Exploring Functions and Graphing

Name: _____

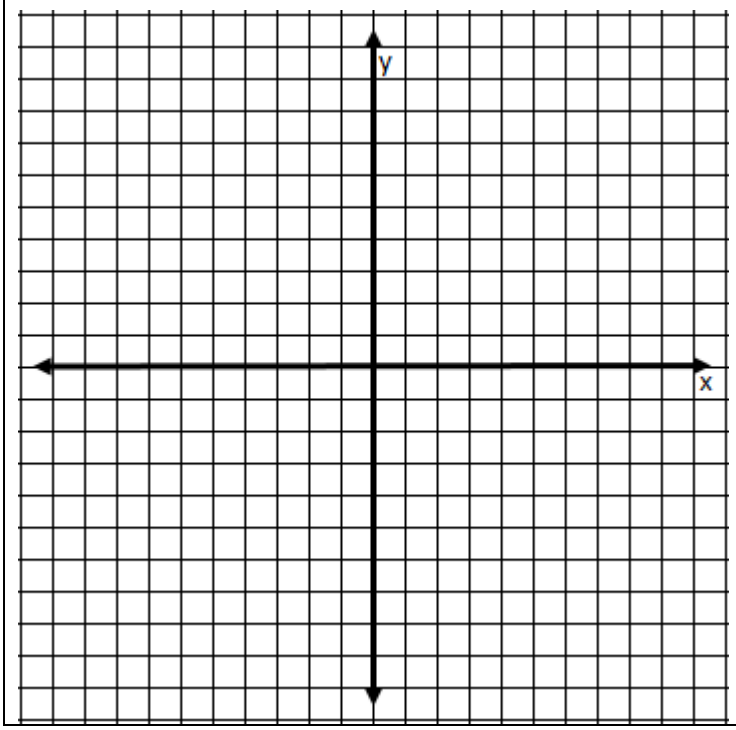
Work through the following questions and statements about a given scenario. You may want to skip some and come back to them because your answers will help you with other questions.

1. Write the scenario in words.

2. Which values make the relationship true?
   Each pair that you find is a point on the line of the graph of the function.

Conversational	If I try _____	I get_____	Coordinate pair written in (x,y) format.
Using algebraic language	If I substitute _____ for x	The y value is _____	
In/out table	In	Out	
Function notation	x	f(x)	
Components of a relation	Domain	Range	
Description of change	Independent variable	Dependent variable	
Coordinate pair (define each if possible)	**x**	**y**	
Pair #1			
Pair #2			
Pair #3			
Pair #4			
Pair #5			

3. Draw the line on the coordinate grid. Start by marking your scale.



4. Is this a **function**? How do you know?

5. Circle the **x intercept**. What are the coordinates of this point?

6. Circle the **y intercept**. What are the coordinates of this point?

7. Draw a $\frac{\textbf{rise}}{\textbf{run}}$ right triangle starting with 2 points on the line. What is the **slope** of the line?

8. **Formulas** for the equation of a line
   a. Write the **slope-intercept form** of the equation of a line. Label what each variable represents.

   b. Write the **point-slope form** of the equation of a line. Label what each variable represents.

9. Use one of the formulas to write your function in **slope-intercept form**.

   a. What is the **slope** of your function?

   b. What is the **y-intercept** of your function?

10. When graphed on the coordinate grid, what is the shape of this line? How do you know?

11. Find the **x intercept** by substituting **y = 0** into the equation.

12. Find the **y intercept** by substituting **x = 0** into the equation.

13. Use the **slope of a line formula** to find the slope.

14. What is the slope of a line that is **parallel** to this line?

15. What is the slope of a line that is **perpendicular** to this line?

Since all of these questions look at a function from various viewpoints, some of the questions will lead to the same answer. Check to make sure that the following answers match each other; make corrections if they do not match.

- Numbers 7, 9a, 13, and 14 are all about **slope**, and should match. Check the sign as well as the number. Why should 14 match this set of answers, but not 15?
- Numbers 5 and 11 ask for the **x intercept,** so should match.
- Numbers 6, 9b, and 12 ask for the **y intercept**, so should match.