Slopes and Midpoint

C.O.:_____

_____

L.O.:_____

_____

Slopes: Recap

The Slope of a line is the ratio of *change in* __ (vertical change, or _____) to the *change in* __ (horizontal change, or _____).

Parallel Lines have slopes that are _____.

Perpendicular Lines have slopes that _____.

Positive slopes (#2 on the warm-up) _____ to the right.

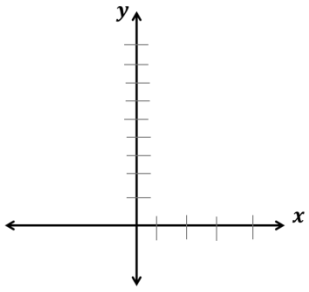
Negative slopes (#1 on the warm-up) _____ to the right.

Slopes: Continued

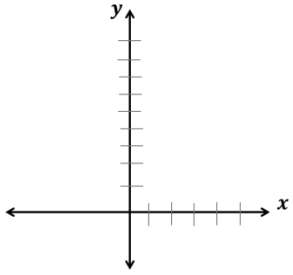
From the warm-up, you noticed something about the answers for problems 3 and 4.

On the two graphs provided, graph the points given of these two problems. Name the kind of line the points make.

3. $(1,6)$ **and** $(4,6)$



4. $(3,3)$ **and** $(3,7)$



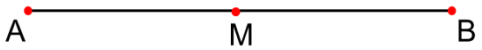
Conclusion: _____ lines have a slope of _____ and _____ lines have an _____ slope.

Midpoint:

As a reminder, the Midpoint of a line segment is a point ***M*** such that _____.

We can calculate the value of this midpoint if we have the values of the endpoints.

Ex: If $A = x_1$ and $B = x_2$, then the value of M will be



$$M = \_\_\_\_\_$$

Slopes and Midpoint

The Midpoint Formula – Theorem 13-5: The midpoint of the segment that joins points (x_1, y_1) and (x_2, y_2) is the point

$$M = \left(\text{————}, \text{————}\right)$$

Practice: Find the midpoint of the segment that joins the points given

1.) $(-11,3)$ and $(8,-7)$ 2.) $(2,1)$ and $(8,-5)$ 3.) $(1,-3)$ and $(5,1)$

Example: ***M*** is the midpoint of $\overline{AB}$, where the coordinates of ***A*** are given. Find the coordinates of ***B***

A: $(1,-3)$; *M*: $(5,1)$

Group Practice: Find the midpoint of the segment that joins the points given

1.) $(3,5)$ and $(9,-7)$ **2.)** $(2,5)$ and $(-1,2)$ **3.)** $(0,4)$ and $(4,3)$

Find the midpoint and slope of the segment that joins the points given.

4.) $(3,-8)$ and $(-5,2)$ **5.)** $(-3,4)$ and $(7,8)$ **6.)** $(-7,11)$ and $(1,-4)$