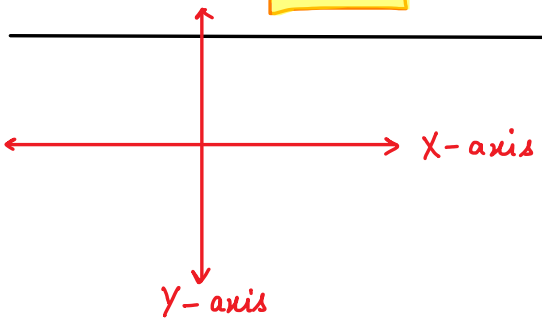
Coordinate Geometry 7

Distance formula :- $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

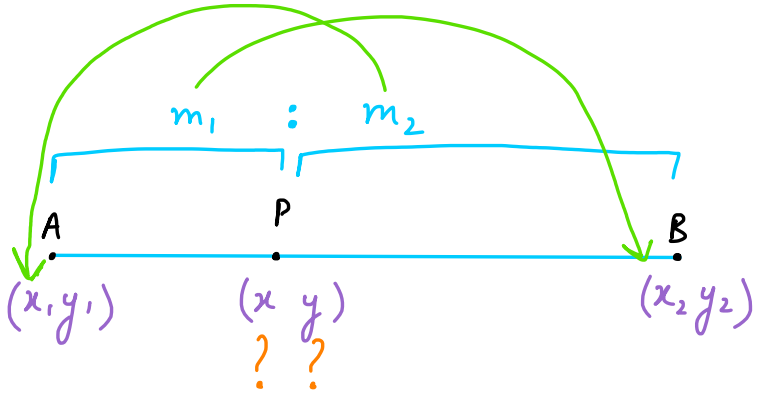
X - axis → $y = 0$

Y-axis → $x = 0$



Distance from origin :- $\sqrt{x^2+y^2}$

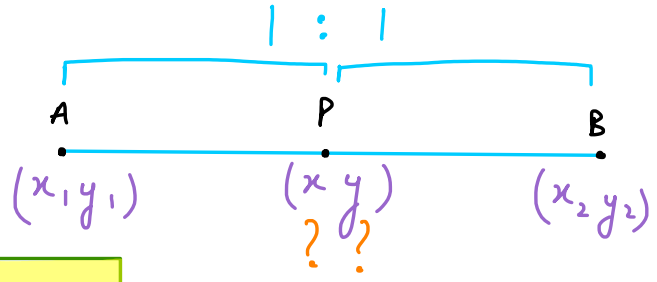
Section Formula :-



$$x = \frac{m_1x_2 + m_2x_1}{m_1 + m_2}$$

$$y = \frac{m_1y_2 + m_2y_1}{m_1 + m_2}$$

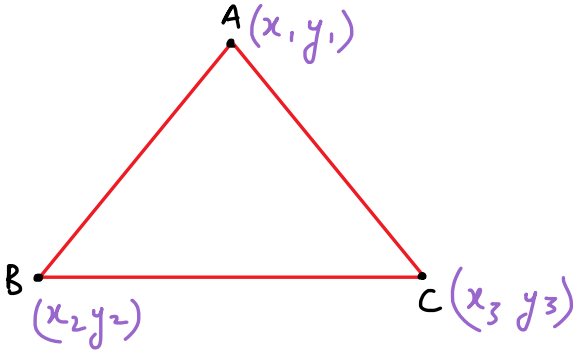
Mid-point Formula :-



$$x = \frac{x_1 + x_2}{2} \qquad y = \frac{y_1 + y_2}{2}$$

Area of triangle :-

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



When A, B, C are **collinear points** :- which lie on same line

then, Area of triangle = 0

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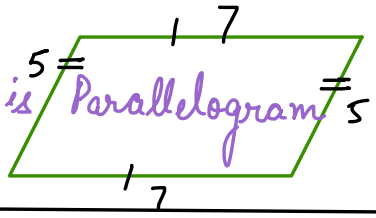
x - coordinate ⟶ abcissa

y - coordinate ⟶ ordinate

Q→ Find the ratio ? ⟶ Let the ratio $K:1$

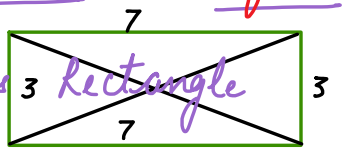
If opposite sides are equal

Then it is Parallelogram



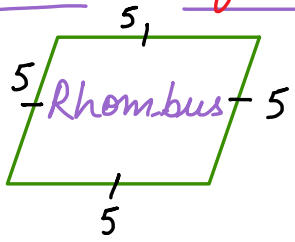
If opposite sides are equal and diagonals are equal.

Then it is Rectangle



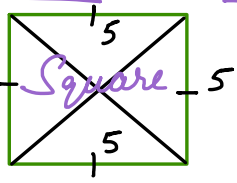
If all the sides are equal

Then it is Rhombus

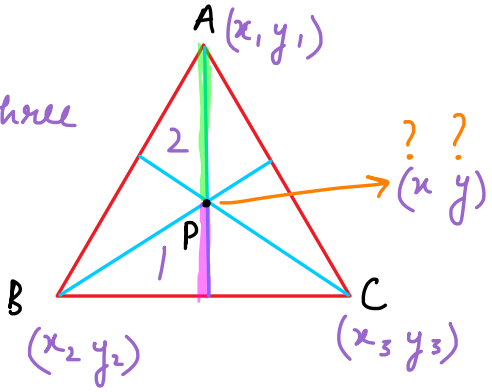


If all the sides are equal and diagonals are equal.

Then it is Square



Centroid :- intersection of all the three medians.

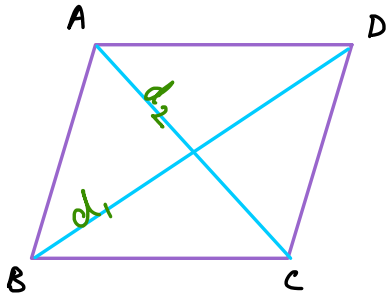


$$x = \frac{x_1 + x_2 + x_3}{3} \qquad y = \frac{y_1 + y_2 + y_3}{3}$$

Centroid divides the median in $2:1$

Area of Rhombus :- $\frac{1}{2} \times d_1 \times d_2$

$\frac{1}{2} \times AC \times BD$



→ Diagonals of Ilgm bisect each other.

→ Diagonals of Rhombus bisect each other at right angle.

→ Diagonals of Rectangle bisect each other and equal.

→ Diagonals of Square bisect each other at right angle and equal.