

→ The coordinates of a point dividing the line segment joining the points (x_1, y_1) and (x_2, y_2) internally, in the ratio $m:n$ are $\left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n} \right)$

If $m=n$, Then the point is mid-point of the line -

$$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

→ If the area of the triangle ABC is zero, then three points A, B and C lie on a line, i.e., they are collinear.