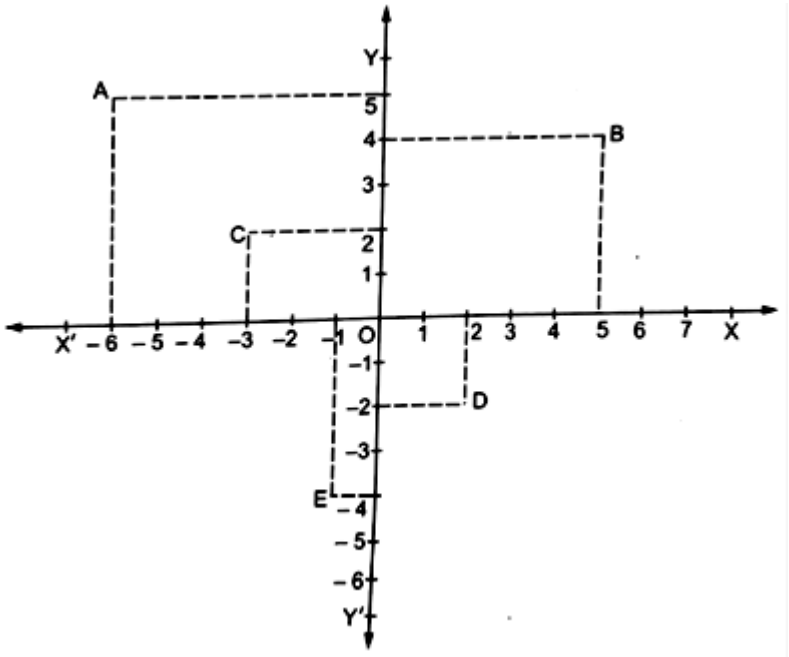
6. Coordinate Geometry

Exercise 6A

1. Question

Write down the coordinates of each of the points A, B, C, D, E shown below:



Answer

Co-ordinates of A, B, C, D and E are as follows,

A(-6 , 5) , B (5 , 4) , C(-3 , 2) , D (-2 , 2) , E(-1 , 4)

2. Question

Draw the lines X' OX and YOY' as the coordinate axes on a paper and plot the following points on it.

(i) $P(7,\ 4)$

(ii) $Q(-5,\ 3)$

(iii) $R(-6,\ -3)$

(iv) $S(3,\ -7)$

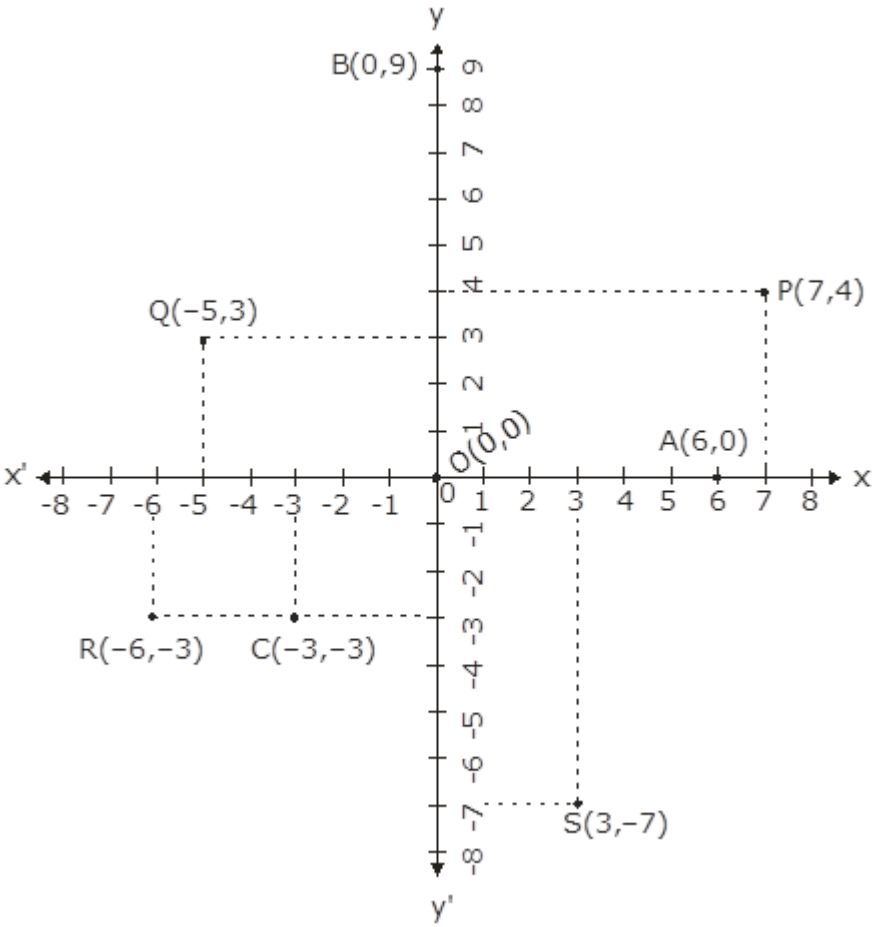
(v) $A(6,\ 0)$

(vi) $B(0,\ 9)$

(vii) $O(0,\ 0)$

(viii) $C(-3, -3)$

Answer



3. Question

On which axis do the following points lie?

(i) (7, 0)

(ii) (0, -5)

(iii) (0, 1)

(iv) (-4, 0)

Answer

(i) (7, 0) lies on X-axis.

(ii) (0, -5) lies on negative or Y-axis.

(iii) (0, 1) lies on positive Y-axis.

(iv) (-4, 0) lies on negative X-axis.

4. Question

In which quadrant do the given points lie?

(i) (-6, 5)

(ii) (-3, -2)

(iii) (2, -9)

Answer

(i) In given points X co-ordinate is negative and Y co-ordinate is positive, Hence, (-6, 5) lies in 2^{nd} quadrant.

(ii) In given points X co-ordinate is negative and Y co-ordinate is also negative, Hence, (-3, -2) lies in 3^{rd} quadrant.

(iii) In given points X co-ordinate is positive and Y co-ordinate is negative, Hence, (2, -9) lies in 4^{th} quadrant.

5. Question

Draw the graph of the equation, $y = x + 1$.

Answer

The given equation is y = x + 1 …….(i)

Now,

By putting x = 0 in equation (i), we get y = 1

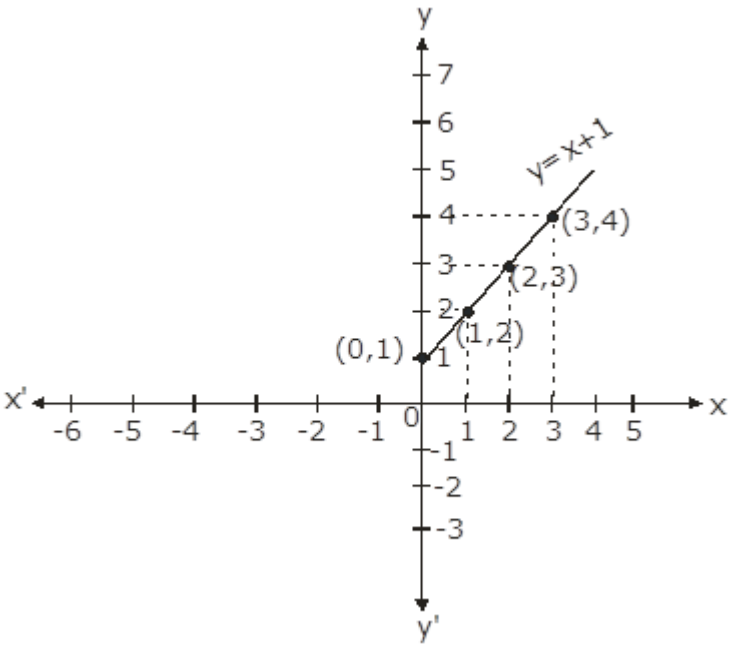
By putting x = 1 in equation (i), we get y = 2

By putting x = 2 in equation (i), we get y = 3

By putting x = 3 in equation (i), we get y = 4

A table is form such that:

X	0	1	2	3
Y	1	2	3	4



6. Question

Draw the graph of the equation, $y = 3x + 2$.

Answer

The given equation is y = 3x + 2 …….(i)

Now,

By putting x = -1 in equation (i), we get y = -1

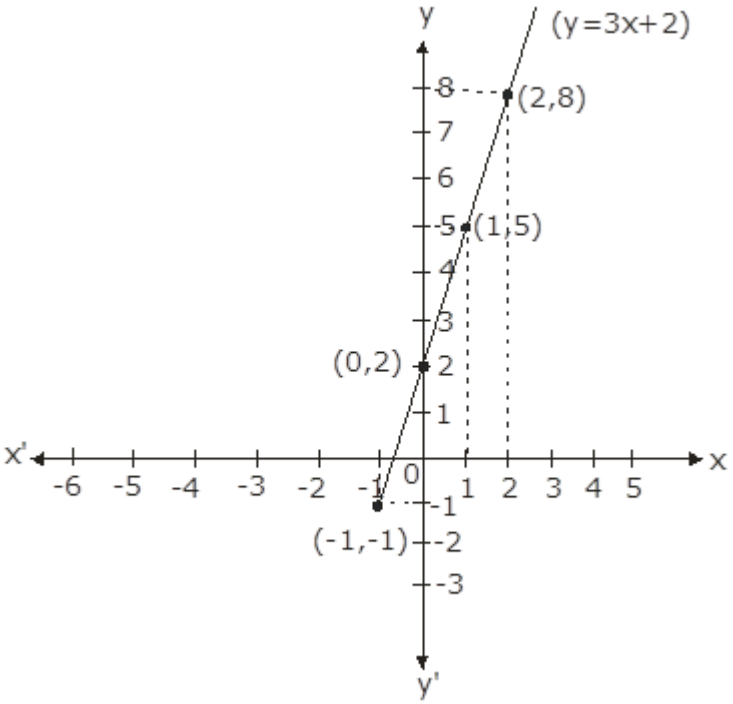
By putting x = 0 in equation (i), we get y = 2

By putting x = 1 in equation (i), we get y = 5

By putting x = 2 in equation (i), we get y = 8

A table is form such that:

X	-1	0	1	2
Y	-1	2	5	8



7. Question

Draw the graph of the equation, $y = 5x - 3$.

Answer

The given equation is y = 5x - 3 …….(i)

Now,

By putting x = 0 in equation (i), we get y = -3

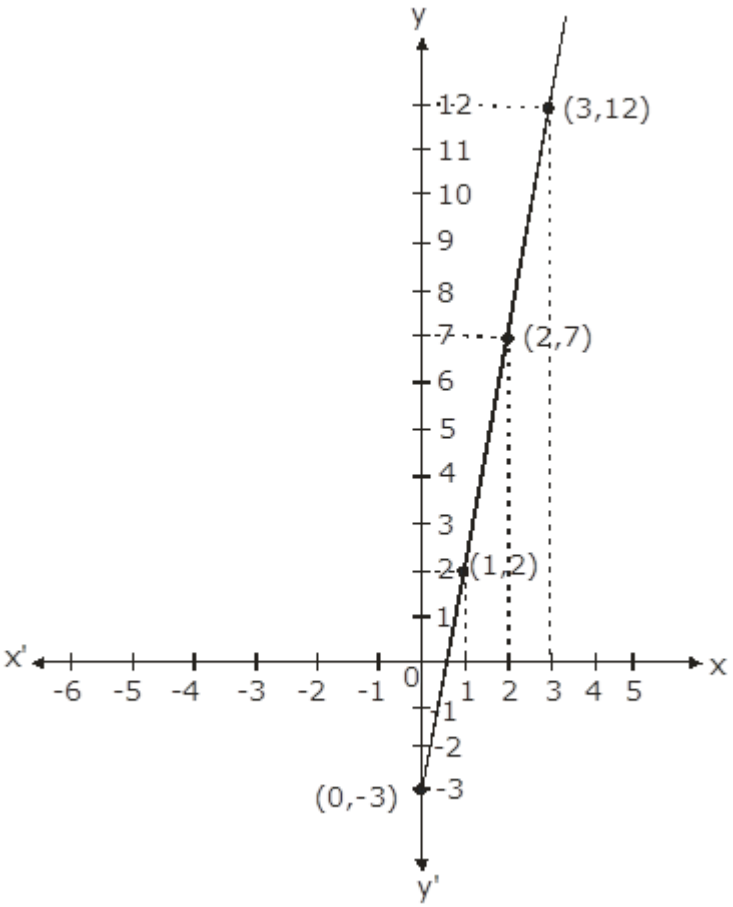
By putting x = 1 in equation (i), we get y = 2

By putting x = 2 in equation (i), we get y = 7

By putting x = 3 in equation (i), we get y = 12

A table is form such that :

x	0	1	2	3
y	-3	2	7	12



8. Question

Draw the graph of the equation, $y = 3x$.

Answer

The given equation is y = 3x …….(i)

Now,

By putting x = 0 in equation (i), we get y = 0

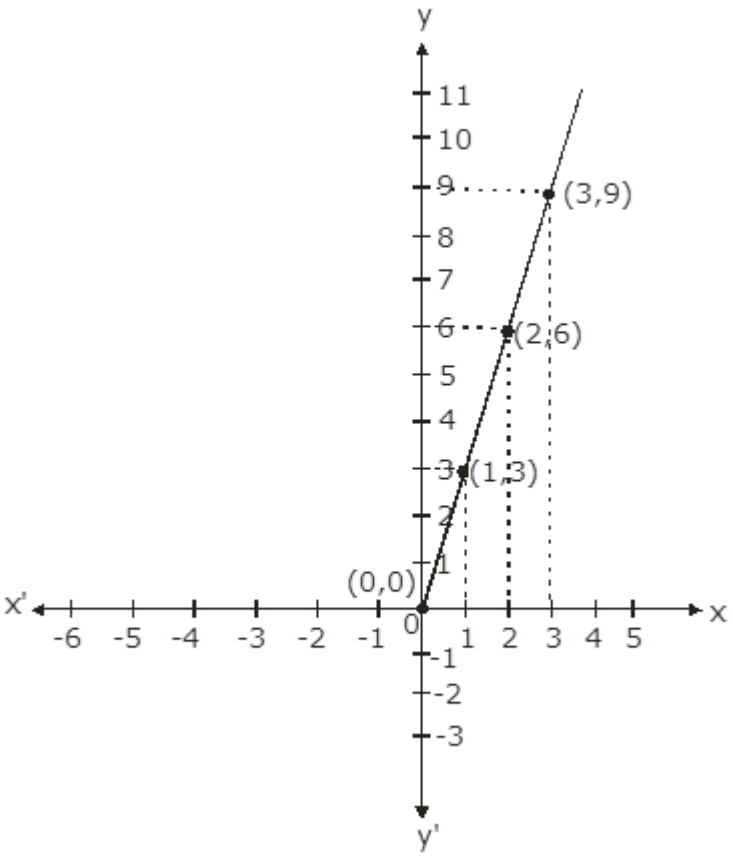
By putting x = 1 in equation (i), we get y = 3

By putting x = 2 in equation (i), we get y = 6

By putting x = 3 in equation (i), we get y = 9

A table is form such that:

X	0	1	2	3
Y	0	3	6	9



9. Question

Draw the graph of the equation, $y = -x$.

Answer

The given equation is y = - x …….(i)

Now,

By putting x = -2 in equation (i), we get y = 2

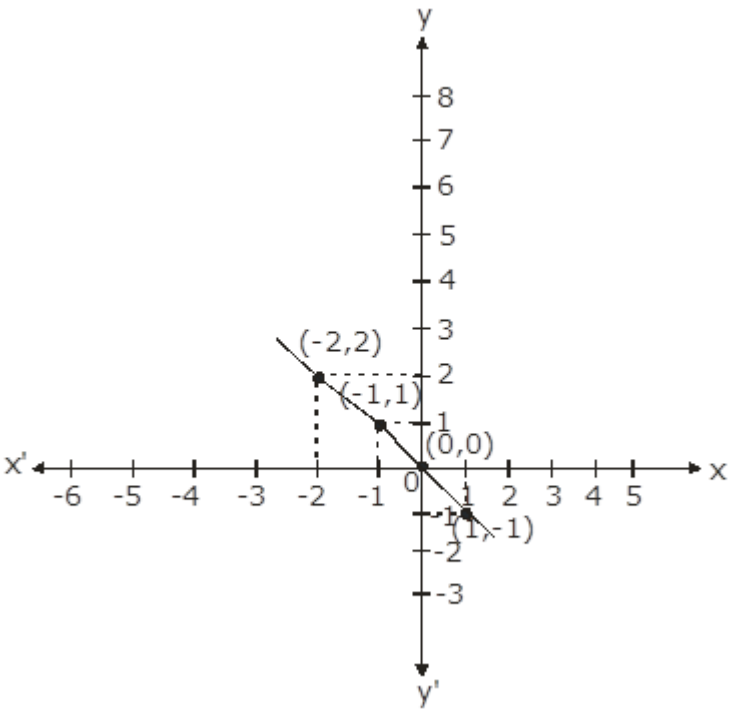
By putting x = -1 in equation (i), we get y = 1

By putting x = 0 in equation (i), we get y = 0

By putting x = 1 in equation (i), we get y = -1

A table is form such that:

X	-2	-1	0	1
Y	2	1	0	-1



CCE Questions

1. Question

The point lies P (-5, 3) in

A. quadrant I

B. quadrant II

C. quadrant III

D. quadrant IV

Answer

We can see that, x – coordinate is negative and y- coordinate is positive.

Hence, it can be clearly said that P (-5,3) lies in the 2^{nd} quadrant.

∴ Option B is correct

2. Question

The point Q (4, -6) lies in

A. quadrant I

B. quadrant II

C. quadrant III

D. quadrant IV

Answer

We can see that, x – coordinate is positive and y- coordinate is negative.

Hence, it can be clearly said that Q (4,-6) lies in the 4^{th} quadrant.

∴ Option D is correct.

3. Question

The point Q (0, -4) lies

A. quadrant II

B. quadrant IV

C. on the x-axis

D. on the y-axis

Answer

We can see that, x – coordinate is zero and y- coordinate is negative.

Hence, it can be clearly said that Q (0,-4) lies on the y axis.

∴ Option D is correct.

4. Question

The point B (8, 0) lies

A. quadrant I

B. quadrant IV

C. on the x-axis

D. on the y-axis

Answer

We can see that, x – coordinate is positive and y- coordinate is zero.

Hence, it can be clearly said that B (8,0) lies on the x axis.

∴ Option C is correct.

5. Question

The point C(-6, 0) lies

A. quadrant II

B. quadrant III

C. on the x-axis

D. on the y-axis

Answer

We can see that, x – coordinate is negative and y- coordinate is zero.

Hence, it can be clearly said that C(-6,0) lies on the x axis.

∴ Option C is correct.

6. Question

The point at which the two coordinate axes meet is called

A. the abscissa

B. the ordinate

C. the origin

D. the quadrant

Answer

Origin is the point of intersection of the two coordinate axes.

∴ Option C is correct.

7. Question

If $x > 0$ and $y < 0$, then the point (x, y) lies in

A. quadrant I

B. quadrant II

C. quadrant III

D. quadrant IV

Answer

We have, $x > 0$ and $y < 0$

∴x is positive and y is negative

= point (x, -y) lies in 4^{th} quadrant

∴ Option D is correct.

8. Question

The points (other than the origin) for which the abscissa is equal to the ordinate lie in

A. quadrant I only

B. quadrant I and II

C. quadrant I and III

D. quadrant II and IV

Answer

We know that abscissa and ordinate can be equal in only two cases i.e.

i. x and y both are positive

ii. x and y both are negative

∴The points will lie in the 1^{st} and 3^{rd} quadrants only.

∴ Option C is correct.

9. Question

The point in which abscissa and ordinate have different signs will the in

A. quadrant I and II

B. quadrant I and IV

C. quadrant IV and II

D. quadrant II only

Answer

We know that abscissa and ordinate can have different signs in only two cases i.e.

i. x is negative and y is positive

ii. x is positive and y is negative

∴The points will lie in the 2^{nd} and 4^{th} quadrants only.

∴ Option C is correct.

10. Question

The perpendicular distance of the point A (7, 5) from y-axis is

A. 7 units

B. 5 units

C. 12 units

D. 2 units

Answer

Since, we have the point A (7, 5)

And we have to find its perpendicular distance from y-axis

∴The perpendicular distance will be the x- coordinate

Hence, it is 7 units.

∴ Option A if correct.

11. Question

A point both of whose coordinates are negative lies in

A. quadrant I

B. quadrant II

C. quadrant III

D. quadrant IV

Answer

We have, both the coordinates are negative i.e.

x and y both are negative

Hence, the point lies in the 3^{rd} quadrant.

∴ Option C is correct

12. Question

Abscissa of a point is positive in

A. quadrant I only

B. quadrant II only

C. quadrant I and II

D. quadrant I and IV

Answer

We have, (x, y)

Where, x is positive

Hence it may lie in either 1^{st} or 4^{th} quadrant.

∴ Option D is correct.

13. Question

The coordinates of two points are and then (abscissa of A) – (abscissa of B) = ?

A. 1

B. -1

C. 5

D. -5

Answer

Here, abscissa of A = 3

Abscissa of B = -2

According to the question,

(abscissa of A) – (abscissa of B) = 3 – (-2)

= 3 + 2 = 5

∴ Option C is correct.

14. Question

The points A(2, –2), B(3, – 3), C(4, – 4) and D(5, –5) all lie in

A. quadrant II

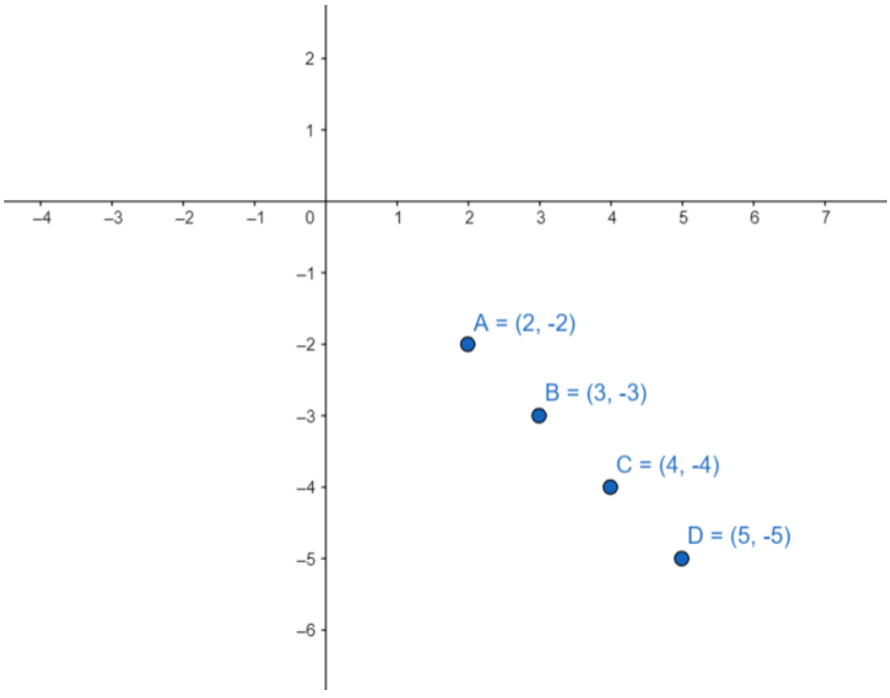
B. quadrant III

C. quadrant IV

D. different quadrants

Answer

Let us see the plot of these points,



Since, all the given points have their x – coordinate positive and y – coordinate negative.

Hence, all these points lie in the 4^{th} quadrant. And also they all lie in a straight line.

∴ Option C is correct

15. Question

Which of the points A(0, 6), B(−2, 0), C(0, − 5) D(3, 0) and E(1, 2) does not lie on x-axis?

A. A and C

B. B and D

C. A, C and E

D. E only

Answer

We know that, a point can only lie on x-axis if its y coordinate is 0.

Hence, points A, C and E does not lie on x-axis

∴ Option C is correct

16. Question

The signs of abscissa and ordinate of a point in quadrant II are respectively

A. (+, -)

B. (-, +)

C. (-, -)

D. (+, +)

Answer

Since, in the 2^{nd} quadrant x is negative and y is positive

Hence, as per sign the point could be written as (-, +)

∴ Option B is correct.

17. Question

Which of the following points does not lie on the line y = 3x + 4?

A. (1, 7)

B. (2, 10)

C. (-1, 1)

D. (4, 12)

Answer

We have,

$y = 3x + 4$ (i)

a. (1, 7) [putting $x = 1$ and $y = 7$ in (i)]

$7 = 3(1) + 4$

$7 = 7$

Thus, A lies on the line.

b. (2, 10) [putting $x = 2$ and $y = 10$ in (i)]

$10 = 3(2) + 4$

$10 = 10$

Thus, B lies on the line.

c. (-1, 1) [putting $x = -1$ and $y = 1$ in (i)]

$1 = 3(-1) + 4$

$1 = 1$

Thus, C lie on the line.

d. (4, 12) [putting $x = 4$ and $y = 12$ in (i)]

$12 = 3(4) + 4$

$12 \neq 16$

Thus, D does not lie on the line.

$\therefore$ Option D is correct

18. Question

Which of the following points lies on the line $y = 2x + 3$?

A. (2, 8)

B. (3, 9)

C. (4, 12)

D. (5, 15)

Answer

We have, $y = 2x + 3$ (i)

a. (2, 8) [putting $x = 2$ and $y = 8$ in (i)]

$8 = 2(2) + 3$

$8 \neq 7$

Thus, A doesn’t lie on the line.

b. (3, 9) [putting $x = 3$ and $y = 9$ in (i)]

$9 = 2(3) + 3$

$9 = 9$

Thus, B lies on the line.

∴ Option B is correct.

19. Question

If $a < 0$ and $b < 0$, then the point P(a, b) lies in

A. quadrant IV

B. quadrant II

C. quadrant III

D. quadrant I

Answer

We have, $a < 0$ and $b < 0$

i.e. both x and y are negative

Hence, point P lies in 3^{rd} quadrant

∴ Option C is correct.

20. Question

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

A. 3 units

B. 4 units

C. 5 units

D. 7 units

Answer

Since, we have the point P (4, 3)

And we have to find its perpendicular distance from y-axis

∴The perpendicular distance will be the x- coordinate

Hence, it is 4 units.

∴ Option B is correct

21. Question

The area of the ΔOAB with O(0, 0), A(4, 0) and B(0, 6) is

A. 8 sq units

B. 12 sq units

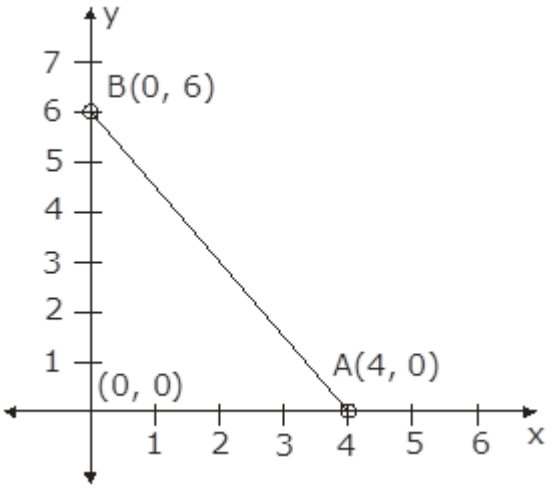
C. 16 sq units

D. 24 sq units

Answer

Here, OA = 4 – 0 = 4 units

OB = 6 – 0 = 6 units



$\therefore \text{Area}(\Delta OAB) = \frac{1}{2} \times OA \times OB$

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

= 12 sq. units

∴ Option B is correct.

22. Question

The area of the ΔOPQ with O(0, 0), P(1, 0) and Q(0, 1) is

A. 1 sq unit

B. $\frac{1}{2}$ sq unit

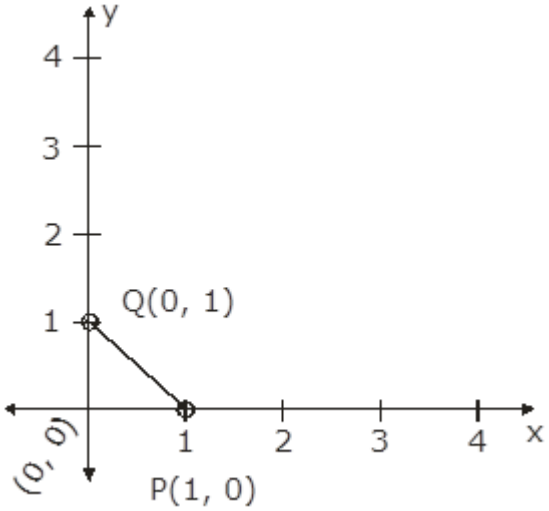
C. $\frac{1}{4}$ sq unit

D. 2 sq units

Answer

Here, OA = 4 – 0 = 4 units

OB = 6 – 0 = 6 units



$\therefore \text{Area}(\Delta OAB) = \frac{1}{2} \times OA \times OB$

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

= 12 sq. units

∴ Option B is correct

23. Question

Consider the three statements given below:

I. Any point on x-axis is of the form $(a, 0)$.

II. Any point on y-axis is of the form $(0, b)$.

III. The point $P(3, 3)$ lies on both the axes.

Which is true?

A. I and II

B. I and III

C. II and III

D. III only

Answer

Here,

1st statement is true as the point lying on x axis has its y coordinate as 0

2nd statement is true as the point lying on y axis has its x coordinate as 0

3rd statement is false as a point can never lie on both the axes unless it is their point of intersection i.e. (0, 0)

∴ Option A is correct

24. Question

The question consists of two statements, namely, Assertion (A) and Reason (R). Please select the correct answer.

Assertion (A)	**Reason (R)**
The point p(–3,0) lies on x-axis.	Every point on x-axis is of the form (x,0).

A. Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).

B. Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

C. Assertion (A) is true and Reason (R) is false.

D. Assertion (A) is false and Reason (R) is true.

Answer

We have, pb(-3, 0)

Since, the y coordinate is 0.

Hence, it lies on x-axis.

∴ Option (a) is correct.

25. Question

The question consists of two statements, namely, Assertion (A) and Reason (R). Please select the correct answer.

Assertion (A)	**Reason (R)**
The point O (0,0) lies in quadrant I.	The point O(0,0) lies on both the axes.

A. Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).

B. Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

C. Assertion (A) is true and Reason (R) is false.

D. Assertion (A) is false and Reason (R) is true.

Answer

We have,

Point O(0, 0)

It does not lie in any of the quadrant because it is the point of intersection of both the axes.

∴ Option (d) is the correct option.

26. Question

The question consists of two statements, namely, Assertion (A) and Reason (R). Please select the correct answer.

Assertion (A)	**Reason (R)**
The point p(–6,–4) lies in quadrant III.	The signs of points in quadrants I,II,III and IV are respectively (+,+) (-,+) (-,-) and (+,-).

A. Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).

B. Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

C. Assertion (A) is true and Reason (R) is false.

D. Assertion (A) is false and Reason (R) is true.

Answer

We know that,

The point P (-6, -4) lies in the third quadrant as the points of the type (-, -) lie in III quadrant

Also, we know that

The signs of points in quadrants I, II, III and IV are respectively (+,+) (-,+) (-,-) and (+,-)

∴ Both assertion and reason are true and reason justifies the assertion

Hence, option (a) is correct

27. Question

The question consists of two statements, namely, Assertion (A) and Reason (R). Please select the correct answer.

Assertion (A)	**Reason (R)**
If a $\neq$ b then (a, b) $\neq$ (b, a)	(4,–3) lies in quadrant IV.

A. Both Assertion (A) and Reason (R) are true and Reason (R) is a correct explanation of Assertion (A).

B. Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).

C. Assertion (A) is true and Reason (R) is false.

D. Assertion (A) is false and Reason (R) is true.

Answer

According to question,

If a $\neq$ b then (a, b) $\neq$ (b, a)

This statement is true

Also, (4, -3) lies in the quadrant IV

As both assertion and reason are true but the reason does not justify the assertion

Hence, option (b) is correct

28. Question

Write whether the following statements are true or false?

(i) The point $P(6, 0)$ lies in the quadrant I.

(ii) The perpendicular distance of the point $A(5, 4)$ from x-axis is 5 units.

Answer

(i) The given statement is false as the ordinate of the point P (6, 0) is 0 and hence it lies on the x-axis

(ii) The given statement is also false because the perpendicular distance of the point A (5, 4) from the x-axis will be 4 units instead of 5 units

29. Question

State whether true or false:

(i) The mirror image of the point $A(4,5)$ in the x-axis is $A'(-4,5)$.

(ii) The mirror image of the point $A(4,5)$ in the y-axis is $A'(-4,5)$.

Answer

(i) The given statement is false because the mirror image of the point A (4, 5) on the x-axis is A’ (4, 5) instead of A’ (-4, 5)

(ii) The given statement is true as the mirror image of the point A (4, 5) in the y-axis is A’ (-4, 5)

30. Question

Write whether the following statements are true or false:

A. The point (-5, 0) lies on x-axis.

B. The point (0, -3) lies in quadrant II.

Answer

A. The given statement is true as the ordinate of the point is 0 which lies on the x-axis

B. The given statement is false as the point (0, -3) lies on the y-axis

31. Question

Match the following columns:

Column I	**Column II**
(a) Equation of x-axis is	(p) (a,0)
(b) Equation of y-axis is	(q) y = 0
(c) Any point on x-axis is of the form	(r) (0,b)
(d) Any point on y-axis is of the form	(s) x = 0

The correct answer is:

A. -……., B. -……,

C. -……., D. -……,

Answer

(a) We know that,

The points that lie on the x-axis have coordinate = 0

∴ The equation of the x-axis will be y = 0

(b) We know that,

The points that lie on the y-axis have abscissa = 0

∴ The equation of the y-axis will be x = 0

(c) We know that,

Any point on the x-axis is of the form (a, 0)

(d) We also know that,

A point on the y-axis is of the form = (0, b)

Hence the correct match for the given table is as follows:

(a) – (q)

(b) – (s)

(c) - (p)

(d) – (r)

32. Question

Match the following columns:

Column I	**Column II**
(a) The point A (-3, 0) lies on	(p) y-axis
(b) The point B (-5, -1) lies in quadrant	(q) IV
(c) The point C (2, -3) lies in quadrant	(r) III
(d) The point D(0, -6) lies on	(s) x-axis

The correct answer is:

A. -……., B. -……,

C. -……., D. -……,

Answer

(a) We know that,

The point of the type (a, 0) lies on the x-axis

∴ Point A (-3, 0) lies on the x-axis

(b) We know that,

The point of the type (-, -) lie in the III quadrant

∴ Point B (-5, -1) lies in the quadrant III

(c) We know that,

The point of the type (+, -) lie in the quadrant IV

∴ Point C (2, -3) lies in the quadrant IV

(d) We know that,

The point of the type (o, b) lies on the y-axis

∴ Point D (0, -6) lies on the y-axis

Hence, the correct match for the above given table is as follows:

(a) - (s)

(b) – (r)

(c) – (q)

(d) – (p)

33. Question

Without plotting the given points on a graph paper indicate the quadrants in which they lie, if

A) ordinate = 6, abscissa = - 3

B) ordinate = 6, abscissa = 4

C) abscissa = -5, ordinate = -7

D) ordinate = 3, abscissa = 5

Answer

A. We know that,

Point (-3, 6) lie in the second quadrant

B. We know that,

Point (4, -6) lie in the fourth quadrant

C. We know that,

Point (-5, -7) lie in the third quadrant

D. We know that,

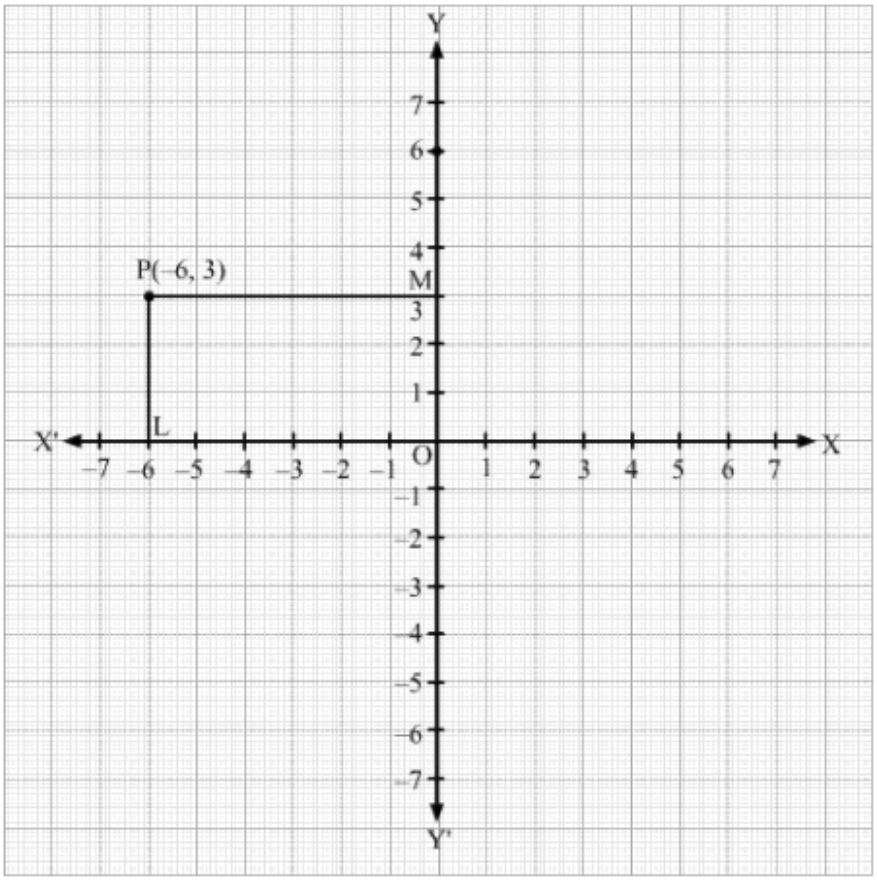
Point (5, 3) lie in the first quadrant

34. Question

Plot the point P(−6, 6) on a graph paper. Draw PL ⊥ x-axis and PM ⊥ y-axis. Write the coordinates of L and M.

Answer

The required point is shown in the graph given below:



In the above graph PL is drawn perpendicular to x-axis while PM is drawn perpendicular to y-axis

∴ Coordinates of L = (-6, 0)

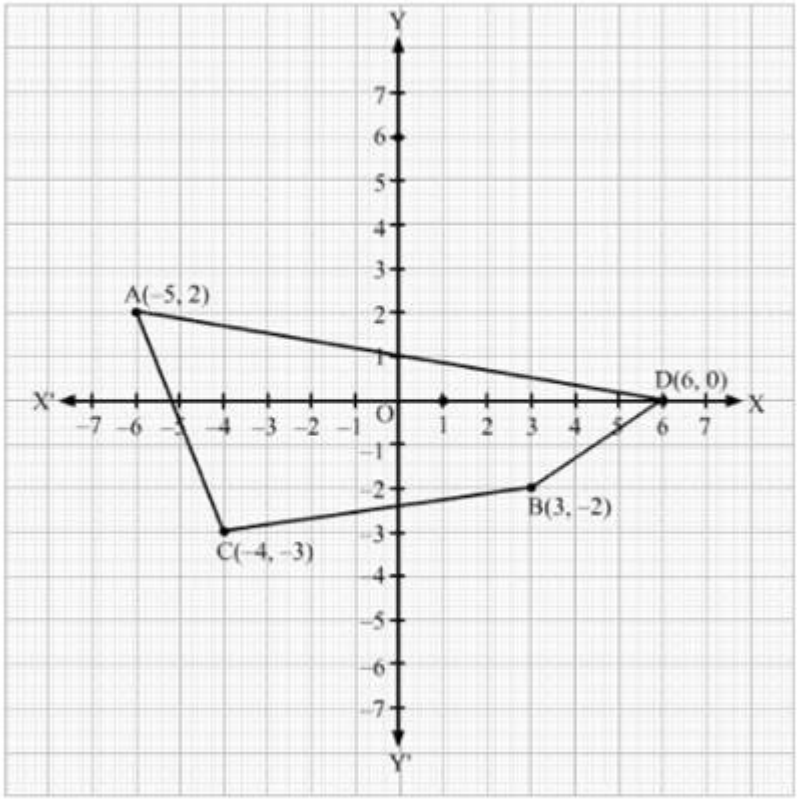
Also, coordinates of M = (0, 3)

35. Question

Plot the points A(–5, 2), B(3, –2), C(–4, –3) and D(6, 0) on a graph paper.

Answer

The given four points A (-5, 2), B (3, -2), C (-4, -3) and D (6, 0) are plotted on the graph paper as follows:

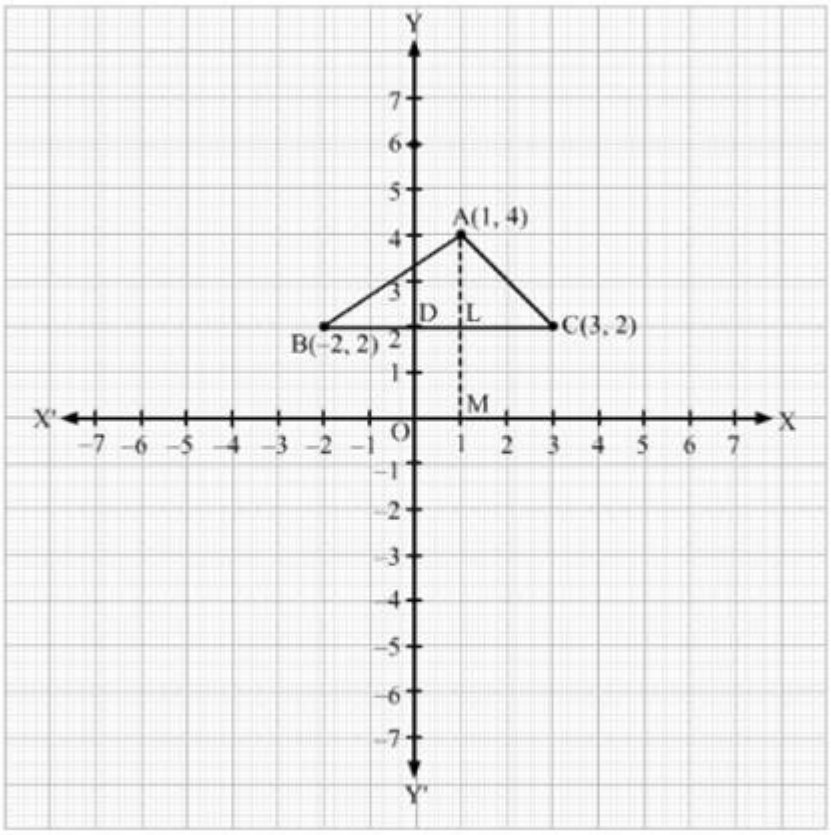


36. Question

The three vertices of ΔABC are A(1, 4), B(−2, 2) and C(3, 2). Plot these points on a graph paper and calculate the area of ΔABC.

Answer

Let the vertices of the triangle be A (1, 4), B (-2, 2) and C (3, 2)



Now, when we plot and join these points on the graph paper, we get a triangle ABC

Let the line BC intersect y-axis at D

∴ BC = BD + DC

= (2 + 3) units

= 5 units

Now, AL is drawn perpendicular to x-axis meeting BC at L

∴ Ordinate of point L = Ordinate of point C – 2

AL = AM – LM

= 4 – 2

= 2 units

Hence, area of $\Delta ABC = \frac{1}{2} \times BC \times AL$

$= \frac{1}{2} \times 5 \times 2$

$= \frac{1}{2} \times 10$

= 5 units

∴ Area of the triangle ABC = 5 square units

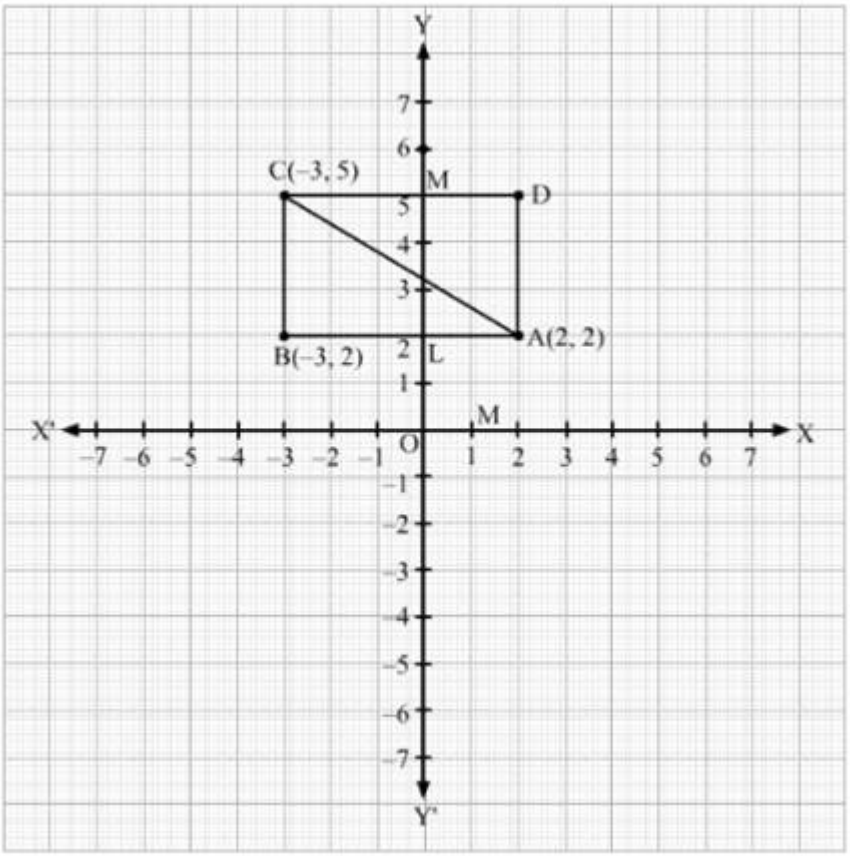
37. Question

The three vertices of a rectangle ABCD are A(2, 2), B(−3, 2) and C(−3, 5). Plot these points on a graph paper and find the coordinates of D. Also, find the area of rectangle ABCD.

Answer

Let the three vertices of rectangle ABCD be A (2, 2), B (-3, 2) and C (-3, 5)

Now, on plotting these points on the graph paper and by joining the points we get:



The point A lies in the first quadrant while B and C lie in the second quadrant

Let us assume D be the fourth vertex of the rectangle

∴ Abscissa of D = Abscissa of A = 2

And, Ordinate of D = Ordinate of C = 3

Hence, Coordinate of the fourth vertex, D = (2, 5)

Let y-axis cut AB and CD at point L and M respectively

∴ AB = (BL + LA)

= (3 + 2)

= 5 units

Also, BC = 5 − 2

= 3 units

∴ Area of rectangle ABCD = BC × AB

= 3 × 5

= 15 square units

Hence, the area of the rectangle ABCD is 15 square units

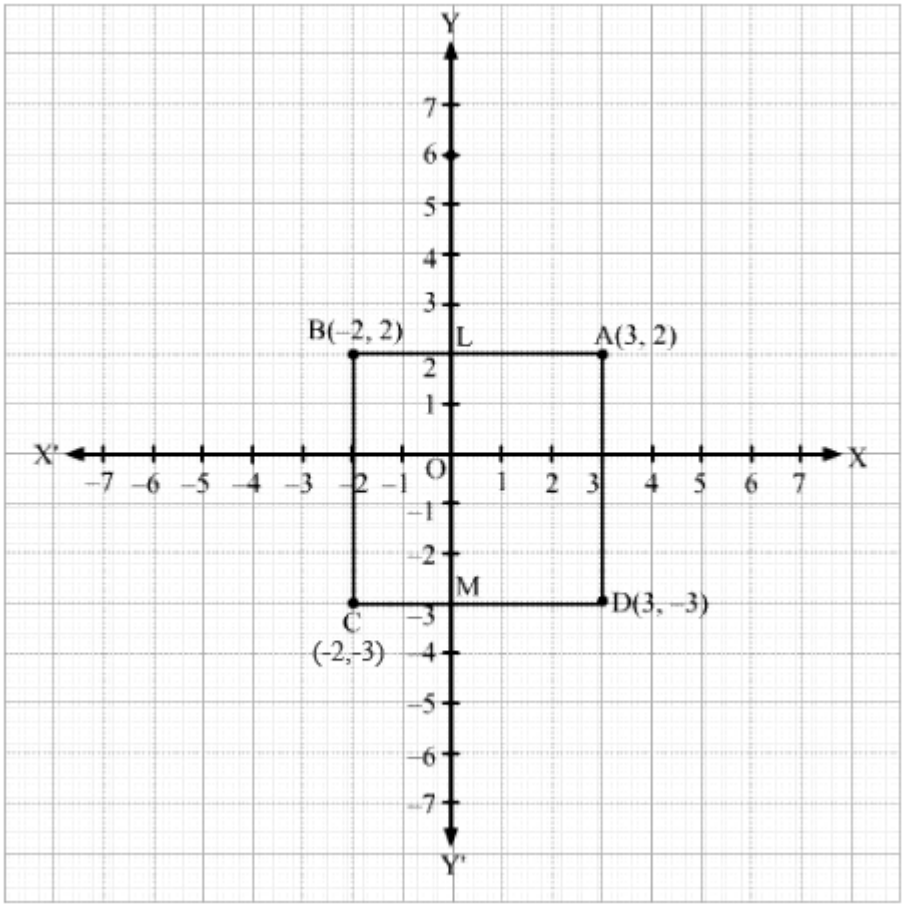
38. Question

The three vertices of a rectangle ABCD are A(3, 2), B(−2, 2) and C(3, −3). Plot these points on a graph paper and find the coordinates of D. Also, find the area of rectangle ABCD.

Answer

Let the three vertices of rectangle ABCD be A (3, 2), B (-2, 2) and D (3, -3)

Now, on plotting these points on the graph paper and by joining the points we get:



A, B and D lie in different quadrants

Let us assume D be the fourth vertex of the rectangle

∴ Abscissa of C = Abscissa of B = - 2

And, Ordinate of C = Ordinate of D = - 3

Hence, Coordinate of the fourth vertex, C = (-2, -3)

Let y-axis cut AB and CD at point L and M respectively

∴ AB = (BL + LA)

= (2 + 3)

= 5 units

∴ Area of rectangle ABCD = AB × AB

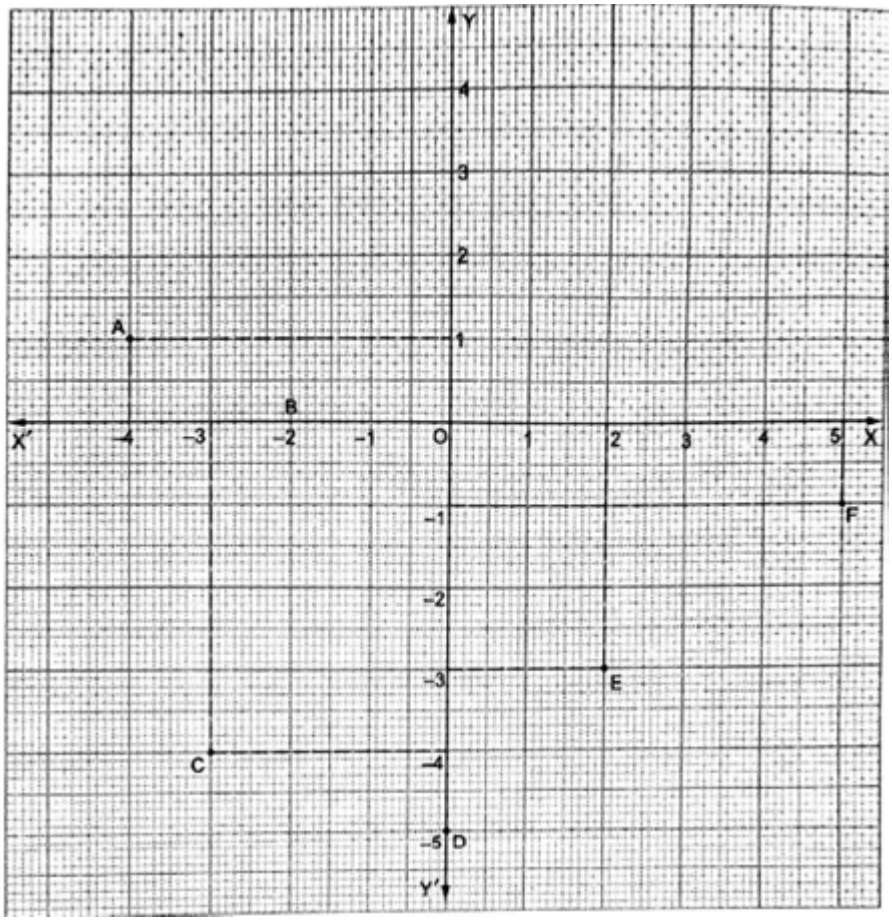
= 5 × 5

= 25 square units

Hence, the area of the rectangle ABCD is 25 square units

39. Question

From the figure given below write each of the following:



(i) The coordinates of point D

(ii) The abscissa of the point A

(iii) The point whose coordinates are (2,-3)

(iv) The point whose coordinates are (-3,-4)

(v) The ordinate of point E

(vi) The coordinates of B

(vii)The coordinates of F

(viii)The coordinates of the origin

Answer

(i) We have,

Abscissa of point D = 0

Ordinate of point D = -5

∴ Coordinates of point D = (0, -5)

(ii) From the given graph, we have:

Abscissa of point A = - 4

(iii) From the given graph, we have:

Coordinates of point E = (2, -3)

(iv) From the given graph, we have:

Coordinates of point C = (-3, -4)

(v) From the given graph, we have:

Ordinate of point E = - 3

(vi) From the given graph, we have:

Point B lies on x-axis

∴ Abscissa of point B = - 2

Ordinate of point B = 0

Hence coordinates of point B are (-2, 0)

(vii) From the given graph, we have:

Abscissa of point F = 5

Ordinate of point F = - 1

(viii) From the given graph, we have:

Coordinates of the origin = (0, 0)

Formative Assessment (Unit Test)

1. Question

If $x < 0$ and $y > 0$, then the point (x, y) lies in

A. quadrant I

B. quadrant II

C. quadrant III

D. quadrant IV

Answer

According to question, we have

$x < 0$ and $y > 0$ then these points will lie in second quadrant

As, points of the type (-, +) lie on the second quadrant

∴ Option B is correct

2. Question

Which point does not lie in any quadrant?

A. (3, -6)

B. (-3, 4)

C. (5, 7)

D. (0, 3)

Answer

From the given options in the question the point which does not lie in any quadrant is (0, 3)

∴ Option D is correct

3. Question

The area of ΔAOB having vertices A(0,6) , O(0,0) and B(6,0) is

A. 12 sq units

B. 36 sq units

C. 18 sq units

D. 24 sq units

Answer

When we plot the given points in the graph paper then,

ΔAOB is the right angle triangle, where

OB = Base = 6 units

Height of triangle = OA = 6 units

∴ Area of $\Delta AOB = \frac{1}{2} \times OA \times OB$

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

$= \frac{1}{2} \times 36$

= 18 square units

∴ Option C is correct

4. Question

Read the statements given below and choose the correct answer:

I. Any point on x-axis is of the form $(x, 0)$ for all x.

II. Any point on y-axis is of the form $(0, y)$ for all y.

III. Any point on both the axes is of the form (x, y) for all x and y.

Which of the following is true?

A. I and II

B. I and III

C. I only

D. III only

Answer

We know that,

Any point which lies on the x-axis is of the form (x, 0) for x

Also, point which lies on the y-axis is of the form (0, y) for y

Hence, statement I and II are true

∴ Option A is correct

5. Question

Which of the following points does not lie on the line 3y = 2x – 5?

A. (7, 3)

B. (1, -1)

C. (-2, -3)

D. (-5, 5)

Answer

From the given four options, (-5, 5) does not satisfy the given equation:

3x = 2x – 5

We have,

R.H.S = 2 × (-5) – 5

= - 10 – 5

= - 15

Also, L.H.S = 3 × 5

= 15

Hence, the point (-5, 5) does not lie on the line 3y = 2x – 5

∴ Option D is correct

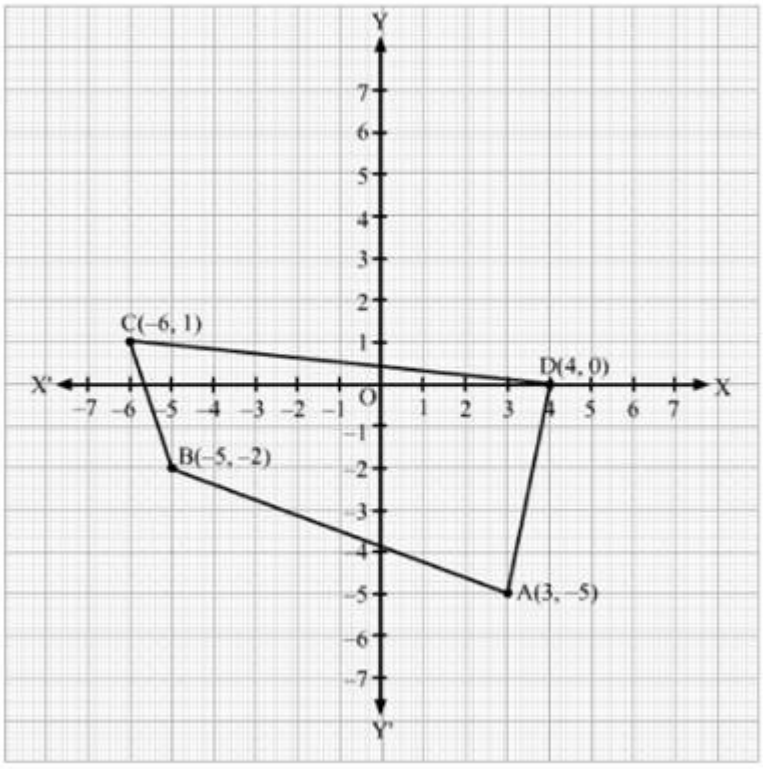
6. Question

Plot each of the following points on a graph paper:

A(3, –5), B(–5, –2), C(–6, 1) and D(4, 0).

Answer

The following given points are plotted on the graph paper as follows:



7. Question

If 2y = 3 – 5x, find the value of y when x = –1.

Answer

We have,

2y = 3 – 5x

Now, by putting the value of x = - 1 in the given equation we get:

2y = 3 – 5 × (-1)

2y = 3 + 5

2y = 8

$y = \frac{8}{2} = 4$

Hence, when x = - 1 then y = 4

8. Question

On which axis does the point A(0, –4) lie?

Answer

We have,

Abscissa of point A (0, -4) = 0

∴ Point A lies on the y-axis

9. Question

In which quadrant does the point B(–3, –5) lie?

Answer

From the given point given in the question, we have

The abscissa and the ordinate of the point B (-3, -5) are negative and we know that those points lie on the III quadrant

∴ Point B lies in the third quadrant

10. Question

What is the perpendicular distance of the point P(–2, –3) from the y-axis?

Answer

We have,

Abscissa of point P (-2, -3) = - 2

We know that, distance cannot be negative

∴ The perpendicular distance of the given point from the y-axis is 2 units

11. Question

At what point do the coordinate axes meet?

Answer

The coordinate axes meet at the origin i.e., at point O (0, 0)

12. Question

For each of the following write true or false:

(i) The point $(4,0)$ lies in quadrant I.

(ii) The ordinate of a point P is -3 and its abscissa is -4. The point is $P(-3,-4)$.

(iii) The points $A(1,-1)$ and $B(-1,1)$ both lie in quadrant IV.

(iv) A point lies on y-axis at a distance of 3 units from x-axis. Its coordinates are (3, 0).

(v) The point $C(0,-5)$ lies on y-axis.

(vi) The point $O(0,0)$ lies on x-axis as well as y-axis.

Answer

(i) The given statement is false as the given point lies on the x-axis

(ii) The given statement is also false as the point is P (-4, -3)

(iii) The given statement is also false as the point A (1, -1) lies in the quadrant IV and point B (-1, 1) lies in the quadrant II

(iv) The given statement is false as the coordinates of the point are (0, 3)

(v) The given statement is true as the point C (0, -5) lies on y-axis

(vi) The given statement is also true as the point O (0, 0) lies on x-axis as well as y-axis

13. Question

Taking a suitable scale, plot the following points on a graph paper:

x	-4	-2	5	0	3	-5
y	6	-7	5	-1	-6	0

Answer

The concept is:

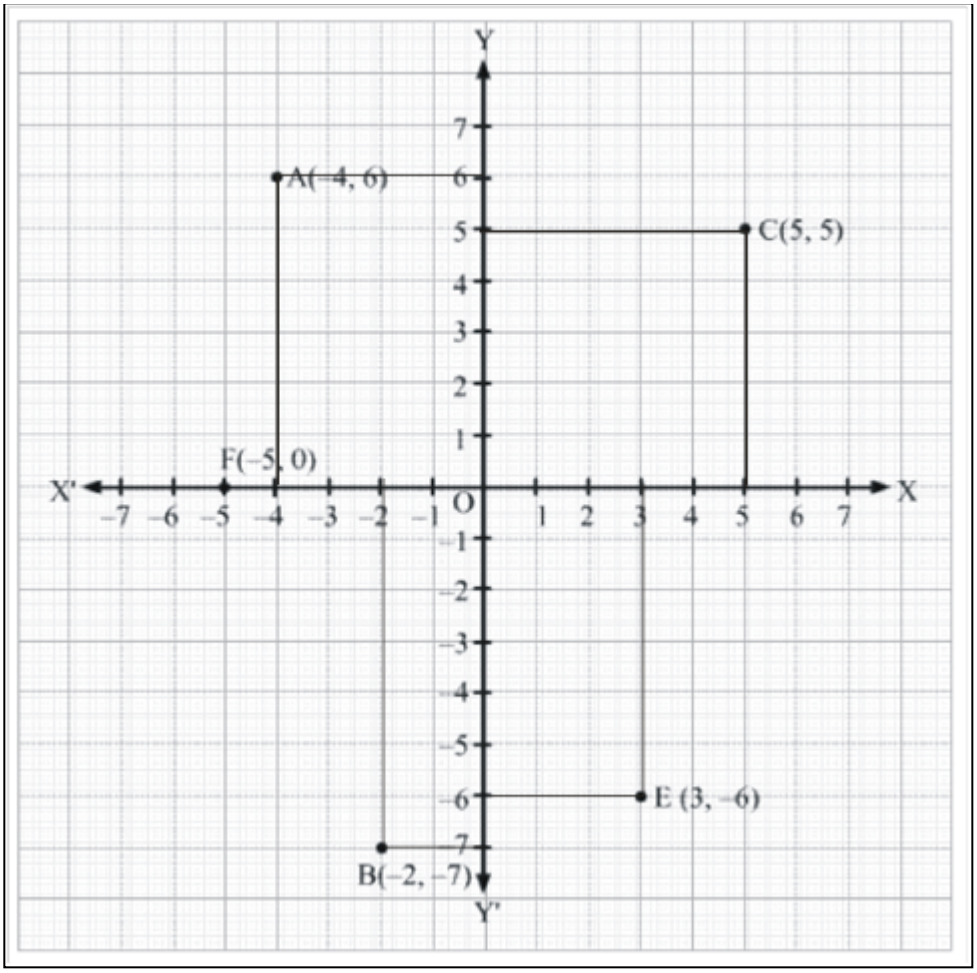
(+x, +y) $\Rightarrow$ 1st Quadrant

(-x, +y) $\Rightarrow$ 2nd Quadrant

(-x, -y) $\Rightarrow$ 3rd Quadrant

(+x, -y) $\Rightarrow$ 4th Quadrant

The given points are plotted as follows:



14. Question

Read the graph paper given below and answer the following:

(i) Write the points whose ordinate is 0.

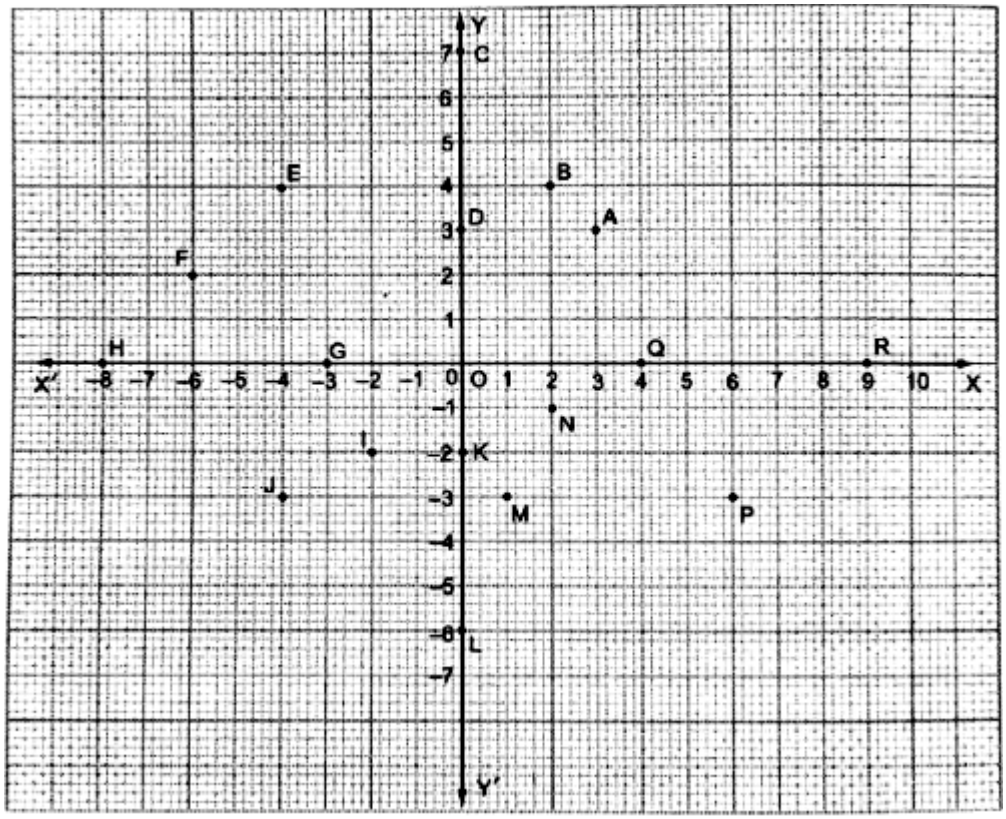
(ii) Write the points whose abscissa is 0.

(iii) Write the points whose ordinate is -3.

(iv) Write the points whose abscissa is 2.

(v) Write the coordinates of all points in quadrant II.

(vi) Write the coordinates of all those points for which abscissa and ordinate have the same value.



Answer

(i)The given four points G (-3, 0) , H (-8, 0), Q (4, 0) and R (9, 0) lie on the x-axis

∴ Their ordinates are equal to O

(ii) The given four points L (0, -6) , K (0, -2), D (0, 3) and C (0, 7) lie on the x-axis

∴ Their abscissa are equal to O

(iii) The ordinates of points M (-1, 3) , J (-4, -3) and P (6, 3) are equal to -3

(iv) Points having abscissa equal to 2 is B (2, 4) and N (2, -1)

(v) From the given points, points E and F lie in quadrant II

∴ Coordinates of E = (-4, 4)

Coordinates of F = (-6, 2)

(vi) Coordinates of all those points having abscissa and ordinate same value are:

A (3, 3) and I (-2, -2)

15. Question

(i) Write the mirror image of the point(2, 5) in the x-axis.

(ii) Write the mirror image of the point(3, 6) in the y-axis.

(iii) A point (a, b) lies in quadrant II. In which quadrant does (b, a) lie?

Answer

(i) The mirror image of the point (2, 5) in the x-axis is (2, -5)

(ii) The mirror image of the point (3, 6) in the y-axis is (-3, 6)

(iii) According to question,

Point (a, b) lies in the second quadrant so a must be a negative number and b must be a positive number

∴ Point (b, a) lies in the fourth quadrant

16. Question

Without plotting the points on a graph paper indicate the quadrant in which they lie:

(i) ordinate = 4, abscissa = - 3

(ii) ordinate = - 5, abscissa = 4

(iii) abscissa = -1, ordinate = -2

(iv) abscissa = -5, ordinate = 3

(v) abscissa = 2, ordinate = 1

(vi) abscissa = 7, ordinate = -4

Answer

The concept is:

(+x, +y) $\Rightarrow$ 1^{st} Quadrant

(-x, +y) $\Rightarrow$ 2^{nd} Quadrant

(-x, -y) $\Rightarrow$ 3^{rd} Quadrant

(+x, -y) $\Rightarrow$ 4^{th} Quadrant

(i) Points having ordinate = 4 and abscissa = - 3 lies in the quadrant II

(ii) Points having ordinate = - 5 and abscissa = 4 lies in the quadrant IV

(iii) Points having ordinate = - 2 and abscissa = - 1 lies in the quadrant III

(iv) Points having ordinate = 3 and abscissa = - 5 lies in the quadrant II

(v) Points having ordinate = 1 and abscissa = 2 lies in the quadrant I

(vi) Points having ordinate = - 4 and abscissa = 7 lies in the quadrant IV

17. Question

Which of the following points do not lie on x-axis?

(i) A(0, 6) (ii) B(2, 0)

(iii) C(0, −2) (iv) D(−6, 0)

(v) E(2, 1) (vi) F(0, 4)

Answer

From the points given in the question, we have

Points B (2, 0) and D (6, 0) have their ordinates = 0

∴ They lie on the point x-axis

And the point whose ordinate is not equal to zero does not lie on the x-axis

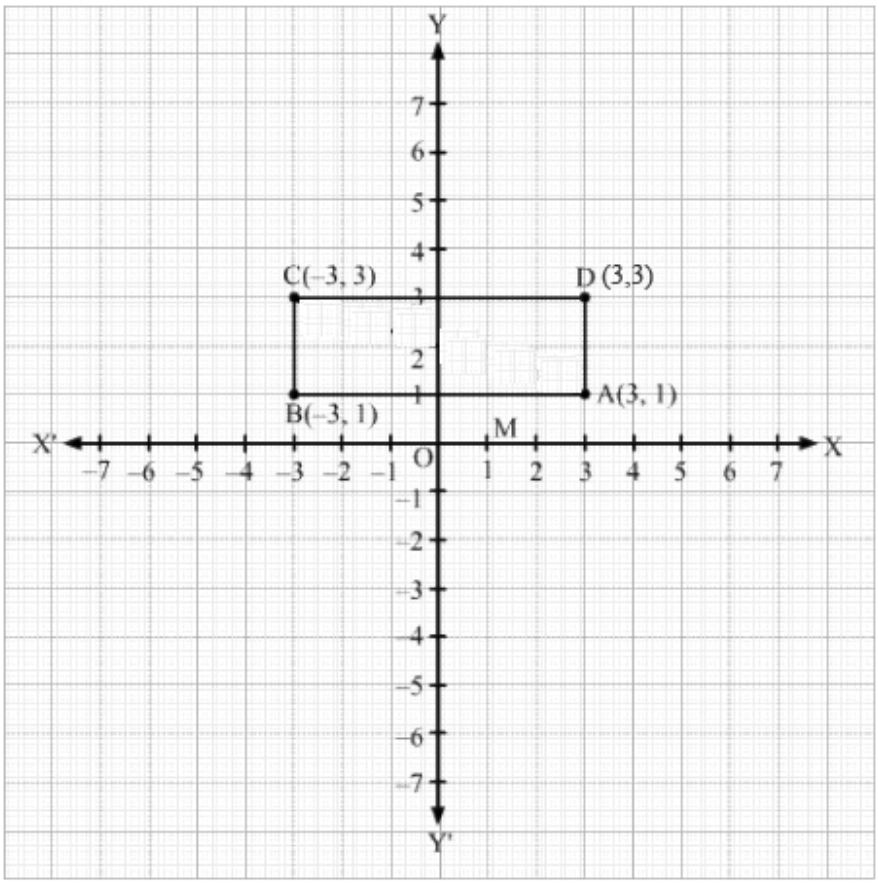
∴ Points A, C, E and F do not lie on the x –axis

18. Question

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

Answer

Let the three vertices of rectangle ABCD be A (3, 1), B (-3, 1) and C (-3, 3)



Now, on plotting these points on the graph paper and by joining the points we get:

A lies in thye first quadrant while B and C lie in the second quadrant

Let us assume D be the fourth vertex of the rectangle

∴ Abscissa of D = Abscissa of A = 3

And, Ordinate of D = Ordinate of C = 3

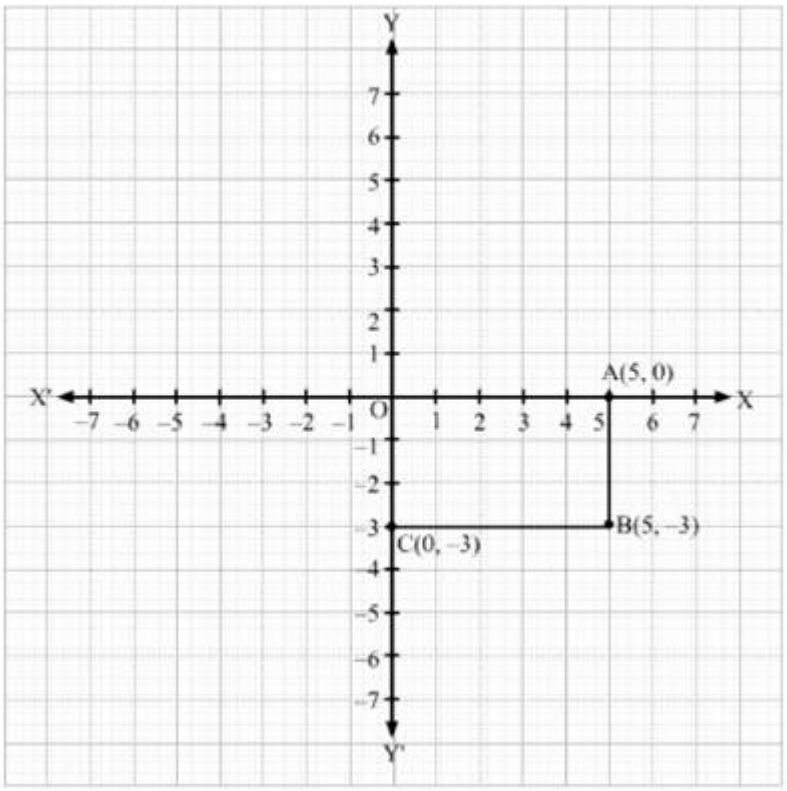
Hence, Coordinate of the fourth vertex, D = (3, 3)

19. Question

Write the coordinates of vertices of a rectangle OABC, where O is the origin, length OA = 5 units lying along x-axis, breadth AB = 3 units and B lying in the fourth quadrant.

Answer

It is given in the question that,



OABC is a rectangle where O is the origin and OA = 5 units along x-axis

Also, AB = 3 units and B lies in the fourth quadrant

Now, coordinates of origin, O = (0, 0)

As point A lies on the x-axis

∴ Coordinate of point A = (5, 0)

Also, point B lies in the fourth quadrant

So, coordinate of point B will be negative

As the given width AB = 3 units

∴ Coordinates of point B = (5, -3)

Also, point C and O lies on the same line

Thus, abscissa of C = abscissa of O = 0

Similarly, Point C and B lies on the same altitude

Hence, both points have equal altitude

∴ Coordinates of C = (0, -3)

Hence, the coordinates of the vertices of the given rectangle are:

O (0, 0), A (5, 0), B (5, -3) and C (0, -3)

20. Question

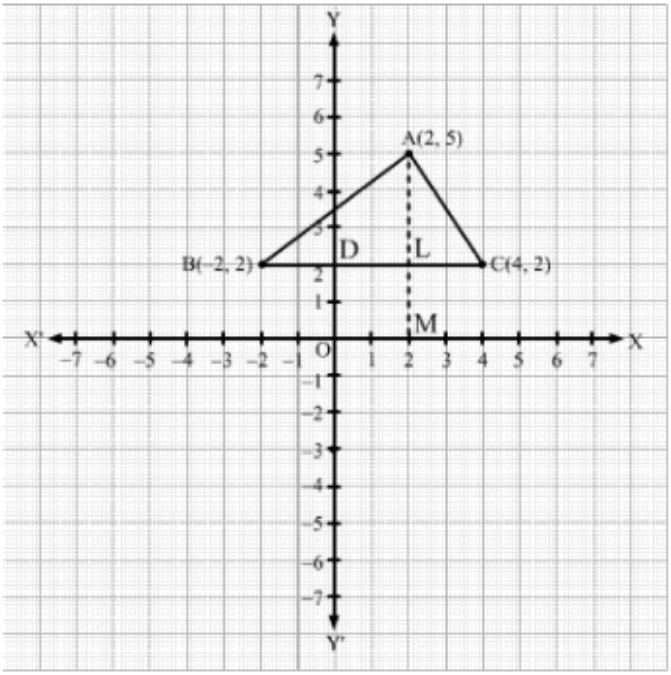
Plot the points A(2, 5), B(−2, 2) and C(4, 2) on a graph paper. Join AB, BC and AC. Calculate the area of ΔABC.

Answer

Let the three vertices of triangle ABC be:

A (2, 5), B (-2, 2) and C (4, 2)

Now, when we plot these points in the graph paper then we see that,



Point A and C lie in the quadrant I and point B lie in the II quadrant

Let the line BC intersect y-axis at point D

∴ BC = (BD + DC)

= (2 + 4) units

= 6 units

Now, we have to draw AM perpendicular to x-axis and intersect BC at L

∴ Ordinate of point L = Ordinate of point B - Ordinate of point C

AL = AM − LM

= 5 – 2

= 3 units

Hence, Area of triangle ABC = $\frac{1}{2} \times BC \times AL$

= $\frac{1}{2} \times 6 \times 3$

= $\frac{1}{2} \times 18$

= 9 square units

∴ Area of triangle ABC = 9 square units