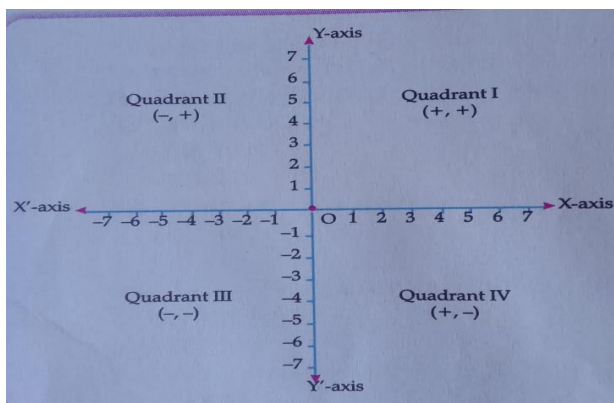


COORDINATE GEOMETRY - CLASS X

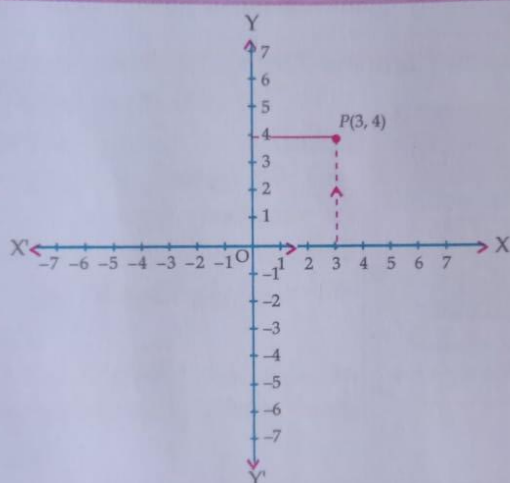
- Two perpendicular lines intersecting at origin are called **Coordinate**



- O- Origin**
- The perpendicular distance of a point from the y axis is called the **x coordinate** or **abscissa**
- The perpendicular distance of a point from the x axis is called the **y coordinate** or **ordinate**.
- A point P in the cartesian plane is represented as $P(x,y)$ where $x =$ **x coordinate** and $y =$ **y coordinate**
- The coordinates of a point on the **X axis** = $(x,0)$
Y axis = $(0,y)$

To plot a point $P(3, 4)$ in the cartesian plane.

- A distance of 3 units along X-axis.
- A distance of 4 units along Y-axis.



Distance Formula:

- The distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$ is:

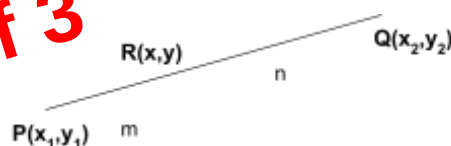


$$PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

- The distance of a point from the origin = $\sqrt{(x)^2 + (y)^2}$

Section Formula:

- The coordinates of a point $R(x,y)$ which divides the line segment $P(x_1, y_1)$ and $Q(x_2, y_2)$ internally in the ratio $m:n$ is:



$$R \left[\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} \right]$$

where $x = \frac{mx_2 + nx_1}{m+n}$ and $y = \frac{my_2 + ny_1}{m+n}$

- The coordinates of a point $R(x,y)$ which divides the line segment $P(x_1, y_1)$ and $Q(x_2, y_2)$ externally in the ratio $m:n$ is :