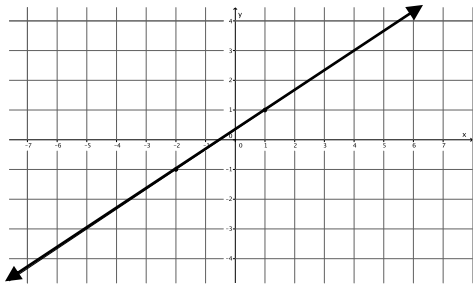
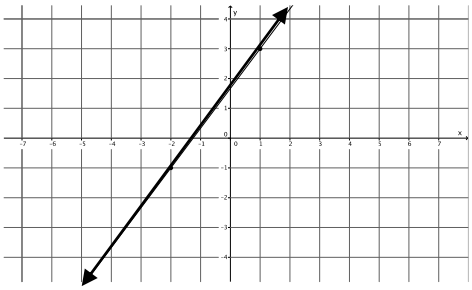
8.4.15 Lesson Date: _____

The Slope of a Non-Vertical Line

Student Objectives

- I know slope is a number that describes the steepness or slant of a line.
- I can interpret the unit rate as the slope of a graph.

Classwork

Example	
Graph A 	Graph B 

a. Which graph is steeper?

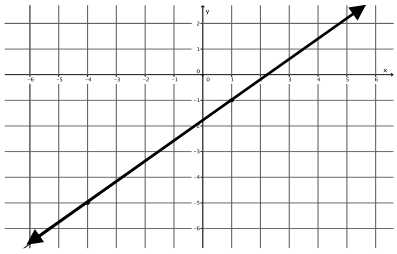
b. Write directions that explain how to move from one point on the graph to the other for each of Graph A and Graph B.

c. Write the directions from part (b) as ratios, and then compare the ratios. How does this relate to which graph was steeper in part (a)?

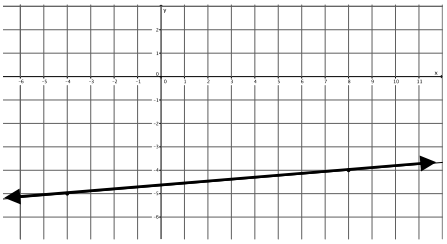
Slope is the ratio of the vertical change to the horizontal change. It describes how to move from one point on the graph to any other. (Slope is easy and fun, it's just rise divided by run!)

Pair 1:

Graph A



Graph B



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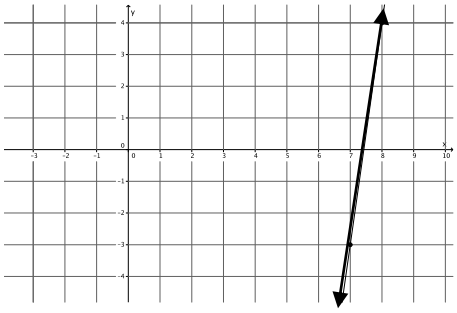
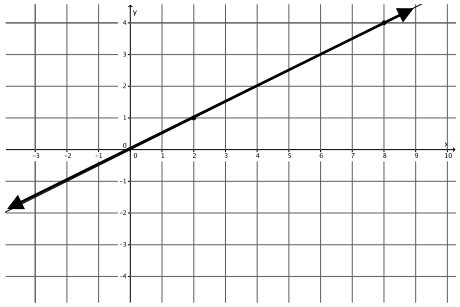
Pair 2:

Graph A

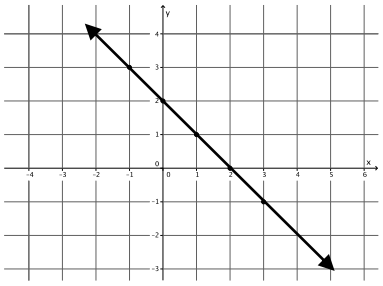


Graph B



a. Which graph is steeper?

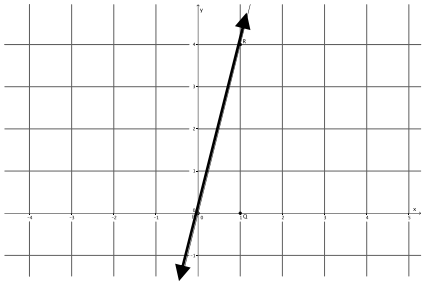
b. Write the slopes as ratios then compare the ratios. How does this relate to which graph was steeper in part (a)?

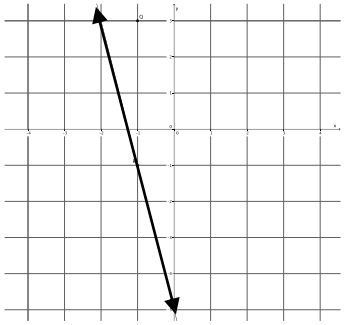
Pair 3:	
Graph A 	Graph B

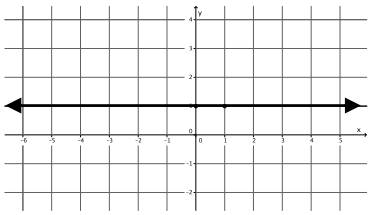
a. Which graph is steeper?

b. Write the slopes as ratios then compare the ratios. How does this relate to which graph was steeper in part (a)?

Find the slope of each line.

1. 

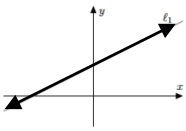
2. 

3. 

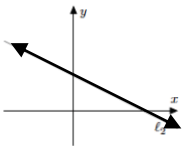
Lesson Summary

Slope is a number that describes the steepness of a line. Slope is represented by the symbol m.

Lines that are left-to-right inclining have a positive slope, as shown below.

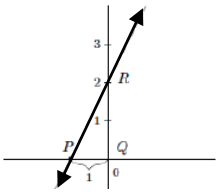


Lines that are left-to-right declining have a negative slope, as shown below.



Determine the slope of a line when the horizontal distance between points is fixed at 1 by translating point Q to the origin of the graph, and then identifying the y-coordinate of point R.

The slope of the line shown below is 2, so $m = 2$, because point R is at 2 on the y-axis.



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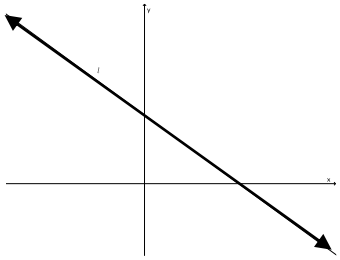
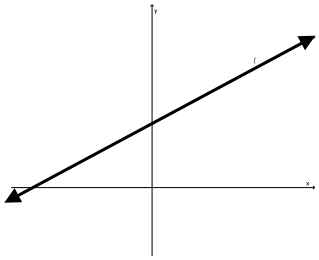
Homework Homework Homework Homework Homework

Do the graphs of the lines shown below have a positive or negative slope? Explain.

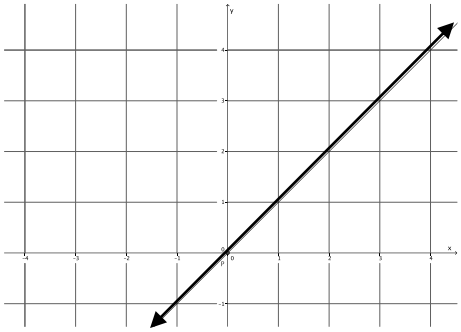


1.



2.

For problems 3-9, calculate the slope of these non-vertical lines.



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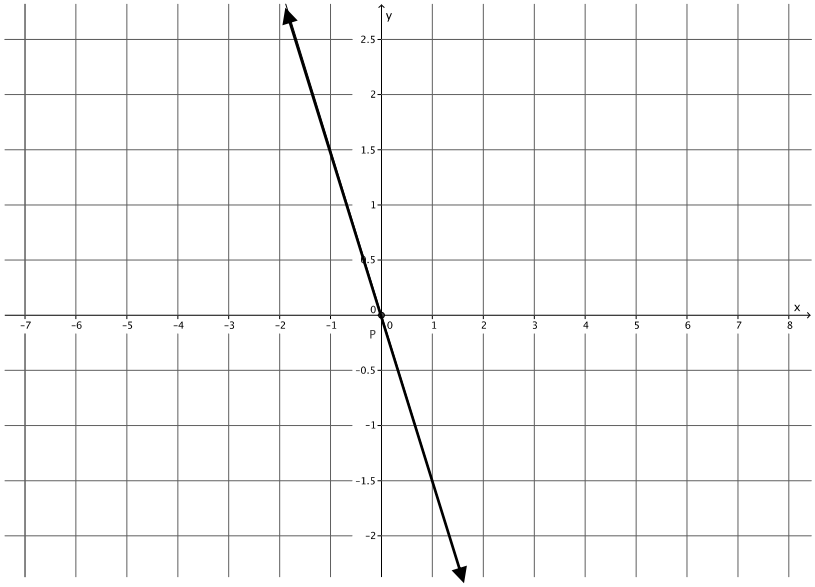

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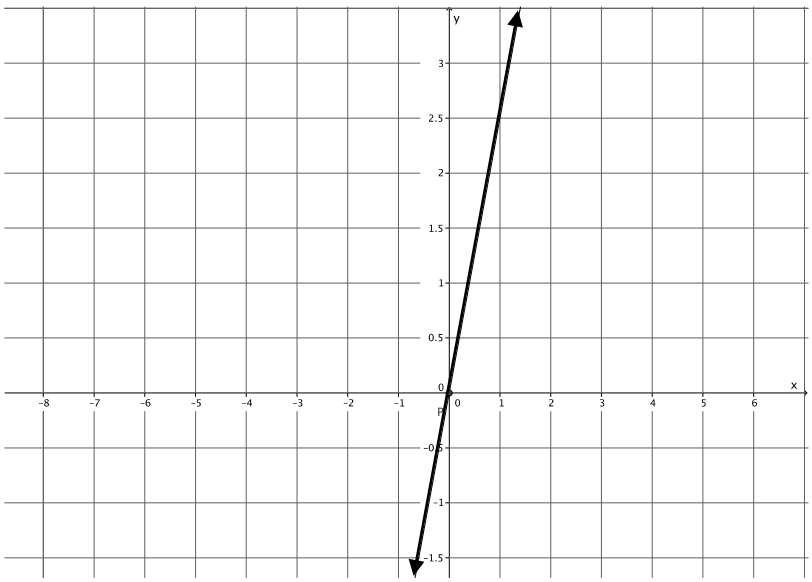
y
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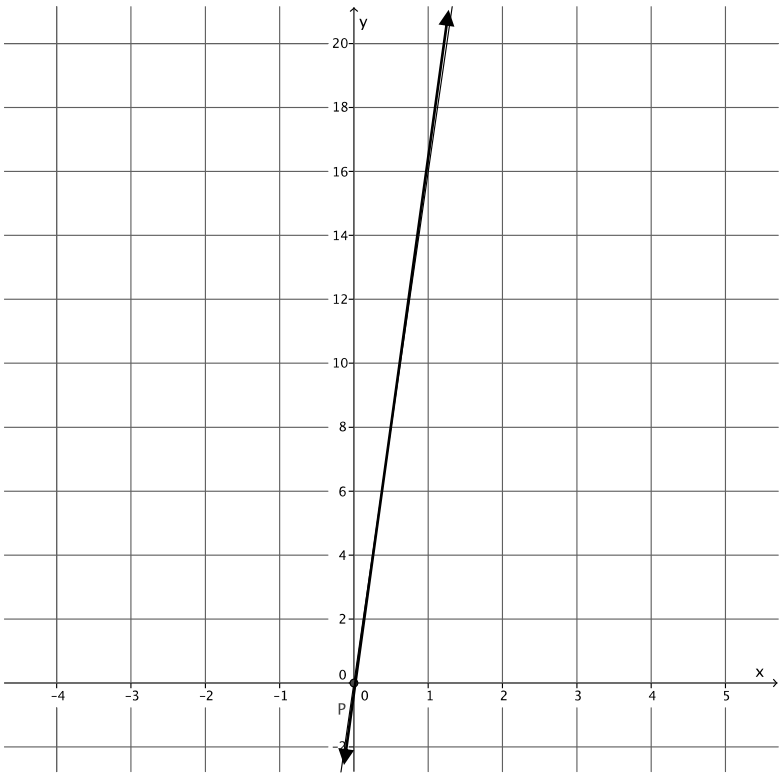
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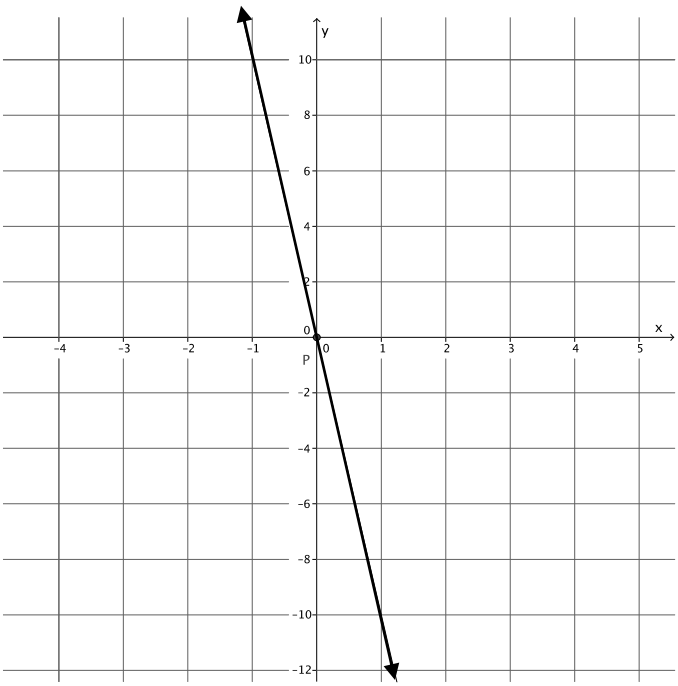
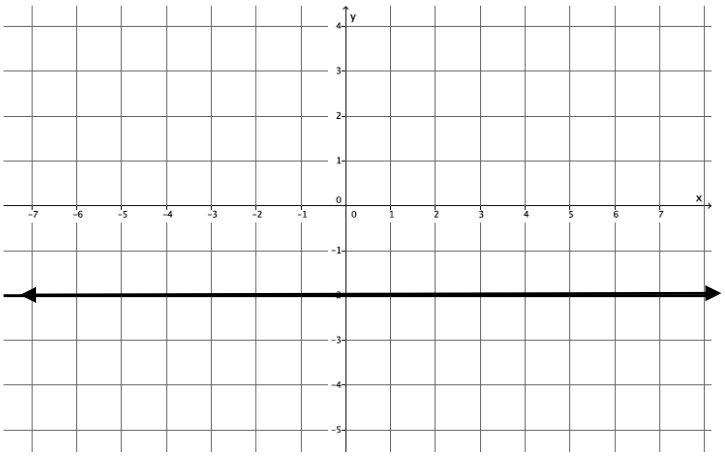


7.

8.

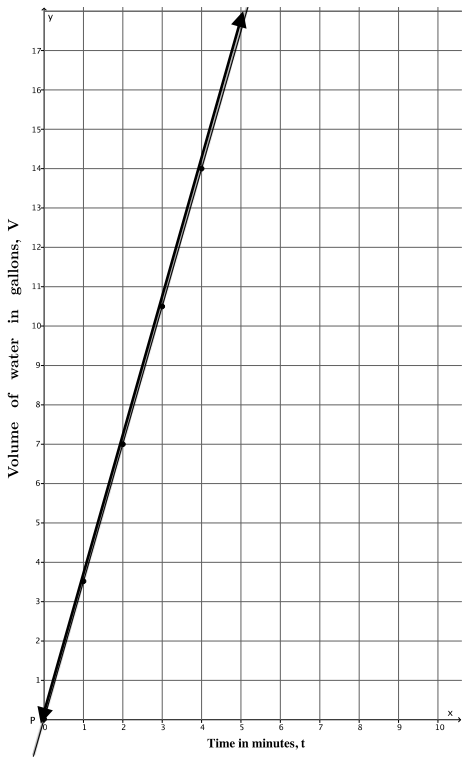


9.

9. We looked at this problem in lesson 11. Suppose the volume of water that comes out in three minutes is 10.5 gallons.

t (time in minutes)	Linear equation: $V = \frac{10.5}{3}t$	V (in gallons)
0	$V = \frac{10.5}{3}(0)$	0
1	$V = \frac{10.5}{3}(1)$	$\frac{10.5}{3} = 3.5$
2	$V = \frac{10.5}{3}(2)$	$\frac{21}{3} = 7$
3	$V = \frac{10.5}{3}(3)$	$\frac{31.5}{3} = 10.5$
4	$V = \frac{10.5}{3}(4)$	$\frac{42}{3} = 14$

Faucet Water Flow



a. How many gallons of water flow out of the faucet per minute, that is, what is the unit rate of water flow?

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?