TURBO

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STRAIGHT LINES

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
		COORDINATE GEOMETRY	
1	Distance Formula	$PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	Distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$.
2	Section Formula	Internal: $(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n})$ External: $(\frac{mx_2-nx_1}{m-n}, \frac{my_2-ny_1}{m-n})$	Midpoint: $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$.
3	Area of Triangle	$\frac{1}{2}\lvert x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\rvert$	Vertices $(x_1, y_1), (x_2, y_2), (x_3, y_3)$.
4	Slope (m)	$m = \tan\theta = \frac{y_2-y_1}{x_2-x_1}, x_1 \neq x_2$	$\theta \neq 90°$.
5	Angle Between Lines	$\tan\theta = \left\lvert \frac{m_2-m_1}{1+m_1m_2} \right\rvert$	Parallel: $m_1 = m_2$. Perpendicular: $m_1m_2 = -1$.
		EQUATIONS OF A LINE	
6	Horiz. / Vert.	Horizontal: $y = a$ Vertical: $x = b$	–
7	Point-Slope Form	$y - y_0 = m(x - x_0)$	Through fixed point (x_0, y_0).
8	Two-Point Form	$y - y_1 = \frac{y_2-y_1}{x_2-x_1}(x - x_1)$	Through (x_1, y_1) and (x_2, y_2).
9	Slope-Intercept	$y = mx + c$	c is the y-intercept.
10	Intercept Form	$\frac{x}{a} + \frac{y}{b} = 1$	a: x-intercept, b: y-intercept.
11	Normal Form	$x\cos\omega + y\sin\omega = p$	p: dist. from origin, ω: angle of normal.
12	General Form	$Ax + By + C = 0$	–
		DISTANCE PROPERTIES	
13	Point to Line	$d = \frac{\lvert Ax_1+By_1+C\rvert}{\sqrt{A^2+B^2}}$	Dist. of (x_1, y_1) from $Ax + By + C = 0$.
14	Parallel Lines	$d = \frac{\lvert C_1-C_2\rvert}{\sqrt{A^2+B^2}}$	Dist. between $Ax + By + C_1 = 0$ and $Ax + By + C_2 = 0$.