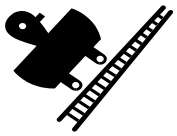
Unit 2 Linear Functions **Name:** _____

Day 2 Notes Rates of Change – Slope **Date:** _____ **Hour:** _____

What is slope? The slope of a line can have many meanings. The steepness of a hill can be described by slope, which is the ratio of the vertical rise to the horizontal run.

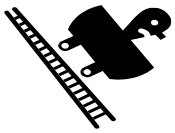
$$slope = \frac{rise \updownarrow}{run \rightarrow}$$

Positive Slope



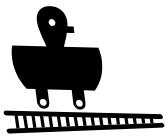
Uphill
(from left to right)

Negative Slope



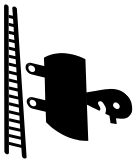
Downhill
(from left to right)

Zero Slope



Horizontal Line
(rise = 0)

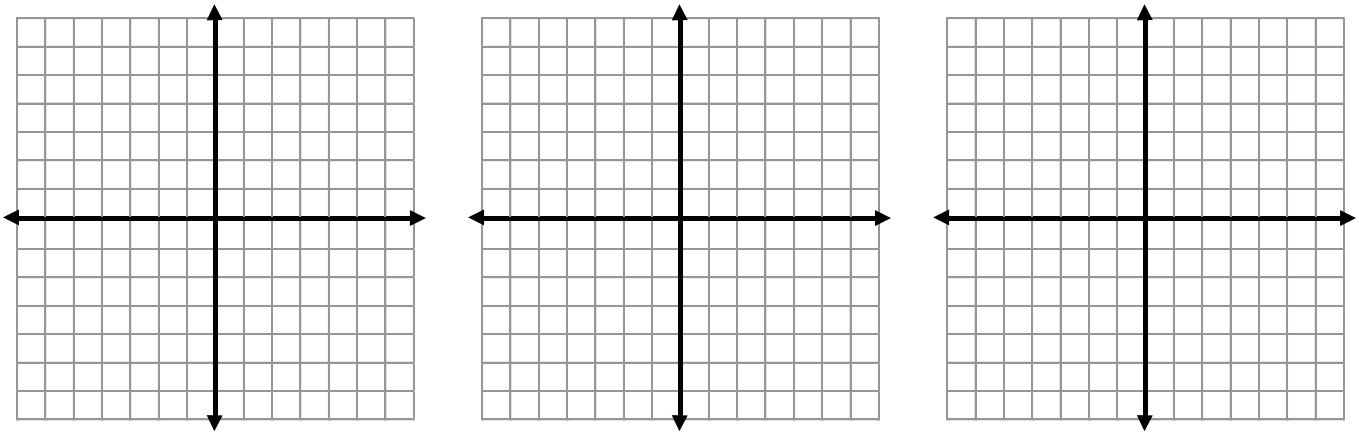
Undefined Slope



Vertical Line
(run = 0)

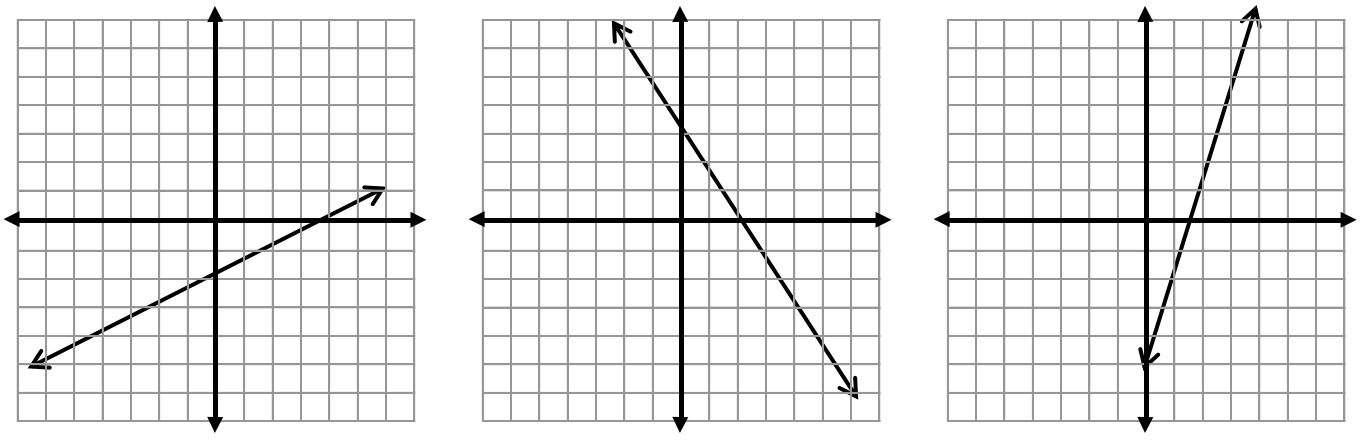
Example 1: Plot the line containing the given point with slope m.

A. $(2,-1);\ m=\frac{2}{3}$ B. $(1,3);\ m=4$ C. $(-3,-2);\ m=-\frac{1}{4}$

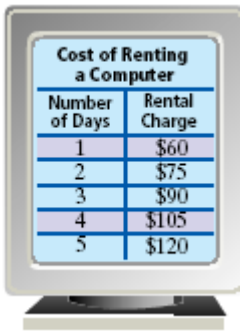


Example 2: Find the slope of the given line. Does the line have positive or negative slope?

A. $Slope =$ B. $Slope =$ C. $Slope =$



Example 3: For the data in the chart, is the rate of change for each pair of consecutive days the same?



Cost of Renting a Computer	
Number of Days	Rental Charge
1	$60
2	$75
3	$90
4	$105
5	$120

What does the rate of change represent?

The ***slope*** of a line is its rate of change.

$$slope = rate\ of\ change = \frac{change\ in\ the\ dependent\ variable}{change\ in\ the\ independent\ variable} = \frac{\Delta y}{\Delta x}$$

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 the line passing through the given points.

A. (3, 5) , (2, 7)

B. (-4, -5), (-9, 1)

C. (-2, -3), (-2, 6)

D. (-5, -3), (4, -3)

Homework: Day 2 Slope Worksheet