



BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:- MATHEMATICS

CHAPTER:- 3 (PART- I)

TOPIC:- COORDINATE GEOMETRY

GUIDELINES

Dear Students

Kindly read the content given below and view the links shared for better understanding.

Solve the given questions in the **yellow register** provided in the notebook set.

Link for the chapter : <http://ncert.nic.in/textbook/textbook.htm?jemh1=3-15>

Introduction and explanation of Coordinate Geometry

Let us Recall the following

Number line: It is a line on which numbers are marked at definite intervals.

For Example:



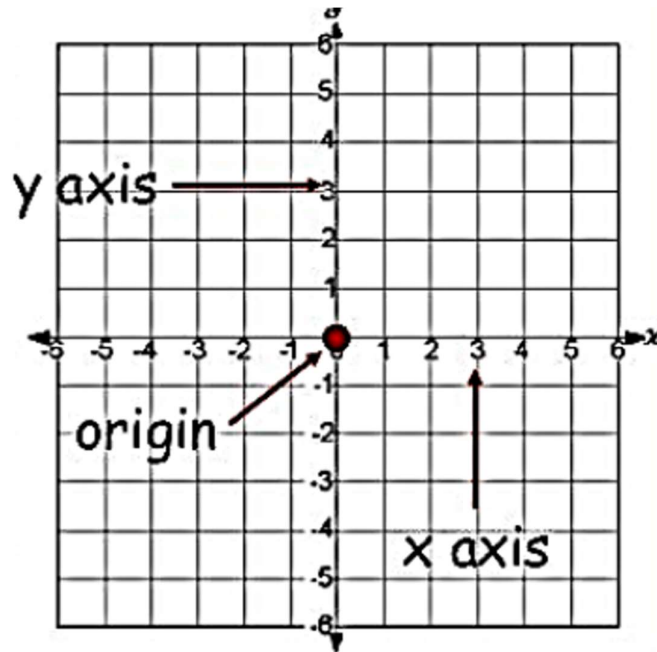
On the number line, distances from a fixed point are marked in equal units' positively in one direction and negatively in the other direction.

Cartesian System:

Cartesian plane & Coordinate Axes

Cartesian Plane: A Cartesian Plane is defined by **two perpendicular number lines**, **A horizontal line (x-axis)** and a **vertical line (y-axis)**.

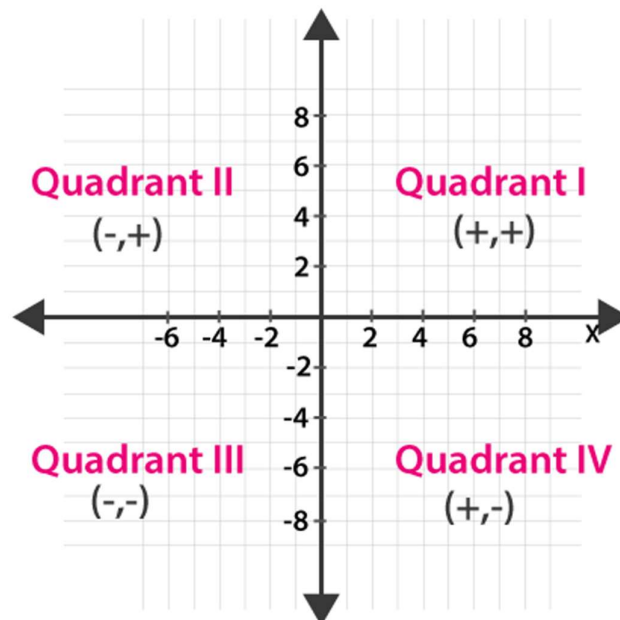
These lines are called **co-ordinate axes**. The Cartesian plane extends infinitely in all the directions.



Origin: The coordinate axes intersect each other at right angles. The point of intersection of these two axes is called Origin.

Quadrants

The cartesian plane is divided into four equal parts, called **quadrants**. These are named in the order as I, II, III and IV starting with the upper right and going around in anticlockwise direction.



Subtopics :

Points in different Quadrants.

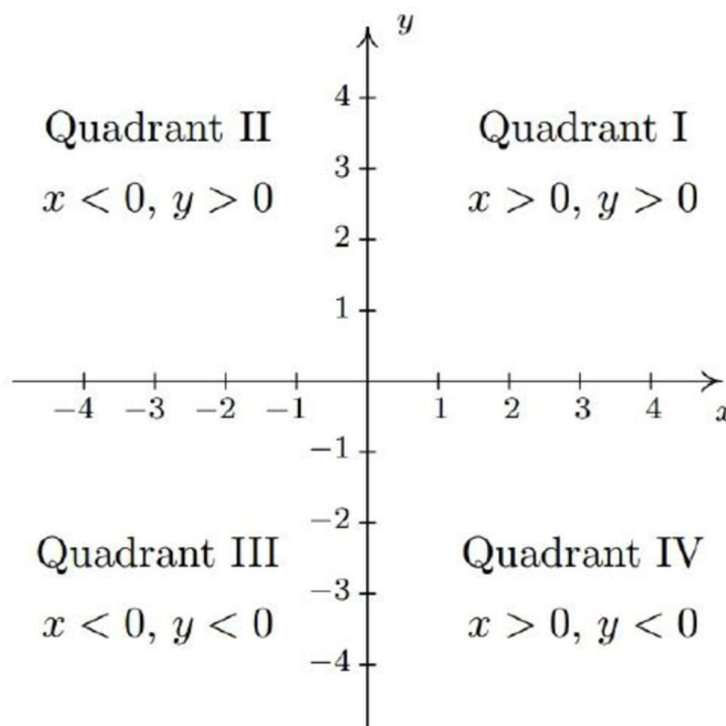
Signs of coordinates of points in different quadrants:

I Quadrant: '+' x-coordinate and '+' y-coordinate. E.g. (2,3)

II Quadrant: '-' x-coordinate and '+' y-coordinate. E.g. (-1,4)

III Quadrant: '-' x-coordinate and '-' y-coordinate. E.g. (-3, -5)

IV Quadrant: '+' x-coordinate and '-' y coordinate. E.g. (6, -1)



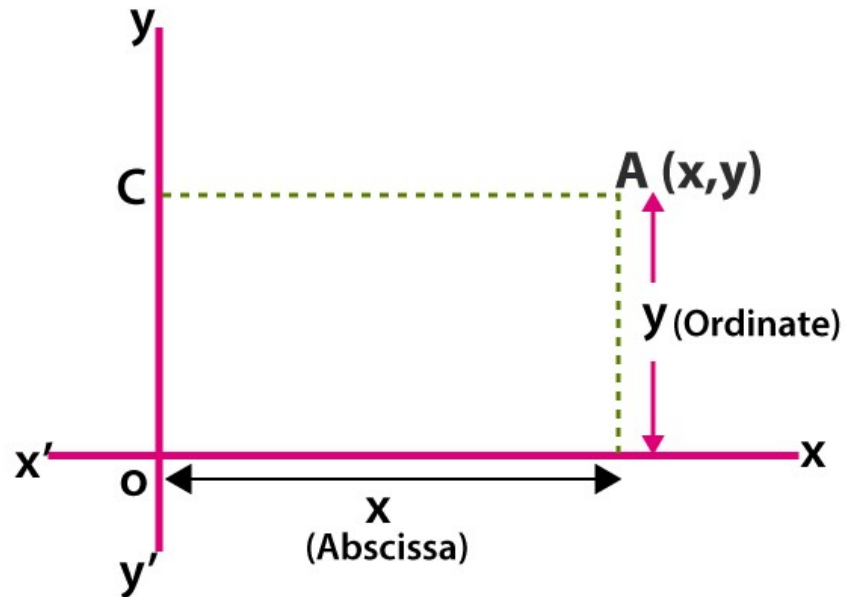
For example, $(1, 2)$ lies in **Quadrant I**,
 $(-1, 2)$ lies in **Quadrant II**,
 $(-1, -2)$ lies in **Quadrant III** and
 $(1, -2)$ lies in **Quadrant IV**.

If a point other than the origin lies on the axes, we typically refer to that point as lying on the **positive or negative x-axis** (if $y = 0$) or on the **positive or negative y-axis** (if $x = 0$). For example, $(0, 4)$ lies on the **positive y-axis** whereas $(-117, 0)$ lies on the **negative x-axis**. Such points do not belong to any of the four quadrants.

Plotting on a Graph

Representation of a point on the Cartesian plane

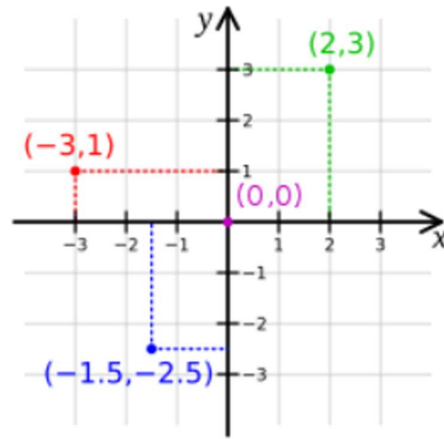
Using the co-ordinate axes, we can describe any point in the plane using an ordered pair of numbers. A point **A** is represented by an ordered pair (x,y) where **x** is the **abscissa** and **y** is the **ordinate** of the point.



Steps to plot the point (2, 3) on the Cartesian plane -

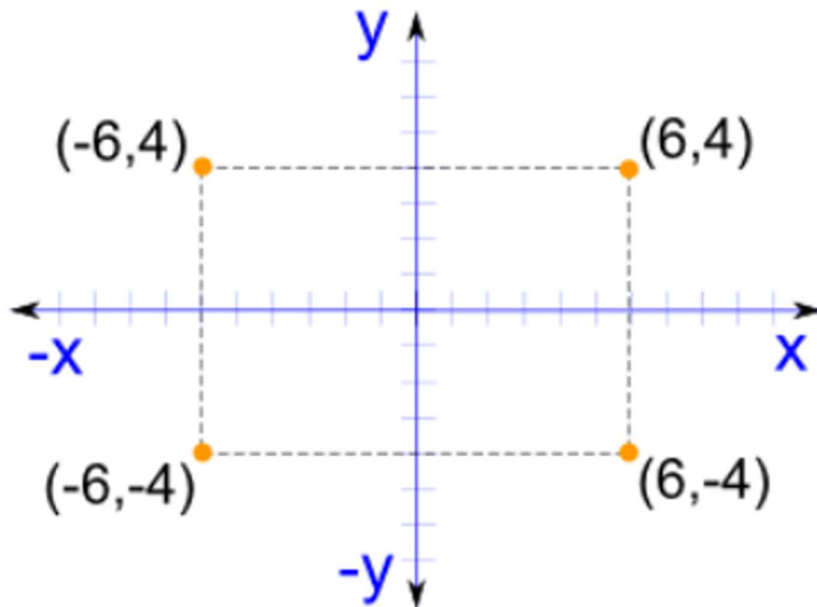
- First, we need to draw the Cartesian plane by drawing the coordinate axes with 1 unit = 1 cm.
- To mark the x coordinates, starting from 0 move towards the positive x-axis and count up to 2.
- To mark the y coordinate, starting from 2 move upwards in the positive direction and count up to 3.
- Now this point is the coordinate (2, 3)

Likewise, we can plot all the other points, like (-3, 1) and (-1.5, -2.5)



Example:

Plot the points $(6, 4)$, $(-6, -4)$, $(-6, 4)$ and $(6, -4)$ on the Cartesian plane.



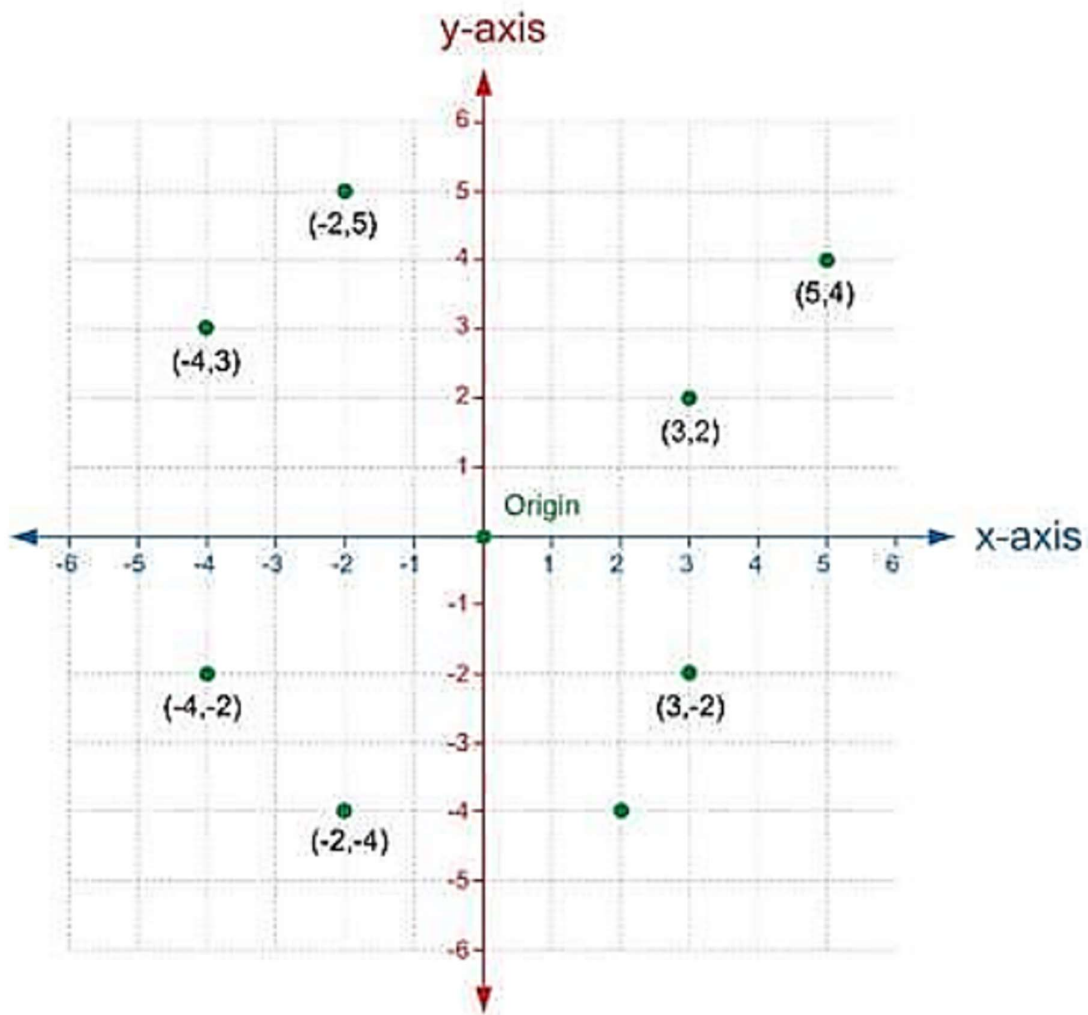
Are the coordinates $(x, y) = (y, x)$?

Let $x = (-4)$ and $y = (-2)$

So $(x, y) = (-4, -2)$

$$(y, x) = (-2, -4)$$

Let's mark these coordinates on the Cartesian plane.



You can see that the positions of both the points are different in the Cartesian plane. So,

If $x \neq y$, then $(x, y) \neq (y, x)$, and $(x, y) = (y, x)$, if $x = y$.

We can check this for other pairs also from the graph.

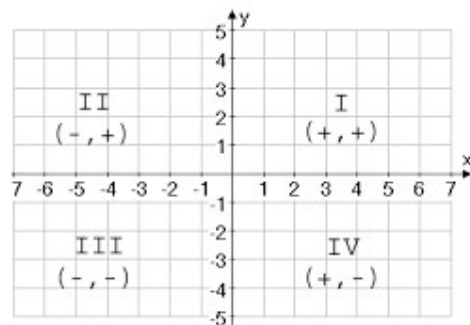
Key points and important links for reference:

1. Introduction of Coordinate Geometry
<https://youtu.be/GiltqjaBTh8>
2. Coordinate of a point in a Cartesian Plane
<https://youtu.be/vvv-tATwdTA>

3. Visit <https://examfear.com/> for further reference.

Points to remember:

- (1) We require two perpendicular axes to locate a point in the plane. One of them is **horizontal** and other is **vertical**.
- (2) The plane is called Cartesian plane and axes are called the **Coordinates Axes**.
- (3) The horizontal axis is called **x-axis** and Vertical axis is called **y-axis**.
- (4) The point of intersection of both the axes is called **origin**.



- (5) The distance of a point from y axis is called x - coordinate or **Abcissa** and the distance of the point from x - axis is called y - coordinate or **Ordinate**.
- (6) The x-coordinate and y - coordinate of the point in the plane is written as **(x, y)** for point and is called the co-ordinates of the point.
- (7) The Origin has zero distance from both x-axis and y-axis so that its abscissa and ordinate both are zero. So the **co-ordinates** of the **origin** is **(0, 0)**.
- (8) A point on the x - axis has zero distance from x-axis, so coordinate of any point on the x - axis will be **(x, 0)**.
- (9) A point on the y - axis has zero distance from y-axis, so coordinate of any point on the y - axis will be **(0, y)**.
- (10) The axes divide the Cartesian plane in to four parts. These four parts are called the **quadrants**.

ASSIGNMENT :-

To be done in the **yellow register**

1. Solved example 2 of NCERT .
2. Exercise 3.1 Question 2 from NCERT
3. Exercise 3.2 Question 2 from NCERT

QUESTIONS FOR PRACTICE

Note : Following questions are for practice only and should be done in a separate practice register/copy of maths

MCQ's

1. The points $(-4, -8)$ lies in:

- a) First quadrant b) Second quadrant
c) Third quadrant d) Fourth quadrant

2. The point $(0, -5)$ lies:

- a) On the x-axis b) On the y-axis
c) In the first quadrant d) None of the above

3. Ordinate of all the points on the x-axis is:

- a) 0 b) 1 c) -1 d) Any natural number

4. Points $(1, -2)$, $(1, -3)$, $(-4, 5)$, $(0, 0)$, $(3, -3)$

- a) Lie in III quadrant b) Lie in II quadrant
c) Lie in IV quadrant d) Do not lie in the same quadrant

5. If the x-coordinate of a point is zero, then this point lies:

- a) In II quadrant b) In I quadrant
c) On x-axis d) On y-axis

SHORT AND LONG ANSWER QUESTIONS:

1. 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 thereafter find the coordinates of the vertex C.

2. 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)

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