Topic: Quadratic Equations in Vertex Form

Fill in the blanks

1. A **quadratic function** is a function that can be written in the **standard form**:

$$y = ax^2 + bx + c, \text{ where } a \neq 0$$

2. Every quadratic function has a U-shaped graph called a _____.

3. If the leading coefficient a is positive, the parabola _____.

4. If the leading coefficient a is negative, the parabola _____.

5. The _____ is the lowest point of a parabola that opens up and the highest point of a parabola that opens down.

6. The line passing through the vertex that divides the parabola into two symmetric parts is called the _____.

7. Solutions of quadratic functions can also be called the _____, _____, or _____.

GRAPHING QUADRATICS IN VERTEX FORM WORKSHEET #1

Graph each quadratic equation.

1. $y = (x-1)^2 + 2$ 2. $y = 2(x-2)^2 + 5$

Vertex : _____   Vertex :   _____

Axis of Symmetry:_____   Axis of Symmetry:_____

Is the vertex a max or min?   Is the vertex a max or min?

CFU_Think-Pair-Share

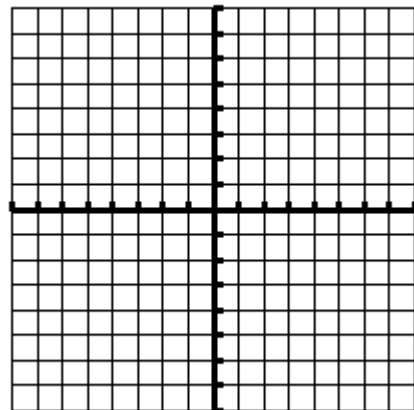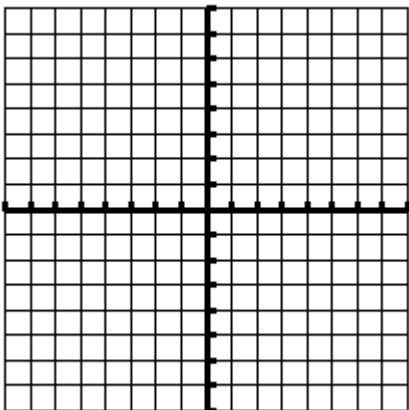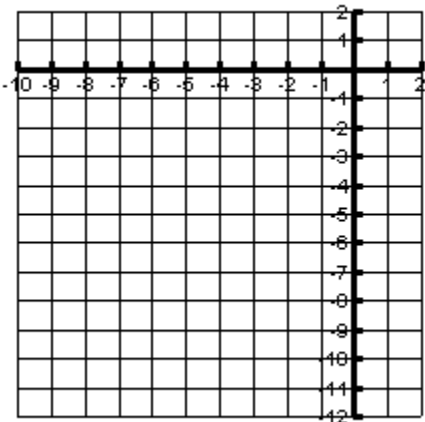3. $y = -3(x+7)^2 - 8$

   Vertex: _____

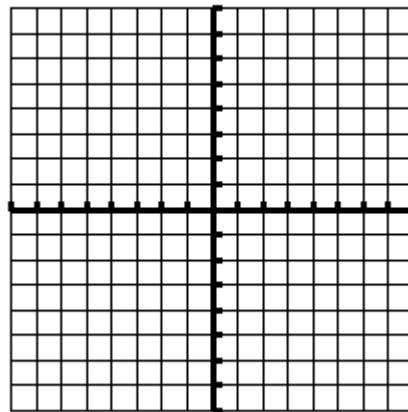   Axis of Symmetry:_____

   Is the vertex a max or min?

4. $y = (x-5)^2 - 3$

   Vertex: _____

   Axis of Symmetry:_____

   Is the vertex a max or min?

Guided Practice:

Convert the following quadratics from standard form to vertex form, then state the vertex.

Example #1	Example #2
$y = x^2 - 8x + 15$	$y = x^2 - 4x$
Vertex Form: _____ Vertex: _____	Vertex Form: _____ Vertex: _____

CFU_Think-Pair-Share

Example #1	Example #2
$y = x^2 + 8x + 18$	$y = x^2 + 4x + 3$
	Vertex Form: _____
Vertex Form: _____	Vertex: _____
Vertex: _____	

Independent Practice:

Convert the following quadratics from standard form to vertex form, then state the vertex.

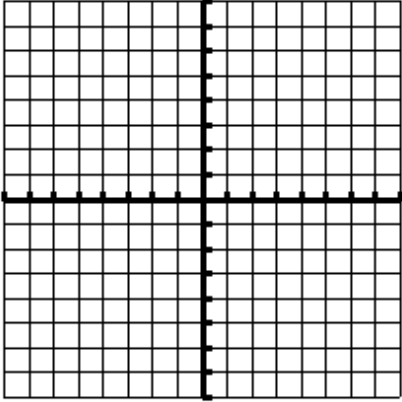| Example #1	Example #2
$y = x^2 - 2x + 5$	$y = x^2 - 8x + 17$
Vertex Form: _____	Vertex Form: _____
Vertex: _____	Vertex: _____

3. $y = -(x-1)^2 + 4$

   Vertex = _____

   A.O.S. = _____

   Is the vertex a max or min?
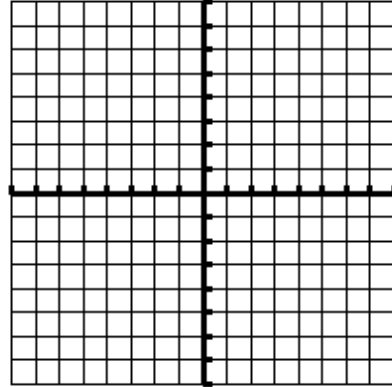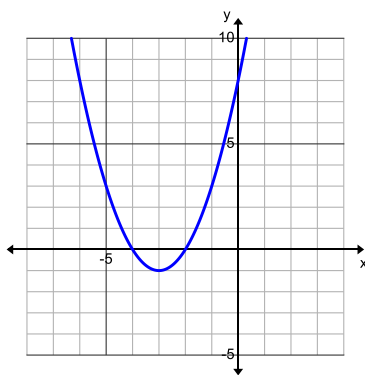
4. $y = 2(x+1)^2$

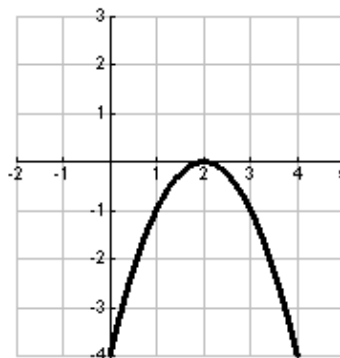   Vertex = _____

   A.O.S. = _____

   Is the vertex a max or min?
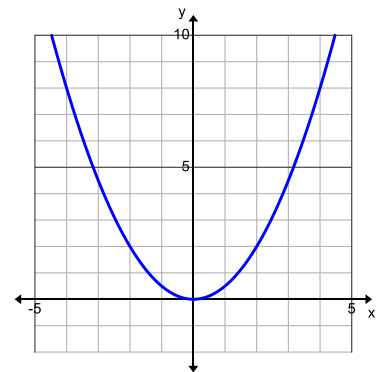
Write the equation of each parabola in vertex form.

5. _____

6. _____

7. _____

8.   A football is kicked into the air. It's height in meters after t seconds is given by $h = -4.9(t-2.4)^2 + 29$.

a) What was the height of the football when it was kicked?

b) What was the maximum height of the ball? At what time was the maximum height reached?

c)   How high was the ball after 2 seconds?

d)   Was the ball still in the air after 5 seconds?