Bell Work:

1. Simplify $(4a^2b^{-4}c)^2$.

2. What is the slope of $3x - 2y = -6$?

3. What is the vertex of $f(x) = 3|x + 4| - 6$?

4. What is the function of the linear parent function?

Chapter 5 – Quadratic Functions:

In this chapter, you will…

1. **Find the transformations of quadratic functions,**

2. **Graph quadratic functions,**

3. **Find the roots of a quadratic function by factoring, completing the square, and the quadratic formula,**

4. **Graph, add, subtract, multiply, and divide complex numbers, and**

5. **Find the intersection of linear and quadratic functions.**
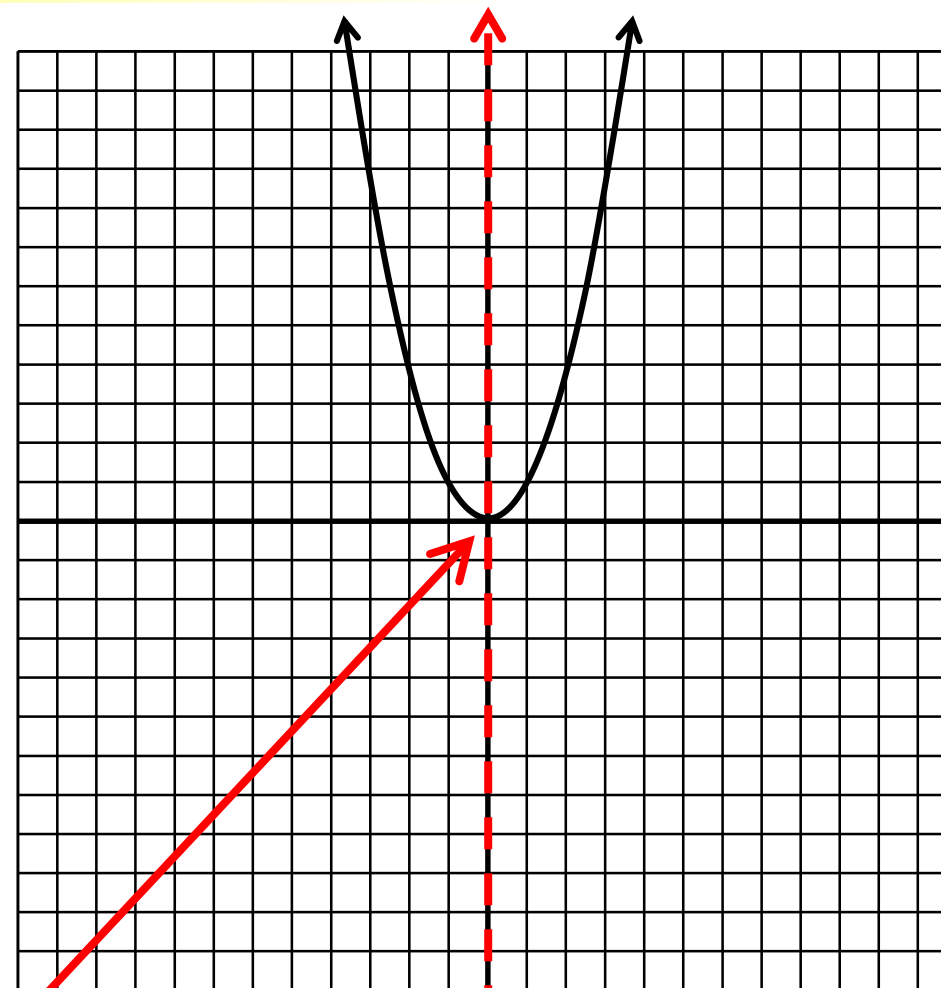
$$f(x) = x^2$$

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

The numbers make a pattern.

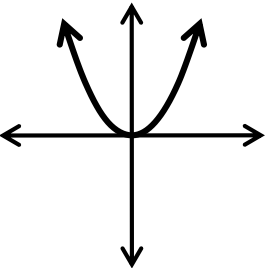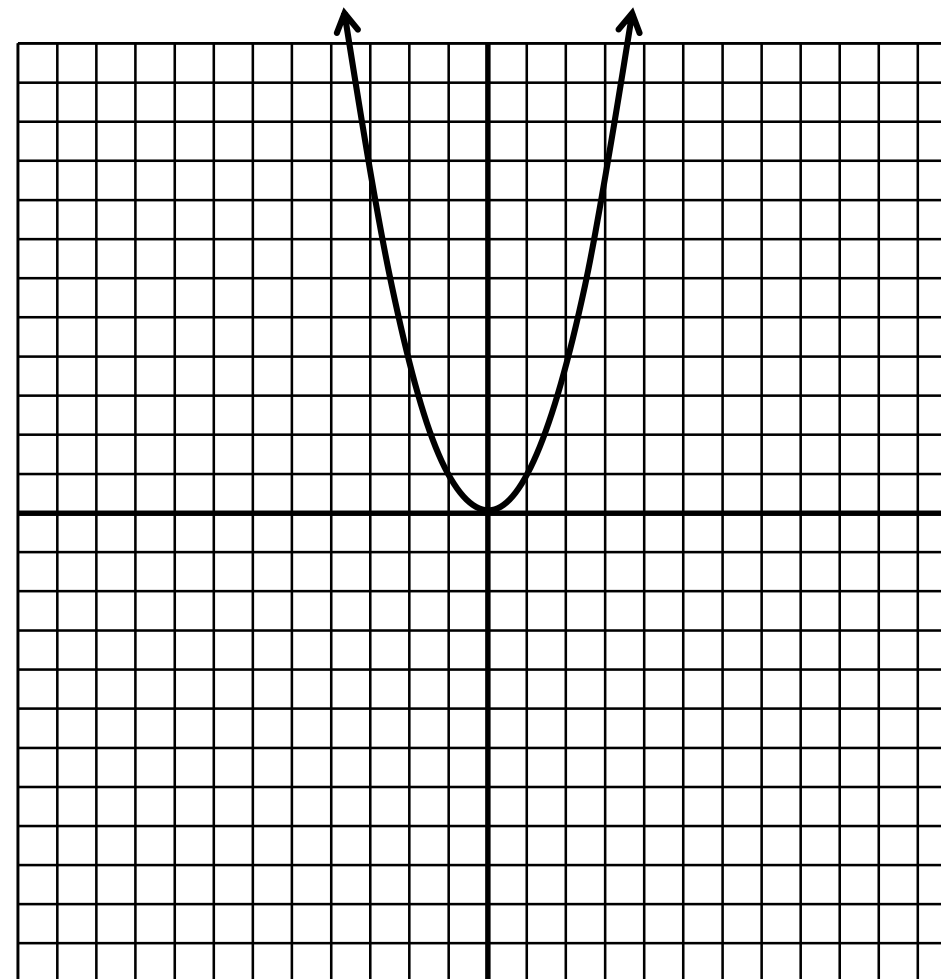| Left/ Right	Up
1	1
2	4
3	9
4	16

Use this chart for all parabolas today.

Vertex: The bottom or top of a parabola.

Axis of Symmetry: A vertical line that cuts the parabola into 2 equal parts. It always goes through the vertex.

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

PARENT FUNCTION	Quadratic
FUNCTION (EQUATION)	$f(x) = x^2$
GRAPH	
DOMAIN: SET NOTATION	$\{x \mid x \in \Re\}$
RANGE: SET NOTATION	$\{y \mid y \geq 0\}$
DOMAIN: INTERVAL NOTATION	$(-\infty, \ +\infty)$
RANGE: INTERVAL NOTATION	$[0, \ +\infty)$

Add this to your yellow parent function sheet.

$$f(x) = (x - 3)^2 - 5 \leftarrow$$

Inside: (plus: Left; minus: Right)

Vertex: $(3, -5)$

Axis of Symmetry:

$x = 3$

Outside:
  plus: Up;
  minus: Down

Left/ Right	Up
1	1
2	4
3	9
4	16

Describe the transformation:

Translated right 3 and down 5
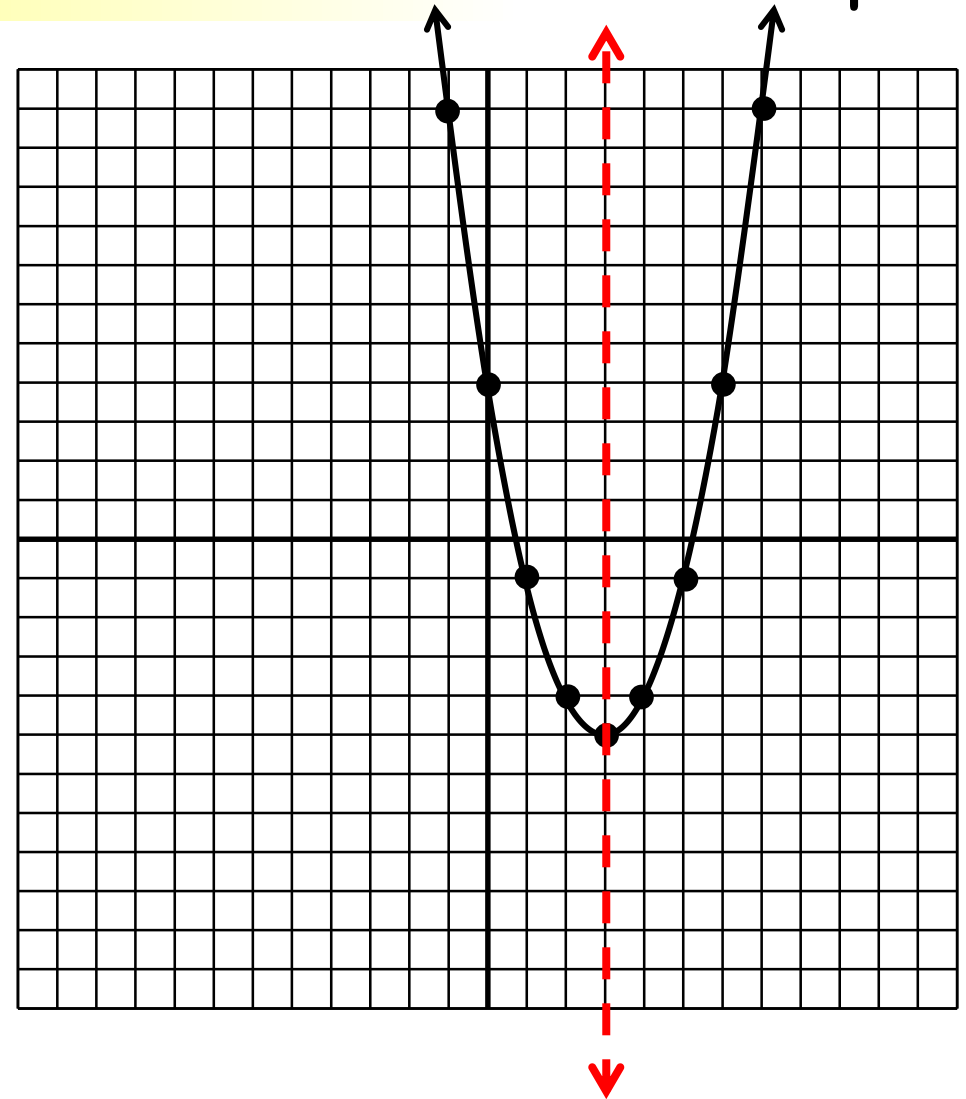
Find the vertex, then use the table to graph the other points of the parabola.

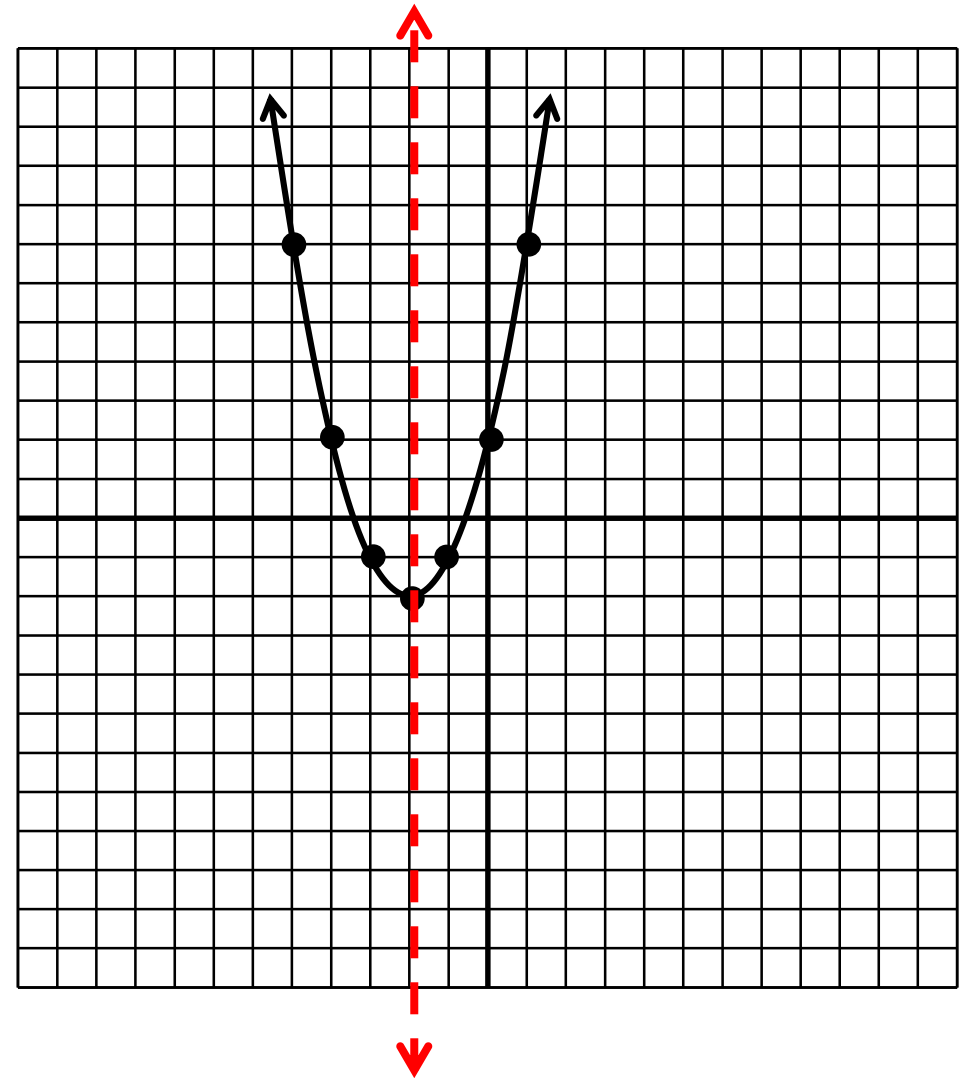$$f(x) = (x + 2)^2 + 1$$

Vertex: $(-2, 1)$

Axis of Symmetry:

$$x = -2$$

Left/ Right	Up
1	1
2	4
3	9
4	16

Describe the transformation:

Translated left 2 and up 1

Find the vertex, then use the table to graph the other points of the parabola.

$$f(x) = -(x - 6)^2 + 4$$

Vertex: **(6, 4)**

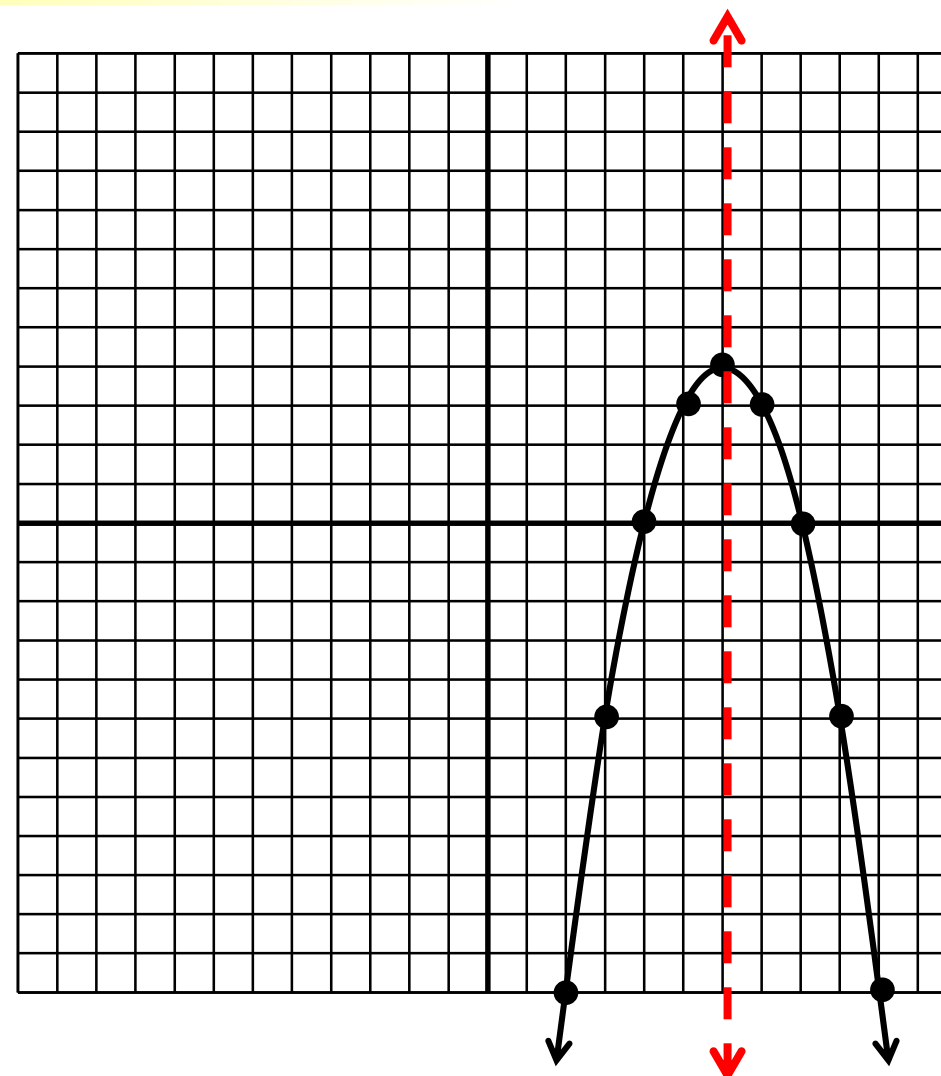| Left/ Right	Up
1	1
2	4
3	9
4	16

Axis of Symmetry:

$$x = 6$$

Describe the transformation:

Reflected over the x-axis,

Translated right 6 and up 4

The negative in front, turns it upside down.

Find the vertex, then use the table to graph the other points of the parabola.
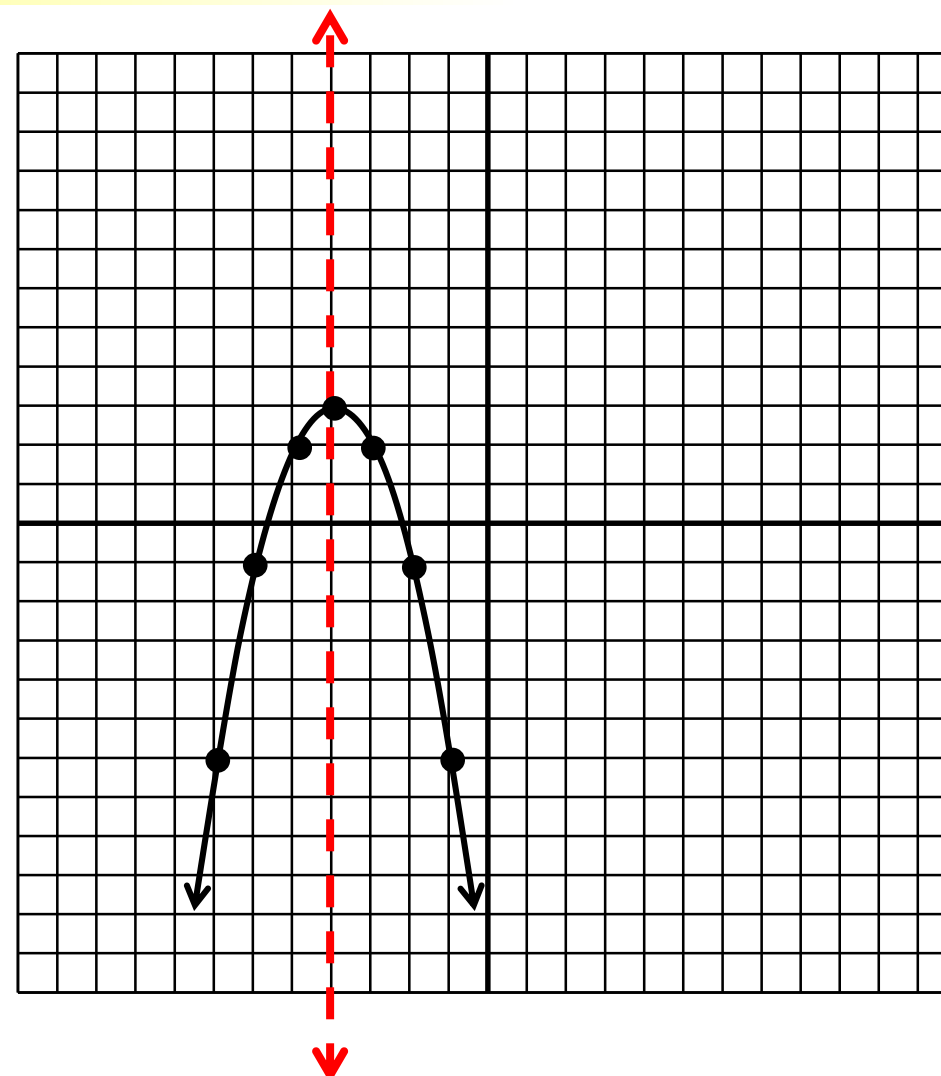
$$f(x) = -(x+4)^2 + 3$$

Vertex: $(-4, \ 3)$

Axis of Symmetry:
$$x = -4$$

Left/Right	Up
1	1
2	4
3	9
4	16

Describe the transformation:

Reflected over the x-axis, Translated left 4 and up 3

Find the vertex, then use the table to graph the other points of the parabola.

Assignment:

Graphing Quadratic Equations A Worksheet

$$f(x) = (x-4)^2 - 2$$

Vertex:

Axis of Symmetry:

Describe the transformation: