

# Geometry BELL WORK

Classify the relationship between each pair of angles as *alternate interior*, *alternate exterior*, *corresponding*, or *consecutive interior* angles.

1)  $\angle 4$  and  $\angle 5$

alternate interior

2)  $\angle 4$  and  $\angle 6$

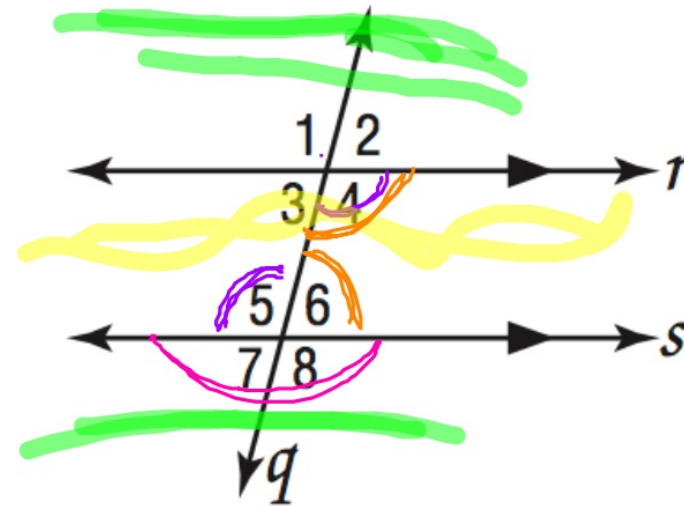
consecutive interior

3) If  $m\angle 8 = 110^\circ$ , what is  $m\angle 7$ ?

$70^\circ$

$180$   
 $-110$   

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Assignment:

3.2 pg. 181 # 1-10

## 3-3 Slopes of Lines

We used angle relationships in parallel lines to determine congruent angles.

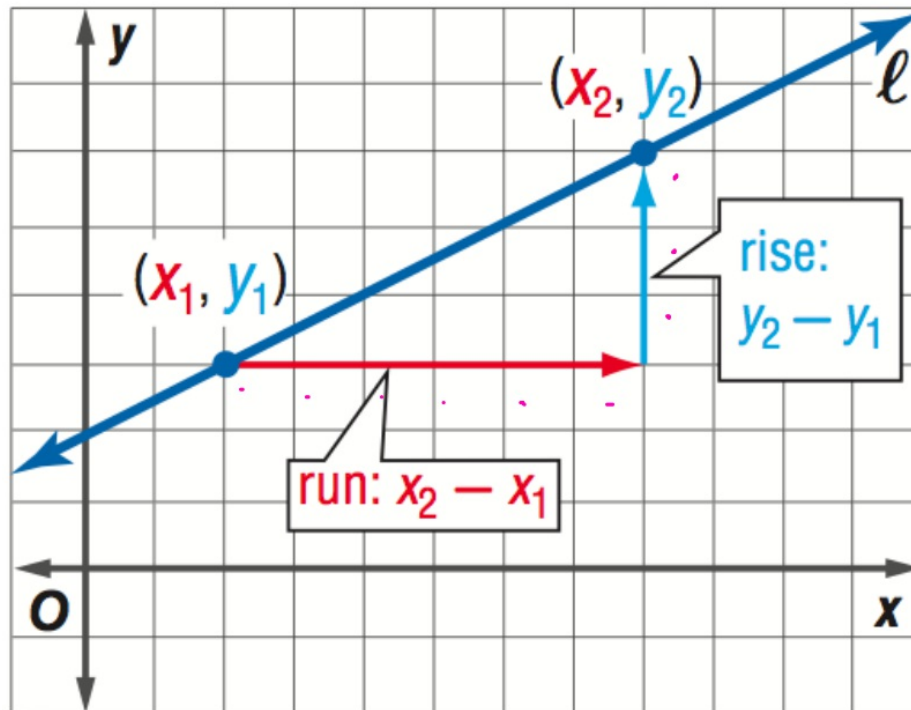
Today we will:

- \* Find slopes of lines.
- \* Use slope to identify parallel and perpendicular lines

**(G.CO.C.9 Congruence: Prove theorems about lines and angles)**

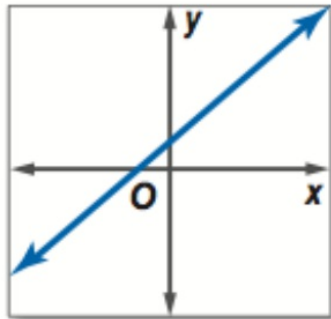
The rate of change on a graph is the slope.

Slope ( $m$ ) is measured as  $m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$

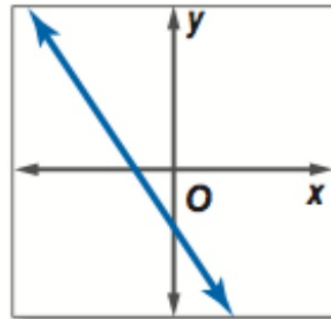


$$\frac{3}{6} = \frac{1}{2}$$

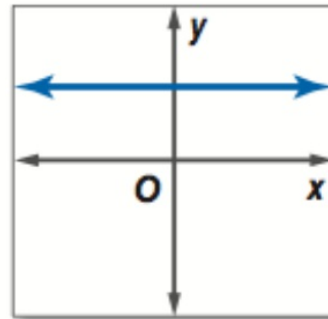
**Positive Slope**



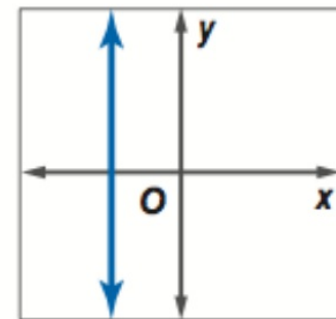
**Negative Slope**



**Zero Slope**



**Undefined Slope**



**Determine the slope of the line that contains the given points.**

1.  $S(-1, 2), W(0, 4)$

$$\begin{array}{ccc} x_1, y_1 & x_2, y_2 & \frac{y_2 - y_1}{x_2 - x_1} \end{array}$$

$$\frac{4 - 2}{0 - (-1)} = \frac{2}{1} = 2$$

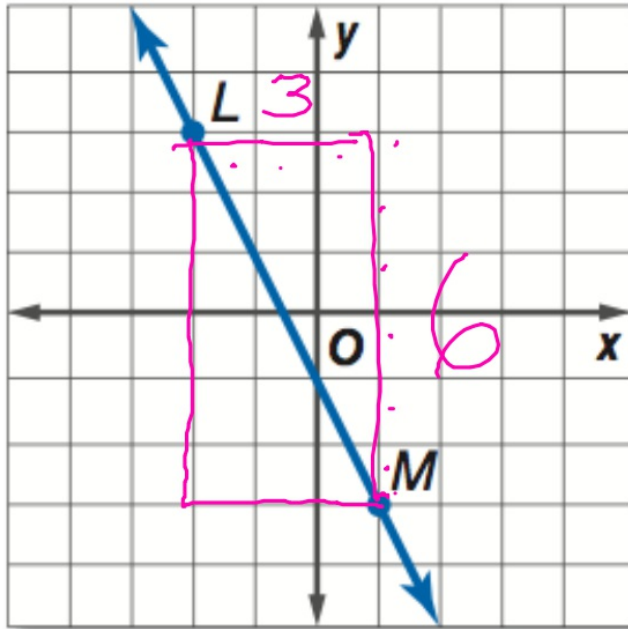
2.  $G(-2, 5), H(1, -7)$

$$\begin{array}{ccc} x_1, y_1 & x_2, y_2 & \end{array}$$

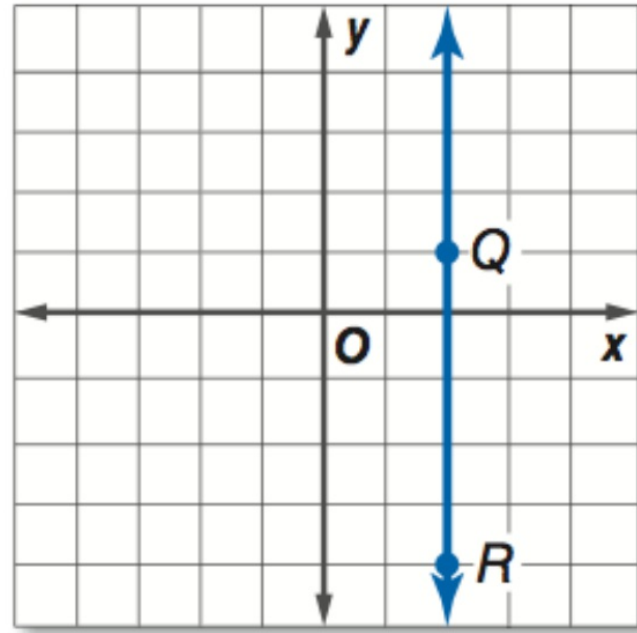
$$\frac{-7 - 5}{1 - (-2)} = \frac{-12}{3}$$

$$= -4$$

Find the slope of each line.

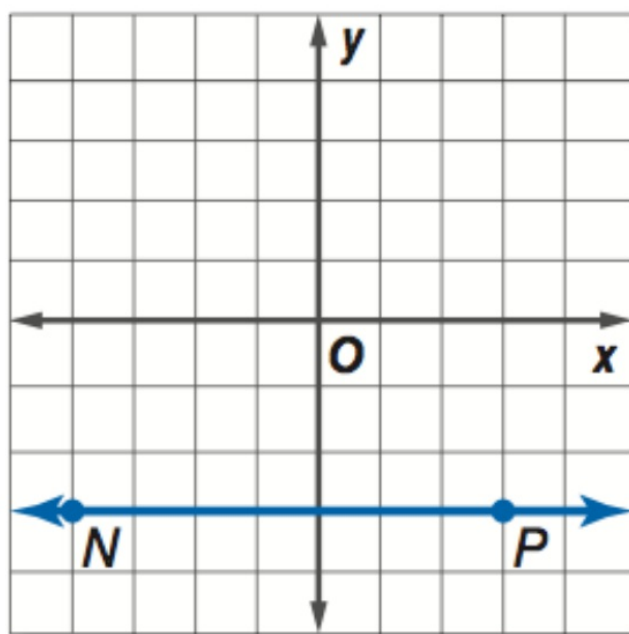
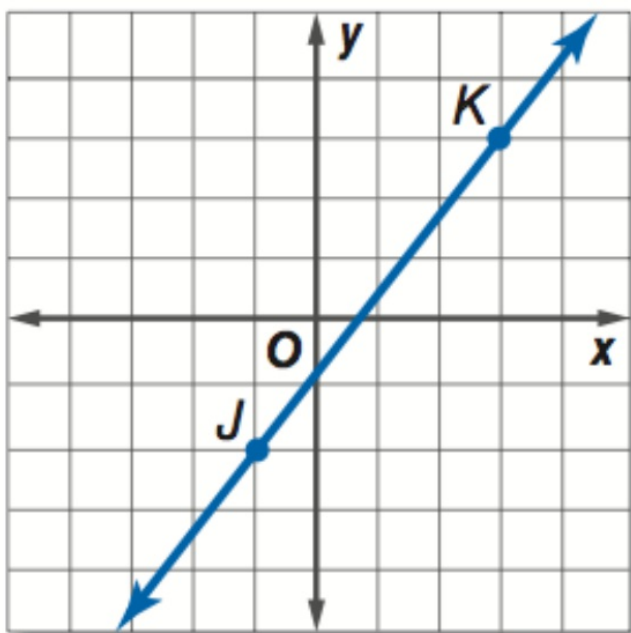


$$-\frac{6}{3} = -\frac{2}{1} = -2$$



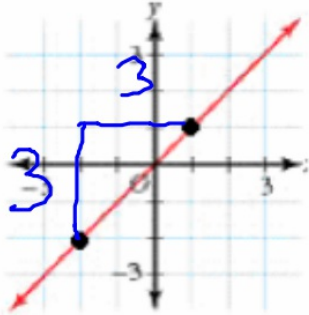
undefined.

Find the slope of each line.

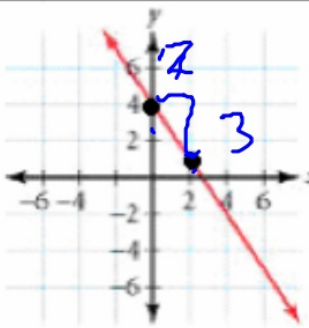




TOP

| Graph   | Points                 | Slope             |
|---|------------------------|-------------------|
|  | $(1, 1)$<br>$(-2, -2)$ | $\frac{3}{3} = 1$ |

Bottom graph

|  |                      |                |
|--|----------------------|----------------|
|  | $(0, 4)$<br>$(2, 1)$ | $-\frac{3}{2}$ |
|--|----------------------|----------------|

Activity: matching slopes and graphs

Here are the potential answers:

|                        |                         |                        |                        |
|------------------------|-------------------------|------------------------|------------------------|
| $(1, -2)$<br>$(3, 1)$  | $slope = -1$            | $slope = 1$            | $(2, -2)$<br>$(0, -1)$ |
| $slope = -\frac{3}{2}$ | $(-4, -2)$<br>$(0, 4)$  | $(-2, -1)$<br>$(0, 3)$ | $slope = -2$           |
| $(-2, 2)$<br>$(0, 3)$  | $slope = 2$             | $slope = \frac{3}{2}$  | $(1, -2)$<br>$(3, 2)$  |
| $slope = -\frac{1}{2}$ | $(-2, -2)$<br>$(2, -6)$ | $(1, -2)$<br>$(0, 1)$  | $slope = \frac{1}{2}$  |
| $slope = -3$           | $slope = 2$             | $(0, 4)$<br>$(2, 1)$   | $(-2, -3)$<br>$(0, 1)$ |
| $(-2, -2)$<br>$(1, 1)$ | $(2, -2)$<br>$(1, 0)$   | $slope = 2$            | $slope = \frac{3}{2}$  |

Assignment:

3.3a pg 191 # 12-21 (18-21 SHOW ALL WORK!)



Writing the equation of the line from the slope.

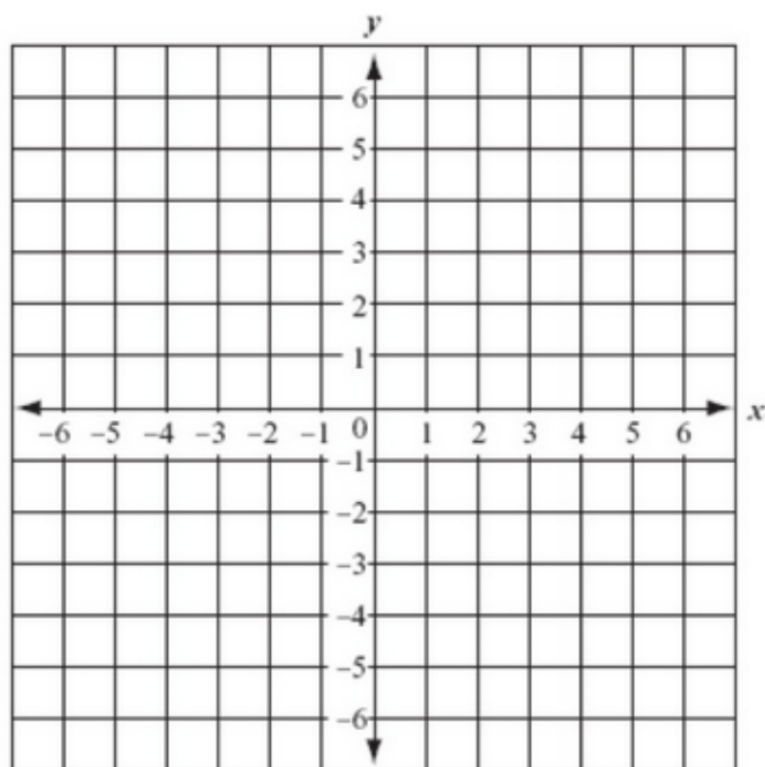
$$y = mx + b$$

$m = \text{slope}$

$b = \text{y-intercept}$

$$m: \frac{3}{2}, (4, 6)$$

$$m: \frac{2}{3}, b: -10$$



Investigation:

Slopes of Parallel and  
Perpendicular Lines

From this investigation, we learned that:

Parallel lines have \_\_\_\_\_  
slope.

Perpendicular lines have a \_\_\_\_\_  
\_\_\_\_\_ slope.



## Example

Determine whether  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$  are *parallel*, *perpendicular*, or *neither* for  $A(1, 1)$ ,  $B(-1, -5)$ ,  $C(3, 2)$ , and  $D(6, 1)$ . Graph each line to verify your answer.

## Example

Graph the line that contains  $A(-3, 0)$  and is perpendicular to  $\overleftrightarrow{CD}$  with  $C(-2, -3)$  and  $D(2, 0)$ .

## 3-3 Slopes of Lines

Today we:

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- \* Used slope to identify parallel and perpendicular lines

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