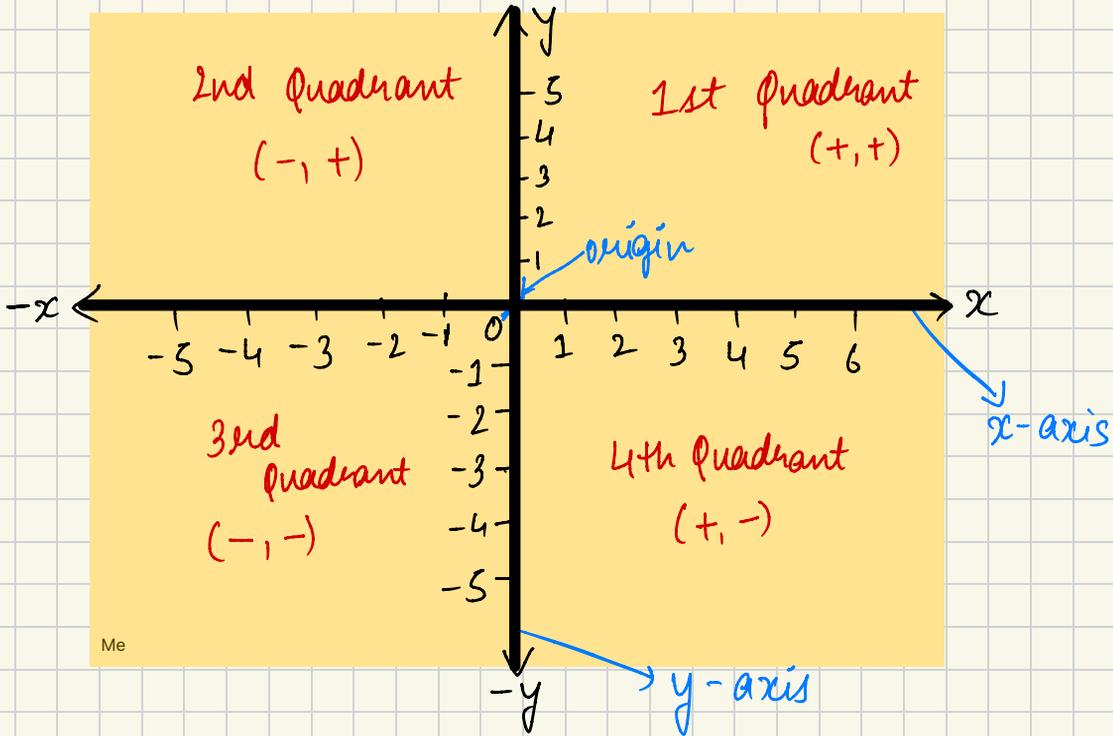


# Coordinate Geometry



- The above 2-D plane is known as cartesian plane
- origin (0,0), a point where the two coordinate axis meet.
- The coordinate system tells us about the location of a point.
- x-coordinate is the perpendicular distance of the point from y-axis also known as abscissa
- y-coordinate is the perpendicular distance of the point from x-axis also known as ordinate

- While writing coordinates, x-coordinate always comes first
- Points on x-axis:  $(x, 0)$  & on y-axis:  $(0, y)$

★ Example:  $P(3, 4)$

3: x-coordinate / abscissa

4: y-coordinate / ordinate

Q) Plot the following points on the Cartesian Plane

a)  $P(-3, 5)$

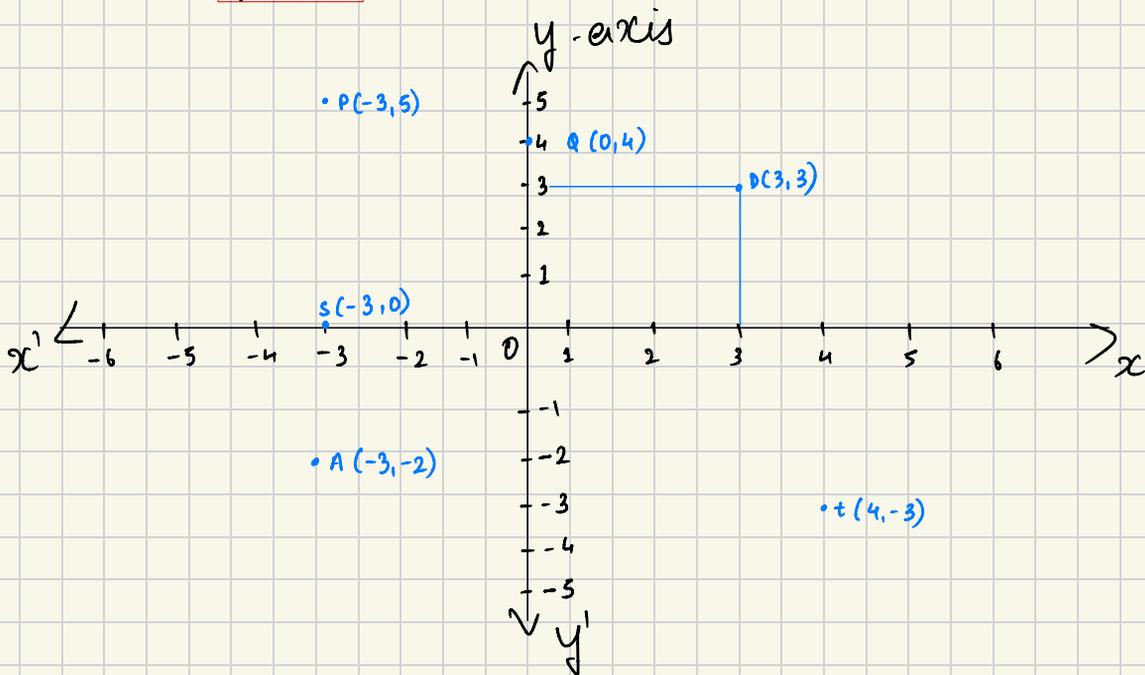
b)  $Q(0, 4)$

c)  $t(4, -3)$

d)  $S(-3, 0)$

e)  $A(-3, -2)$

f)  $D(3, 3)$



Q) A point whose abscissa & ordinate both are negative lies in which quadrant?

ans) III Quadrant

•  $P(3, 2)$

→ distance from x-axis : 2 units  
→ distance from y-axis : 3 units

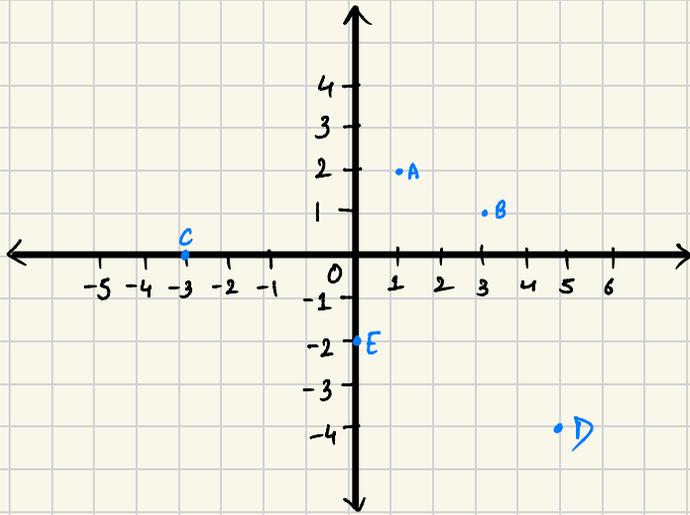
•  $Q(-4, 5)$

→ distance from x-axis : 5 units  
→ distance from y-axis : 4 units

Q) Determine the following points lies in which quadrant?

- i)  $P(-3, 8) \rightarrow$  III quad
- ii)  $Q(8, 2) \rightarrow$  I quad
- iii)  $R(4, -2) \rightarrow$  IV quad
- iv)  $T(-2, -2) \rightarrow$  III quad
- v)  $S(-6, 1) \rightarrow$  II quad
- vi)  $i(0, 8) \rightarrow$  lies on y-axis
- vii)  $j(4, 0) \rightarrow$  lies on x-axis

Q) Determine the coordinates of the following points on Cartesian Plane.



Solution :

$$A \rightarrow (1, 2)$$

$$B \rightarrow (3, 1)$$

$$C \rightarrow (-3, 0)$$

$$D \rightarrow (5, -4)$$

$$E \rightarrow (0, -2)$$

Q) The teacher draw two lines perpendicular to each other. The point at which these lines intersect is known as : ORIGIN

Q) If abscissa & ordinate of a point  $P(a+4, 2a-1)$  are equal, then the value of  $a$  is :

Soln. It's given that,

$$\text{abscissa} = \text{ordinate}$$

$$a+4 = 2a-1$$

$$a-2a = -1-4$$

$$+ a = +5$$

$$a = 5$$

Q) Find the coordinates of the point which lies on y-axis and x-axis both:

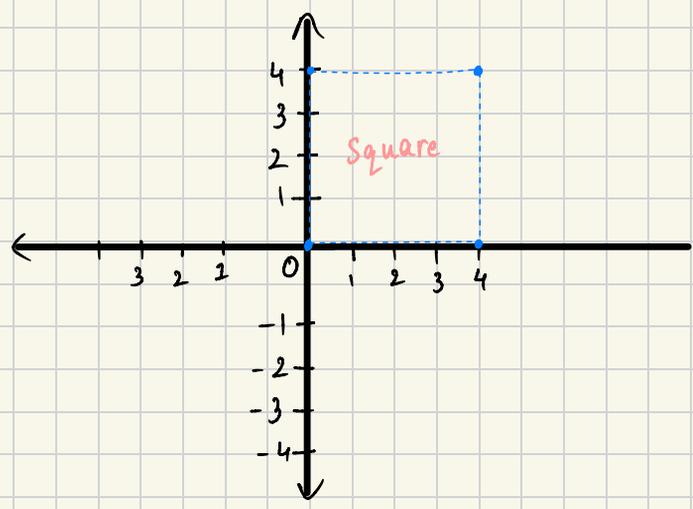
Ans. Origin

Q) Find the coordinates of the point whose ordinate is 3 and abscissa is -6 :

Ans. Point is  $(-6, 3)$

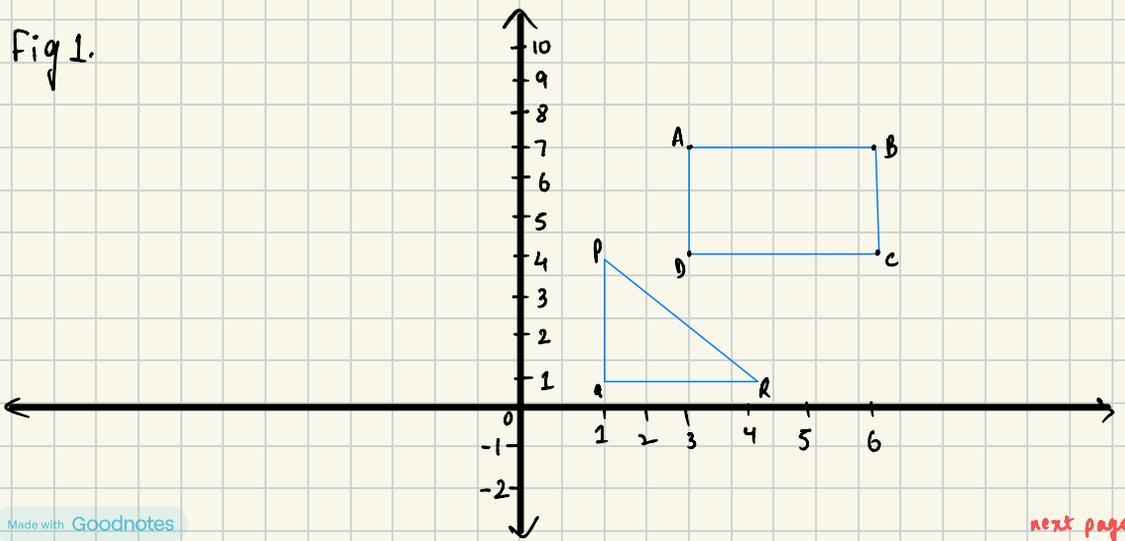
Q) On plotting the points  $O(0,0)$ ,  $A(3,0)$ ,  $B(3,4)$ ,  $C(0,4)$  and joining  $OA$ ,  $AB$ ,  $BC$  &  $OC$ . Which of the following figures is obtained?  a) Square,  b) Rectangle,  c) Rhombus

Soln.



Ex: 1  
Q) A society located in Jaipur, does not have any park for the residences, so the committee of the society decides to construct the diff. parks for children and adults (Fig 1)

Fig 1.

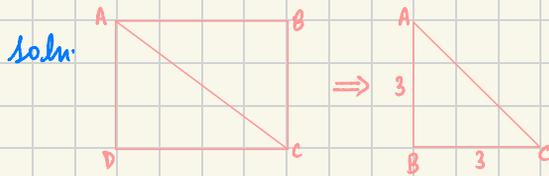


A) Find the area of park PQR

Soln. Since PQR is a triangle,  
length = 3 units  
Height = 3 units

$$\begin{aligned}\text{Area of park PQR} &= \frac{1}{2} \times \text{length} \times \text{height} \\ &= \frac{1}{2} \times 3 \times 3 = \frac{9}{2} \text{ sq. units}\end{aligned}$$

B) Find the length of AC, if the graph scales 10 times, i.e., the one smaller square = 10 units. Find the area of the park constructed for adults.



① Using pythagorean theorem,

$$\begin{aligned}AC^2 &= AB^2 + BC^2 \\ &= 3^2 + 3^2 = 18\end{aligned}$$

$$\begin{aligned}AC^2 &= 18 \\ AC &= \sqrt{18} = \sqrt{3 \times 3 \times 2} \\ AC &= 3\sqrt{2} \text{ units}\end{aligned}$$

② Now,

1 cm = 10 units or acc. to ques 1 unit = 10 units

$$\begin{aligned}\text{Area of Square ABCD} &= (\text{Side})^2 \\ &= (30)^2 \\ &= 900 \text{ sq. units}\end{aligned}$$

# Homework Ques



Q1) Plot the following points and write the name of the figure obtained by joining, them in order:

$P(-3, 2)$  ;  $Q(-7, -3)$  ;  $R(6, -3)$  ;  $S(2, 2)$

Q2) Plot the following points & check whether they are collinear or not:

i)  $(1, 3)$ ,  $(-1, -1)$ ,  $(-2, -3)$

ii)  $(1, 1)$ ,  $(2, -3)$ ,  $(-1, -2)$

iii)  $(0, 0)$ ,  $(2, 2)$ ,  $(5, 5)$

Q3) See the fig. write the following:

i) The coordinates of B

ii) The coordinates of C

iii) The ordinate of H

iv) The abscissa of D

v) The point identified by coordinates  $(-3, -5)$

