

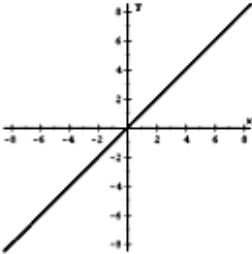
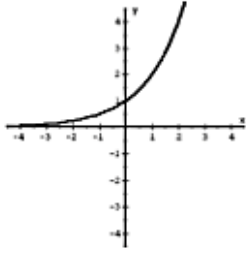
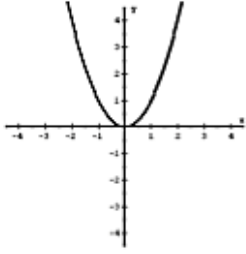
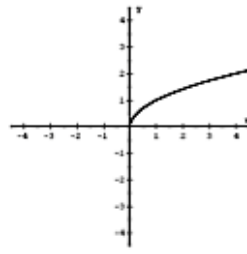
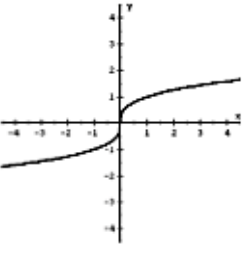
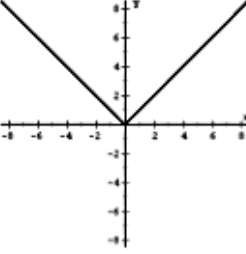
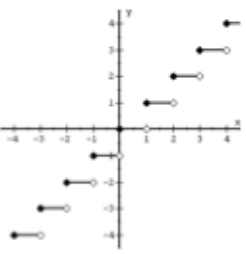
Name:

Date:

Period:

Parent functions (Perfect Functions) are the simplest form of that type of function, meaning they are as close as they can get to the origin (most go through). Familiarize yourself with the shapes and equations of these parent functions because we will learn how to transform them (move them around) and make comparisons of the parent to the transformed functions.

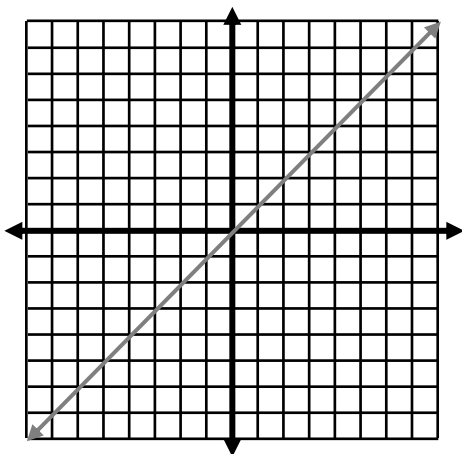
The chart shows the basic “parent” functions we will discuss this year.

Linear $y = x$	Exponential $y = a^x$	Quadratic $y = x^2$	Square Root $y = \sqrt{x}$
			
Cubed Root $y = \sqrt[3]{x}$	Absolute Value $y = x $	Greatest Integer $y = \lfloor x \rfloor$ *	
		 <p>The Greatest Integer Function, sometimes called the <u>Step Function</u>, returns the greatest integer less than or equal to a number (think of rounding down to an integer). There’s also a Least Integer Function, indicated by $y = \lceil x \rceil$, which returns the least integer greater than or equal to a number (think of rounding up to an integer).</p>	

❖ Note: The letter “y” very often will be replaced with f(x) when referring to functions, however, they mean the same thing.

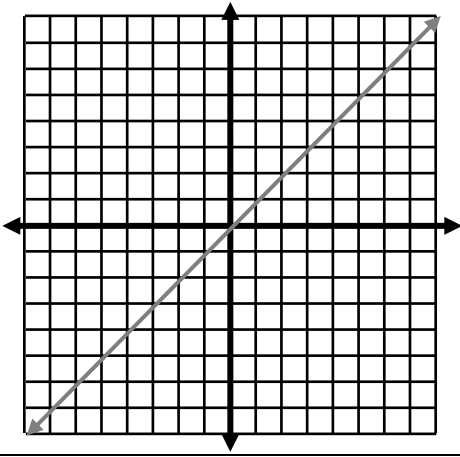
For the following linear functions, graph the given equation then describe the difference between your graph and the graph of the parent function.

1.



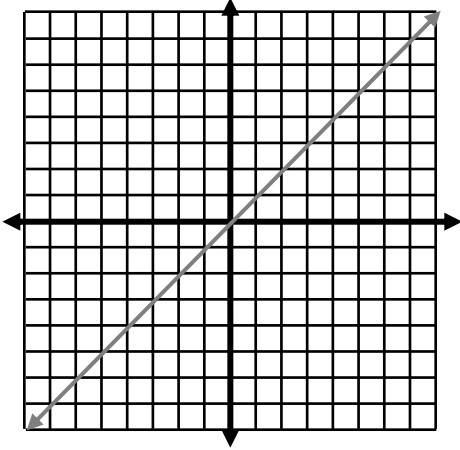
$y = x + 3$

2.



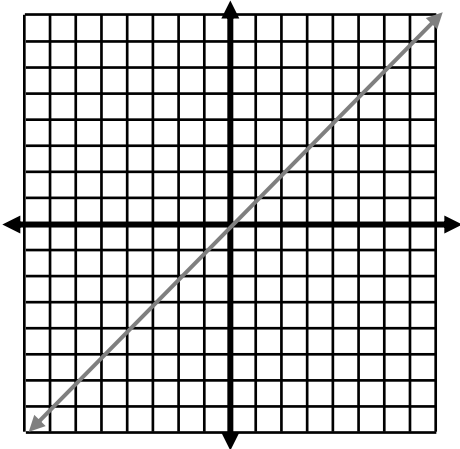
$$y = x - 4$$

3.



$$y = 2x + 2$$

4.



$$y = -x$$

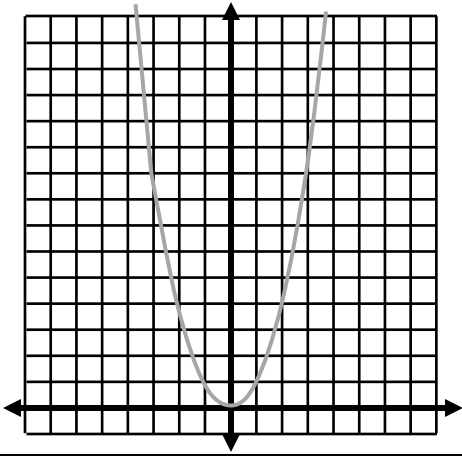
On the next page, please complete the table for the quadratic function given and graph it. Then, describe the difference between your graph and the graph of the parent function (parent function is sketched for you).

When comparing, consider the following:

- Is the function reflected over the x-axis?
- Did the function get wider or more narrow?
- Was the function shifted horizontally (left or right)?
- Was the function shifted vertically (up or down)?

If any of these answers are yes, you must include it in your description. You may use bullet points for descriptions.

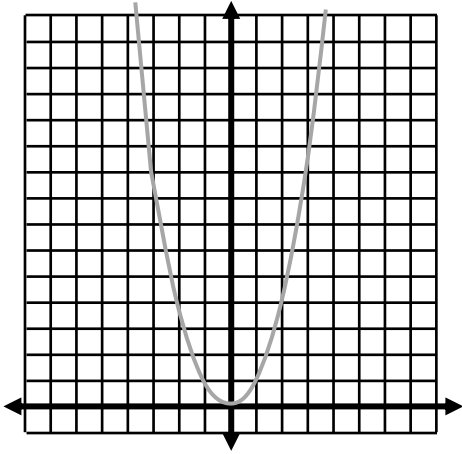
5.



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

x	y

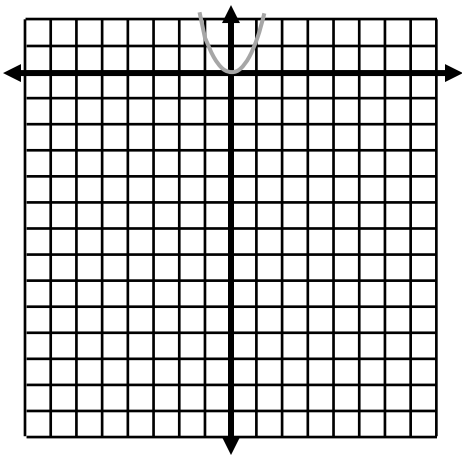
6.



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

x	y

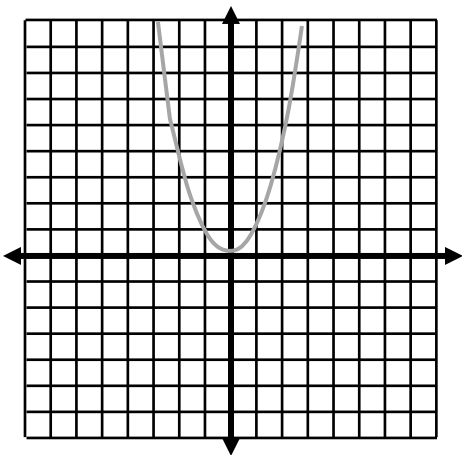
7.



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

x	y

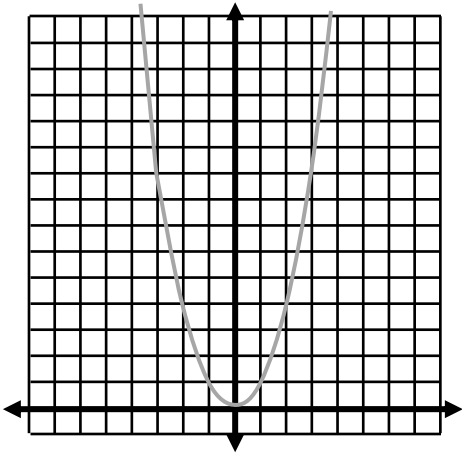
8.



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

x	y

9.

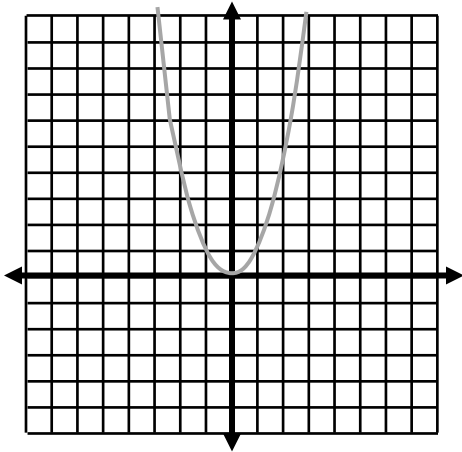


$$f(x) = \frac{1}{2}x^2$$

x	y

Use even #s only from $-6 \leq x \leq 6$

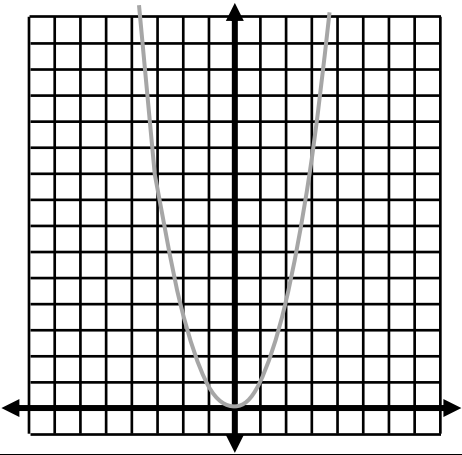
10.



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

x	y

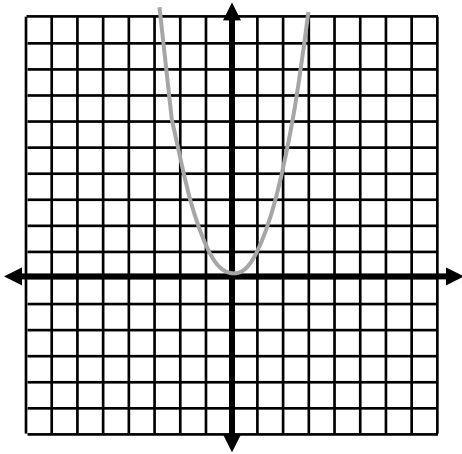
11.



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

x	y

12.



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

x	y
