1. Distance formula:

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

2. Section Formula:

$x = (mx_2+nx_1)/(m+n)$

$y = (my_2+ny_1)/(m+n)$

3. Centroid:

$G = [(x_1+x_2+x_3)/3, (y_1+y_2+y_3)/3]$

4. Incentre:

$I = \{(ax_1+bx_2+cx_3)/(a+b+c), (ay_1+by_2+cy_3) / (a+b+c)\}$

5. Excentre:

$I_1 = \{(-ax_1+bx_2+cx_3)/(-a+b+c), (-ay_1+by_2+cy_3)/(-a+b+c)\}$

6.Slope formula:

(i) Line joining two points (x_1, y_1) and (x_2, y_2), m = $(y_1 - y_2) / (x_1 - x_2)$

(ii) Slope of a line ax+by+c = 0 is -coefficient of x/coefficient of y = -a/b

7.Equation of a straight line in various forms:

(i) Point Slope form: $y-y_1 = m(x − x_1)$

(ii) Slope intercept form: y = mx + c

(iii) Two point form: $y-y_1 = \{(y_2 − y_1) / (x_2 − x_1)\} \times (x-x_1)$

(v) Intercept form: (x/a) + (y/b) = 1

(v) Perpendicular / Normal form: x cos α + y sin α = p

(vi) Parametric form: $x = x_1 + r \cos\theta$, $y = y_1 + r \sin\theta$

(vii) Symmetric form: $(x − x_1)/\cos\theta = (y − y_1) / \sin\theta = r$

 (ix) General form: ax + by + c = 0

x intercept = -c/a

y intercept = -c/b

8.Two lines ax+by+c = 0 and a'x+b'y+c' = 0 are perpendicular if aa'+bb' = 0

9. Reflection of a point about a line:

(i) Foot of the perpendicular from a point on the line is $(x-x_1)/a = (y-y_1)/b = -(ax_1+by_1+c)/(a^2+b^2)$

(ii)Image of (x_1, y_1) in the line ax+by+c = 0 is $(x-x_1)/a = (y-y_1)/b = -2 (ax_1+by_1+c)/(a^2+b^2)$

10. The equation of a family of straight lines passing through the point of intersection of the lines,

$L_1 = a_1x+b_1y+c_1 = 0$ and $L_2 = a_2x+b_2y+c_2 = 0$ is given by $L_1 + kL_2 = 0$