Name:_____

Date:_____

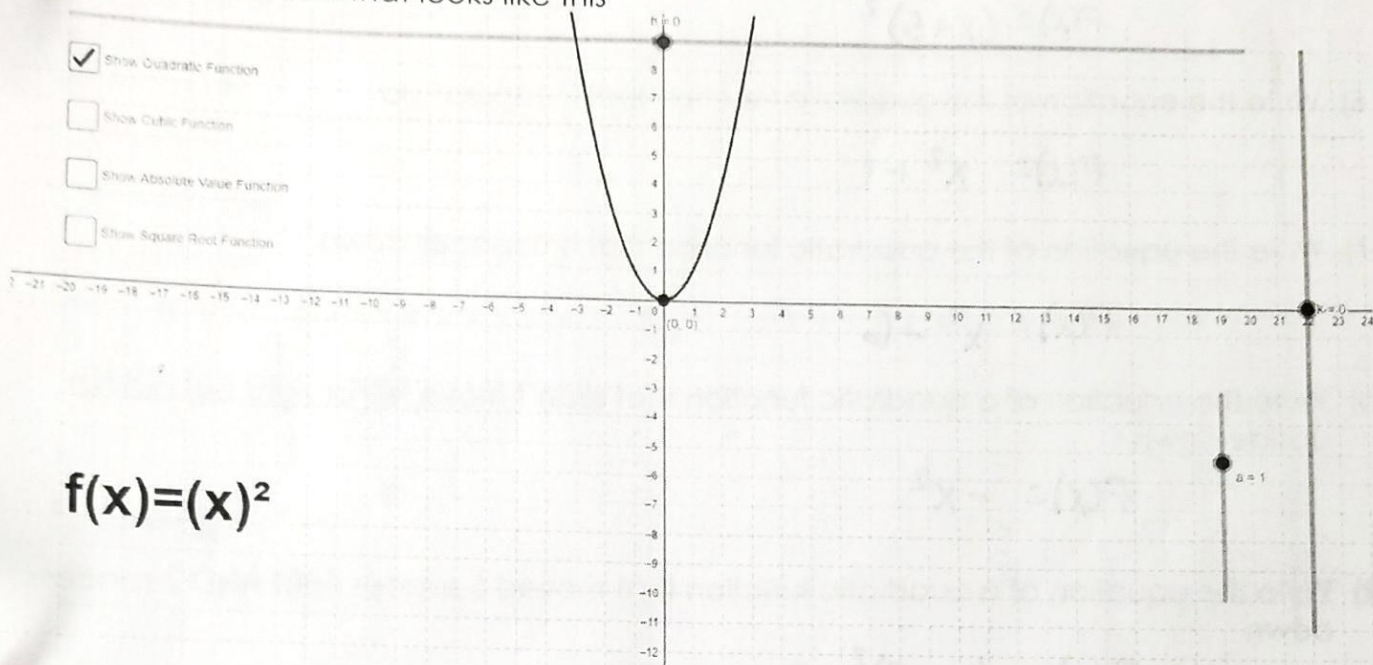## Exploration into Quadratic Graphs

Go to the following link (OR go to today's date on the blog and click on the link)
**https://www.geogebra.org/m/kstGD8uR**

You will see a screen that looks like this

☑ Show Quadratic Function

☐ Show Cubic Function

☐ Show Absolute Value Function

☐ Show Square Root Function

$$f(x)=(x)^2$$

The parabola is the equation **f(x) = x²** and it is the **PARENT function** of a quadratic (meaning the most basic because lets be honest--- parents are basic).

There are three sliders the green (h) at the top, the blue (k) on the right, and the skinny red a

I want you to explore how the parent function changes when you move the sliders and make some hypothesis about graphing quadratic functions. Play around with the sliders and look at how the **graph AND the function** change and answer the following questions

1) How can you make the graph move horizontally?

    *By moving h*

2) How can you make the graph move vertically?

    *By moving k*

3) How can you make the graph flip upside down?

    *by making a negative*

**FLIP TO BACK OF PAGE!**

4) Write the equation of the quadratic function that moved 2 spaces to the right.

$$f(x) = (x-2)^2$$

5) Write the equation of the quadratic function that is 5 spaces to the left

$$f(x) = (x+5)^2$$

6) Write the equation of the quadratic function that is 1 space up

$$f(x) = x^2 + 1$$

7) Write the equation of the quadratic function that is 6 spaces down.

$$f(x) = x^2 - 6$$

8) Write the equation of a quadratic function that didn't move left or right but did flip upside down

$$f(x) = -x^2$$

9) Write the equation of a quadratic function that moved 5 spaces right AND 2 spaces down

$$f(x) = (x-5)^2 - 2$$

10) Write the equation of a quadratic function that is upside down and 3 spaces left.

$$f(x) = -(x+3)^2$$

11) What would be the equation of a graph that did not move left or right but did shrink by a factor of 2?

$$f(x) = 2x^2$$

12) Write your own equation and explain how it have moved from the parent function

$$f(x) = -(x+6)^2 - 1$$

UPSIDE DOWN
LEFT    6
DOWN    1