MIND MAP

The coordinates of a point on x-axis are of the form $(x, 0)$ and a point on y-axis are of the form $(0, y)$.

Distance Formula: The distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$ is given by

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

The distance of a point $P(x, y)$ from the origin $O(0, 0)$ is given by $OP = \sqrt{x^2 + y^2}$

Area of Triangle: The area of a triangle with vertices $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ is

$$\frac{1}{2}[x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$

$$\frac{1}{2}[(x_1y_2 + x_2y_3 + x_3y_1)$$

Three points A, B, C are collinear if $AB + BC = AC$ i.e., sum of distances between two pairs of points is equal to distance between third pair.

- In a parallelogram, diagonals bisect each other.
- In a square all four sides are equal and both diagonals are equal.
- In a rectangle opposite sides and both

Section Formula: The co-ordinates of the point which divides the join of points $A(x_1, y_1)$ and $B(x_2, y_2)$ internally in the ratio $m : n$ are $\left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n}\right)$

Mid Point Formula: The coordinates of the mid point of line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$ are $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Centroid Formula: The coordinates of centroid of the triangle formed by the points $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ are

$$\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}$$

Collinear Points: Three points $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ are collinear if area of triangle formed by these points is zero.