Slope Intercept Form

Linear equations can be written in slope-intercept form. In the equation, m represents the **slope** and tells us how to *move* between points. The letter b represents the **y-intercept** and tells us where to *begin* our graph on the y-axis.

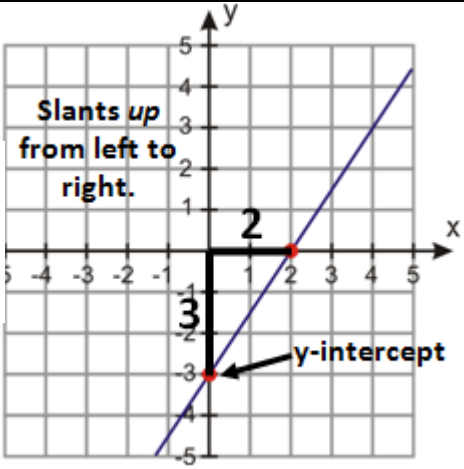
writing the equation from a graph:

1. Determine if the slope is positive or negative
2. Find the slope using $\frac{rise}{run}$.
3. Find the y-intercept where the line crosses the y-axis.

example:

$m = \frac{3}{2}, b = -3$

$y = \frac{3}{2}x - 3$



writing the equation from a table:

1. Find the slope using $\frac{change\ in\ y}{change\ in\ x}$.
2. Using the slope and one ordered pair from the table, plug into y=mx+b and solve for the y-intercept (b).

example:

X	Y
-2	0
0	-4
4	-12

+2 (between X values) -4 (between Y values)

$\frac{change\ in\ y}{change\ in\ x} = \frac{-4}{2} \div \frac{2}{2} = \frac{-2}{1} = -2$

$y = mx + b$

$-12 = -2(4) + b$

$-12 = -8 + b$

$-4 = b$

$y = -2x - 4$

writing the equation from context:

1. Identifiy the starting value (y-intercept).
2. Identify the rate of change (slope).

example:

Kenny and his friends rented a boat at the lake. The marina charges a $35 rental fee for a boat, and charges $15 an hour to use the boat.

starting value: $35, rate of change: $15

$y = 15x + 35$

Converting into slope-intercept form::

Solve the equation for y (get the y by itself).

examples:

$3x - y = 4$

$-3x \quad -3x$

$\frac{-y}{-1} = \frac{-3x + 4}{-1}$

$y = 3x - 4$

$-5x + 3y = 15$

$+5x \quad +5x$

$\frac{3y}{3} = \frac{5x + 15}{3}$

$y = \frac{5}{3}x + 5$