Online Class Supporting Materials

MALAPPURAM EDUCATIONAL DISTRICT

| EM_6.01	**MATHEMATICS**	Class - X
Chapter–6	**COORDINATES**	

Points to remember:-

- The positions of points in a plane can be represented using a pair of numbers called **coordinates of the point.** The lines drawn to mark the positions of points on a plane are called the **axes of coordinates.**

- The horizontal line is the **x axis** and the vertical line is the **y axis**. The intersecting point of these axes is called **Origin**.

- Positive and negative numbers are used to distinguish right-left and up-down directions.

- In the pair of numbers to represent a point , the first number is called **X-coordinate** and Second is called **Y-coordinate.**

- The coordinates of the **origin** is **(0,0)**

ACTIVITY – 01

In the figure the coordinates of some points are marked. Write the coordinates of the points A, B, C, D and E.
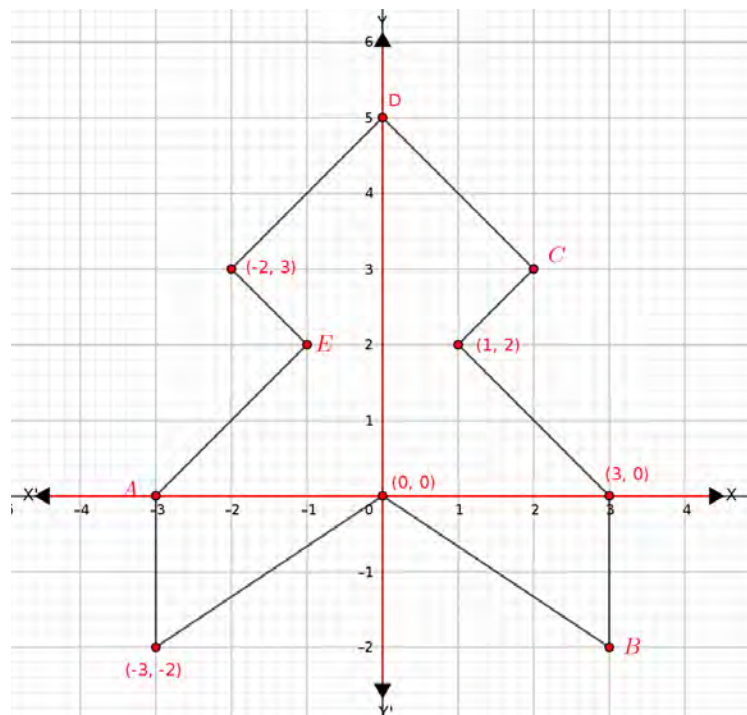
ACTIVITY - 02

Draw X and Y axes and mark the points **A(2,0), B(0,4), C(3,2), D(5,0), E(5,2), F(3,1), G(0,3)** using the same axes.

a) Which of the above points are on *X*-axis ?

b) Which of the above points are on Y-axis ?

c) Which are the points on a line parallel to X-axis?

d) Which are the points on a line parallel to Y-axis?

e) Any point on a line parallel to X-axis has its ------ coordinate equal.

f) Any point on a line parallel to Y-axis has its ------ coordinate equal?

ACTIVITY - 03

Four points A(-3 , -2), B(2 , -2), C(1, 3) and D(-2 , 3) are marked on the plane and points are joined in order. The figure obtained is isosceles trapezium as AB ∥ CD and AD=BC.

Similarly mark the points in each set and join the points in order. Give the most suitable name for the figure obtained.

(a) P(0 , 0), Q(4 , 0), R(4, 4) and S(0, 4)

(b) D(-4 , 1), E(3 , 1), F(4, 3) and G(-3 , 3)
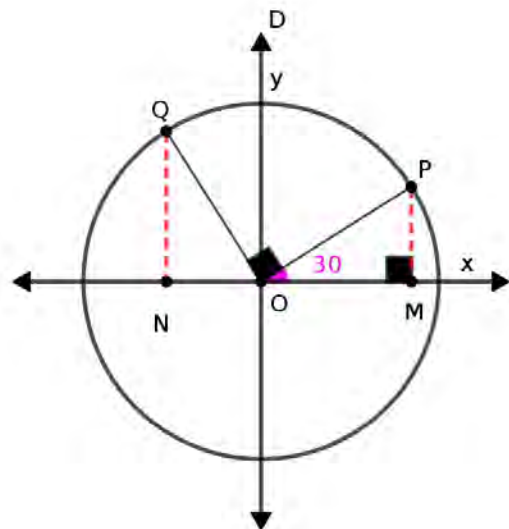
(c) X(-2 , -3), Y(3 , -3), Z(3, 4)
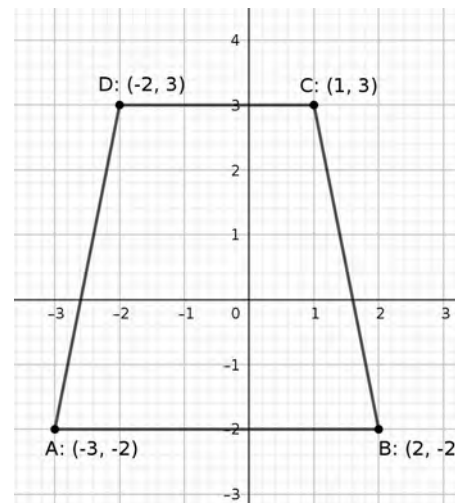
ACTIVITY - 04

In the figure, the centre of the circle is the origin and radius is 4 units. Fill in the blanks suitably and find the coordinates of **P** and **Q.**

Draw **PM** and **QN** perpendicular to **X-axis**.

a) The angles of ΔOMP are 30^0, __, __

b) Its sides are in the ratio 1 : __ : __

c) Since, OP=4 units, PM=__, OM= __

d) ∴ coordinates of P(__, __)

e) ∠QON=180-(30+90) = _____

f) In ΔQON, ON =_____ units. QN =_____

g) Coordinates of Q= (__, __)

ACTIVITY - 05

(2,3), (-3,5) are coordinates of two opposite vertices of a rectangle with sides parallel to the axes. Answer the following questions and find the coordinates of other vertices.

(a) Write the position of point (2 , 3) with respect to the point (-3 , -5)
   [left bottom, left top, right bottom, right top]
(b) Which vertex of rectangle ABCD is (2,3)?
(c) Which vertex is (-3,5)?
(d) Which coordinates of **A** and **D** are equal?
(e) Which coordinates of **C** and **D** are equal?
(f) Write the coordinates of other two vertices.

# WORKSHEET 6.01

1. a) Write the coordinates of 3 points on x-axis
   b) Write the coordinates of 3 points on y-axis
   c) (-3,9) is point on a line parallel to x-axis. Write the coordinates of any other 3 points on it.
   d) (2,-4) is point on a line parallel to y-axis. Write the coordinates of any other 3 points on it.

2. In the figure OABC is a trapezium. OC=4√2, ∠COA=45^0, A(6 , 0)
   a) What is the perpendicular distance form C to OA?
   b) Write the coordinates of B and C
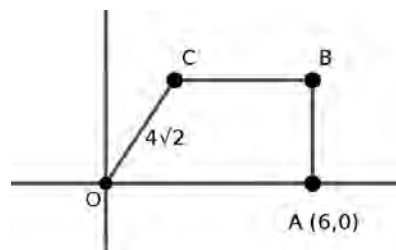
3. In the figure O is the origin and ΔOAB is right isosceles triangle. OA= 8 units.

   a) Find the coordinates of each vertices of ΔOAB

   b) What is the area of ΔOAB ?
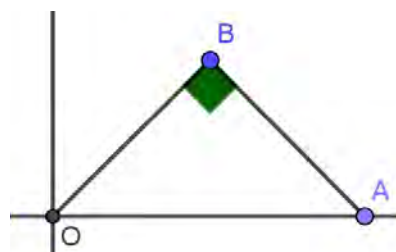
4. In the figure ABCD is a rectangle with its sides parallel to the axes. Find the coordinates of the pints B and D.

5. (4,3), (-2,1) are the coordinates of two opposite vertices of a rectangle with sides parallel to the axes. Draw a rough figure and mark the given points in the correct position and also find the coordinates of the other vertices.

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MALAPPURAM EDUCATIONAL DISTRICT

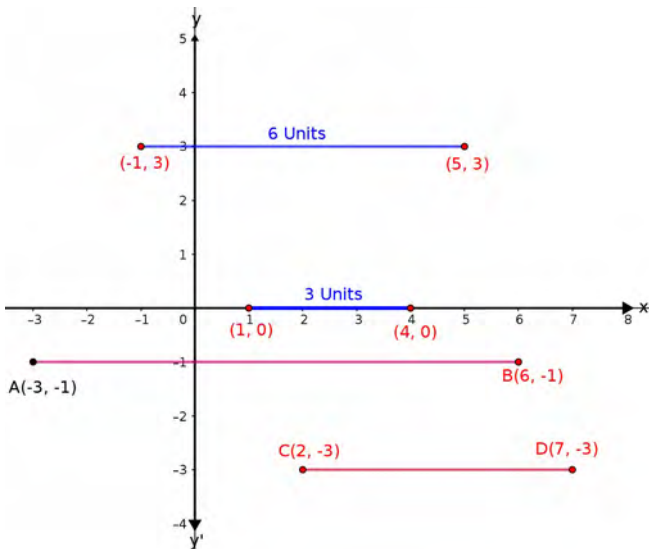| **EM_6.02**	**MATHEMATICS**	**Class - X**
Chapter–6	**COORDINATES**	

Previous Knowledge:- Any point on a line parallel to x**–axis** has its y **- coordinate** equal. Any point on a line parallel to y **- axis** has its x **- coordinate** equal.
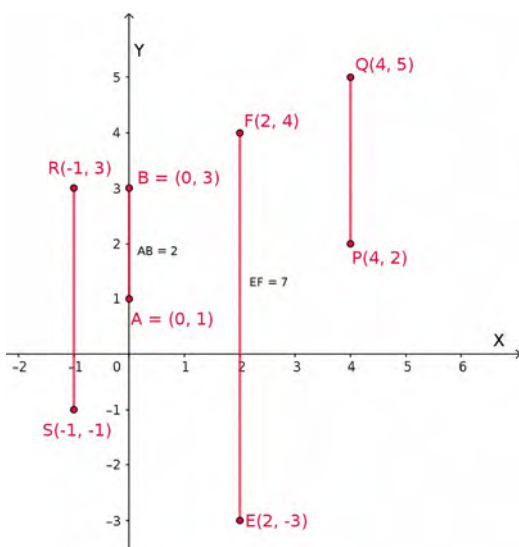
Distance:- Distance between any two points on x-axis / y-axis / a line parallel to x-axis / a line parallel to y-axis.

ACTIVITY – 01

a) What is the distance between A and B ?

b) Find the distance from C to D

If (x_1 , y) and (x_2 , y) are two points on x-axis or a line parallel to x-axis the distance between these points is $|x_1 - x_2|$

a) What is the distance from P to Q ?
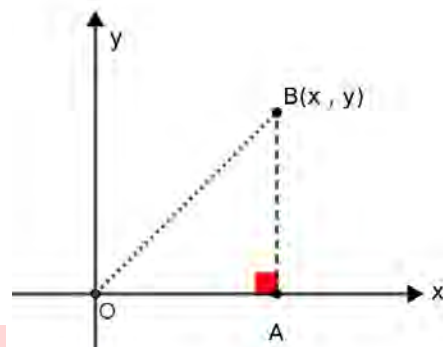
b) Find the distance between R and S ?

If (x , y_1) and (x , y_2) are two points on y-axis or a line parallel to y-axis the distance between these points is $|y_1 - y_2|$

ACTIVITY - 02

Fill in the blanks suitably to find the distance from Origin to a point (x , y).

In the right triangle OAB

a) OA = _____ units

b) AB = _____ units

c) Hypotenuse OB= _____ units

The distance from Origin to any point (x , y) is $\sqrt{x^2+y^2}$

ACTIVITY - 03

In the figure **A(x_1,y_1), B(x_2,y_2)** are two points on the plane. Draw **AC** parallel to **x-axis** and **BC** parallel to **y-axis.** Answer the following questions to find the distance between **A** and **B.**

x-coordinate of B and C are equal and *y-coordinates* of A and C are equal,

a) ∴ coordinates of C(__ , __)

b) What is the length of AC?

c) What is the length of BC?

d) AB²=AC²+_____

e) AB²=(X₁-X₂)² + _____

f) AB = $\sqrt{(x_1-x_2)^2+(\text{...............})^2}$
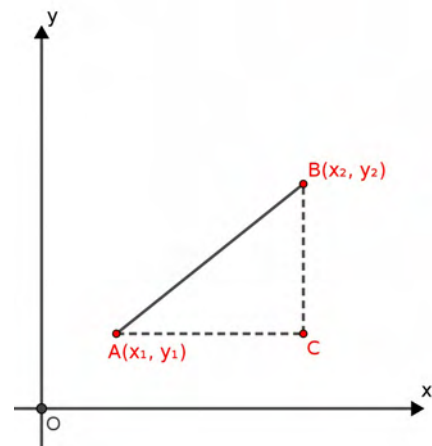
The distance between two points (x_1 , y_1) and (x_2 , y_2) is $\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$

ACTIVITY - 04

If **P** is a point inside a rectangle OABC, **PO²+PB²=PA²+PC².** The following method is used to prove the result. Fill in the blanks suitably.

a) ∴ A(a , 0), B(a , b) and C(__ , __)

b) Let P(x , y); Now PA² = (x-a)2 + _____

c) PB² = _____ + (y -b)²

d) PO² = x² + _____

e) PC² = _____ + (y - b)²

f) PO²+PB² = x²+y²+(x-a)² +(y - b)²

g) PA²+PC² = (x-a)² + y²+x²+(y-b)²

h) ∴ **PO²+PB²=PA²+PC²**

The sides of the rectangle is taken as **a , b** and one vertex of the rectangle is considered **Origin.**
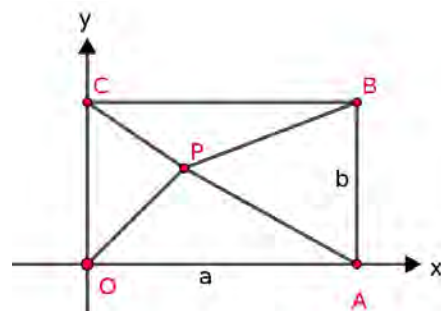
WORKSHEET 6.02

1. A circle with centre Origin passes through the point **(12, 5).** Write the coordinates of other four points on this circle.

2. A line drawn from the origin **'O'** passes through two points **A(3,4)** and **B(6,8)** on a circle. **OP** is a tangent drawn from the origin to the circle

   a)   Draw a rough figure

   b)   Find the length of the tangent **OP**

3. **A(2,4), B(2,6), C(5,4), D(5,9), E(8,4), F(8,12)**
   a) Find **AB, CD** and **EF**
   b) Prove that the above three lengths are in arithmetic sequence.

4. **'A'** is a point on Y-axis equidistant from **(3,5)** and **(-2,6)**. Find the coordinates of **'A'**

5. Prove that the points **(2,1), (3,4)** and **(-3,6)** are the vertices of a right triangle.