Algebra

Lines in the Plane

One of the toughest things about working with lines is knowing when to use which formula. This chart should keep things straight for the student who is first beginning to work with lines [or help those who are trying to remember what they did in Algebra].

Name	Formula	When to use
Slope Formula	$m = \frac{y_2 - y_1}{x_2 - x_1}$	Use when you have two points on a line and you want to find the slope (tilt) of a line (m = Rise/Run).
Point-Slope Form	$y - y_1 = m(x - x_1)$	Use when you want to find the equation of a line. Notice that to use this equation you must first find the slope of the line and have a point on the line.
Slope-Intercept Form	$y = mx + b$	Use when you want to graph a line (m = slope, b = y-intercept). Also use when you are trying to find the slope of a line if you are given the equation of the line. (This is the form you will use to graph on your calculator)
General Form	$Ax + By + C = 0$	An alternate form to the slope-intercept. There will be no fractions and the equation is equal to zero.
Intercept Form	$\frac{x}{a} + \frac{y}{b} = 1$	An alternate form to the slope-intercept and general forms. *a* is the x-intercept, *b* is the y-intercept.
Horizontal Line	$y = b$	Use when you are trying to find the equation of a horizontal line (notice, the line passes through the y-intercept).
Vertical Line	$x = a$	Use when you are trying to find the equation of a vertical line (notice, the line passes through the x-intercept).
Parallel Lines	$m_1 = m_2$	Remember, parallel lines have exactly the same slopes.
Perpendicular Lines	$m_1 = \frac{-1}{m_2}$	Remember, perpendicular lines have negative reciprocal slopes.