Unit 2 Language Of Geometry **Name:** _____
Day 7 Notes Equations of Lines **Date:** _____ **Hour:** _____
(PH Lesson 3-5)

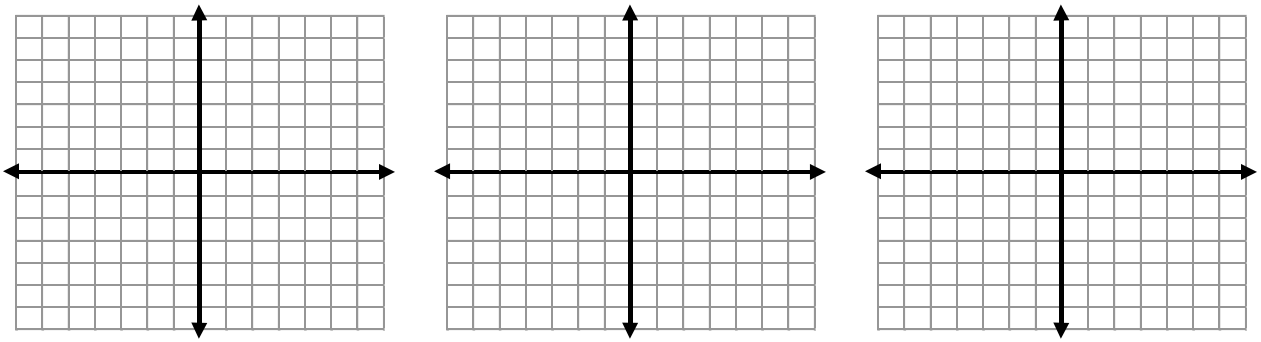
The ***slope*** of a line measures how steep the line is. It is found by comparing the vertical change to the horizontal change.

$$m = \frac{rise \updownarrow}{run \rightarrow}$$

Positive Slope	**Negative Slope**	**Zero Slope**	**Undefined Slope**
			
Uphill (from left to right)	Downhill (from left to right)	Horizontal Line	Vertical Line

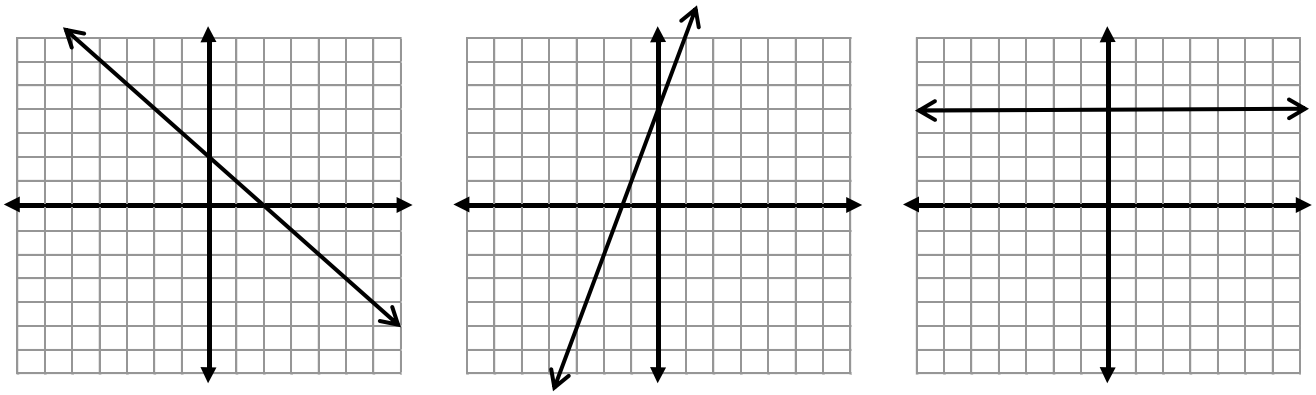
Example 1: Plot the line containing the given point with slope m.

a. $(2,-1);\ m = \frac{2}{3}$ b. $(1,3);\ m = 4$ c. $(-3,-2);\ m = -\frac{1}{4}$



Example 2: Find the slope of the given line. Does the line have positive or negative slope?

a. b. c.



SLOPE FORMULA : Given two points on a line (x_1, y_1) and (x_2, y_2), the slope *m* is the ratio:

$$m = \frac{rise \updownarrow}{run \rightarrow} = \frac{y_2 - y_1}{x_2 - x_1}$$

Example 4: Find the slope of $\overleftrightarrow{AB}$. A. A(6, 2) and B(-4, 0) B. A(-5, 3) and B(-7, 1)

Slope-Intercept Form of a Linear Equation: $y = mx + b$

The letter *m* refers to the *slope* and *b* refers to the *y-intercept*.

Vertical Lines: **Slope is undefined** **Vertical Equation:** **x = a**

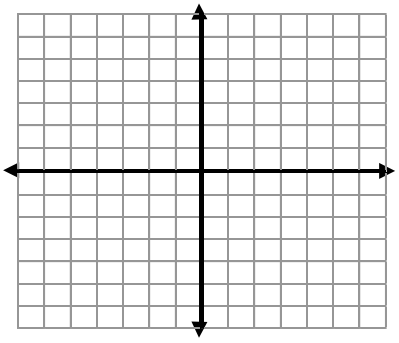
Horizontal Lines: **Slope is zero** **Horizontal Equation:** **y = b**

Example 5: What are the slope and *y*-intercept of each equation?

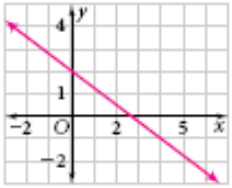
a. $y = 3x - 5$ **b.** $y = -\frac{4}{5}x$ **c. x = 4** **d. y = -3**

Example 6: Write an equation of the line with a slope of $\frac{3}{8}$ and a *y*-intercept of 6.

Example 7: Use the slope and y-intercept to graph the line $y = 3x - 1$.



Example 8: Write the equation of the line.



Homework: **Day 7 Worksheet**