KD EDUCATION ACADEMY [9582701166]

Time : 4 hour | STD 9 Maths | Total Marks : 100

kd sir 90+ questions chapter - Coordinate geometry

*** Choose the right answer from the given options. [1 Marks Each]** **[35]**

1. A point of the form (a, 0) lies on:

(A) Quadrant IV (B) Quadrant I (C) y-axis (D) x-axis

Ans. :

d. x-axis

Solution:

The given point of the form = (a, 0)

Here, x-co-ordinate = a and y-co-ordinate = 0

$\therefore$ The point of the form (a, 0) always lies on x-axis.

Thus, the point of the form (a, 0) always lies on x-axis.

2. The area of $\triangle AOB$ having vertices A(0, 6), 0(0, 0) and B(6, 0) is:

(A) 36 sq units (B) 18 sq units (C) 24 sq units (D) 12 sq units

Ans. :

b. 18 sq units

Solution:

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

is the right angle triangle, where

OB = Base = 6 units

Height of triangle = OA = 6 units

$\therefore$ Area of $\triangle AOB = \frac{1}{2} \times OA \times OB$

$\Rightarrow$ Area of $\triangle AOB = \frac{1}{2} \times 6 \times 6$

$\Rightarrow$ Area of $\triangle AOB = \frac{1}{2} \times 36$

$\Rightarrow$ Area of $\triangle AOB = 18 \text{ square units}$

3. Points (2, -3), (4, -5), (5, -9) and (-2, -5).

(A) Lie on the axes. (B) Lie in the i quadrant. (C) Does not lie in same quadrant. (D) Lie in the IV quadrant.

Ans. :

c. Does not lie in same quadrant.

Solution:

Point (2, -3), (4, -5), (5, -9) lies in 4th quadrant, because sign of abscissa and ordinate in 4th quadrant is (+, -).

But point (-2, -5) lies in 3rd quadrant since, sign of abscissa and ordinate in 3rd quadrant is (-, -).

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

(A) y coordinate = 5 or -5 (B) x coordinate = -5 (C) y coordinate = 5 only (D) y coordinate = -5 only

Ans. :

a. y coordinate = 5 or -5

Solution:

We know that, the perpendicular distance of a point from the X-axis gives y-coordinate of that point.

Here, foot of perpendicular lies on the negative direction of X-axis, so perpendicular distance can be measure in II quadrant or III quadrant. Hence, the point P has y-coordinate = 5 or -5.

5. Which point does not lie in any quadrant?

(A) (3, -4) (B) (5, 9) (C) (-3, 6) (D) (0, 3)

Ans. :

d. (0, 3)

Solution:

Since here value of x-coordinate = 0 so point lies on y-axis not in any quadrant.

6. The co-ordinates of two points A and B are (4, 3) and (-5, 3) respectively. The co-ordinates of the point at which the line segment AB meets the y-axis are:

(A) (0, 4) (B) (0, 3) (C) (3, 0) (D) (-5, 0)

Ans. :

b. (0, 3)

Solution:

Since it meets at y-axis, so, abscissa will be zero and we have ordinate = 3 in common so,point will be (0, 3)

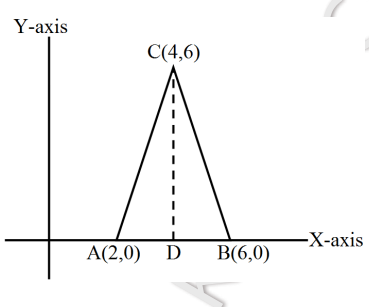
7. The area of the triangle formed by the points A(2, 0), B(6, 0) and C(4, 6) is:

(A) 24sq. unit (B) 12sq. unit (C) 10sq. unit (D) None of these

Ans. :

b. 12sq. unit

Solution:



Let CD be perpendicular drawn from C to AB.

The length of the perpendicular will be equal to the ordinate of point C.

⇒ CD = 6 unit

AB = 4 unit

Now, area of $\triangle \mathrm{ABC} = \frac{1}{2} \times \mathrm{Base} \times \mathrm{height}$

$\triangle \mathrm{ABC} = \frac{1}{2} \times 5 \times 6$

12sq. units

8. If P(3, 9) and Q(-3, -4), then (abscissa of P) - (ordinate of Q) is:

(A) -1 (B) 1 (C) 7 (D) -7

Ans. :

c. 7

Solution:

From the given data we have,

The abscissa of P = 3 and ordinate of Q = -4,

So, according to question,

(abscissa of P) - (ordinate of Q)

= 3 - (-4)

= 7

9. Which of the following are the signs of abscissa and ordinate of a point in quadrant?

(A) (-, +) (B) (-, -) (C) (+, +) (D) (+, -)

Ans. :

c. (+, +)

Solution:

The signs of abscissa and ordinate of a point in quadrant I are both +ve i.e. (+, +)

10. If $10x - 4x^2 - 3$, then the value of p(0) + p(1) is:

(A) -3 (B) 0 (C) 3 (D) 1

Ans. :

b. 0

Solution:

$10x - 4x^2 - 3$

$p(x) = -4x^2 + 10x - 3$

$p(0) + p(1) = [-4(0)^2 + 10(0) - 3] + [-4(1)^2 + 10(1) - 3]$

$p(0) + p(1) = [0 + 0 - 3] + [-4 + 10 - 3]$

$p(0) + p(1) = [-3] + [3]$

$p(0) + p(1) = 0$

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

(A) II and IV quadrants, respectively. (B) Same quadrant. (C) IV and II quadrants, respectively. (D) II and III quadrants, respectively.

Ans. :

a. II and IV quadrants, respectively.

Solution:

In point (-5, 2), x-coordinate is negative and y-coordinate is positive, so it lies in II quadrant and in point (2, -5),

x- coordinate is positive and y-coordinate is negative, so it lies in IV quadrant.

12. Write the correct answer in the following:

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 point(s) on the x-axis are:

(A) P and R (B) R and S (C) Only Q (D) Q and O

Ans. :

d. Q and O

Solution:

We now that, a point lies on X-axis, if its y-coordinate is zero.

So, the points on the axis are Q(8, 0) and O(0, 0).

13. If x-1 if the factor of $p(x)= x^3 - 23x^2 + kx -120$, then the value of 'k' is:

(A) 120 (B) 124 (C) 142 (D) 140

Ans. :

c. 142

Solution:

If x - 1 is a factor of p(x), then

$p(1) = 0$

$(1)^3 - 23 (1)^2 + k(1) - 120 = 0$

$1 - 23 + k - 120 = 0$

$1 - 143 + k = 0$

$-142 + k = 0$

$k = 142$

14. The distance of the point (-6, -2) from y-axis is:

(A) 2 units (B) 6 units (C) 38 units (D) 8 units

Ans. :

b. 6 units

Solution:

Distance from y-axis is the x co-ordinate of another given point,

So, distance = 6, (since distance cannot be negative)

15. The point of intersect of the coordinate axes is:

(A) Ordinate (B) Abscissa (C) Quadrant (D) Origin

Ans. :

d. Origin

Solution:

The point of intersection of co-ordinate axes i.e. X-axis and Y-axis is (0, 0), which is called origin.

16. The equation of y-axis is:

(A) x = 0 (B) y = x (C) y = 0 (D) None of these.

Ans. :

a. x = 0

Solution:

The value of abscissa or x-corrdinate is always zero at any point on y-axis.

So, x = 0 is the equation of y-axis.

17. The name of each part of the plane formed by the two lines in the Cartesian plane is:

(A) Origin (B) Quadrant (C) x-axis (D) y-axis

Ans. :

b. Quadrant

Solution:

In the Cartesian plane, there are two Axis one is x axis and other is y axis.

When the both Axis cut one another it forms four quadrant(quadrant 1, 2, 3 and 4)

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

(A) 7 (B) 3 (C) 5 (D) 4

Ans. :

b. 3

Solution:

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 is 3

19. The co-ordinates of a point below the x-axis lying on y-axis at a distance of 4 units are.

(A) (0, 4) (B) (4, 0) (C) (-4, 0) (D) (0, -4)

Ans. :

d. (0, -4)

Solution:

Since, it lies on the y-axis so abscissa = 0

And since it lies 4 unit below x-axis so the value of ordinate = -4.

Thus, point will be (0, -4)

20. The measure of the angle between the coordinate axes is:

(A) 0º (B) 90º (C) 180º (D) 360º

Ans. :

b. 90º

Solution:

The angle between the co-ordinate axes is 90º because $\mathrm{X}-\mathrm{axis} \perp \mathrm{Y}-\mathrm{axis}.$

21. A point is at a distance of 3 units from the x-axis and 7 units from the y-axis. Which of the following may be the co-ordinates of the point?

(A) (0, 0) (B) (4, 5) (C) (3, 7) (D) (7, 3)

Ans. :

d. (7, 3)

Solution:

We know that distance of any point from x-axis is the y-ordinate, so here y-coordinate = 3.

Now, distance of any point from y-axis is the x coordinate of the point.

So, here x co-ordinate is = 7

Thus, point will be (7, 3)

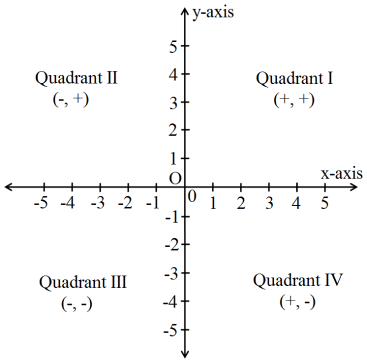
22. If $x > 0$ and $y < 0$ then the point (x, y) lies in quadrant.

(A) I (B) III (C) II (D) IV

Ans. :

d. IV

Solution:



Points of the type (+, -) lie in the 4th quadrant.

Since $x > 0$ and $y < 0$, the point (x, y) lies in quadrant IV.

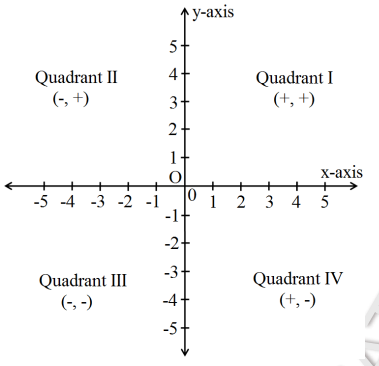
23. The point (other than origin) for which abscissa is equal to the ordinate will lie in quadrant.

(A) I only (B) I or II (C) I or III (D) II or IV

Ans. :

c. I or III

Solution:



The points are same when they are of the form (m, m) or (-n, -n).

This happens only in quadrant I and quadrant III.

So, the points (other than the origin) for which the abscissa is equal to the ordinate lie in quadrant I and quadrant III.

24. Which of the following point does not lie on the line $y = 2x + 3$?

(A) (-5, -7) (B) (3, 7) (C) (-1, 1) (D) (3, 9)

Ans. :

b. (3, 7)

Solution:

Let us put $x = 3$ in the give equation,

Then, $y = 2(3) + 3$

$y = 6 + 3 = 9$

So, the point will be (3, 9)

For x = 3, y = 9. But in the given option, y = 7

So, the given point (3, 7) will not lie on the line y = 2x + 3.

25. Write the correct answer in the following:

On plotting the points O(0, 0), A(3, 0), B(3, 4), C(0, 4) and joining OA, AB, BC and CO which of the following figure is obtained?

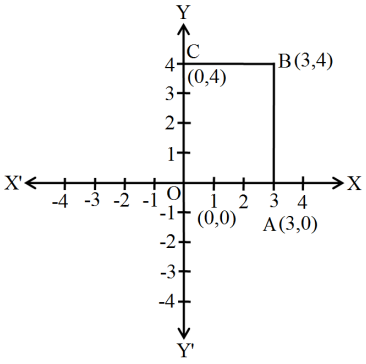
(A) Square. (B) Rectangle. (C) Trapezium. (D) Rhombus.

Ans. :

b. Rectangle.

Solution:

Here, point O(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.



26. A point both of whose co-ordinates are positive lies in:

(A) Quadrant I and III (B) Quadrant III only (C) Quadrant I only (D) Quadrant II and IV

Ans. :

c. Quadrant I only

Solution:

In 1st quadrant only the sign of x and y coordinate is +ve. i.e, (+, +)

27. The radius of a circle whose radius is 5 units and whose centre lies on the origin. The co-ordinates of any point lies on the circle and on the y-axis are:

(A) (5, 0) only (B) (0, 5) only (C) (5, 0) or (-5, 0) (D) (0, 5) or (0, -5)

Ans. :

d. (0, 5) or (0, -5)

Solution:

Since point lies on the y-axis so it can lie in two-point one in positive direction and another is negative direction of y-axis.

So point will be (0, 5) or (0, -5).

28. The abscissa of a point is positive in the:

(A) First and Second quadrant. (B) Second and Third quadrant. (C) Third and Fourth quadrant. (D) Fourth and First quadrant.

Ans. :

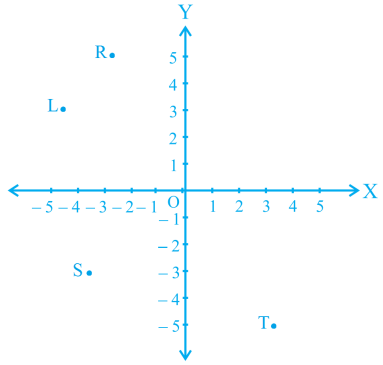
d. Fourth and First quadrant

Solution:

Abscissa = Intercept on X-axis

If intercept on X-axis is positive, means First and Fourth quadrant

29. In Figure, the point identified by the coordinates (-5, 3) is:



(A) T (B) L (C) R (D) S

Ans. :

b. L

Solution:

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.

30. The point which lies on x-axis at a distance of 3 units in the positive direction of x-axis is:

(A) (0, -3) (B) (-3, 0) (C) (0, 3) (D) (3, 0)

Ans. :

d. (3, 0)

Solution:

Since it lies on x-axis so ordinate will be zero because the value of the y-coordinate in the x-axis is equal to zero.

Thus point will be (3, 0).

31. If A (-2, 3) and B(-3, 5) are two given points then (abscissa of A) - (abscissa of B) = ?

(A) -2 (B) 1 (C) -1 (D) 2

Ans. :

b. 1

Solution:

Abscissa of A - Abscissa of B

= -2 - (-3)

= -2 + 3

= 1

32. If O(0, 0), A(3, 0), B(3, 4) and C(0, 4) are the vertices of a quadrilateral OABC, then OABC is:

(A) Trapezium. (B) Rectangle. (C) Square. (D) Rhombus.

Ans. :

b. Rectangle.

Solution:

As O(0, 0) and A(3, 0)

So, Length of side OA = 3 units

As A(3, 0) and B(3, 4)

So, Length of side AB = 4 units

As O(0, 0) and C(0, 4)

So, Length of side OC = 4 units

As B(3, 4) and C(0, 4)

So, Length of side BC = 3 units

As O(0, 0) and B(3, 4)

So, Length of diagonal OB = 5 units

As A(3, 0) and C(0, 4)

So, Length of diagonal AC = 5 units

In a quadrilateral opposite sides are equal and diagonals are also equal then it is a rectangle.

Therefore, OABC is a rectangle.

33. The points A(-2,3), B(-2,-4) and C(5,-4) are the vertices of the square ABCD, then the co-ordinates of the vertex D are:

(A) (5, 3) (B) (3, 3) (C) (0, 0) (D) (3, -4)

Ans. :

a. (5, 3)

Solution:

Let A(-2, 3), B(-2, 4), C(5, -4) be the three vertices of the square ABCD.

Clearly, abscissa of D = abscissa of C = 5

And,ordinate of D = ordinate of A = 3

So, the coordinates of the 4th vertex of ABCD i.e. D are (5, 3).

34. The distance of the point (-3, -2) from x-axis is:

(A) $\sqrt{13}$ units (B) 5 units (C) 3 units (D) 2 units

Ans. :

d. 2 units

Solution:

Distance from x-axis is they, co-ordinate of other point So ,here distance = 2,

35. If $x^2 + kx - 3 = (x - 3) (x + 1)$, then the value of 'k' is:

(A) -3 (B) 2 (C) -2 (D) 3

Ans. :

c. -2

Solution:

$x^2 + kx - 3 = (x - 3) (x + 1)$

$\Rightarrow x^2 + kx - 3 = x^2 + (-3 + 1) x + (-3) x 1$

$\Rightarrow x^2 + kx - 3 = x^2 - 2x - 3$

On comparing the term, we get k = -2

*** A statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.** [5]

36. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The coordinate of the point $\left(\frac{5}{2}, 0\right)$ where the line 2x - 3y - 5 = 0 cut the x - axis.

Reason: Line 2x - 3y - 5 = 0 will cut the x - axis at x = 0, also it satisfy the equation of line 2x - 5 = 0 $x = \frac{5}{2}$ hence, $\left(\frac{5}{2}, 0\right)$.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

Ans. :

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.

37. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The point which divides the line segment joining the points (7, -6) and (3, 4) in ratio 1 : 2 internally lies in the IV quadrant.

Reason: The ratio in which the point $P\left(\frac{3}{4}, \frac{5}{12}\right)$ divides the line segment joining the Points $A\left(\frac{1}{2}, \frac{3}{2}\right)$ and B(2, -5) is 1 : 5.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

Ans. :

b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.

38. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: The line 3x + y - 9 = 0 divides the line joining the points (1, 3) and (2, 7) internally in the ratio 3 : 4.

Reason: If $\left(\frac{a}{3}, 4\right)$ is the mid - point of the segment joining the points P (-6, 5) and R (-2, 3), then the value of 'a' is -6.

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.

d. Both assertion and reason are false.

Ans. :

c. Assertion is true but the reason is false.

39. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: If the distance of P(x, y) from A(6, 2) and B(-2, 6) are equal, then y = 3x.

Reason: $\left(\frac{5}{3}, 3\right)$ are the co - ordinates of the points of trisection of the line segment joining the points A(1, -2) and B(-3, 4).

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

Ans. :

d. Both assertion and reason are false.

40. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

Assertion: Mirror image of the point on the (9, -8) in x - axis is (-9, -8)

Reason: The coordinates of the point which lies on y - axis at a distance of 4 units in negative direction of y - axis is (6, 5)

a. Both Assertion and Reason are correct and Reason is the correct explanation for Assertion.
b. Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c. Assertion is true but the reason is false.
d. Both assertion and reason are false.

Ans. :

c. Assertion is true but the reason is false.

* Answer the following questions in one sentence. [1 Marks Each] [2]

41. Without plotting the points indicate the quadrant in which they will lie, if:
Ordinate is 5 and abscissa is -3

Ans. : In the point (-3, 5) abscissa is negative and ordinate is positive, so it lies in the second quadrant.

42. Without plotting the points indicate the quadrant in which they will lie, if:
Ordinate is 5 and abscissa is 3.

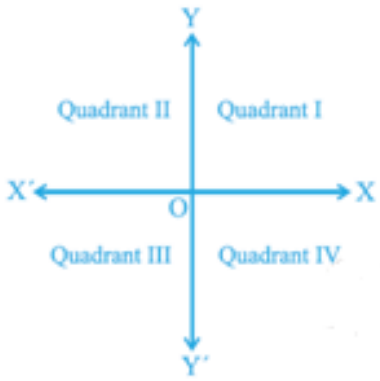
Ans. : In the point (3, 5) abscissa and ordinate both are positive, so it lies in the first quadrant.

* Answer the following short questions. [2 Marks Each] [8]

43. What is the name of each part of the plane formed by the two lines?

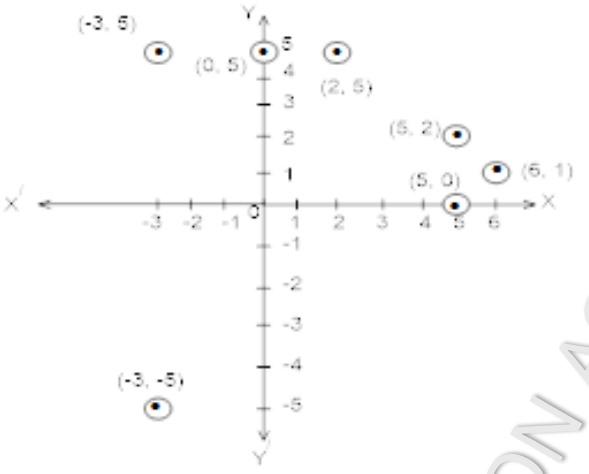
Ans. : The name of each part of the plane that is formed by x-axis and y-axis is called as quadrant.

(+, +) = First Quadrant, (-, +) = Second Quadrant, (-, -) = Third Quadrant and (+, -) = Fourth Quadrant



44. Locate the points (5, 0), (0, 5), (2, 5), (5, 2), (-3, 5), (-3, -5) and (6, 1) in the Cartesian plane.

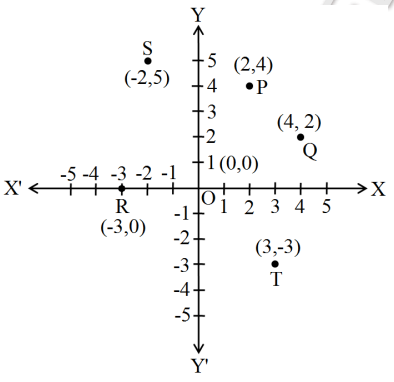
Ans. :



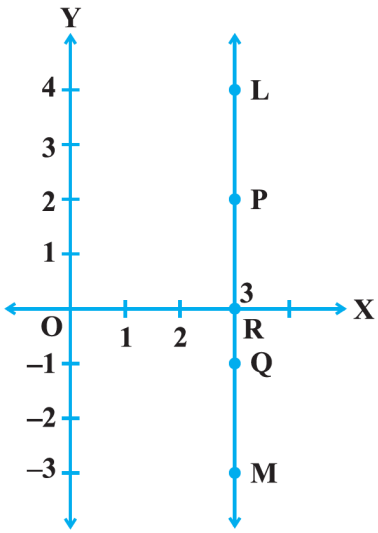
45. Plot the points (x, y) given by the following table:

x	2	4	-3	-2	3	0
y	4	2	0	5	-3	0

Ans. : On plotting the given points on the graph, we get the points P(2, 4), Q(4, 2), R(-3, 0), S(-2, 5), T(3, -3)and O(0, 0).



46. 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 the points L and M?

Ans. : Given LM is a line parallel to the Y-axis and its perpendicular distance from Y-axis is 3 units.

i. Coordinate of point P = (3, 2) [Since, its perpendicular distance from X-axis is 2]

Coordinate of point Q = (3, -1) [Since, its perpendicular distance from X-axis is 1 in negative direction of Y-axis].

Coordinate of point R = (3, 0) [since its lies on X-axis, so its y coordinate is zero].

ii. Abscissa of point L= 3, abscissa of point M = 3

Difference between the abscissa of the points L and M = 3 - 3 = 0

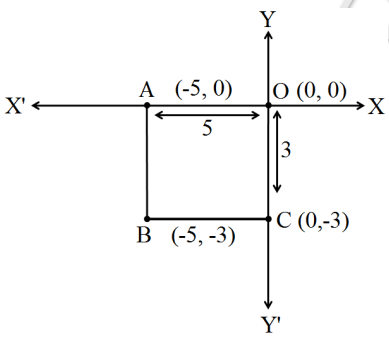
* Answer the following questions. [3 Marks Each] [9]

47. 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.

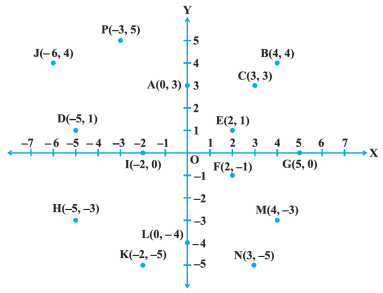
Ans. : Given length of rectangle = 5 units

Given breadth of rectangle = 3 units

One vertex is at origin i.e.., D(0, 0) and one of the other vertices lies in III quadrant. So the Length of the rectangle is 5 units in the negative direction of X–axis and then vertex is A(-5, 0).Also the breadth of the rectangle is 3 units in the negative direction of Y-axis and then vertex is C(0, -3). The fourth vertex B is (5, -3).



48. From the answer the following:



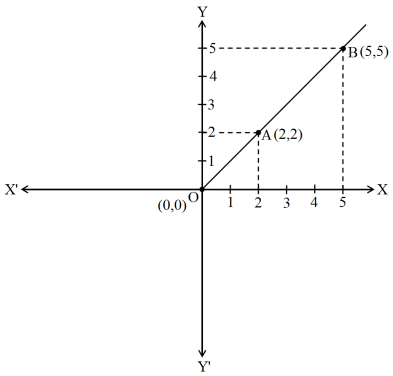
i. Write the points whose abscissa is 0
ii. Write the points whose ordinate is 0
iii. Write the points whose abscissa is -5

Ans. :

i. Clearly, the distance of points A, L and O from y-axis is 0. So, A(0, 3), L(0, -4) and O(0, 0) are the points whose abscissa is 0.
ii. Clearly, the distance of points G, I and O from x-axis is 0. So, G(5, 0), I(-2, 0) and O(0, 0) are the points whose ordinate is 0.
iii. Clearly, the distance of points H and D from y-axis is 5 units and both lien in second and third quadrants respectively. So, (-5, -3) and D(-5, 1) are the points whose abscissa is -5.

49. Plot the following points and check whether they are collinear or not:
(0, 0), (2, 2), (5, 5)

Ans. : Plotting the points 0 (0, 0), A (2, 2)and 6 (5, 5)on the graph paper and join these points, we get a straight line. Hence, given points are collinear.

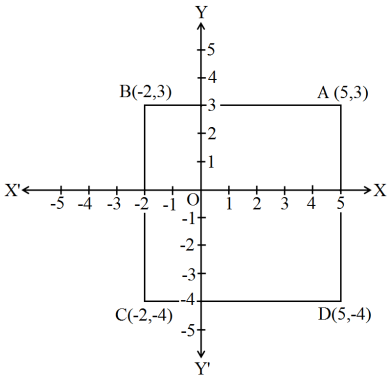


* Questions with calculation. [4 Marks Each] [12]

50. Points A(5, 3), B(-2, 3) and D(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.

Ans. : The graph obtained by plotting the points A, B and 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 AD are equal.

So, abscissa of C should be equal to abscissa of B i.e., -2 and ordinate of C should be equal to ordinate of D i.e., -4. Hence, the coordinates of C are (-2, -4).



51. In which quadrant or on which axis each of the following points lie?
(-3, 5), (4, -1), (2, 0), (2, 2), (-3, -6)

Ans. : In point (-3, 5), x-coordinate is negative and y-coordinate is positive, so it lies in II quadrant.

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

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

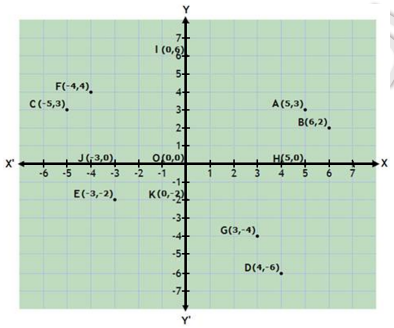
In point (2, 2), x-coordinate and y-coordinate both are positive, so its lies in I quadrant.

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

52. On the plane of a graph paper draw X' OX and YOY' as coordinate axes and plot each of the following points.

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

Ans. : The given points are plotted as follows:



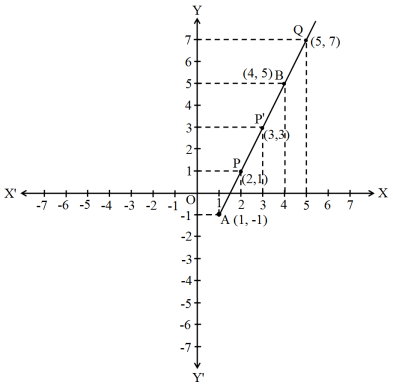
* Answer the following questions. [5 Marks Each] [5]

53. Plot the points A(1, -1) and B(4, 5):

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

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

Ans. : In point A(1, -1), x-coordinate is positive and y-coordinate is negative, so it lies in IV quadrant. In point B(4, 5), both coordinates are positive, so it lies in I quadrant. On plotting these point, we get the following graph.

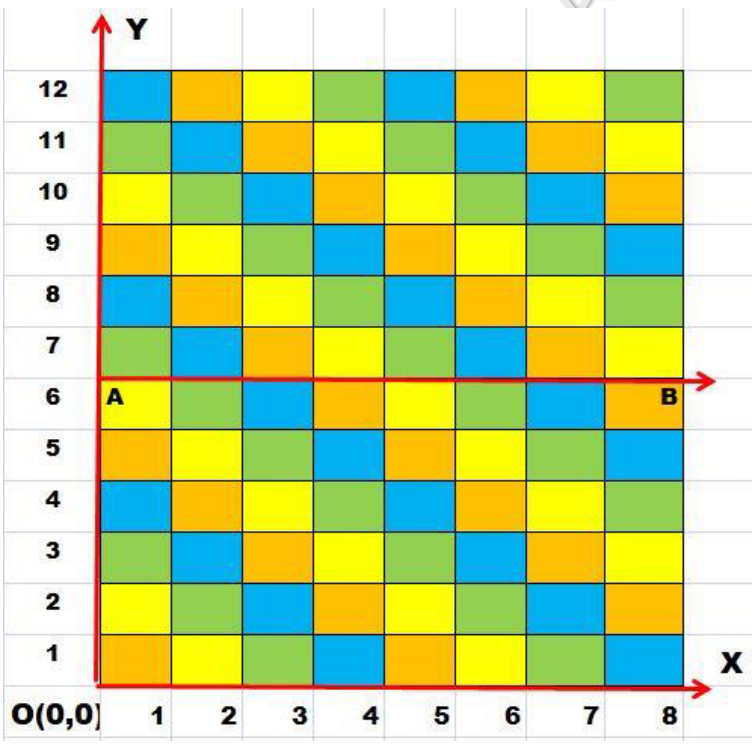


i. On joining the points A and B, we get the line segment AB. Now, to find the coordinates of a point on this line segment between A and B draw a perpendicular to X-axis from x = 2 and 3. [since, x = 2 and 3 lies between A and B] say it intersect line segment AB at P and p'. Now, draw a perpendicular to Y-axis from P and p', they intersect Y axis at y = 1 and 3, respectively. Thus, we get points (2,1) and (3, 3) which lie between line segment AB.

ii. Extent the line segment AB. Now, draw a perpendicular to X-axis from x = 5, say it intersects extended line segment at Q. Again, draw a perpendicular to Y-axis from Q and it intersects Y-axis at y = 7. Thus, we get the point Q(5,7) which lies outside the line segment AB.

* Case study based questions. [24]

54. Read the Source/ Text given below and answer these questions:



Roshan decorated one of his bathroom wall with tiles as shown in the picture. He was having tiles of four colours orange, yellow, green and blue. He fitted the tiles in 8 columns and 12 rows. The size of one tile was 1 foot × 1 foot and the area of each tile is

1 foot^2. He arranged the tile in such a way that colour of tiles in each row and column were in the pattern: Orange → Yellow → green → Blue → Orange → ..... and so on.

Now answer the following questions:

i. Which colour tile was fitted at the point with coordinates (5, 3)?
   a. Orange.
   b. Yellow.
   c. Green.
   d. Blue.

ii. Which colour tile was fitted at the point with coordinates (7, 7)?
   a. Orange.
   b. Yellow.
   c. Green.
   d. Blue.

iii. Which colour tile was fitted at the point with coordinate (2, 5)?
   a. Orange.
   b. Yellow.
   c. Green.
   d. Blue.

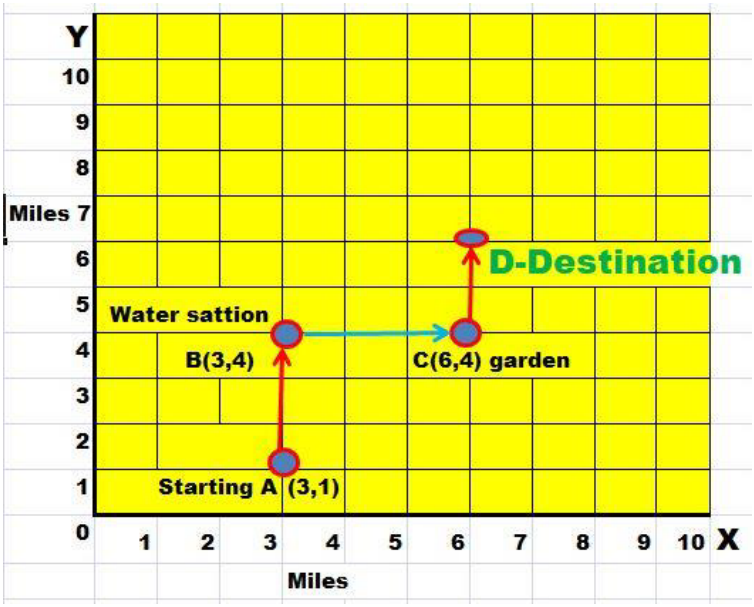
iv. What is the area of the tiles fitted in the rectangular part OABX?
   a. 50 foot^2
   b. 24 foot^2
   c. 12 foot^2
   d. 48 foot^2

v. What is the ordinate of top row tiles?
   a. 8
   b. 12
   c. 16
   d. 6

Ans. :

(i)	(c)	Green.
(ii)	(a)	Orange.
(iii)	(b)	Yellow.
(iv)	(d)	48 foot^2
(v)	(b)	12

55. Read the Source/ Text given below and answer these questions:



Arun is participating in an 8 miles walk. The organizers used a square coordinate grid to plot the course. The starting point is at A (3, 1). At B (3, 4), there's a water station to make sure the walkers stay hydrated. From water station, the walkway turns right and at C (6,4) a garden is situated to keep walkers fresh. From the garden, the walkway turns left and finally, Arun reaches at destination D to complete 8 miles.

i. How far is the water station B from the starting point A?
   a. 4 miles
   b. 3 miles
   c. 1 mile
   d. 5 miles

ii. How far is the water station B from garden C?
   a. 3 miles
   b. 4 miles
   c. 1 mile
   d. 5 miles

iii. What is the abscissa of destination point D:
   a. 3
   b. 5
   c. 3
   d. 6

iv. What is the ordinate of destination point D?
   a. 3
   b. 2
   c. 6
   d. 5

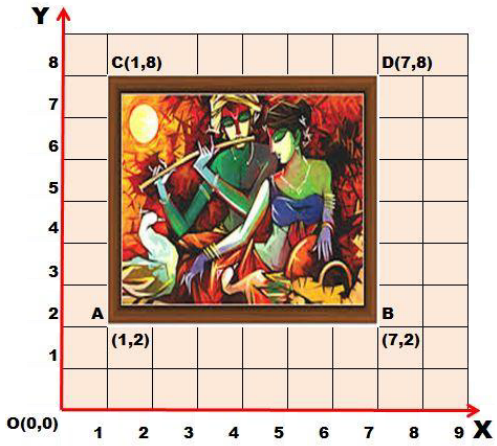
v. What are the coordinates of destination point D?
   a. (5, 6)
   b. (6, 5)
   c. (3, 9)
   d. (6, 6)

Ans. :

(i)	(b)	3 miles
(ii)	(a)	3 miles
(iii)	(d)	6

(iv)	(c)	6
(v)	(d)	(6, 6)

56. Read the Source/ Text given below and answer any four questions:



Rohit was putting up one of his paintings in his living room. Before this Rohit had put a grid on the wall where each unit measured equal to a foot. The upper-left corner of the frame is at point C(1, 8) and the upper-right corner at D(7, 8). The bottom-left corner is at A(1, 2) and the bottom-right corner at B(7, 2).

Please answer the following questions:

i. What is the width of the painting plus frame?
   a. 5 feet
   b. 8 feet
   c. 9 feet
   d. 6 feet

ii. What is the length of the painting plus frame?
   a. 9 feet
   b. 8 feet
   c. 6 feet
   d. 5 feet

iii. Which sides of the painting are parallel to x-axis?
   a. AB and CD
   b. AC and BD
   c. Diagonals AD and BC
   d. No one

iv. Which sides of the painting are parallel to y-axis?
   a. AB and CD
   b. AC and BD
   c. Diagonals AC and BD
   d. No one

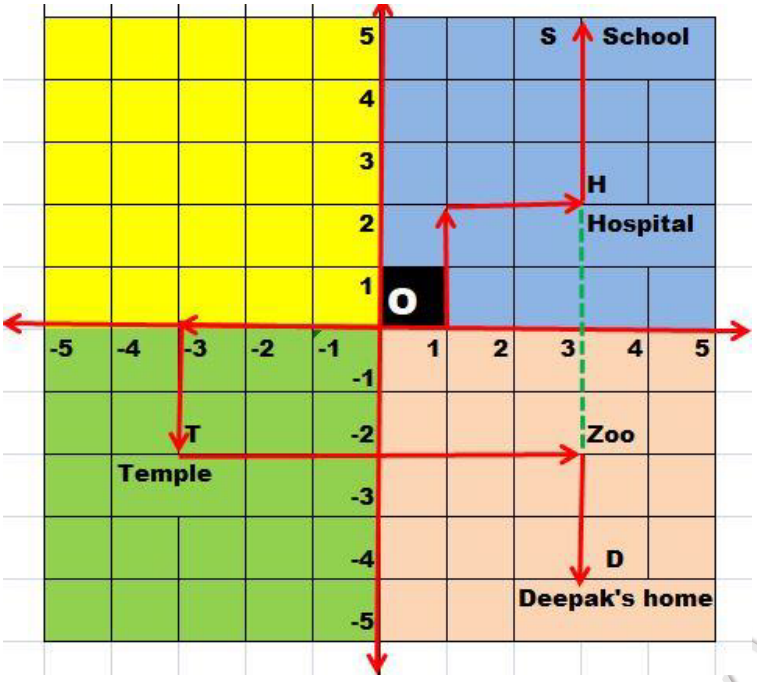
v. Point A, B, C and D lie in which quadrant?
   a. I
   b. II
   c. III
   d. IV

Ans. :

i	d	6 feet
ii	c	6 feet
iii	a	AB and CD

iv	b	AC and BD
v	a	I

57. Read the Source/ Text given below and answer these questions:



In the above picture, one small square is of size 1km × 1km. From the starting point O(0, 0) Deepak started to drive towards his home. He first drives 3km in left then he turned to his left and drove 2km, there he found a temple. He worshipped there and drove 6km in the left direction, there is a zoo and from the zoo, he drives 2km on the right side, then he reached his home. From O Sanjay drove for his school, he drove 1km to his right then took a left turn and drives 2km then again took a right turn and drives 2km. He found a hospital in the way. From Hospital he drove 3km and finally reached his school.

i. What are the coordinates of the Hospital?
   a. (3, 2)
   b. (2, 3)
   c. (3, 3)
   d. (5, 5)

ii. What is common abscissa of school, Hospital, Zoo and Deepak's home?
   a. 3
   b. 5
   c. -3
   d. -5

iii. What is the common ordinate of temple and Zoo?
   a. 3
   b. 5
   c. -3
   d. -2

iv. Deepak Drove in which quadrants?
   a. I & II
   b. II and III
   c. III and IV
   d. IV and I

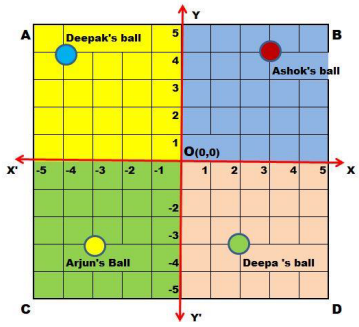
v. Sanjay Drove in which quadrants?
   a. I only

b. II and III
c. III and IV
d. II and I

Ans. :

(i)	(a)	(3, 2)
(ii)	(a)	3
(iii)	(d)	-2
(iv)	(c)	III and IV
(v)	(a)	I only

58. Read the Source/ Text given below and answer these questions:



There is a square park ABCD in the middle of Saket colony in Delhi. Four children Deepak, Ashok, Arjun and Deepa went to play with their balls. The colour of the ball of Ashok, Deepak, Arjun and Deepa are red, blue, yellow and green respectively. All four children roll their ball from centre point O in the direction of XOY, X'OY, X'OY' and XOY'. Their balls stopped as shown in the above image.

Answer the following questions:

i. What are the coordinates of the ball of Ashok?
   a. (4, 3)
   b. (3, 4)
   c. (4, 4)
   d. (3, 3)

ii. What are the coordinates of the ball of Deepa?
   a. (2, -3)
   b. (3, 2)
   c. (2, 3)
   d. (2, 2)

iii. What the line XOX' is called?
   a. y-axis.
   b. ordinate.
   c. x-axis.
   d. origin.

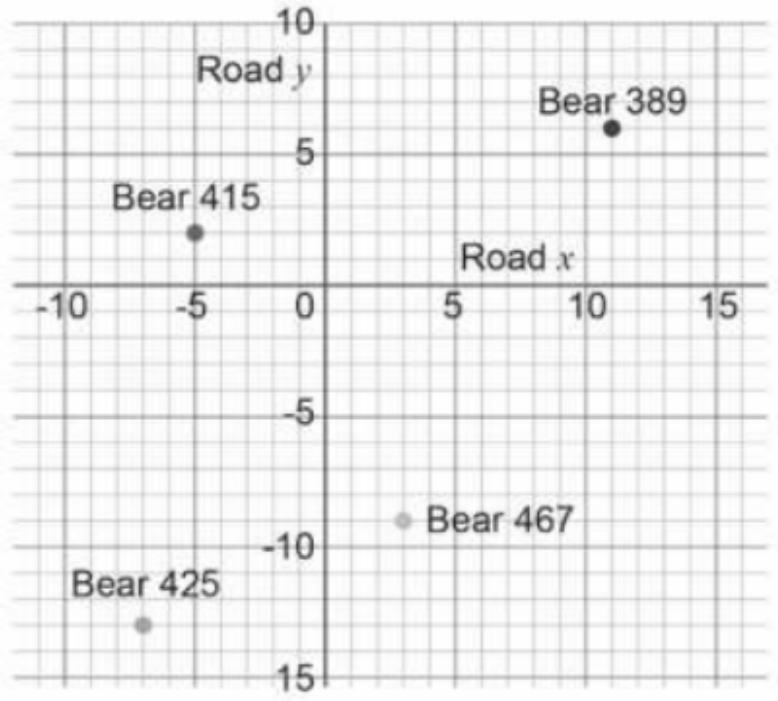
iv. What the point O(0, 0) is called?
   a. y-axis.
   b. ordinate.
   c. x-axis.
   d. origin.

v. What is the ordinate of the ball of Arjun?
   a. -3
   b. 3
   c. 4
   d. 2

Ans. :

(i)	(b)	(3, 4)
(ii)	(a)	(2, -3)
(iii)	(c)	x-axis.
(iv)	(d)	origin.
(v)	(a)	-3

59. A forest ranger keeps track of bears in his area. He plotted their location on a graph. The origin
represents the ranger's control room's location. To access and maintain equipment, Road x and
Road yhave been laid and paved inside the forest. They pass through the control room.



One unit on the graph paper represents 1 km.

1. Which bear is nearest to a paved road?
   A. Bear 389
   B. Bear 415
   C. Bear 425
   D. Bear 467
2. Bear 467 has been injured. The forest rescue team starts from the control room and decides to use the paved road as much as possible. Which road should they take?
3. How far is Bear 425 from Road x?
4. A tiger is at (11, 4). How far from it is the nearest bear?
   A. 2 km
   B. 4 km
   C. 5 km
   D. 7 km
5. In the forest, rain shelters are at an interval of 2 km along paved roads. A forest ranger is travelling on Road x. He crosses a rain shelter located at (3, 0).
What is likely to be the location of the next shelter?

6. The control room receives a message about trespassers located at (−9, −8). The trespassers were seen moving towards Road x on foot. The ranger immediately dispatches a team of guards in a jeep towards them. The guards encounter the trespassers before crossing Road x.

Which of the following is most likely to be the location of the encounter?

A. (−9, −14)
B. (−9, −5)
C. (−9, 4)
D. (9, 5)

7. Ravi planted a red maple tree sapling. The height of the sapling is 0.25 m. The average growth rate of the height of a red maple tree is 0.27 m per year.

The average life of a red maple tree is 80–100 years. Ravi estimated that his tree will grow up to 27 m.

What is the likely reason behind his estimation?

8. Which of the following equations represents the height (h) of the red maple tree after 't' years of planting?

A. h=0.25+0.27
B. h=0.25t+0.27
C. h=0.25+0.27t
D. h=0.25+0.27t

9. Which of the following is true for the line with equation: 1.x+0.y-4=0?

A. The distance of the line from the x-axis is 1.
B. The distance of the line from the Y-axis is 4.
C. The distance of the line from the Y-axis is −1.
D. The distance of the line from the x-axis changes from 1 to −4.

10. The equation of a line is ax+by+c=0.

What conditions ensure that the distance of the line from an axis is constant?

A. c = 0 and a, b ≠ 0
B. c < 0 and a, b ≠ 0
C. c, b ≠ 0 and a =1
D. c, b ≠ 0 and a = 0

Ans. : 1. B. Bear 415

2. Writes Road y OR y

3. Writes 13 km OR 13

4. A. 2 km

5. Gives a point which is at a distance of 2 units from (3, 0)

- (5, 0)
- (1, 0)

6. B. (−9, −5)

7. Writes coordinates which are at a distance of 1 km from either of the jeeps including decimal values

- (2, −9)
- (3, −10)

8. (− 7, − 9)

9. Writes four coordinates that are at equal distance from the control room and paved roads including decimal values

For example:

- (5, 5), (−5, 5), (−5, −5), (5, −5)
- (2.5, 2.5), (−2.5, 2.5), (−2.5, −2.5), (2.5, −2.5)

10. y = x and x = y

----- Don't wait for the perfect moment. Start small and take consistent action towards your goals. -----