NOTES: Section 2.2 – Find Slope and Rate of Change

Goals: #1 - I can find the slope of the line passing through 2 points and compare slopes to determine which line is steeper.
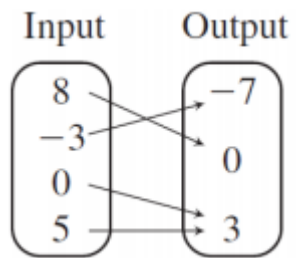
#2 - I can use slopes to determine if lines are parallel, perpendicular, or neither.

😎 😬 😰

Homework: Lesson 2.2 Worksheet

Warm Up:

1. Identify the domain and range of the given relation. Then tell whether the relation is a function.

Input	Output
8	−7
−3	0
0	
5	3

    Domain: _____

    Range: _____

    Function?: _____

2. Tell whether the function $f(x) = -x^2 + 3$ is linear. Then evaluate the function for $x = -2$.

Exploration #1: Work with a partner.

1. Plot the following points:
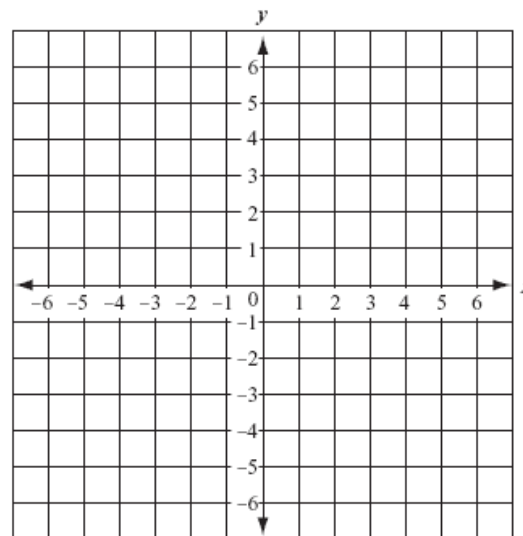
    Point A: $(-2, 3)$

    Point B: $(5, 6)$

    Point C: $(-4, -1)$
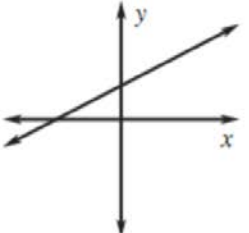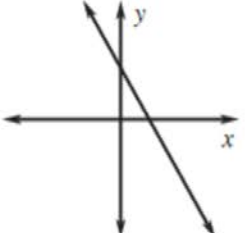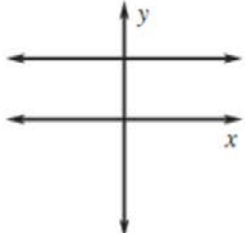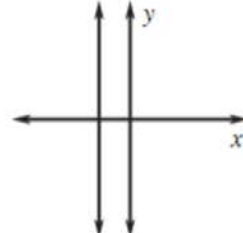
    Point D: $(4, -2)$

    Point E: $(0, 3)$

Name:_____ Hour: _____ Date: _____

Notes:
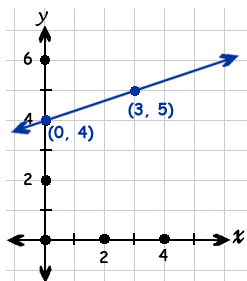
Between any 2 points on a coordinate grid, there is exactly one _____ that can be drawn.

_____ is a number we use to describe _____ and _____ of a line.

We use the variable _____ for slope.

| A | B | C | D |

The equation we use to calculate slope is:

$$m = \frac{\rule{2cm}{0.4pt}}{\rule{2cm}{0.4pt}} = \frac{\rule{2cm}{0.4pt}}{\rule{2cm}{0.4pt}}$$

Example #1: Without graphing, tell whether the line through the given points *rises, falls,* is *horizontal,* or is *vertical.*

1. $(-6, -2), (1, 3)$ 2. $(2, -1), (2, 2)$ 3. $(-3, 2), (1, -4)$

Example #2: Ms. Hentrich walked up a hill that was 15 feet long and 3 feet tall. What is the slope of this hill?
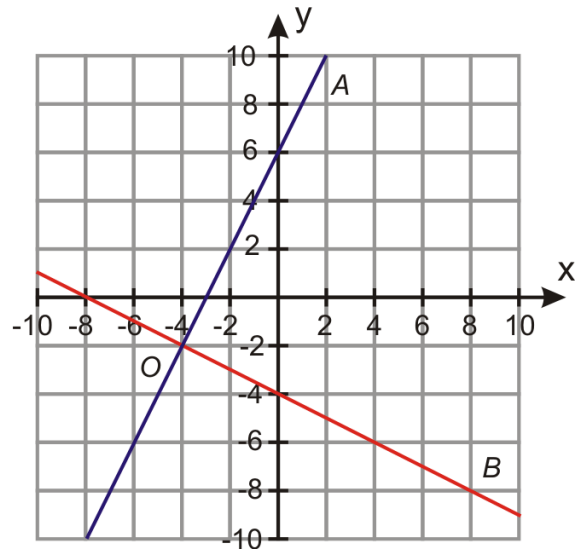
Name:_____ Hour: _____ Date: _____

Exploration #2: Work with a partner.

1. Draw two lines that are *parallel*. What do you notice about the *slopes* of these lines?

2. Draw two lines that are *perpendicular*. What do you notice about the *slopes* of these lines?

3. Line A and Line B are perpendicular lines. Find the slope of the each line:

   Line A:

   Line B:

   What do you notice?

Notes:

Lines are parallel if and only if they have the _____ slope.

　　　Picture:

Lines are perpendicular if and only if their slopes are _____

of each other.

　　　Picture:

Example #3: Tell whether the lines are *parallel, perpendicular,* or *neither.*

1. Line 1: through $(-3, -1)$ and $(2, 5)$

    Line 2: through $(3, -4)$ and $(-3, 1)$

2. Line 1: through $(-4, -2)$ and $(1, 7)$

    Line 2: through $(-2, -4)$ and $(3, 5)$

CHALLENGE: Tell whether the lines are *parallel, perpendicular,* or *neither.*

1. Line 1: $2y = x - 4$

    Line 2: $y + 2x = 3$