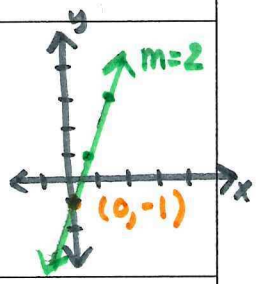
Section 3.5 Date_____

Write and Graph Equations of Lines

Vocabulary	Definition	Picture
SLOPE-INTERCEPT FORM	The general form of a linear equation in slope-intercept form is y = m x + b, where m is the slope and b is the y-intercept.	$y = mx + b$ ↳ y-intercept crosses the y-axis (0, b) * starting point on graph $m = \frac{\text{rise}}{\text{run}}$ $y = 2x - 1$, $m = 2$ $\frac{\text{up } 2}{\text{right } 1}$, $b = -1$, (0, -1) 
STANDARD FORM	The general form of a linear equation in standard form is A x + B y = C, where A and B are both not zero. A and B ≠ 0	$Ax + By = C$ * To change to y=mx+b, solve for y. $y = \frac{-A}{B}x + \frac{C}{B}$ $3x - 5y = 10$ $-3x \quad -3x$ $-5y = -3x + 10$ $\frac{-5y}{-5} = \frac{-3x}{-5} + \frac{10}{-5}$ $y = \frac{3}{5}x - 2$ A = 3 B = -5 C = 10 *shortcut* $m = \frac{-A}{B}$ $b = \frac{C}{B}$

Examples:

Point-Slope Form use when given a point (x_1, y_1) and a slope m.

$y - y_1 = m(x - x_1)$

If you solve for y, then it will give you $y = mx + b$.

2 steps
1. Distribute your slope (m) to $(x - x_1)$.
2. Add/subtract y_1 to both sides.

write an equation of a line that goes through $(\overset{x_1}{2}, \overset{y_1}{-8})$ and has a slope of 5.

$(\overset{x_1}{2}, \overset{y_1}{-8})$ $m = 5$

$y - y_1 = m(x - x_1)$

$y + 8 = 5(x - 2)$

$y + 8 = 5x - 10$

$-8 \quad +8$

$y = 5x - 18$