EngineeringRise

Straight line: forms, angles, distance and triangle centres

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Slope-intercept form	y = m x + c Valid when: non-vertical line; m is slope, c the y-intercept	m dimensionless (c length)
Point-slope form	y - y1 = m(x - x1) Valid when: non-vertical line through (x1, y1) with slope m	length
Two-point form	(y - y1)/(y2 - y1) = (x - x1)/(x2 - x1) Valid when: line not vertical or horizontal (x1 != x2, y1 != y2)	dimensionless
Intercept form	x/a + y/b = 1 Valid when: line with non-zero intercepts a and b on the axes	length
Slope from general form	ax + by + c = 0 has slope -a/b Valid when: b not 0 (line not vertical)	dimensionless
Angle between lines	tan(theta) = |(m1 - m2)/(1 + m1 m2)| Valid when: both lines non-vertical, m1 m2 not -1 (else 90 degrees)	dimensionless
Distance of a point from a line	|a x1 + b y1 + c|/sqrt(a^2 + b^2) Valid when: a and b not both zero; (x1, y1) any point	length
Distance between parallel lines	|c1 - c2|/sqrt(a^2 + b^2) Valid when: parallel lines written with identical a and b coefficients	length
Line through intersection of L1 = 0 and L2 = 0	L1 + k L2 = 0 Valid when: L1, L2 intersecting lines; k real (never gives L2 itself)	dimensionless
Concurrency of three lines	determinant of (a_i, b_i, c_i) = 0 Valid when: three lines in general form ax + by + c = 0	dimensionless
Centroid and the Euler relation	G = ((x1 + x2 + x3)/3, (y1 + y2 + y3)/3); H = 3G - 2O Valid when: any triangle; G centroid, O circumcentre, H orthocentre	length

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/mathematics/coordinate-geometry/straight-line-forms-angles-distance-and-triang

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