Practice Set 7.1   **Page 93**

1. State in which quadrant or on which axis do the following points lie.
 (1)A(-3, 2) (2) B(-5, -2), (3) K(3.5, 1.5) (4) D(2, 10)
(5) E(37, 35) (6) F(15, -18) (7) G(3, -7) (8) H(0, -5)
 (9) M(12, 0) (10) N(0, 9) (11) P(0, 2.5) (12) Q(-7, -3)

Solution:
1. For the point A(-3,2), x co-ordinate is negative and y co-ordinate is positive.
Hence the point is in second quadrant.

2. For the point B(-5,-2), x co-ordinate is negative and y co-ordinate is negative.
Hence the point is in third quadrant.

3. For the point K(3.5,1.5), x co-ordinate is positive and y co-ordinate is positive.
Hence the point is in first quadrant.

4. For the point D(2,10), x co-ordinate is positive and y co-ordinate is positive.
Hence the point is in first quadrant.

5. For the point E(37,35), x co-ordinate is positive and y co-ordinate is positive.
Hence the point is in first quadrant.

6. For the point F(15,-18), x co-ordinate is positive and y co-ordinate is negative.
Hence the point is in fourth quadrant.

7. For the point G(3,-7), x co-ordinate is positive and y co-ordinate is negative.
Hence the point is in fourth quadrant.

8. For the point H(0,-5), x co-ordinate is zero and y co-ordinate is negative.
Hence the point lies on Y axis.

9. For the point M(12,0), x co-ordinate is positive and y co-ordinate is xero.
Hence the point lies on X axis.

10. For the point N(0,9), x co-ordinate is zero and y co-ordinate is positive.
Hence the point lies on Y axis.

11. For the point P(0,2.5), x co-ordinate is zero and y co-ordinate is positive.
Hence the point lies on Y axis

12. For the point Q(-7,-3), x co-ordinate is negative and y co-ordinate is negative.
Hence the point is in third quadrant.

2. In which quadrant are the following points ?
 (i) whose both co-ordinates are positive.
 (ii) whose both co-ordinates are negative.
 (iii) whose x co-ordinate is positive, and the y co-ordinate is negative.
**(iv) whose x co-ordinate is negative and y co-ordinate is positive.**

Solution:

(i) If both co-ordinates are positive, then the point lies in first quadrant.

(ii) If both co-ordinates are negative, then the point lies in third quadrant.

(iii) If x co-ordinate is positive and the y co-ordinate is negative, then the point lies in fourth quadrant.

(iv) If x co-ordinate is negative and the y co-ordinate is positive, then the point lies in second quadrant.

3. Draw the co-ordinate system on a plane and plot the following points. L(-2, 4), M(5, 6), N(-3, -4), P(2, -3), Q(6, -5), S(7, 0), T(0, -5)

Solution:

The given points are L(-2, 4), M(5, 6), N(-3, -4), P(2, -3), Q(6, -5), S(7, 0), T(0, -5)
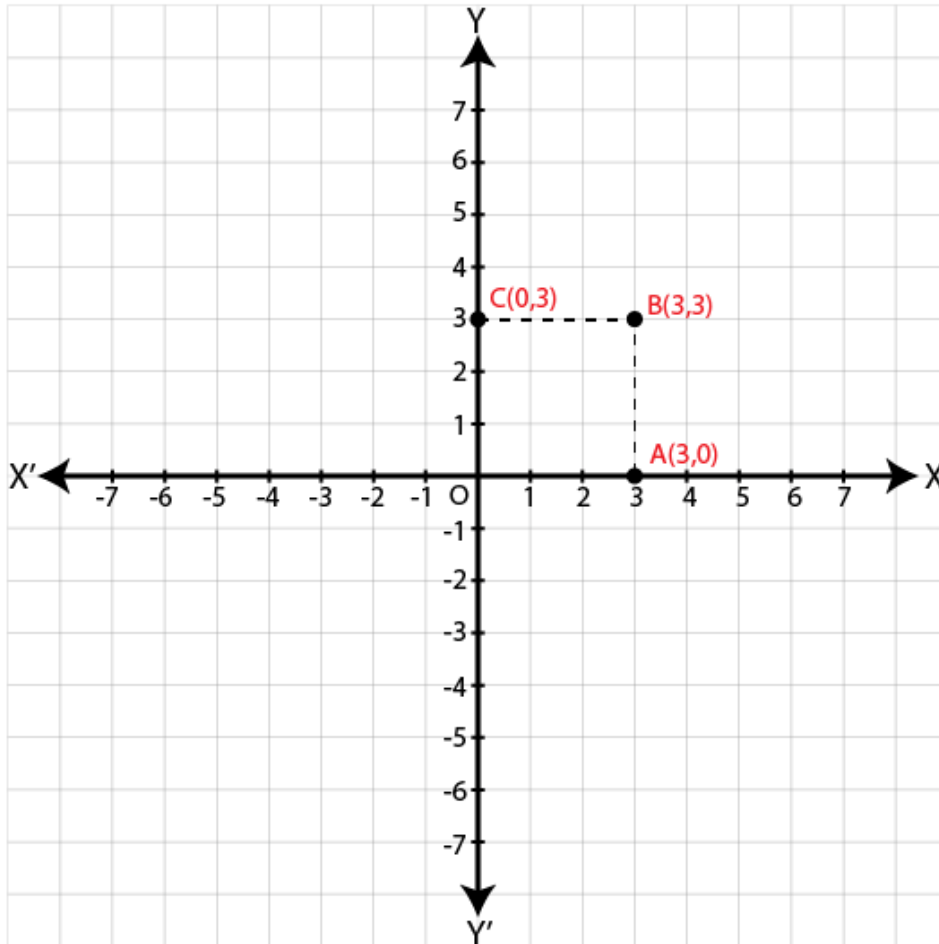
These can be plotted as follows.
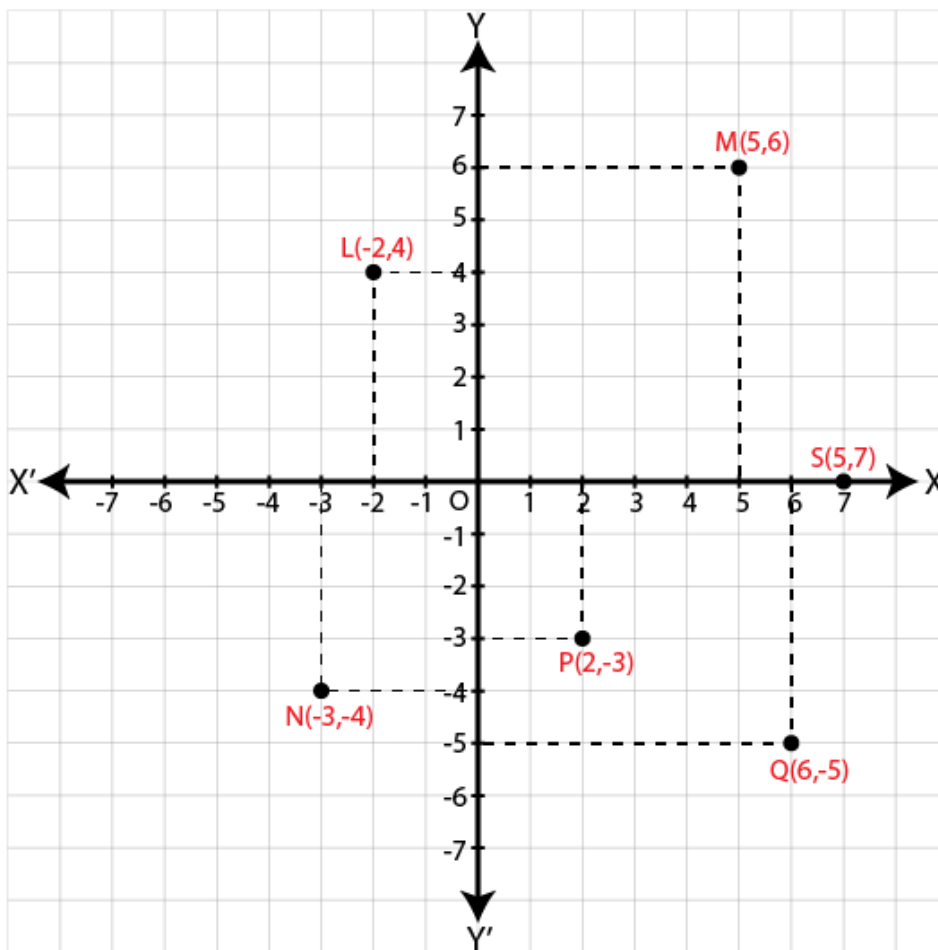
Practice set 7.2　　　　　　　　　　　　　　　　　　　　　　Page 97

1. On a graph paper plot the points A (3,0), B(3,3), C(0,3). Join A, B and B, C. What is the figure formed?

Solution:
The given points are A (3,0), B(3,3) and C(0,3).
These can be plotted as follows.

Here OA = AB = BC = OC = 3 units. Each angle formed is 90°.
Hence the figure obtained is a square.

2. Write the equation of the line parallel to the Y-axis at a distance of 7 units from it to its left.

Solution:
The equation of a line parallel to the Y-axis is in the form x = a.
Here line is at a distance 7 units from the left of Y-axis.
So a = -7

Hence the required equation is x = -7.

3. Write the equation of the line parallel to the X-axis at a distance of 5 units from it and below the X-axis.

Solution:
The equation of a line parallel to the X-axis is in the form y = b.
Here line is at a distance 5 units below the X-axis.
 So b = -5
Hence the required equation is y = -5.

4. The point Q(-3, -2) lies on a line parallel to the Y-axis. Write the equation of the line and draw its graph.

Solution:
The equation of a line parallel to the Y-axis is in the form x = a.
Here a = -3
∴ x = -3
Hence the required equation is x = -3.

5. Y-axis and line x = -4 are parallel lines. What is the distance between them?

Solution:
Note : Question is modified.
The equation of Y-axis is x = 0.
Equation of line parallel to Y-axis is x = -4   [Given]
Distance between the Y-axis and given line is 0-(-4) = 0+4 = 4
Hence the distance between given lines is 4 units.

6. Which of the equations given below have graphs parallel to the X-axis, and which ones have graphs parallel to the Y-axis ?
(i) x = 3
(ii) y - 2 = 0
(iii) x + 6 = 0
(iv) y = -5

Solution:
(i) Given equation of the line is x = 3.
The equation of a line parallel to the Y-axis is in the form x = a.
Hence the given equation will have a graph which is parallel to Y-axis.

(ii) Given equation of the line is y-2 = 0.
⇒ y = 2
The equation of a line parallel to the X-axis is in the form y = b.
Hence the given equation will have a graph which is parallel to X-axis.

(iii) Given equation of the line is x+6 = 0.
⇒ x = -6
The equation of a line parallel to the Y-axis is in the form x = a.
Hence the given equation will have a graph which is parallel to Y-axis.

(iv) Given equation of the line is y = -5.

The equation of a line parallel to the X-axis is in the form y = b.
Hence the given equation will have a graph which is parallel to X-axis.

7. On a graph paper, plot the points A(2, 3), B(6, -1) and C(0, 5). If those points are collinear then draw the line which includes them. Write the co-ordinates of the points at which the line intersects the X-axis and the Y-axis.

Solution:
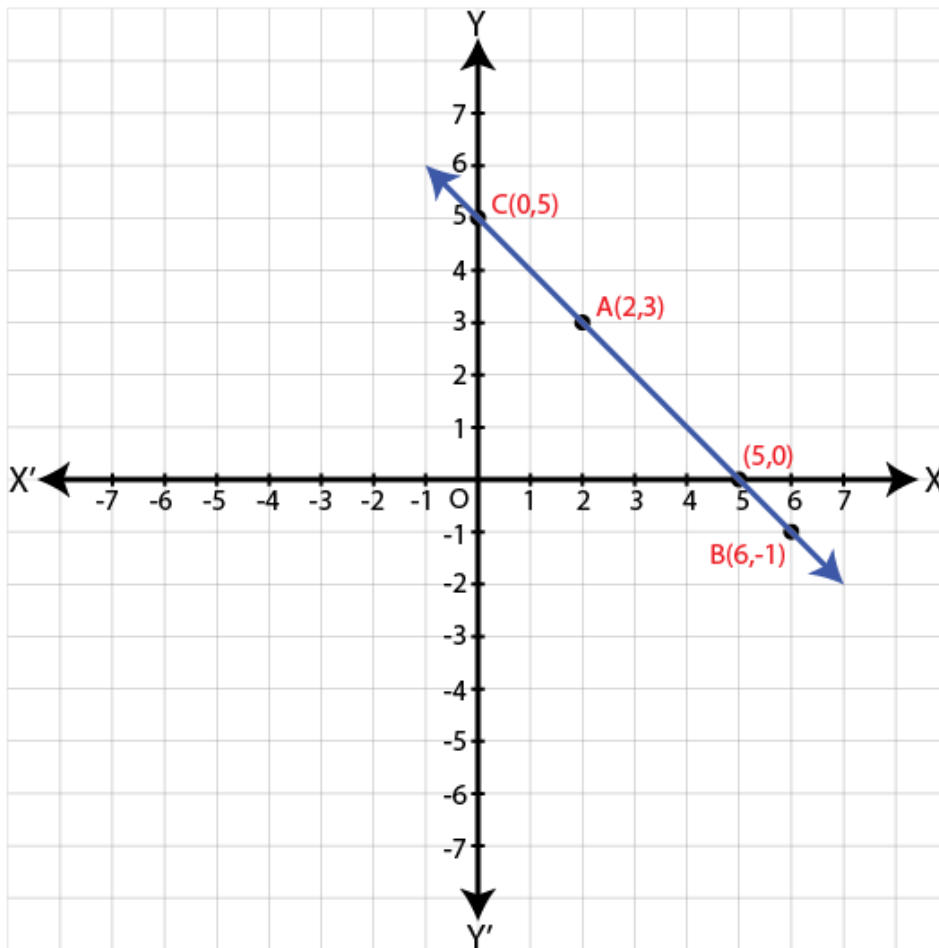
From the graph, the line intersects the X-axis at the point (5,0) and Y-axis at the point (0,5).

8. Draw the graphs of the following equations on the same system of co-ordinates. Write the co-ordinates of their points of intersection. x + 4 = 0, y - 1 =0, 2x + 3 = 0, 3y - 15 =0

Solution:
x+4 = 0
$\Rightarrow$ x = -4   ….(i)

y-1 = 0

⇒ y = 1 ….(ii)

2x+3 = 0
⇒2x = -3
⇒x = -3/2 = -1.5 …(iii)

3y-15 = 0
⇒3y = 15
⇒y = 15/3 = 5 …(iv)
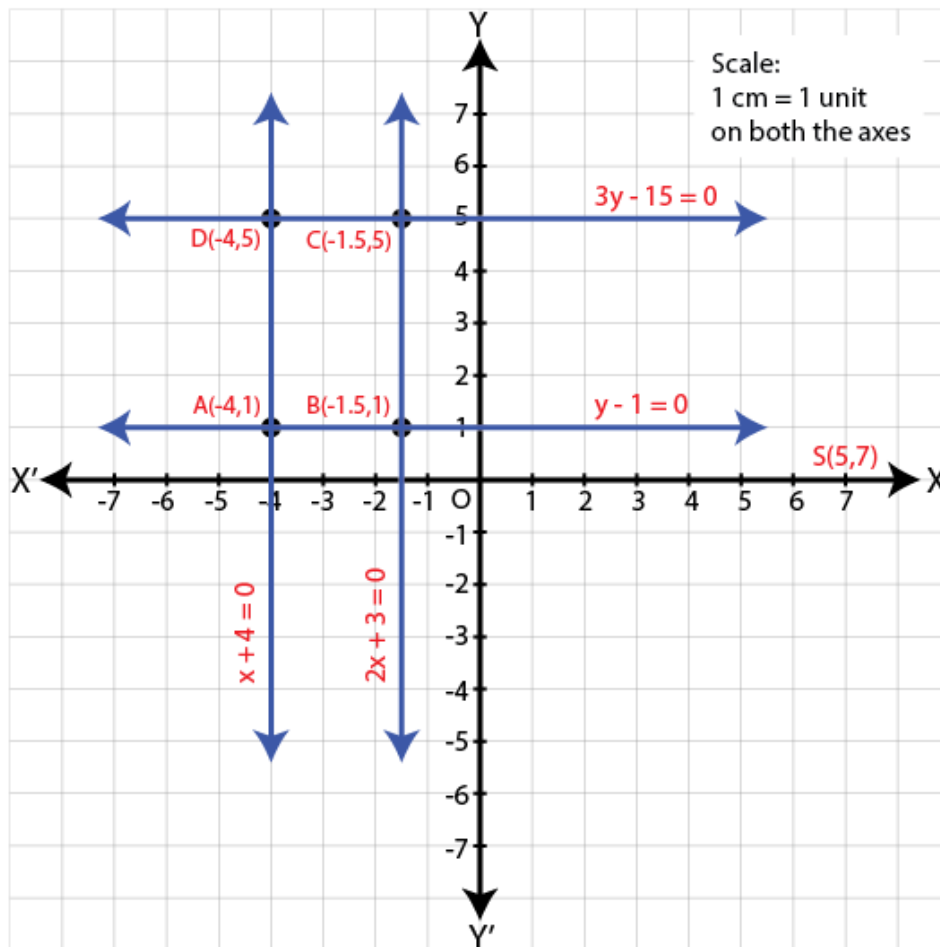
The point of intersection of x+4 = 0 and y−1 = 0 is A(-4, 1).
The point of intersection of y−1 = 0 and 2x + 3 = 0 is B(-1.5, 1).
The point of intersection of 3y − 15 = 0 and 2x + 3 = 0 is C(-1.5, 5).
The point of intersection of x + 4 = 0 and 3y − 15 = 0 is D(-4, 5).

9. Draw the graphs of the equations given below
(i) x + y = 2

(ii) 3x - y = 0
(iii) 2x + y = 1

Solution:
(i) x+y = 2
⇒ y = 2-x
Let us assume some values of x and find the corresponding values of y.
When x = -1
y = 2-x = 2-(-1) = 2+1 = 3
When x = 0
y = 2-x = 2-0 = 2
When x = 1
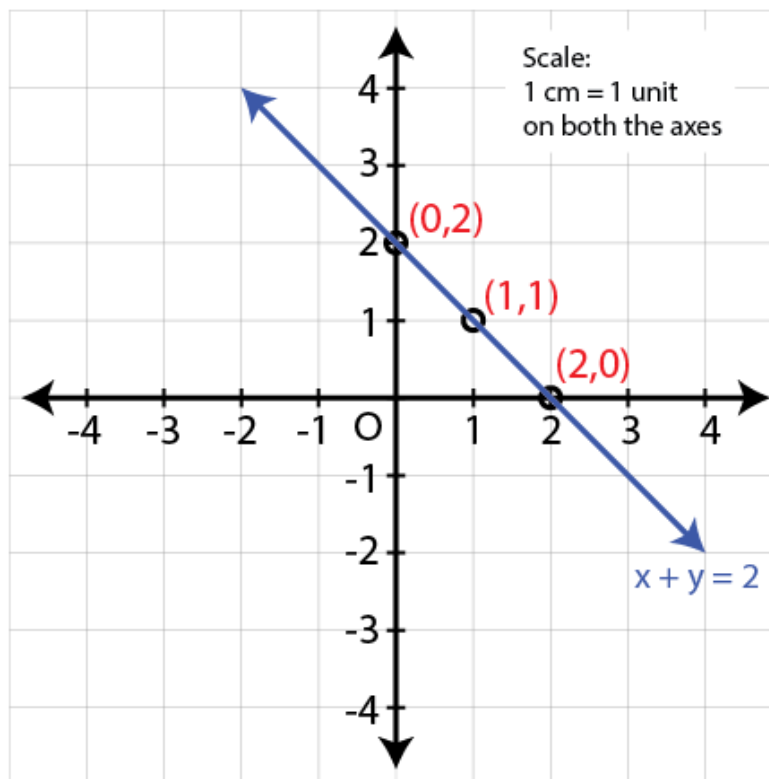y = 2-x = 2-1 = 1
When x = 2
y = 2-x = 2-2 = 0

x	-1	0	1	2
y	3	2	1	0
(x,y)	(-1,3)	(0,2)	(1,1)	(2,0)

(ii) 3x-y = 0

⇒y = 3x
Let us assume some values of x and find the corresponding values of y.
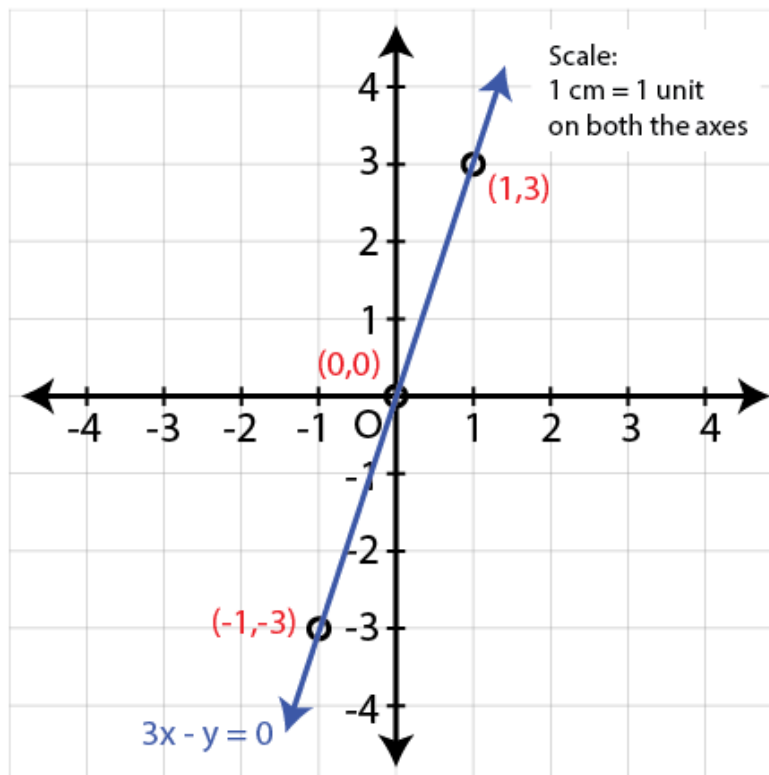When x = -1
y = 3x = 3×-1 = -3
When x = 0
y = 3x = 3×0 = 0
When x = 1
y = 3x = 3×1 = 3
When x = 2
y = 3x = 3×2 = 6

x	-1	0	1	2
y	-3	0	3	6
(x,y)	(-1,-3)	(0,0)	(1,3)	(2,6)

(iii) 2x+y = 1
⇒y = 1-2x
Let us assume some values of x and find the corresponding values of y.
When x = -1
y = 1-2x = 1-2×-1 = 1+2 = 3
When x = 0
y = 1-2x = 1-2×0 = 1

When x = 1
y = 1-2x = 1-2×1 = 1-2 = -1
When x = 2
y = 1-2x = 1-2×2 = 1-4 = -3

x	-1	0	1	2
y	3	1	-1	-3
(x,y)	(-1,3)	(0,1)	(1,-1)	(2,-3)
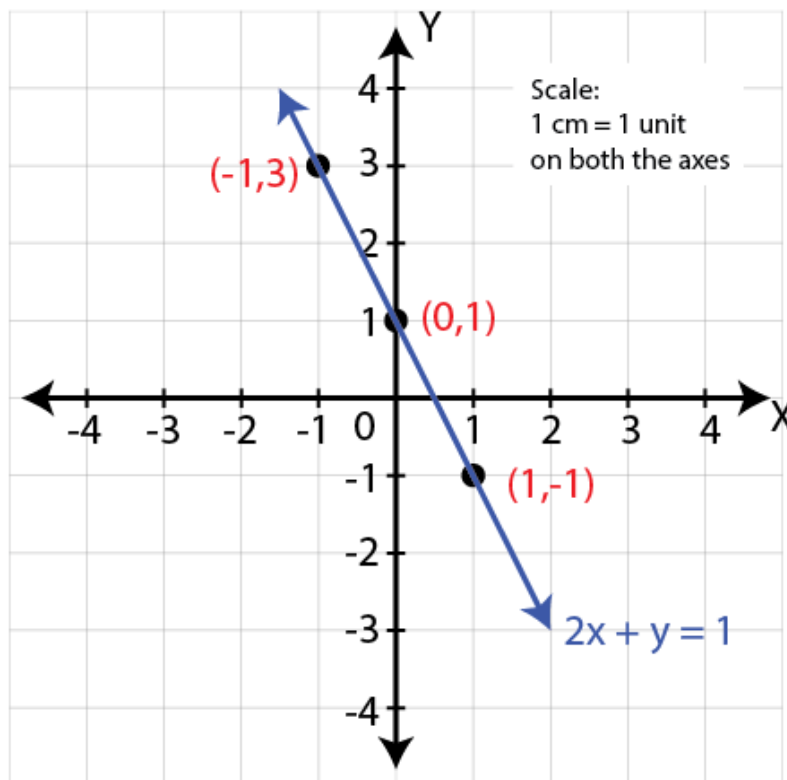
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1. Choose the correct alternative answer for the following quesitons.
(i) What is the form of co-ordinates of a point on the X-axis ?
(A) (b, b) (B) (0, b) (C) (a, 0) (D) (a, a)

(ii) Any point on the line y = x is of the form .....
(A) (a, a) (B) (o, a) (C) (a, o) (D) (a, - a)

(iii) What is the equation of the X-axis ?
(A) x = 0 (B) y = 0 (C) x + y = 0 (D) x = y

(iv) In which quadrant does the point (-4, -3) lie ?
(A) First (B) Second (C) Third (D) Fourth

(v) What is the nature of the line which includes the points (-5,5), (6,5), (-3,5), (0,5) ?
(A) Passes through the origin,, (B) Parallel to Y-axis. (C) Parallel to X-axis (D) None of these

(vi) Which of the points P (-1,1), Q (3,-4), R(1,-1), S (-2,-3), T (-4,4) lie in the fourth quadrant ?
(A) P and T (B) Q and R (C) only S (D) P and R

Solution:
(i) For a point on X-axis, the y co-ordinate is zero. So (a,0) is a point on X-axis.
Hence Option C is the answer .

(ii) In the line y = x, both x and y co-ordinates are same.
So any point on the line y = x is of the form (a,a).
Hence Option A is the answer .

(iii) The equation of the X-axis is y = 0.
Hence Option B is the answer .

(iv) In (-4,-3), both x co-ordinate and y co-ordinate are negative.
So it lies in third quadrant.
Hence Option C is the answer .

(v) The y co-ordinate of all points are the same.
So the line will be parallel to X-axis.
Hence Option C is the answer .

(vi)In fourth quadrant, x co-ordinate is positive and y co-ordinate is negative.
So Q (3,-4) and R(1,-1) lies in fourth quadrant.
Hence Option B is the answer .

2. Some points are shown in the figure 7.11
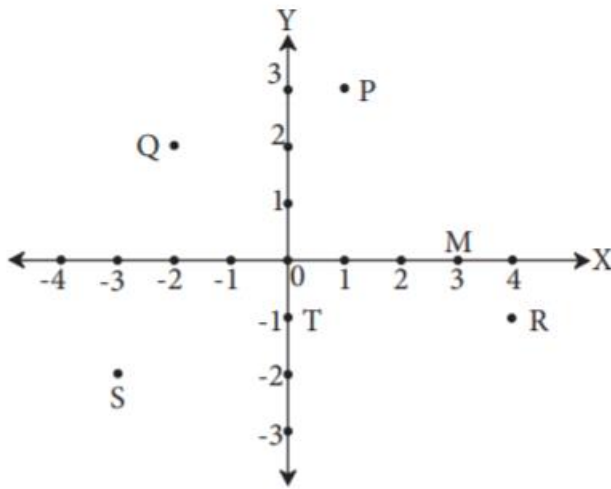**With the help of it answer the following questions**

Fig.7.11

(i) Write the co-ordinates of the points Q and R.
(ii) Write the co-ordinates of the points T and M.
(iii) Which point lies in the third quadrant ?
(iv) Which are the points whose x and y co-ordinates are equal ?

Solution:
(i) The co-ordinates of point Q are (-2,2) and the co-ordinates of point R are (4,-1).
(ii) The co-ordinates of point T are (0,-1) and the co-ordinates of point M are (3,0).
(iii) Point S lies in third quadrant.
(iv) For the point O(0,0), x and y co-ordinates are equal.

3. Without plotting the points on a graph, state in which quadrant or on which axis do the following point lie.
(i) (5, -3) (ii) (-7, -12) (iii) (-23, 4) (iv) (-9, 5) (v) (0, -3) (vi) (-6, 0)

Solution:
(i)For the point (5,-3), the x co-ordinate is positive and y co-ordinate is negative.
So the point lies in fourth quadrant.

(ii)For the point (-7,-12), the x co-ordinate is negative and y co-ordinate is negative.
So the point lies in third quadrant.

(iii)For the point (-23,4), the x co-ordinate is negative and y co-ordinate is positive.
So the point lies in second quadrant.

(iv)For the point (-9,5), the x co-ordinate is negative and y co-ordinate is positive.
So the point lies in second quadrant.

(v)For the point (0,-3), the x co-ordinate is zero and y co-ordinate is negative.
So the point lies Y-axis.

(vi)For the point (-6,0), the x co-ordinate is negative and y co-ordinate is zero.

So the point lies on X-axis.

4. Plot the following points on the one and the same co-ordinate system.
A(1, 3), B(-3, -1), C(1, -4), D(-2, 3), E(0, -8), F(1, 0)

Solution:
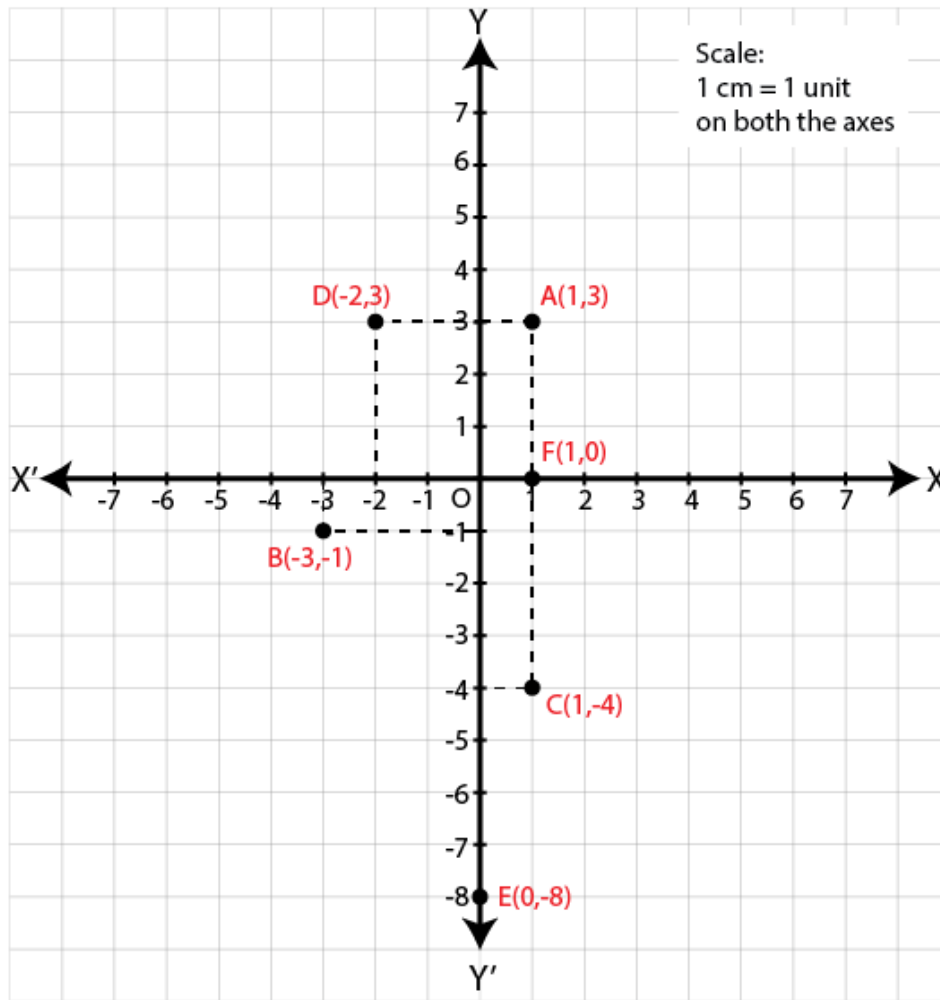
5. In the graph alongside, line LM is parallel to the Y-axis. (Fig. 7.12)
(i) What is the distance of line LM from the Y-axis ?
(ii) Write the co-ordinates of the points P, Q and R.
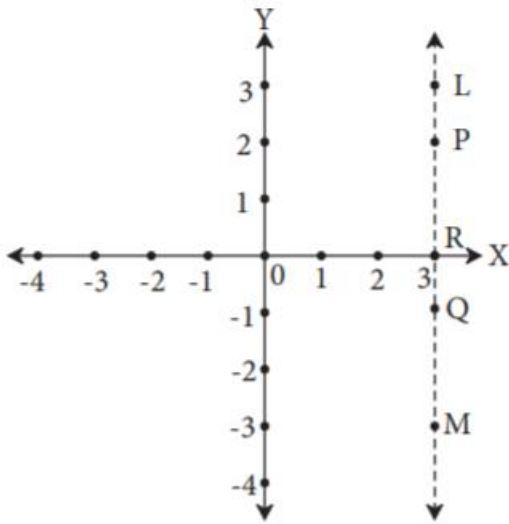**(iii) What is the difference between the x co-ordinates of the points L and M?**

Fig.7.12

Solution:

(i) Line LM is at a distance of 3 units from Y-axis.
(ii) Co-ordinates of P are (3,2).
 Co-ordinates of Q are (3,-1).
Co-ordinates of R are (3,0).
(iii) x co-ordinate of L = 3
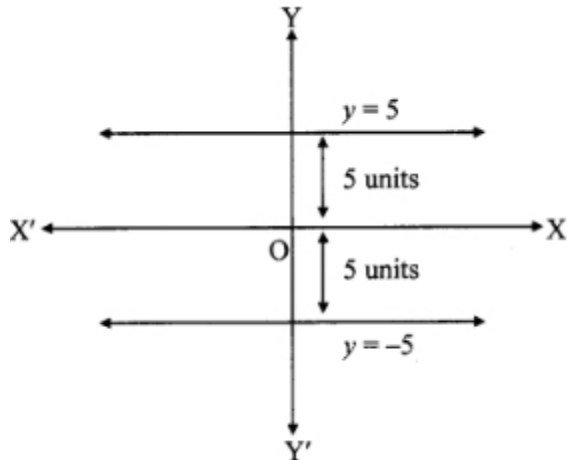x co-ordinate of M = 3
3-3 = 0
Hence the difference between them is 0.

6. How many lines are there which are parallel to X-axis and having a distance 5 units?

Solution:
The equation of a line parallel to the X-axis is in the form y = b.
Equations of the lines are y = 5 and y = -5.
There can be two lines parallel to X-axis and having a distance 5 units.

7* . If 'a' is a real number, what is the distance between the Y-axis and the line x = a ?

Solution:
The line x = a is a line parallel to Y-axis which is at a distance of 'a' units from the Y-axis.
If a > 0, then the line will be on the right side of Y-axis.
If a < 0, then the line will be on the left side of Y-axis.
Hence the distance between Y-axis and the line will be |*a*| units.