Name: _____ Date: _____ **Unit 3 Class Work**

Graphing Lines Class Work

Objective: You will be able to graph lines on the coordinate plane, and describe important aspects of the graphs.

★ Methods for Graphing Lines

Guided Example: *Intercept Method*

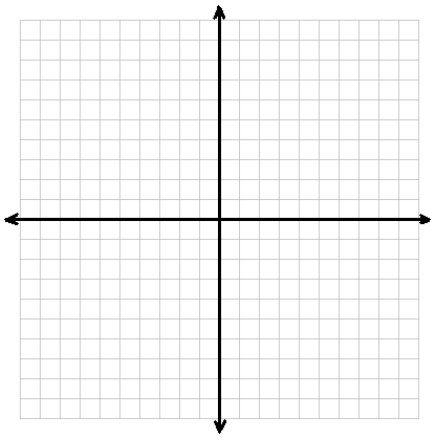
Graph the line given by the equation $5x - 3y = 30$.

Determine the x-intercept (when _____)

(____, ____)

Determine the y-intercept (when _____)

(_____, _____)



Guided Example: *Using a Point and the Slope*

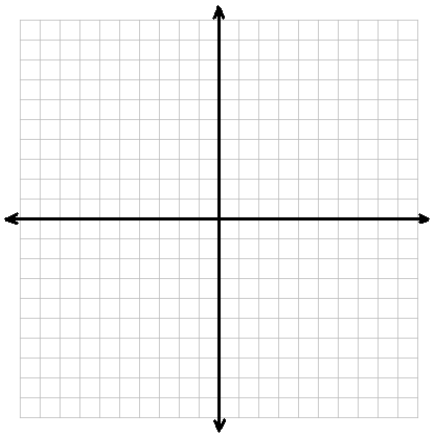
Graph the line given by the equation $2y = -8x + 10$.

Determine the slope and y-intercept.

Plot the y-intercept: (o,b).

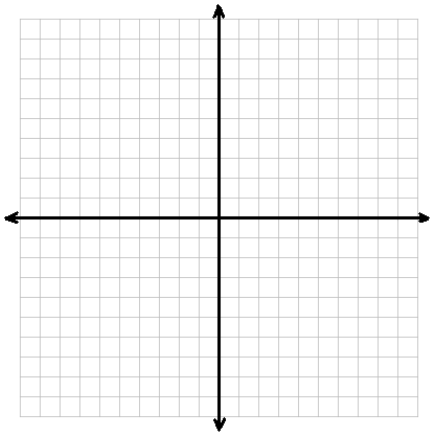
Use the slope to plot two more points:

$$m = \frac{rise}{run} = \frac{\_\_\_\_\_}{\_\_\_\_\_} \Rightarrow \frac{\_\_\_\_\_}{\_\_\_\_\_}$$



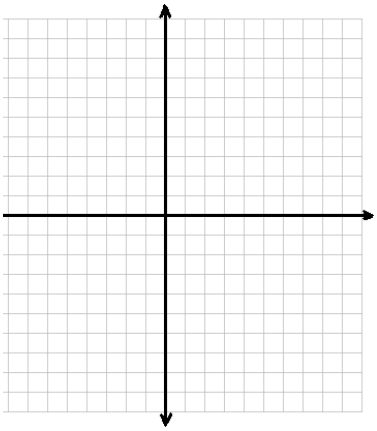
Guided Example: *Using a Table of Values*

Graph the line given by the equation $2x = -\frac{1}{4}y - 2$

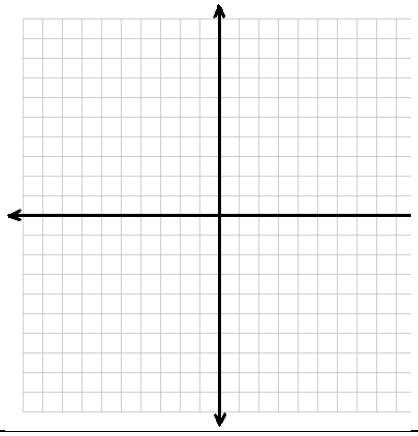


✍ **Now Your Try Some!** Graph each line.
Use the method of your choice, and try to be as efficient as possible. ☺

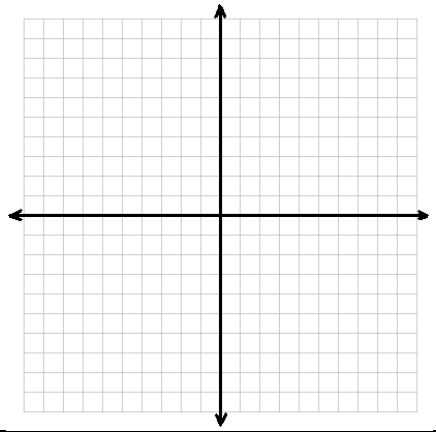
1. $9y - 3x = 36$



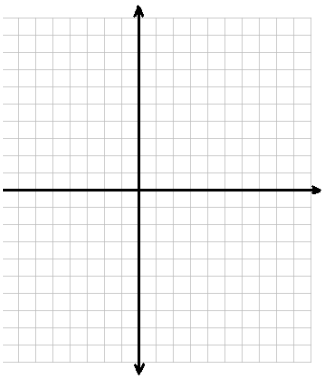
2. $2x = 8 + 4y$



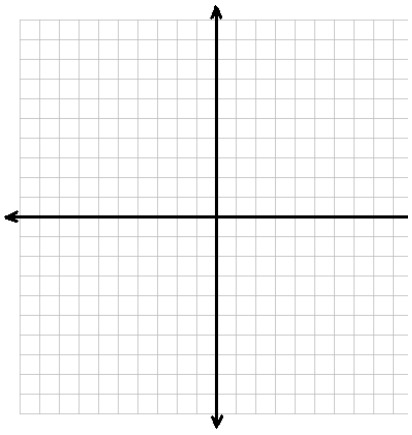
3. $-8y = -56x + 16$



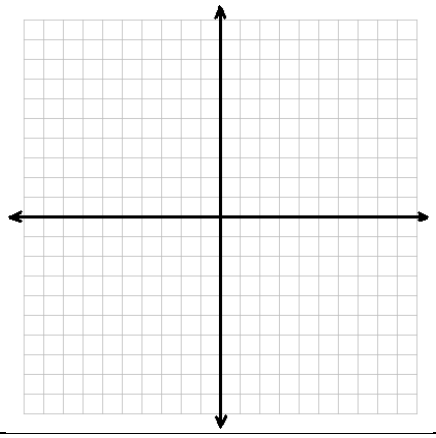
4. $3y - 2x = 18$

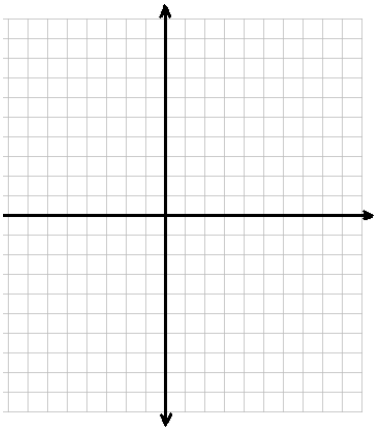
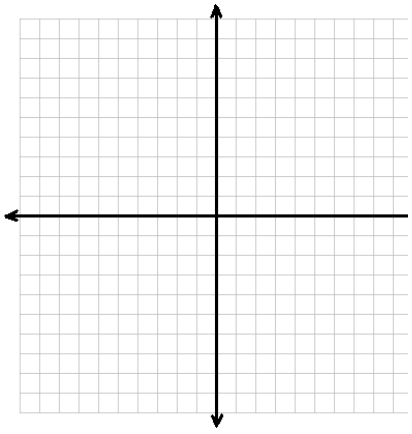
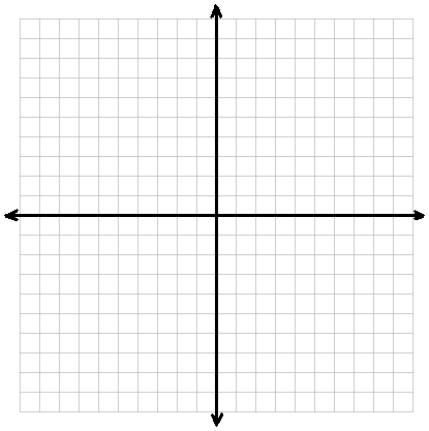


5. $3x - 3.5 = \frac{1}{2}y$



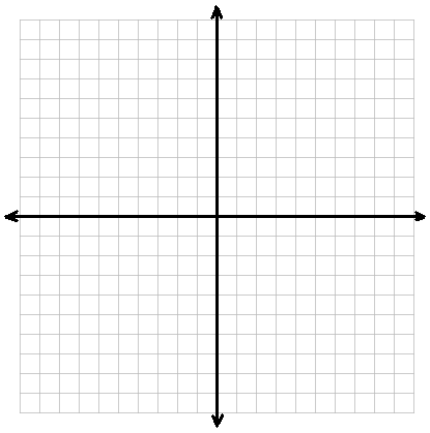
6. $7x - 7y = -49$



7. $y = -1$	8. $x = 4$	9. $8x - 16y = -64$
		

★ Interpreting Aspects of Graphs of Lines

Guided Example: The amount of water (gallons) after x hours in a pool that is being filled up by a hose can be modeled by the equation $y = 200x + 100$. Graph this line.



What does the y-intercept represent in context of the problem?

What does the slope represent in context of the problem?

What can we conclude about the x-intercept, and why?

If the pool can hold a total of 1500 gallons, approximately how long will it take for the pool to be full? Check and support your answer.

✍ **Now Your Try Some!** *Remember to define your variables.*

10. A container of grain is filled with 400 cubic centimeters of grain, and grain leaks out at a constant rate to be used as feed for animals. After 20 minutes, there are 200 cubic centimeters of grain in the container, and after 35 minutes, the container has 50 cubic centimeters of grain.

a. Represent this situation on a graph (use graph paper).

b. Write an equation to model this situation. (You may graph this equation on a graphing calculator to check your work for the rest of the problem.)

c. What does the slope represent?

d. What does the y-intercept represent?

e. What does the x-intercept represent?

f. How much grain will be in the container after half an hour?

11. Consider each situation. Remember to define your variables.

A. An insurance plan costs a certain initial fee, plus a constant monthly rate. After two months using this insurance plan, Jose had paid a total of $515, and after six months, he had paid a total of $995.

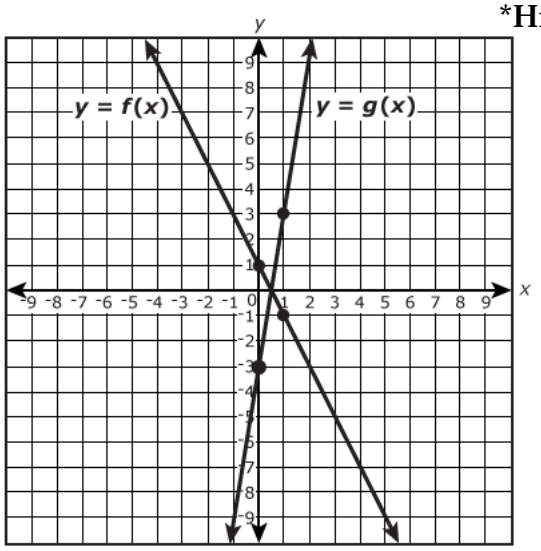
B. Water is draining from a tub at a constant rate. After two minutes, the water level decreased 2.4 inches, and after four minutes, the water level decreased 4.8 inches.

Part I: Write an equation to model each situation.
Part II: Graph each equation on a graphing calculator. Sketch the graphs on graph paper.
Part III: In one of the situations, the x-intercept does not hold any value. Which situation does this apply to, and why?
Part IV: Determine the "initial value" for each situation, and explain its meaning in terms of the context.

★ Defining Dilated Lines

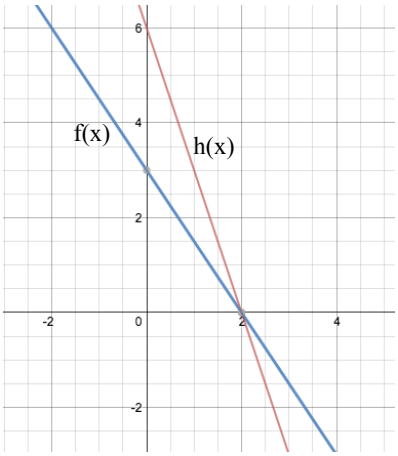
Guided Example: The figure shows the graphs of the functions y = f(x) and y = g(x). All indicated points have integer coordinates. If g(x) = k * f(x), determine the value of the scale factor, k.

***Hint: Write the equation for each line first. ☺**



Now Your Try Some!

12. The figure shows the graphs of the functions h(x) and f(x). All indicated points have integer coordinates. If f(x) = k * h(x), determine the value of the scale factor, k.



13. The figure shows the graphs of the functions w(x) and r(x). All indicated points have integer coordinates. If r(x) = k * w(x), determine the value of the scale factor, k.