# Co-ordinate Geometry Basics

By **BrushMyQuant**

YouTube Video Link to this Post is Here

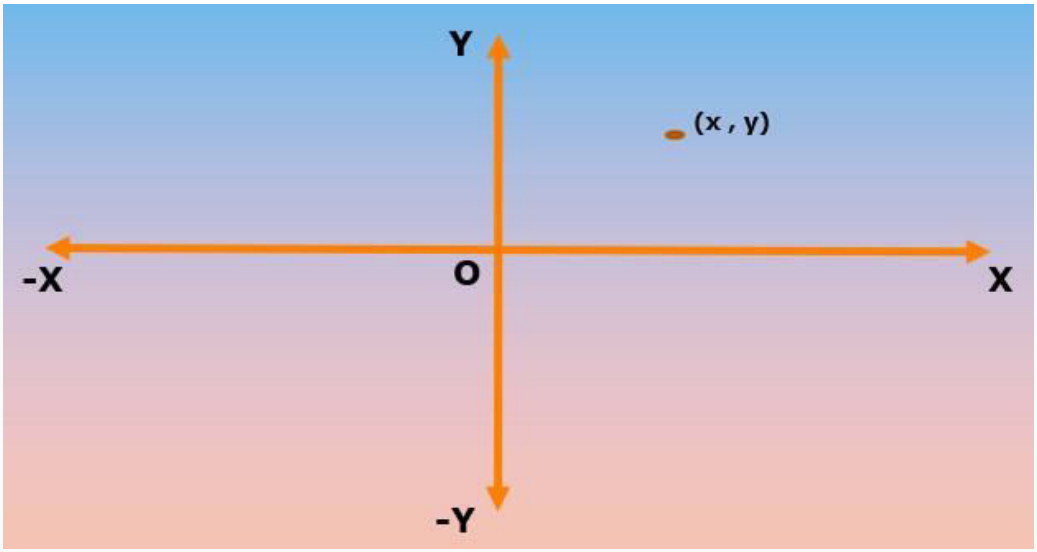
Following is covered in the video

- **XY or 2D Plane**
- **Introduction to Quadrants**
- **x-intercept and y-intercept**
- **Distance between two points**
- **Distance of a point from origin**
- **Slope of a line**
- **Sign of slope of a line**
- **Slope of Parallel and Perpendicular lines**

## XY or 2D Plane

**XY Plane is a 2D Plane which contains the x-axis and the y-axis. x-axis is horizontal axis and y-axis is vertical axis.**

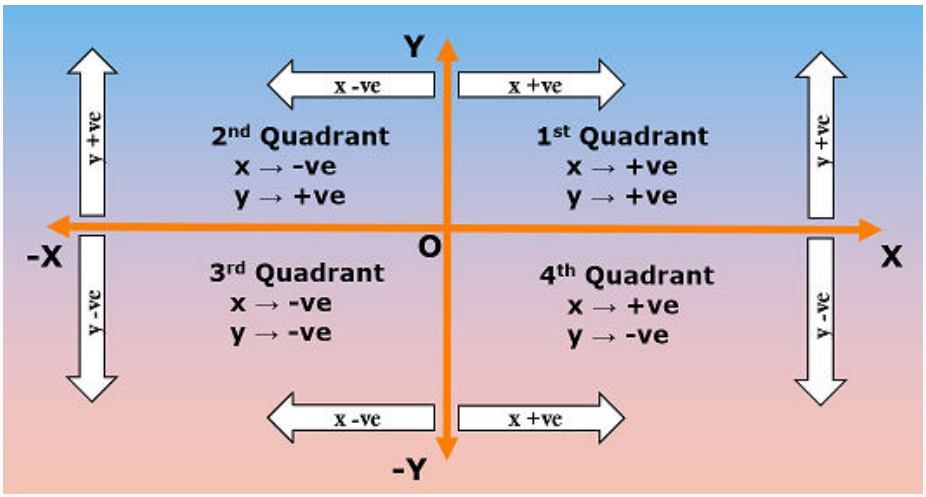
- Each point in the XY Plane has two co-ordinates (x,y)
- x is the x co-ordinate, y is the y co-ordinate



# Introduction to Quadrants

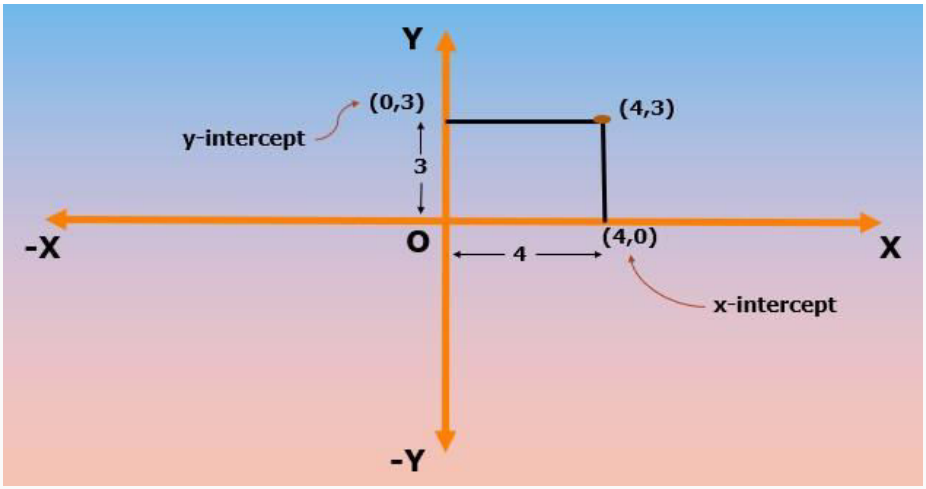
**x-axis and y-axis divide the XY plane into 4 quadrants.**

- 1st Quadrant : x +ve, y +ve
- 2nd Quadrant : x -ve, y +ve
- 3rd Quadrant : x -ve, y -ve
- 4th Quadrant : x +ve, y -ve




# x-intercept and y-intercept

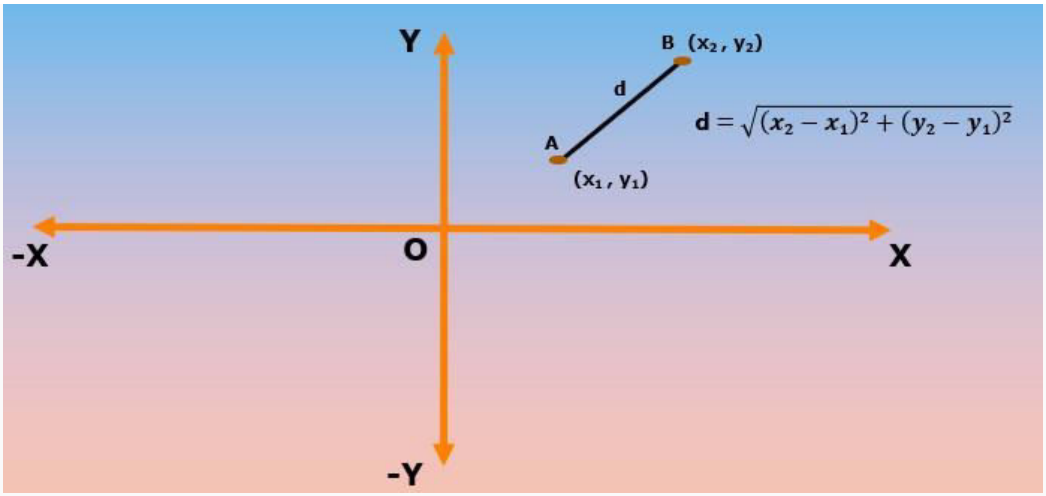
**x-intercept: Point where a line touches the x-axis**
**y-intercept: Point where a line touches the y-axis**



# Distance between two points

**Distance, d, between two points A $(x_1,y_1)$ and B$(x_2,y_2)$ on a XY plane is given by**

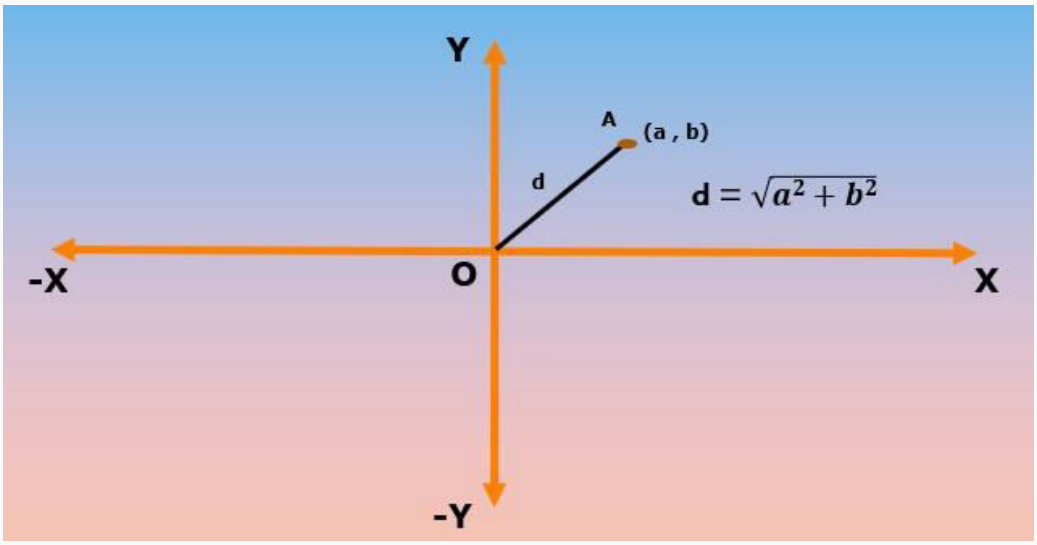
$$d = \sqrt{((x_2-x_1)^2 + (y_2-y_1)^2)}$$




# Distance of a point from Origin

**Distance, d, of a point A (a,b) from origin (0,0) is given by**

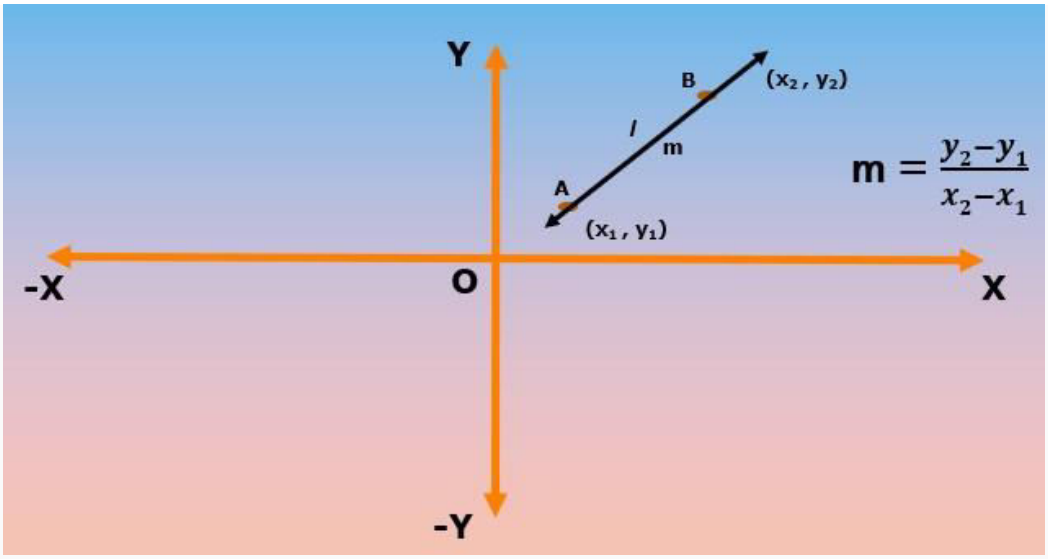
$$d = \sqrt{((a-0)^2 + (b-0)^2)}$$



# Slope of a Line

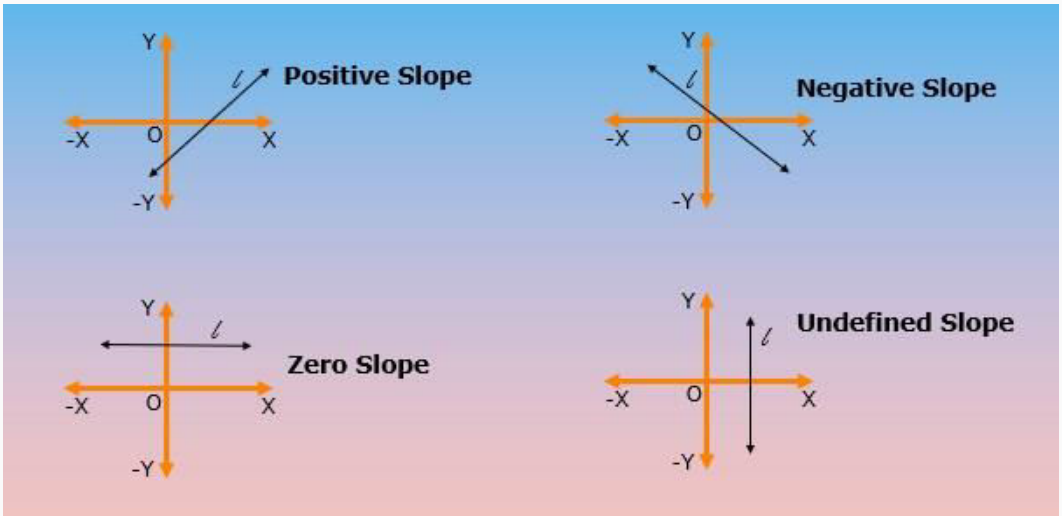
**Slope of a line is an indication of how inclined the line is as compared to positive x-axis.**

¤ Slope(m) of line(l) passing through points A and B is given by
**m = $(y_2-y_1)$ / $(x_2-x_1)$**




# Sign of slope of a line

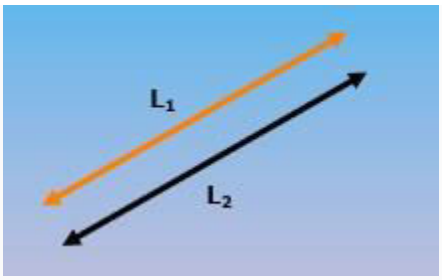
¤ **Positive Slope: Line tilted towards right**
¤ **Negative Slope: Line tilted towards left**
¤ **Zero Slope: Line parallel to x-axis**
¤ **Infinite Slope: Line parallel to y-axis**



# Slope of Parallel and Perpendicular Lines

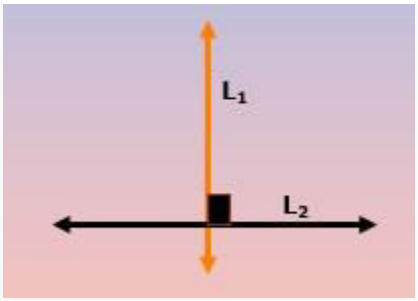
**If two lines are Parallel, then their slopes will be equal.**

¤ If we have two parallel lines $L_1$ and $L_2$, with below equations
¤ Line $L_1$: $y = m_1x + c_1$
¤ Line $L_2$: $y = m_2x + c_2$
¤ then $m_1 = m_2$




**If two lines are Perpendicular, then product of their slopes will be equal to -1**

¤ If we have two perpendicular lines $L_1$ and $L_2$, with below equations
¤ Line $L_1$: $y = m_1x + c_1$
¤ Line $L_2$: $y = m_2x + c_2$
¤ then $m_1 * m_2 = -1$




Hope it helps!
Good Luck!