LINEAR EQUATIONS

THE SLOPE OF A LINE

Slope = m = $\frac{y_2 - y_1}{x_2 - x_1}$

Parallel lines: have the same slope

Perpendicular lines: one slope is the
               negative reciprocal of the other

If the slope is:	The line:
Positive	Slants up to the right
Negative	Slants down to the right
0	Is horizontal
Undefined	Is vertical

THREE FORMS OF AN EQUATION OF A LINE

- Standard (General) Form: Ax + By = C
- Slope-Intercept Form: y = mx + b (m = slope; b = y-intercept)
- Point-Slope Form: $y - y_1 = m(x - x_1)$

FINDING THE INTERCEPTS

To find the y-intercept, let x = 0 and then solve for y
To find the x-intercept, let y = 0 and then solve for x

GRAPHING THE EQUATION

Form	Graphing This Form

Standard	Use the intercepts and a check point:
	    Set x = 0 and solve for y (y-intercept)
	    Set y = 0 and solve for x (x-intercept)
	    Pick a convenient x, e.g. x=1, and solve for y

Slope-Intercept	Use the y-intercept = b and the slope = m
Point-Slope	Change to Slope-Intercept Form and graph
y = b	Horizontal line with y-intercept = b
x = a	Vertical line with x-intercept = a

FINDING THE EQUATION

If Given:	Then:
the slope and the y-intercept	Use the Slope-Intercept form. Plug in slope = m and y-intercept = b.
the slope and a point	Use the Point-Slope Form. Plug in slope = m and the point (x_1, y_1).
two points	Use the Point-Slope Form. First, find the slope using the two points and the slope formula. Then plug in slope = m and either point (x_1, y_1).
the line is horizontal and the y-intercept	Use the form y = b and plug in the y-intercept.
the line is vertical and the x-intercept	Use the form x = a and plug in the x-intercept.