find the quadrant in which they lie?

- (a) $(5, 4)$ (b) $(-3, -5)$
(c) $(6, -8)$ (d) $(-10, 5)$

Sol. (a) We know that in the quadrant I, x is positive and y is positive.

\therefore The point $(5, 4)$ lie in the quadrant I.

(b) In the quadrant III, both x and y are negative. Hence, the point $(-3, -5)$ lie in the quadrant III.

(c) In the quadrant IV, x is positive and y is negative. Hence, the point $(6, -8)$ lie in the quadrant IV.

(d) In the quadrant II, x is negative and y is positive.

\therefore The point $(-10, 5)$ lie in the quadrant II.

17. Which of the following points lie on x -axis?

- (a) $(6, 0)$ (b) $(8, 5)$
(c) $(9, 0)$ (d) $(-5, 5)$
(e) $(0, 10)$

Sol. We know that the ordinate of every point on the x -axis is zero. Hence, the points in (a) and (c) only lie on the x -axis.

18. Check which of these points are collinear.

- (a) $P(3, 3)$, $Q(4, 4)$, $R(5, 5)$
(b) $A(1, 2)$, $B(3, 4)$, $C(-1, 5)$
(c) $D(-2, 1)$, $Q(4, 1)$, $F(2, 1)$

Sol. (a) Points $P(3, 3)$, $Q(4, 4)$ and $R(5, 5)$ are collinear.

(b) Points $A(1, 2)$, $B(3, 4)$ and $C(-1, 5)$ are not collinear.

(c) Points $D(-2, 1)$, $E(4, 1)$ and $F(2, 1)$ are collinear.

19. To aid the travellers, serais (rest places) were constructed at an interval of 5 km along the

highway. Imagine a traveller on the road parallel to the x -axis. He crosses a serai located at $(4, 0)$. What is the likely position of the next serai?

Sol. The likely position of the next serai will be 5 units from the present position $(4, 0)$, i.e., $(9, 0)$.

Short Answer Type Questions

20. A point lies on y -axis at a distance of 5 units from x -axis. What are its coordinates? What will be its coordinates if it lies on x -axis at a distance of 5 units from the y -axis?

Sol. On y -axis, the abscissa of every point is zero. Hence, the coordinates of the point lying on the y -axis and at a distance of 5 units from the x -axis are $(0, 5)$ or $(0, -5)$. We also know that the ordinate of every point on the x -axis is zero. Hence, the coordinates of the point lying on the x -axis and at a distance of 5 units from the y -axis will be $(5, 0)$ or $(-5, 0)$.

21. Write the coordinates of a point whose abscissa is 8, and ordinate is $\frac{3}{4}$ times of abscissa.

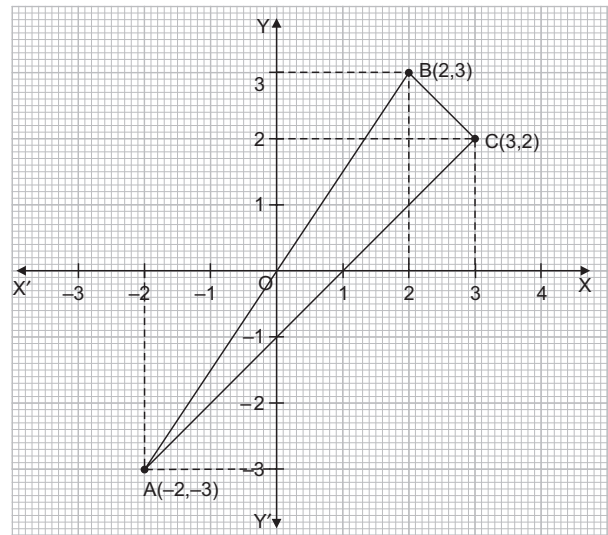
Sol. Abscissa of the point is 8 and its ordinate is $\frac{3}{4} \times 8 = \frac{24}{4} = 6$. Hence, the required coordinates of this point are $(8, 6)$.

22. Write the coordinates of mid-point of the line joining the points $A(1, 1)$ and $B(5, 5)$.

Sol. The mid-point of the line joining $A(1, 1)$ and $B(5, 5)$ is $M\left(\frac{5+1}{2}, \frac{5+1}{2}\right) = M(3, 3)$

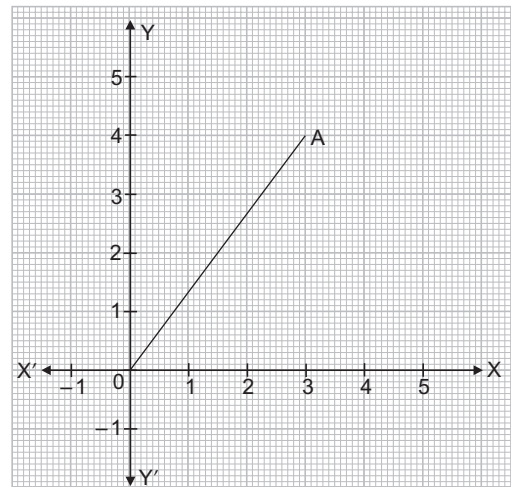
23. Rohit wants to travel from Amritsar (A) to Bareilly (B) by bus for business purpose. There are two routes to travel from A to B. First bus reaches at B via Chandigarh (C) and second bus reaches from A to B directly. If the coordinates of A, B and C are $(-2, -3)$, $(2, 3)$ and $(3, 2)$ respectively then by which bus would he like to travel from A to B, assuming both buses have same speed?

Sol. The points $A(-2, -3)$, $B(2, 3)$ and $C(3, 2)$ are plotted on a graph paper. We see that the figure ABC is a triangle. Also, $AC + CB > AB$. Hence, the direct route from A to B is shorter than the route AC and CB. So, travelling by the direct route from A to B should be preferred by him.



Long Answer Type Questions

24.



In a Cartesian plane, a child is at point A. The school is located at the origin, point O. The coordinates of point O is $(0, 0)$. Find the coordinates of the child. What is the distance between the child and the school?

Sol. The coordinates of the child at A = $(3, 4)$

From A, drop a perpendicular at B on the x -axis. $\triangle ABO$ is a right triangle.

$$AB = 4 \text{ units}$$

$$OB = 3 \text{ units}$$

In right-triangle ABO,

$$OA^2 = AB^2 + OB^2$$

$$= 16 + 9$$

$$= 25$$

$$\Rightarrow OA = 5 \text{ units}$$

The distance between the child and the school is 5 units.

25. If the coordinates of a point A are $(9, -3)$ which can be expressed as $(a^2, b - 1)$ and $a > 0$. Find the coordinates of the point B $(-2a, 3b)$ and C $(a^2, b + 1)$. Also find the quadrants in which the points A, B and C lie in.

Sol. Coordinates of point A = $(9, -3)$

$$= (a^2, b - 1) \text{ and } a > 0$$

$$a^2 = 9$$

$$\Rightarrow a = 3 \text{ as } a > 0$$

$$b - 1 = -3$$

$$\Rightarrow b = -2$$

Coordinates of point B = $(-2a, 3b) = (-6, -6)$

Coordinates of point C = $(a^2, b + 1) = (9, -2)$

Point A $(9, -3)$ lies in the IV quadrant.

Point B $(-6, -6)$ lies in the III quadrant.

Point C $(9, -2)$ lies in the II quadrant.

Let's Compete

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Multiple-Choice Questions

- The point $(-10, b)$ lies on x -axis, when
 (a) $b = 0$ (b) $b = -10$
 (c) $b = 10$ (d) $b < 10$

Sol. (a) $b = 0$

We know that the ordinate of every point on the x -axis is zero.

$$\therefore b = 0$$

- The distance between $(-8, 10)$ and $(-8, 5)$ is
 (a) 0 (b) 5
 (c) 16 (d) 15

Sol. (b) 5

The required distance between the points A $(-8, 10)$ and B $(-8, 5)$ is $(10 - 5)$ units i.e. 5 units, since AB is parallel to y -axis and the two points are lying on the line AB at a distance of 10 and 5 units respectively from the x -axis.

- The line segment joining $(-3, 4)$ and $(-3, -4)$ lies completely in
 (a) quadrant I (b) quadrant II
 (c) quadrant I and II (d) quadrant II and III

Sol. (d) quadrant II and III

The point $(-8, 10)$ lies in the quadrant II and the point $(-3, -4)$ lies in the quadrant III. Also, the

line-segment joining these two points is parallel to y -axis and lies wholly in quadrant II and III.

- Line $x = y$ passes through
 (a) quadrant I
 (b) origin
 (c) quadrant III
 (d) All of these

Sol. (d) All of these

If we put $x = 0$ and $y = 0$, then the given equation $y = x$ is satisfied. Hence, the line $x = y$ passes through the origin $(0, 0)$.

Also, some points on this line lie in quadrant I and quadrant III. For example $(1, 1)$, $(2, 2)$, $(3, 3)$, $(-1, -1)$, $(-2, -2)$, $(-3, -3)$, etc. are such points. Hence, this line $x = y$ passes through the origin and lie in both quadrant I and III.

- The measure between the coordinate axes is
 (a) 90° (b) 180°
 (c) 0° (d) None of these

Sol. (a) 90°

We know that the angle between x and y axes i.e. the coordinate axes is 90° .

- Two points with different abscissa but same ordinate lie on
 (a) x -axis
 (b) y -axis
 (c) a line parallel to y -axis
 (d) a line parallel to x -axis

Sol. (d) a line parallel to x -axis

One such point will lie on the positive side of the x -axis and the other point will lie on the negative side of the x -axis.

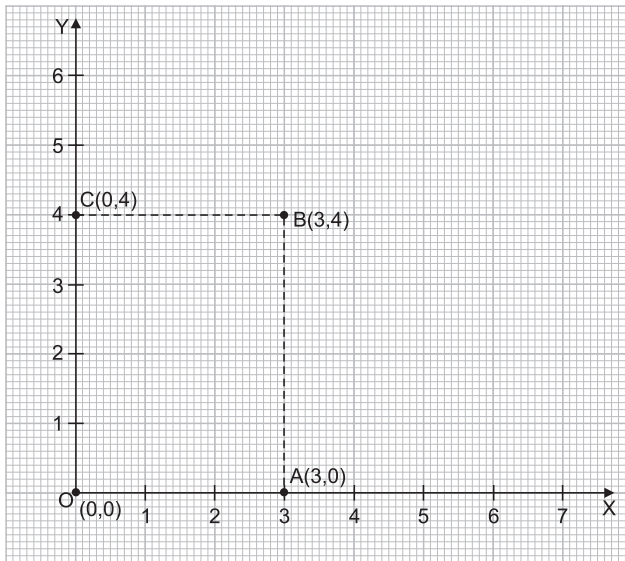
Since these two points have the same ordinate, hence the line joining these two points will be parallel to x -axis.

- On plotting the points O $(0, 0)$, A $(3, 0)$, B $(3, 4)$ and C $(0, 4)$ and joining OA, AB, BC and CO, which of the following figure is obtained?
 (a) Square (b) Rectangle
 (c) Rhombus (d) Trapezium

Sol. (b) Rectangle

We first plot the points O $(0, 0)$, A $(3, 0)$, B $(3, 4)$ and C $(0, 4)$ on a graph paper and join them in order by a pencil and a scale. We see that the figure

OABC is a rectangle of length $OC = 4$ units and breadth $OA = 3$ units.



8. Abscissa of a point is positive in

- (a) quadrant I and II
- (b) quadrant I only
- (c) quadrant I and IV
- (d) quadrant II only

Sol. (c) quadrant I and IV

We know that the abscissa of a point in the quadrant I and quadrant IV is positive.

9. If y -coordinate of a point is zero, then this point lies

- (a) in quadrant I
- (b) on y -axis
- (c) on x -axis
- (d) None of these

Sol. (c) on x -axis

We know that the y -coordinate of every point on the x -axis is 0.

10. The values of x and y for which two ordered pairs $(x - 2, 10)$ and $(5, x + y)$ are equal is

- (a) $x = 7, y = 3$
- (b) $x = 3, y = 7$
- (c) $x = -3, y = 7$
- (d) $x = 7, y = -3$

Sol. (a) $x = 7, y = 3$

If the two ordered pairs are equal, then

$$x - 2 = 5 \quad \dots(1)$$

$$x + y = 10 \quad \dots(2)$$

From (1), we get

$$x = 7 \quad \dots(3)$$

Putting (3) in (2), we get

$$\Rightarrow 7 + y = 10$$

$$\Rightarrow y = 3$$

Hence, the values of x and y are 7 and 3 respectively.

Life Skills

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1. In a sports day celebration, Rohan and Sohan are standing at positions A and B whose coordinates are $(2, -2)$ and $(4, 8)$ respectively. The teacher asked Meghna to fix the country flag at the mid-point of the line joining the points A and B. Find the coordinates of the mid-point?

Sol. We plot the points $A(2, -2)$ and $B(4, 8)$ on a graph paper and join them by a pencil and a scale. We find the middle point M of the line segment AB by a scale and a compass. From the graph we see that the coordinates of the middle point M of AB are $(3, 3)$.

