

AA – Section 5.1 Notes – Rate of Change and Slope

**Objective:**

To find the rate of change (slope) from tables, graphs, or ordered pairs

**Vocabulary:**

Slope is the rate of change of a line.

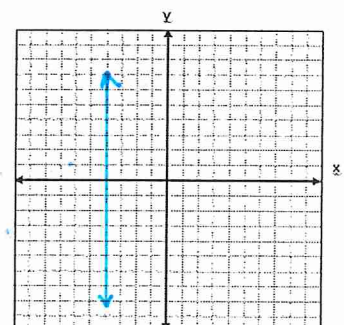
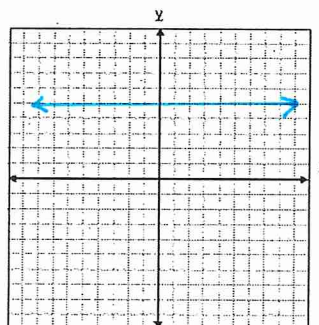
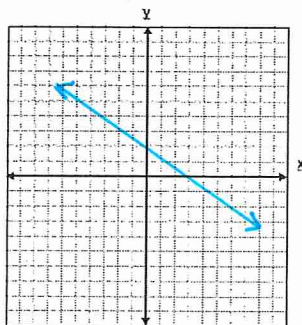
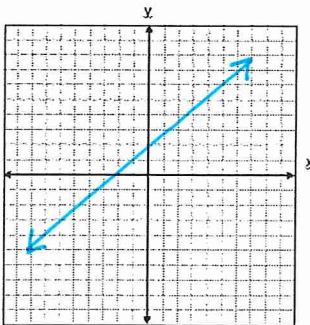
Slope can be positive (increasing), negative (decreasing), zero or undefined. Slope is written as a fraction, whether proper or improper. Usually, you do not write slope as a decimal or a mixed number.

$$\text{Slope } (m) = \frac{\text{vertical change} \updownarrow}{\text{horizontal change} \leftrightarrow} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}, \text{ where } x_2 - x_1 \neq 0$$

label your points  
(x<sub>1</sub>, y<sub>1</sub>) (x<sub>2</sub>, y<sub>2</sub>)

$$\text{Rate of Change} = \frac{\text{change in the dependent variable } (y)}{\text{change in the independent variable } (x)}$$

**Slopes of Lines**



A line that slants upward from left to right has a Positive slope

A line that slants downward from left to right has a Negative slope.

A horizontal line has a slope of Zero

A vertical line has a slope that is Undefined

**"HOYVUX"**

- H – Horizontal Line
- O – Zero Slope
- Y – Equation written as y = \_\_\_\_
- V – Vertical Line
- U – Undefined Slope
- X – Equation written as x = \_\_\_\_

$\frac{O}{K}$  "OK"

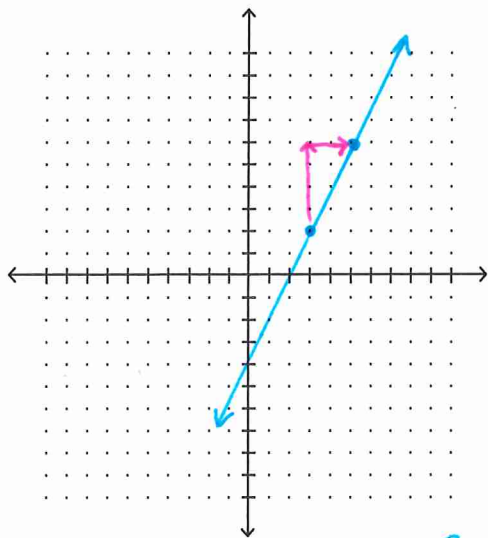
$\frac{N}{O}$  "NO"

Examples – 5.1

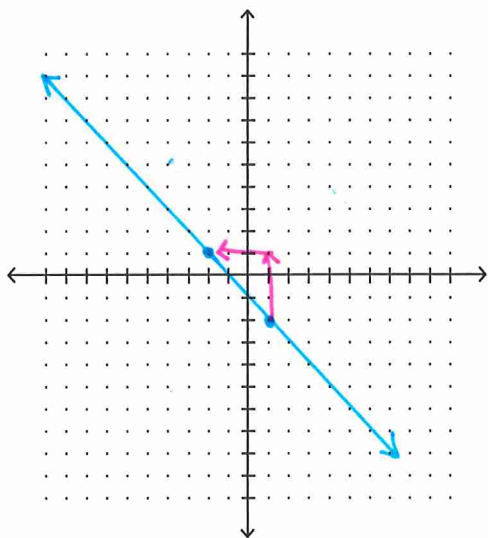
### Finding Slope Using a Graph –

Plot the points, then count rise over run.

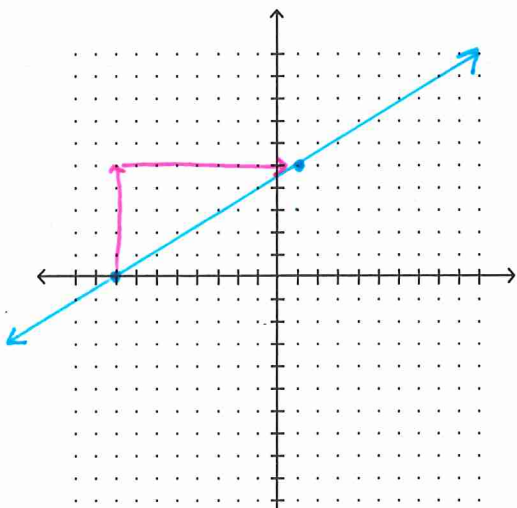
1.  $(3, 2)$   $(5, 6)$   $m = \underline{\frac{4}{2} = 2}$



2.  $(-2, 1)$   $(1, -2)$   $m = \underline{\frac{3}{-3} = -1}$

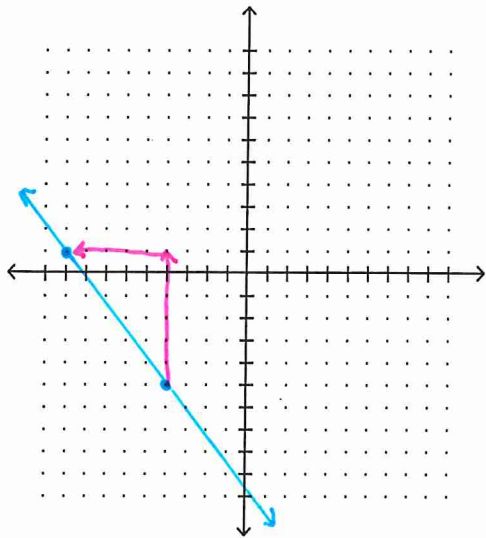


3.  $(-8, 0)$   $(1, 5)$   $m = \underline{\frac{5}{9}}$

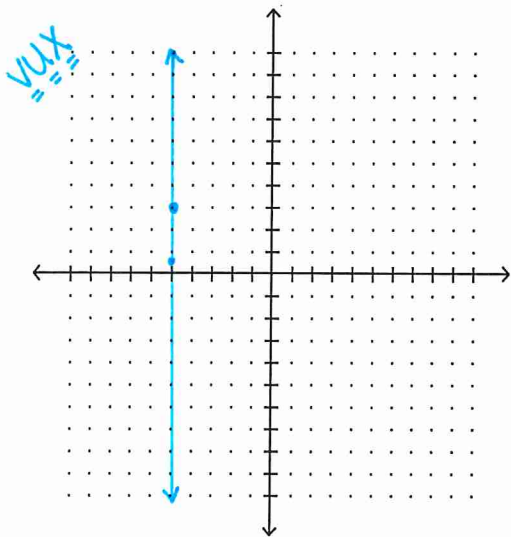


### Find the Slope Using the Formula.

4.  $(-4, -5) (-9, 1)$   $m = \underline{-\frac{9}{5}}$



5.  $(-5, \frac{1}{2}) (-5, 3)$   $m = \underline{\text{undefined}}$



6.  $(-1, 4) (5, 4)$   $m = \underline{0}$

