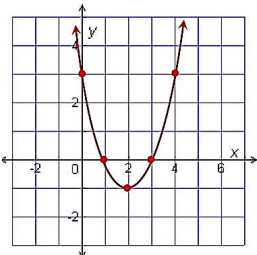
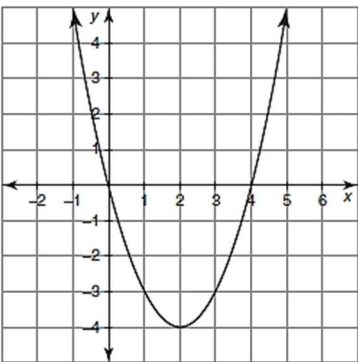
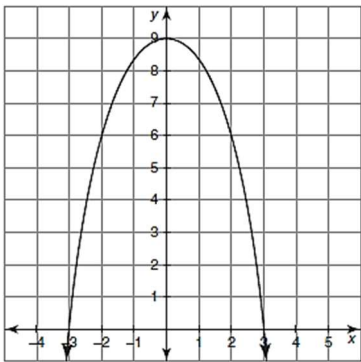
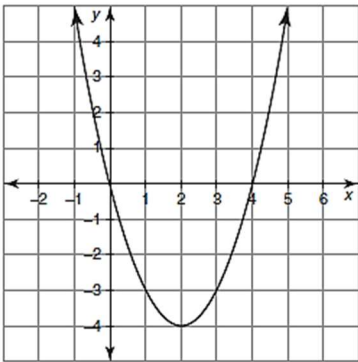
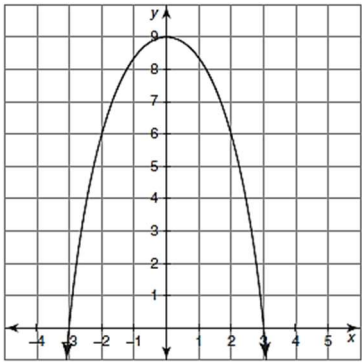
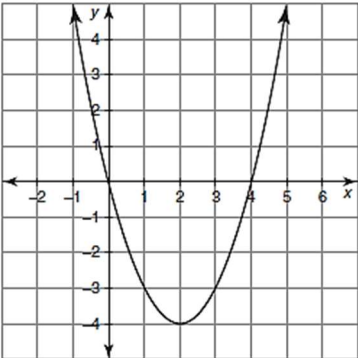
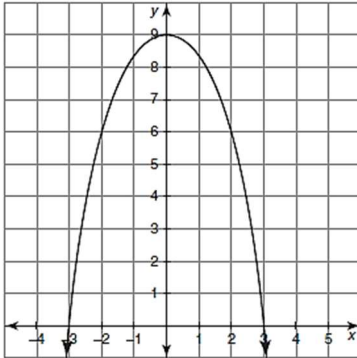
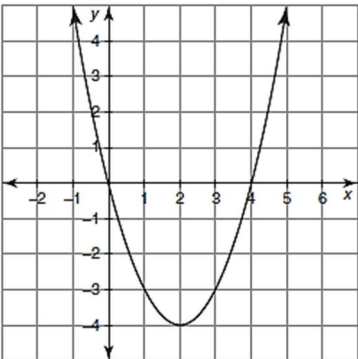
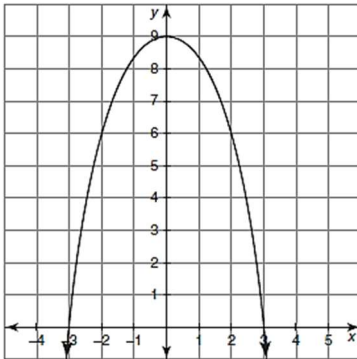
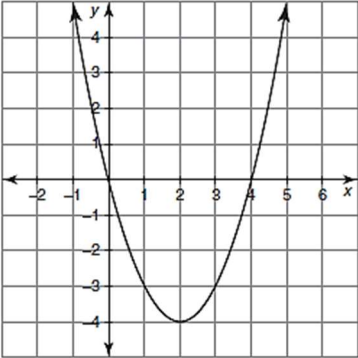
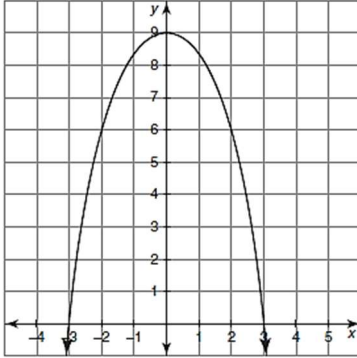
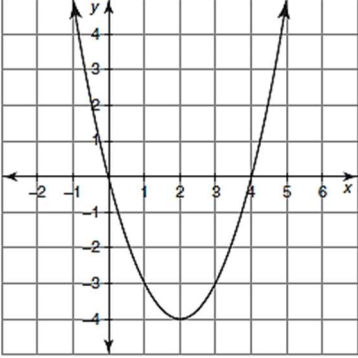
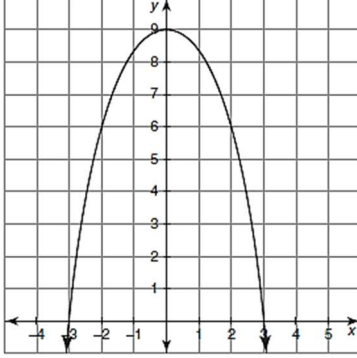


**Unit 6: Quadratic Functions**

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

What you need to know & be able to do	Things to remember	Examples	
1. Describe transformations from an equation or graph	$y = a(x - h)^2 + k$ a: stretches/shrinks & reflects h: shifts left & right k: shifts up & down  vertex: (h, k)	a. Describe the transformations and name the vertex: $y = -2(x + 3)^2 - 9$	a. Describe the transformations and name the vertex: 
2. Create a function using transformations	Determine your, a, h, and k values	a. Opens down, shifts up 3 units and shrinks by 1/4	b. Shifts left 5 and reflects across the x-axis
3. Describe the domain and range.	-Domain: all possible values for x  -Range: all possible values for y -"How far up or down does your graph go?" -written as an inequality	a. Domain:  Range: 	b. Domain:  Range: 
4. Describe the intercepts and zeros.	Zeros and x-intercepts are the same thing.  Zeros: $x = \underline{\hspace{1cm}}$ X-int: (p, 0) (q, 0) Y-int: (0, c)	a. x-intercepts:                      zeros:  y-intercept: 	b. x-intercepts:                      zeros:  y-intercept: 

<p>5. Describe the vertex, axis of symmetry, extrema, and min/max values.</p>	<p>Vertex: highest or lowest point</p> <p>Axis of Symmetry: x value of the vertex; written as <math>x =</math></p> <p>Extrema: Max or Min?</p> <p>Max/Min Value: What's the lowest or highest your graph goes; written as <math>y =</math></p>	<p>a. Vertex:                      Axis of Sym:</p> <p>Extrema:                      Max/Min Value:</p> 	<p>b. Vertex:                      Axis of Sym:</p> <p>Extrema:                      Max/Min Value:</p> 
<p>6. Describe the end behavior.</p>	<p>Which direction are the ends of the graph headed? To positive or negative infinity?</p>	<p>a. As <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow</math> ____.</p> <p>As <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow</math> ____.</p> 	<p>b. As <math>x \rightarrow -\infty</math>, <math>f(x) \rightarrow</math> ____.</p> <p>As <math>x \rightarrow \infty</math>, <math>f(x) \rightarrow</math> ____.</p> 
<p>7. Describe the intervals of increase or decrease.</p>	<p>Draw your axis of symmetry and create an inequality to represent to the left and right of the axis of symmetry.</p> <p>Then determine which direction the graph is going on the left and then on the right using your inequalities.</p>	<p>a. Interval of Increase:</p> <p>Interval of Decrease:</p> 	<p>b. Interval of Increase:</p> <p>Interval of Decrease:</p> 
<p>8. Describe the positive and negative parts of the graph</p>	<p>Determine which parts of the graph are above or below the x-axis.</p> <p>Use inequalities to describe the different regions using the x-intercepts.</p>	<p>a. Positive:</p> <p>Negative:</p> 	<p>b. Positive:</p> <p>Negative:</p> 

<p>9. <i>Applications of the Vertex</i></p>	<p>Maximum/Minimum indicate finding the vertex.</p> <p>Describe what you know about your equation before completing any solving.</p> <p>Interpret the vertex in terms of what x and y represent.</p>	<p>a. The height in feet of a rocket after x second is given by <math>y = -16x^2 + 128x</math>. What is the maximum height reached by the rocket and how long does it take to reach that height?</p>	<p>b. The arch of bridge is modeled by the equation <math>y = -\frac{1}{4}(x - 50)^2 + 95</math>, where x represent the horizontal distance (in feet) and y represents the vertical distance (in feet). What is the maximum height of the arch?</p>
		<p>c. A missile is launched along a path determined by the equation <math>f(x) = -2x^2 + 72x</math>, where <math>f(x)</math> is the height of the missile in feet x seconds after the launch. A plane is flying nearby at a height of 650 feet. Is the plane in danger? Why or why not?</p>	