

# ONLINE MATHS CLASS - X – 68 ( 30 / 11 /2020 )

## 6 . COORDINATES - Class 3

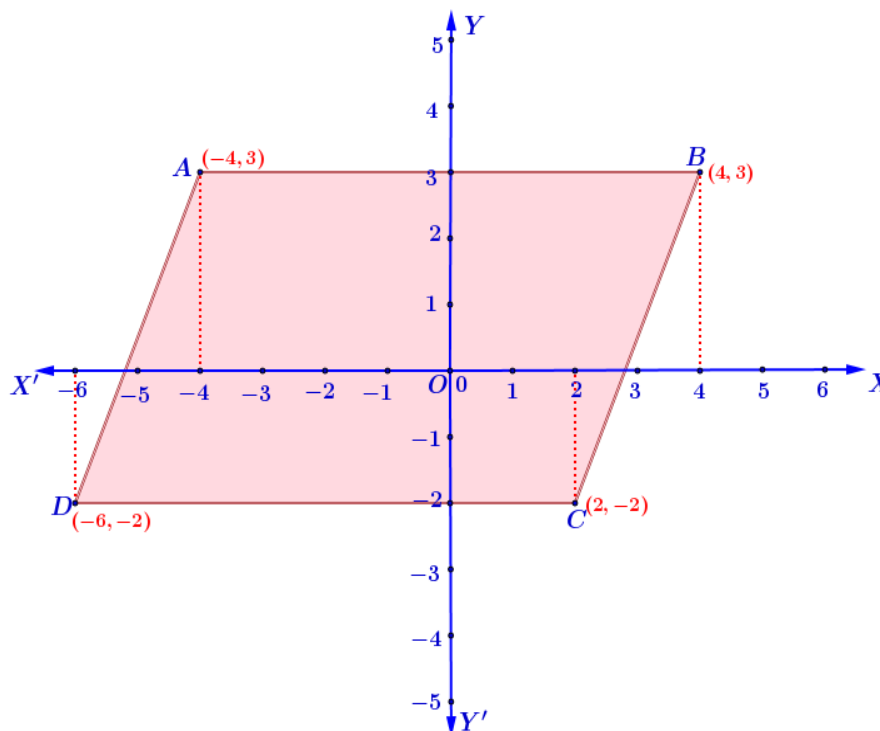
What did we learn in the last class ?

### Marking of points if its coordinates are given

- Draw the  $x$  axis ( horizontal line ) and the  $y$  axis ( vertical line ) .
- Distances to the right or upward from the origin are to be taken positive .
- Distances to the left or downward from the origin are to be taken negative .
- If we denote points by number pairs , the first number shows distance to the right or left from the origin .
- If we denote points by number pairs , the second number shows distance to the up or down from the origin .

( 1 ) Mark the points  $A (-4, 3)$  ,  $B (4, 3)$  ,  $C (2, -2)$  ,  $D (-6, -2)$  after drawing coordinate axes . Name the shape obtained by joining the points in order

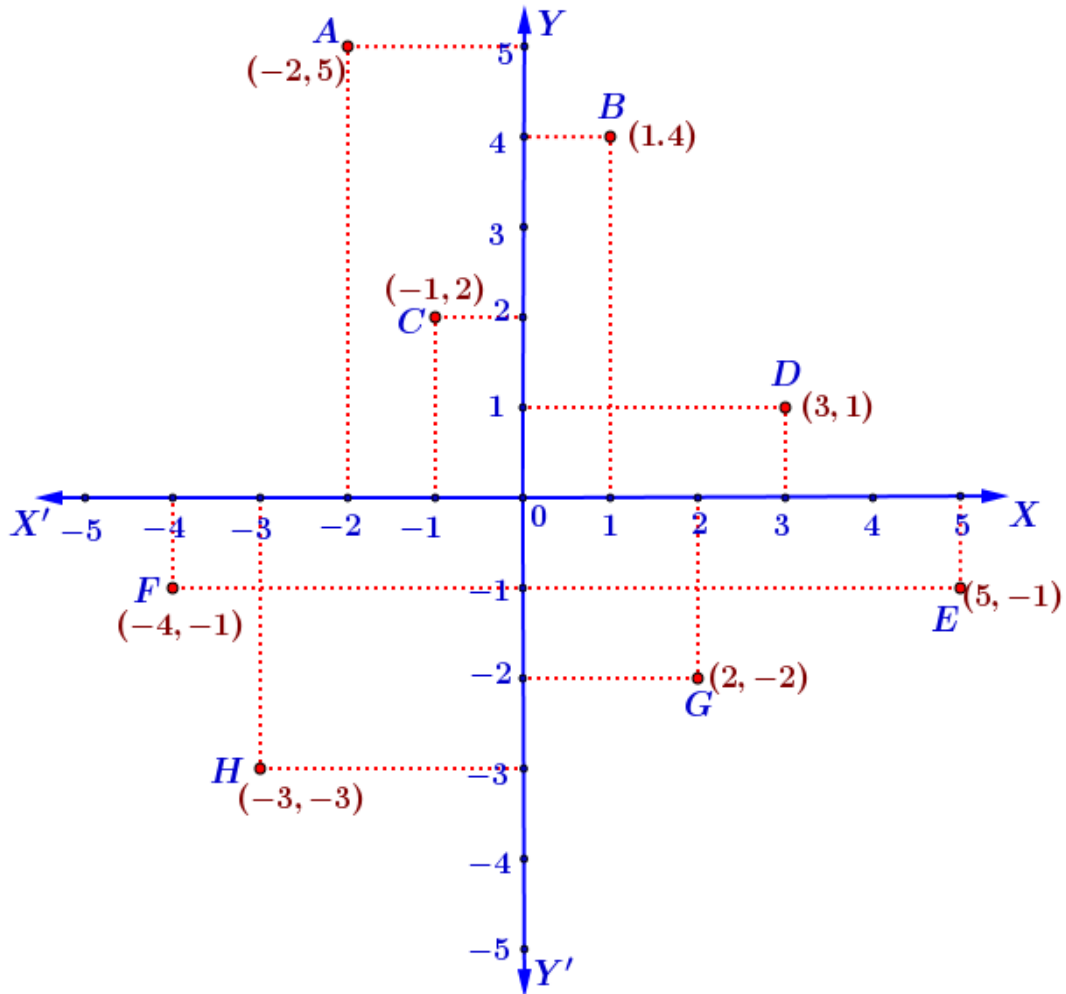
Answer



**Parallelogram**

(2) Find the coordinates of the following points

Answer



(1) In the figure ABC is an isosceles

triangle . Base is 3 cm long .

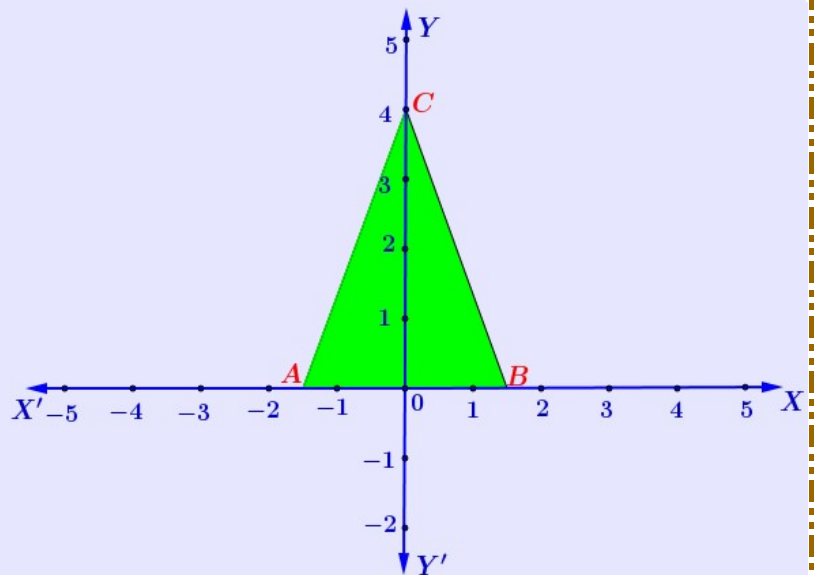
The coordinate axes pass through

the mid point of the base and the

height of the triangle is 4 cm .

Write down the coordinates of the

corners of the triangle ?



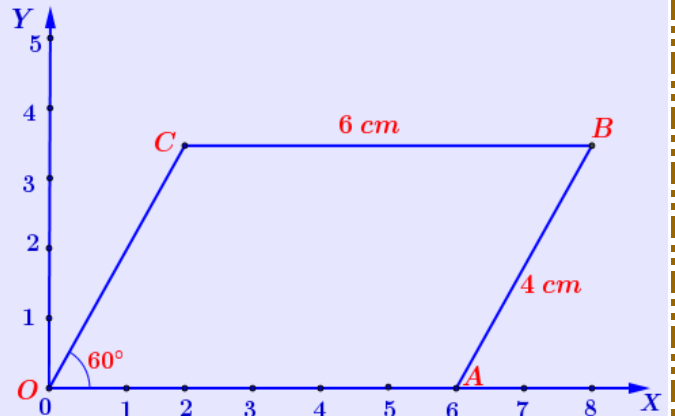
Answer

A (- 1.5 , 0 ) , B ( 1.5 , 0 ) , C ( 0 , 4 )

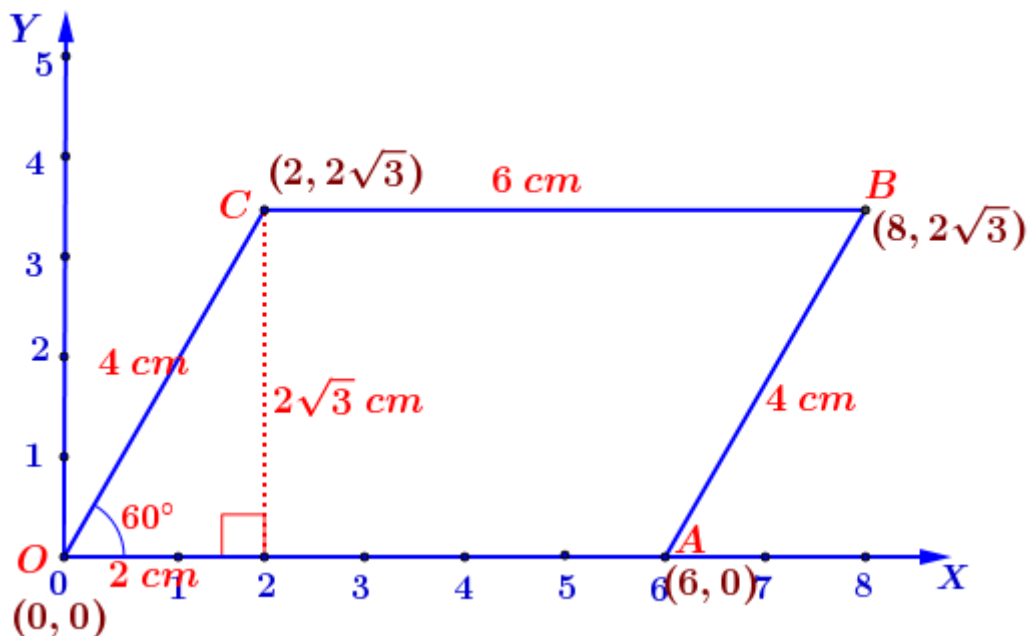
( In any isosceles triangle the perpendicular drawn from the point joining equal sides to the opposite side bisects that side )

(2)

Write down the coordinates of the corners of the parallelogram shown in the figure ?



Answer

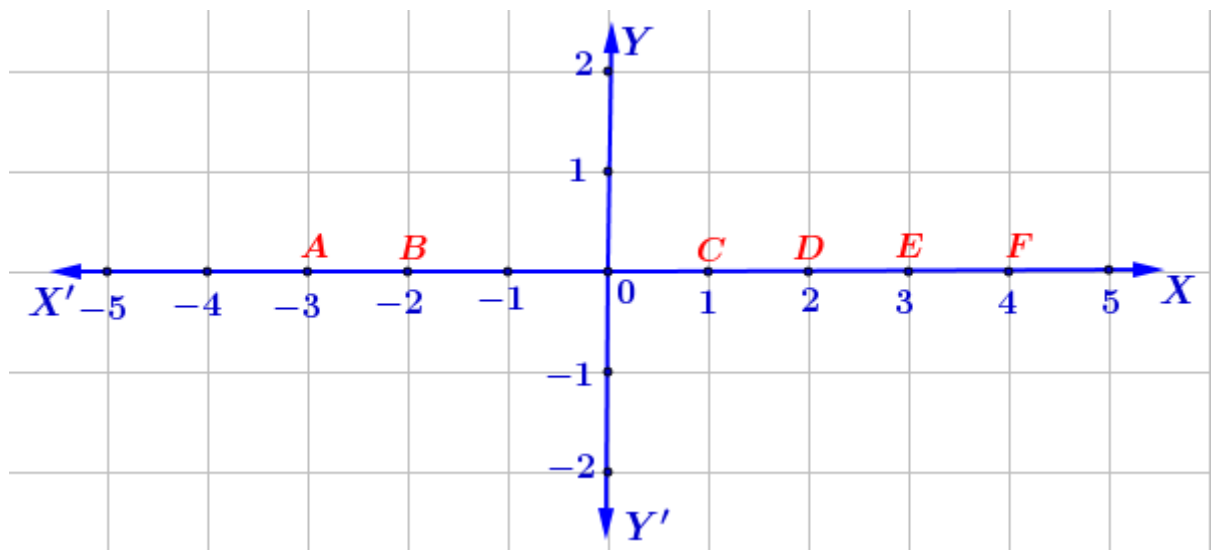


( In any triangle of angles 30° , 60° , 90° the sides are in the ratio 1 : √3 : 2 )

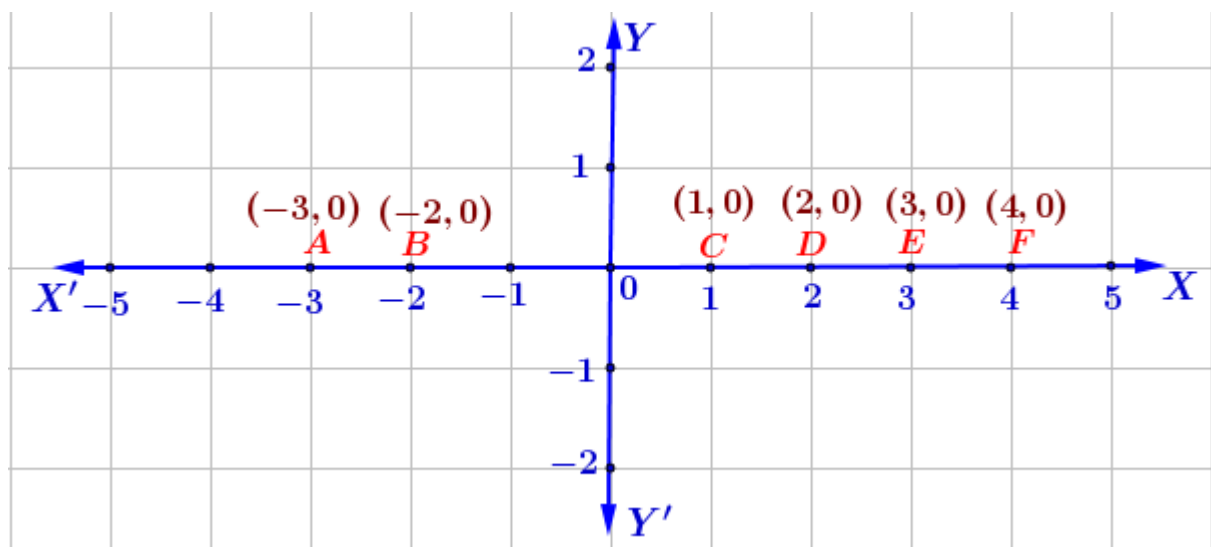
**NOTE :**

If we draw pictures using coordinate axes ,  $x$  axis is labelled as  $X'X$  ( from left to right ) and  $y$  axis is labelled as  $YY'$  ( from top to bottom ) . The point of intersection of the coordinate axis ( origin ) is labelled as  $O$  .

**Activity 1 ( Points on the  $x$  axis )**



Write down the coordinates of the points marked on the  $x$  axis ?

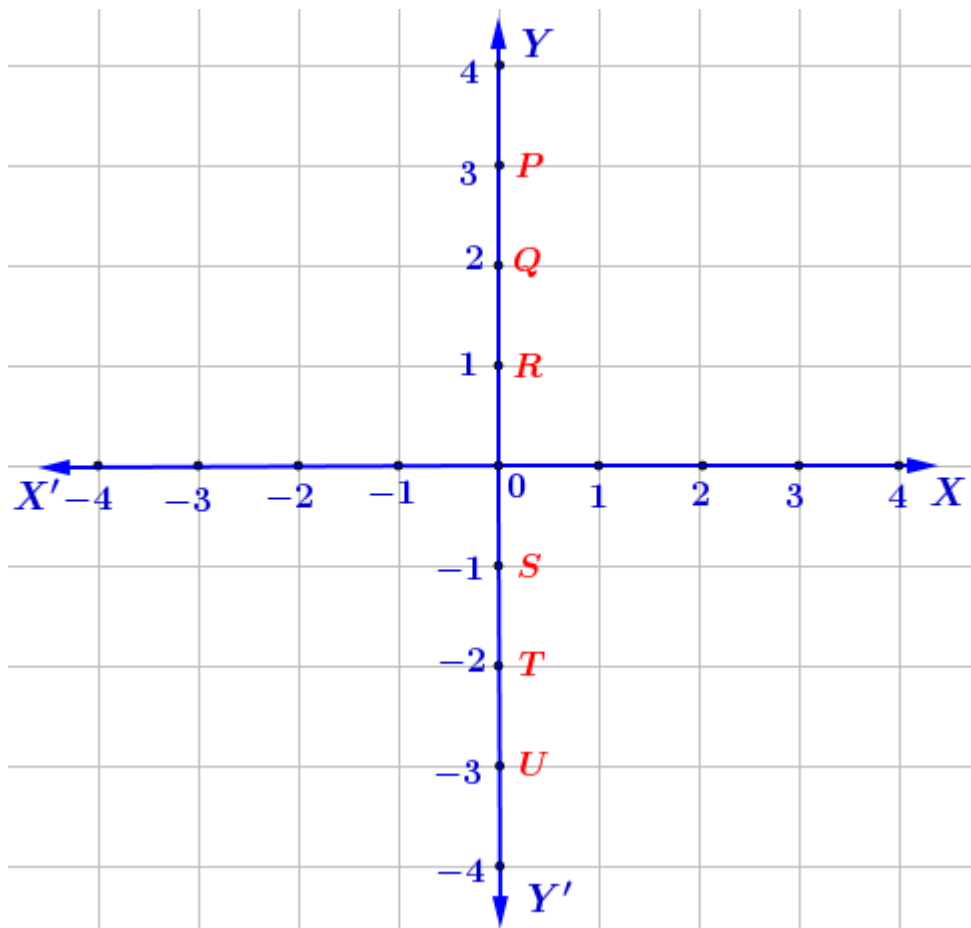


<i>Point</i>	A	B	C	D	E	F
<i>Coordinates</i>	$(-3, 0)$	$(-2, 0)$	$(1, 0)$	$(2, 0)$	$(3, 0)$	$(4, 0)$

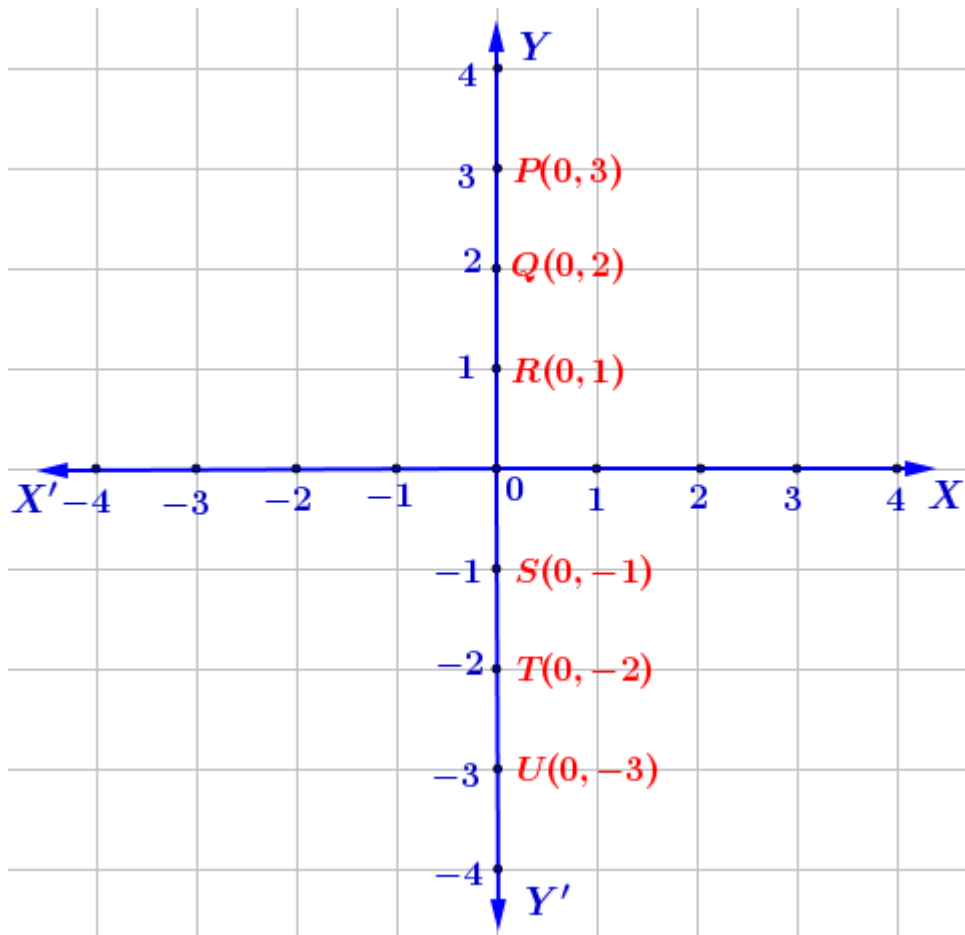
Finding

*The y coordinate of any point on the x axis is zero*

Activity 2 ( Points on the y axis )



*Write down the coordinates of the points marked on the y axis ?*

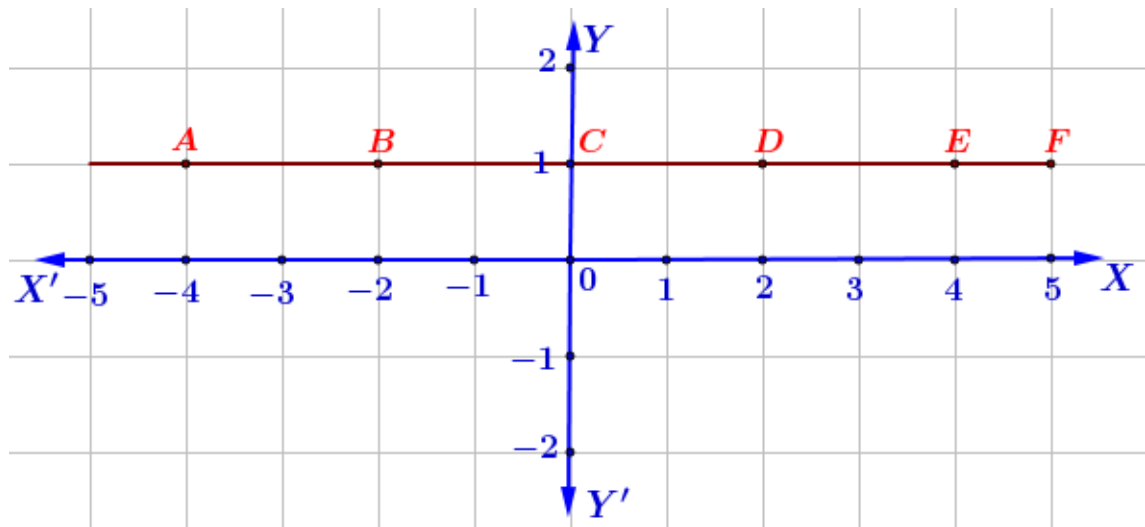


<i>Point</i>	P	Q	R	S	T	U
<i>Coordinates</i>	( 0 , 3 )	( 0 , 2 )	( 0 , 1 )	( 0 , - 1 )	( 0 , - 2 )	( 0 , - 3 )

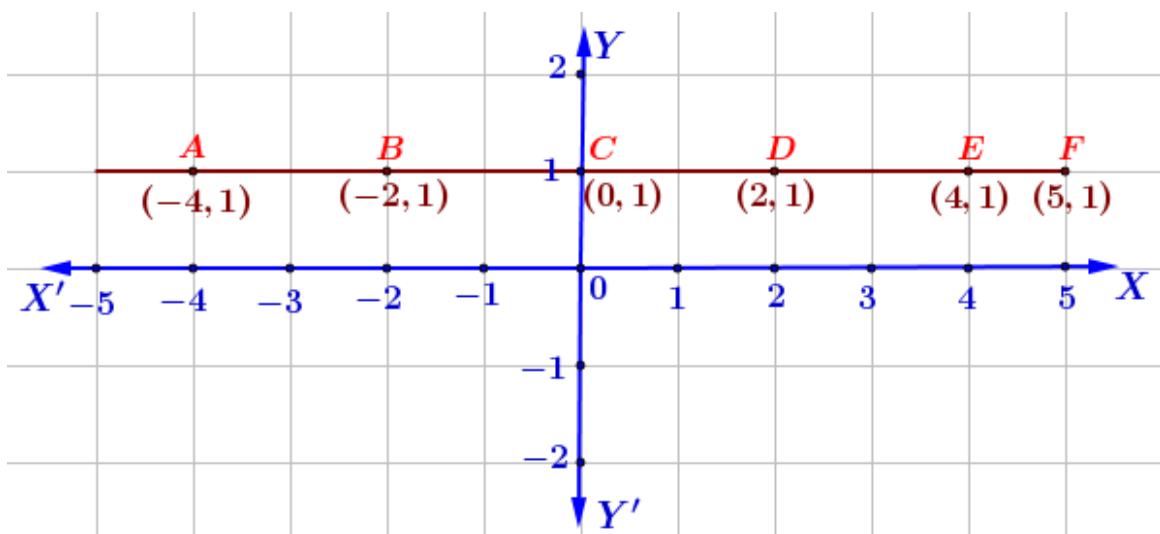
*Finding*

*The x coordinate of any point on the y axis is zero*

**Activity 3** ( Points on a line parallel to the  $x$  axis )



Write down the coordinates of the points marked on the line parallel to the the  $x$  axis ?

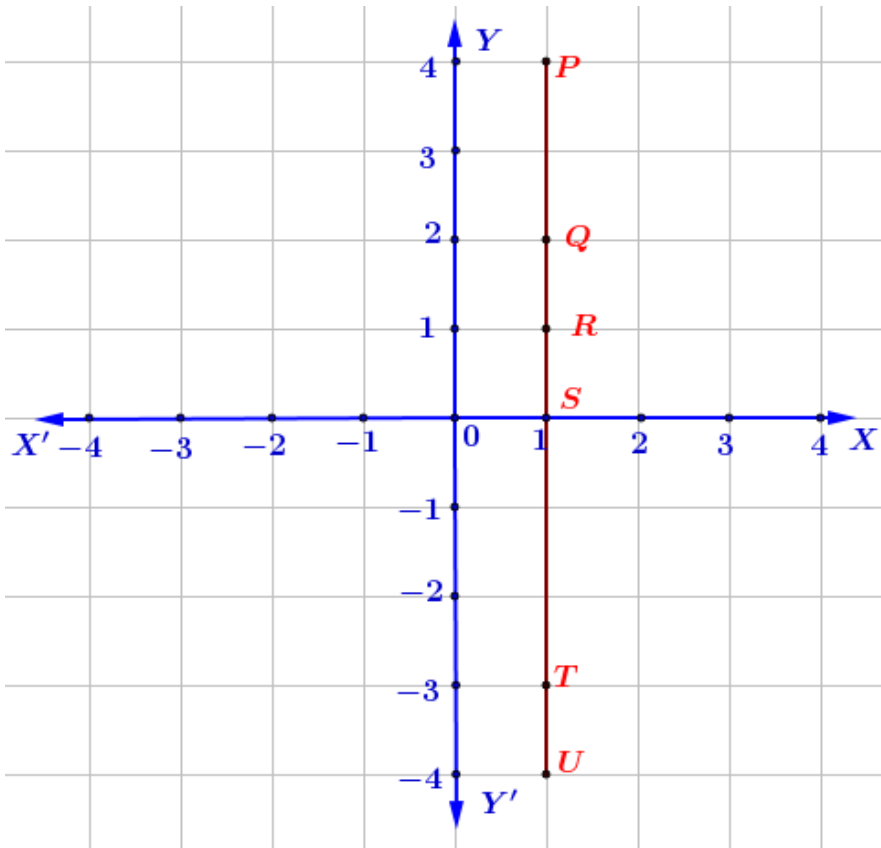


Point	A	B	C	D	E	F
Coordinates	$(-4, 1)$	$(-2, 1)$	$(0, 1)$	$(2, 1)$	$(4, 1)$	$(5, 1)$

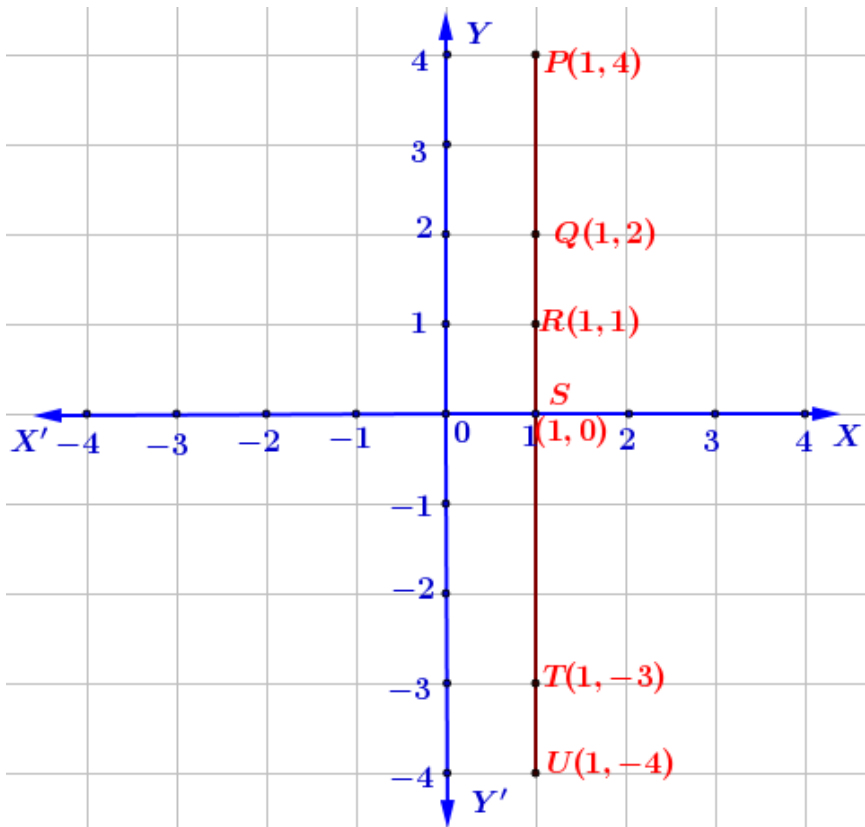
**Finding**

The  $y$  coordinate of any point on a line parallel to  $x$  axis are equal

Activity 4 ( Points on a line parallel to the y axis )



Write down the coordinates of the points marked on the line parallel to the the y axis ?





<b>Point</b>	<b>P</b>	<b>Q</b>	<b>R</b>	<b>S</b>	<b>T</b>	<b>U</b>
<b>Coordinates</b>	<b>(1, 4)</b>	<b>(1, 2)</b>	<b>(1, 1)</b>	<b>(1, 0)</b>	<b>(1, -3)</b>	<b>(1, -4)</b>

### Finding

*The  $x$  coordinate of any point on a line parallel to  $y$  axis are equal*

### Conclusion

- *The  $y$  coordinate of any point on a line parallel to  $x$  axis are equal*
- *The  $x$  coordinate of any point on the  $y$  axis is zero*
- *The  $y$  coordinate of any point on a line parallel to  $x$  axis are equal*
- *The  $x$  coordinate of any point on a line parallel to  $y$  axis are equal*

### Let's solve some problems related to these ideas

(1) Sort the following points as their positions – on the  $x$  axis, on the  $y$  axis, not on the axes. (5, 3), (5, 0), (-4, 1), (0, 2), (-1, 0), (1, 1), (0, -4)

### Answer

On the  $x$  axis : (5, 0), (-1, 0)

On the  $y$  axis : (0, 2), (0, -4)

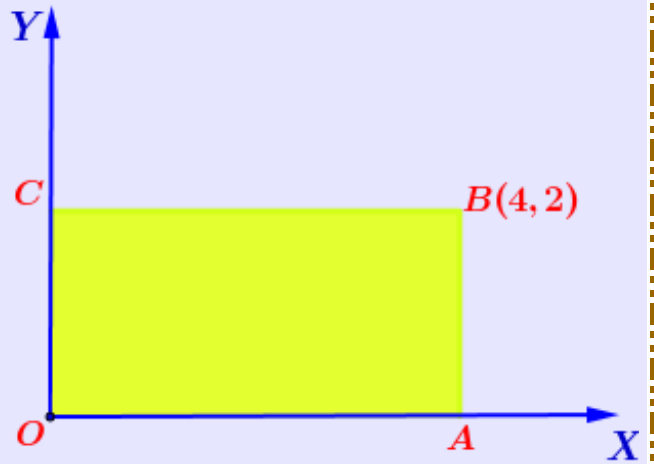
Not on the axes : (5, 3), (-4, 1), (1, 1)

(2)

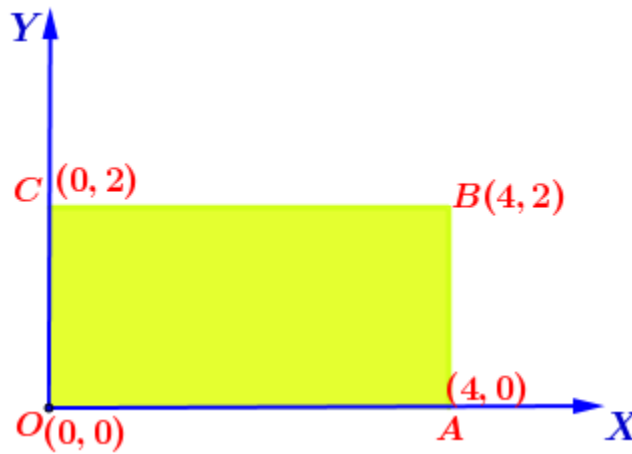
In the figure OABC is a rectangle .

The coordinates of B is ( 4 , 2 )

Write down the coordinates of other corners of the rectangle ?

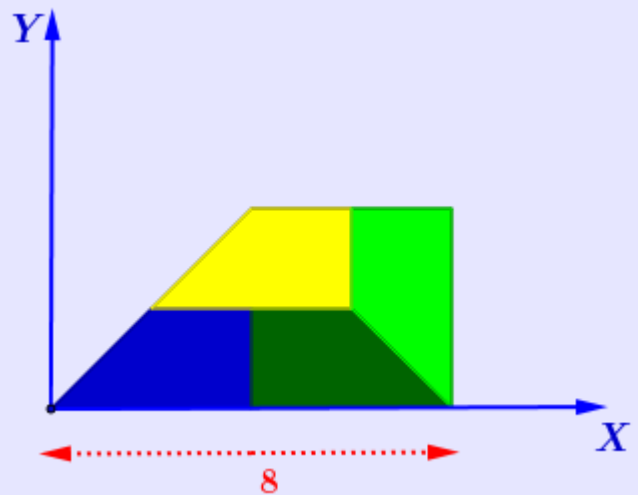


Answer



(3)

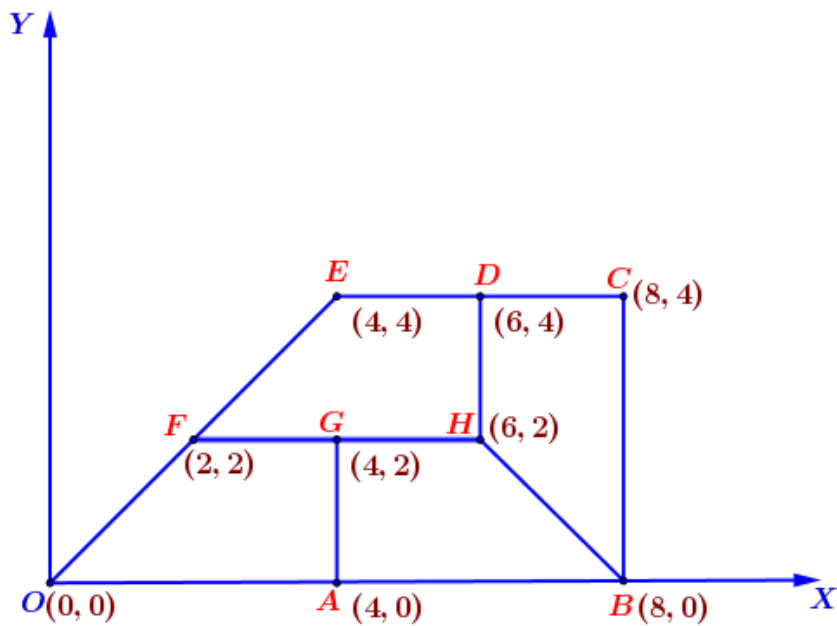
A large trapezium is made of 4 equal trapeziums . Find the coordinates of all the vertices of the trapeziums ?



Answer

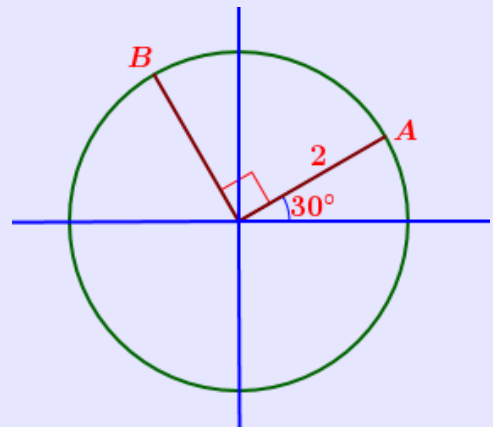
$$OA = AB = BC = FH = 4 \text{ units}$$

$$AG = GF = GH = HD = CD = DE = 2 \text{ units}$$



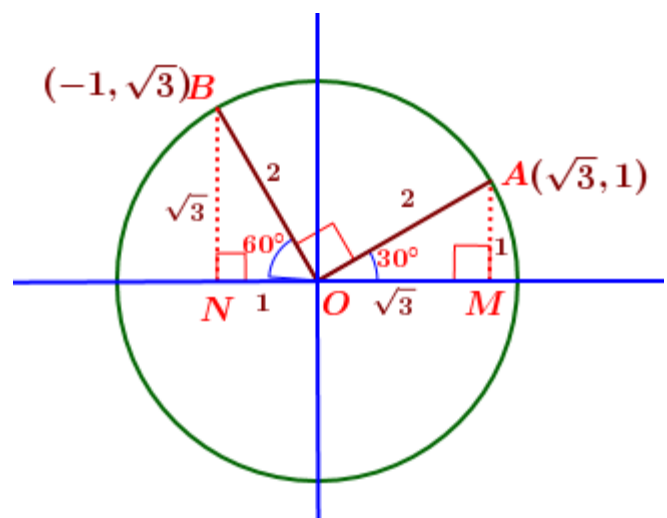
(4)

In the picture, the centre of the circle  $O$  is the origin and  $A, B$  are points on the circle. Find the coordinates of  $A$  and  $B$ ?



Answer

Draw perpendiculars from the points  $A$  and  $B$  to the  $x$  axis. These perpendiculars cut the  $x$  axis at  $M$  and  $N$



$$\angle AOM = 30^\circ$$

$$\angle AOB = 90^\circ$$

$$\angle BON = 180 - (30 + 90) = 180 - 120 = 60^\circ$$

$$OA = OB = 2 \text{ units (Radii of a circle are equal)}$$

In triangle  $AMO$  ,

$$AM = 1 \text{ unit}$$

$$OM = \sqrt{3} \text{ units}$$

( In any triangle of angles  $30^\circ$  ,  $60^\circ$  ,  $90^\circ$  the sides are in the ratio  $1 : \sqrt{3} : 2$  )

$$\text{Coordinates of } A = (\sqrt{3}, 1)$$

In triangle  $BNO$  ,

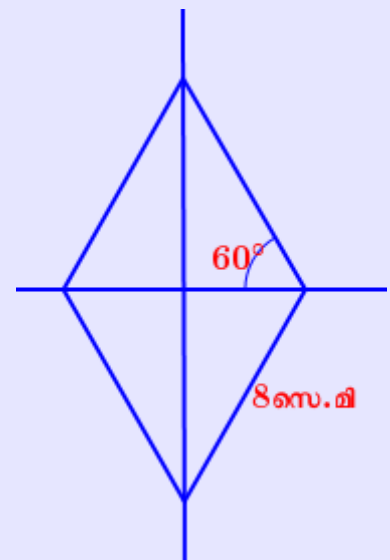
$$ON = 1 \text{ unit}$$

$$BN = \sqrt{3} \text{ units}$$

$$\text{Coordinates of } B = (-1, \sqrt{3})$$

More activity

One side of a rhombus is 8 cm and angle made by the side with  $x$  axis is  $60^\circ$  . Taking the unit as 1 cm , find the coordinates of all its vertices ?



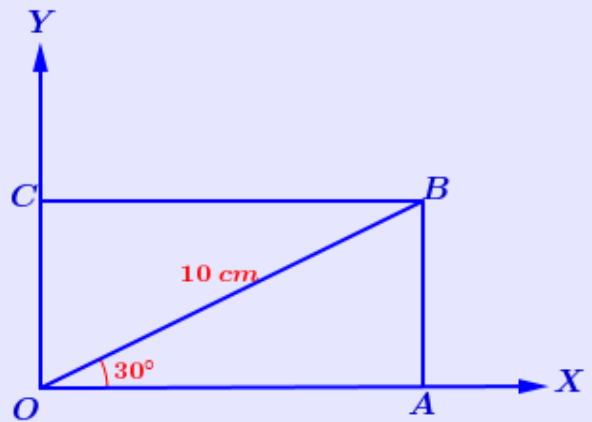
# ONLINE MATHS CLASS - X – 68 ( 30 / 11 /2020 )

## WORKSHEET

( 1 ) In the figure  $OABC$  is a rectangle .

$\angle AOB = 30^\circ$  ,  $OB = 10 \text{ cm}$  .

- What is the length of  $AB$  ?
- What is the length of  $OA$  ?
- Find the coordinates of the vertices of the rectangle ?

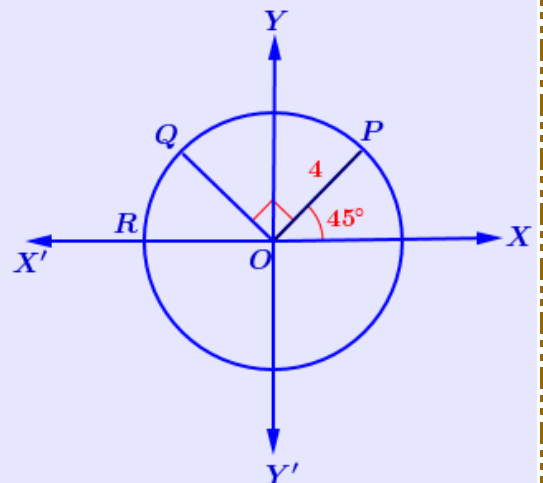


( 2 ) In the figure origin is the centre of the circle and

$P, Q, R$  are the points on the circle .  $OP = 4 \text{ cm}$  .

The line  $OP$  makes an angle  $45^\circ$  with the  $x$  axis .

- Find the coordinates of  $R$  ?
- What is the measure of  $\angle QOR$  ?
- Find the coordinates of  $P$  and  $Q$  ?



( 3 ) In the figure  $LM = 8 \text{ cm}$

$\angle L = 30^\circ$  ,  $\angle N = 60^\circ$

- What is the length of  $OM$  ?
- What is the length of  $OL$  ?
- Find the coordinates of  $L, M, N$  ?

