Algebra 2   Name: _____
Mr. Doherty

Graphing Quadratic Functions in Vertex form
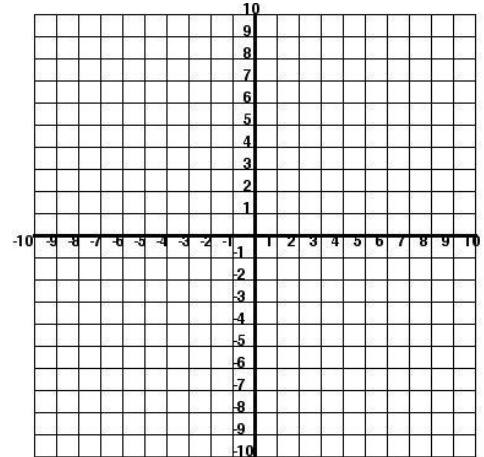**Vertex form of a quadratic function is given by:** $y = a(x - h)^2 + k$

1)   Complete the following table for the function given below and sketch the points
      and connect the dots with a smooth curve. Answer the questions that follow.
      Remember the order of operations!

$y = 2(x - 3)^2 + 1$ Graph:

Table:

X	0	1	2	3	4	5
Y						

      a)   What is the vertex?

      b)   What is the axis of symmetry?
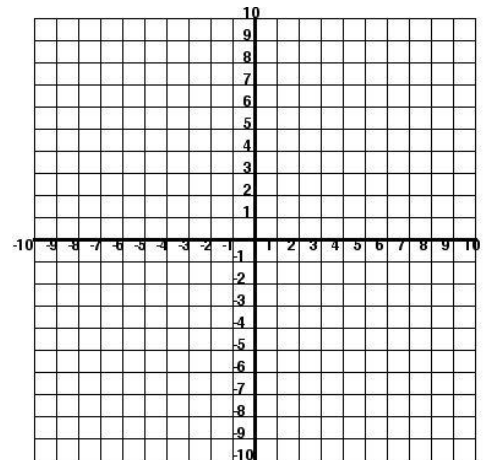
      c)   Does the function open up or down?

2)   Complete the following table for the function given below and sketch the points
      and connect the dots with a smooth curve. Answer the questions that follow.

$y = -2(x - 3)^2 + 1$ Graph:

Table:

X	0	1	2	3	4	5
Y						

      a)   What is the vertex?

      b)   What is the axis of symmetry?

      c)   Does the function open up or down?

      d)   How did making the a-value negative affect the graph?

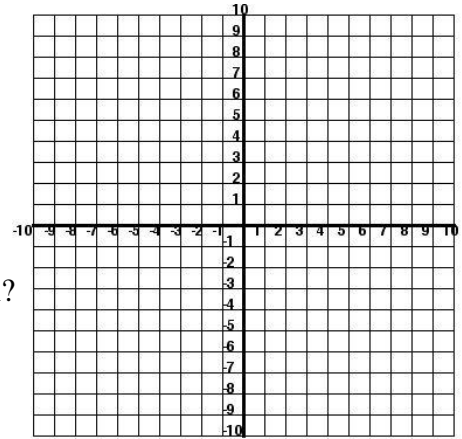Algebra 2   Name: _____
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3)   Complete the following table for the function given below and sketch the points
        and connect the dots with a smooth curve. Answer the questions that follow.

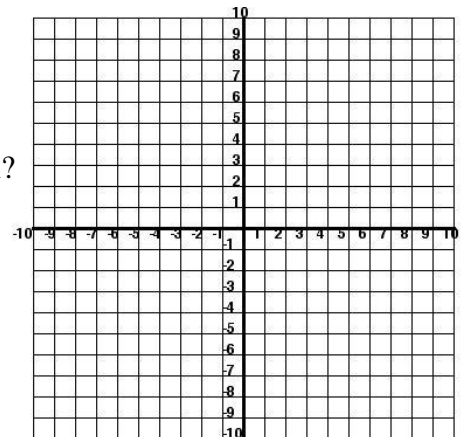$$y = 0.5(x-2)^2 + 4$$ Graph:

Table:

X	0	1	2	3	4	5
Y						

        a)   What are the a, h, and k values of this function?

        b)   What is the vertex?

        c)   What is the axis of symmetry?

        d)   Does the function open up or down?

4)   Answer the questions that follow, and graph the function.

$$y = -1 \cdot (x+4)^2 - 2$$ Graph:

        a)   What are the a, h, and k values of this function?

        b)   What is the vertex?

        c)   What is the axis of symmetry?

        d)   Does the function open up or down?

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5)   Given the vertex form of a parabola: $y = a(x - h)^2 + k$ answer the following
questions:

        a)   What affect do you think the a-value has on the graph?

        b)   What affect does the h value have on the graph?

        c)   What affect does the k value have on the graph?

        d)   What is the vertex based on the equation above?

        e)   What is the axis of symmetry?

        f)   Use the key concept box on page 245 to verify your answers.

6)   For each function below before you graph it identify the a, h, and k values.
        Then use those values to predict whether the function will open up or down,
        where the vertex will be, and where the axis of symmetry will be. Then graph the
        function to confirm your predictions.

a) $y = \dfrac{1}{4}(x - 5)^2 + 2$ a:_____   h:_____   k:_____

Does it open up or down?_____

What is the vertex?_____

What is the axis of symmetry?_____

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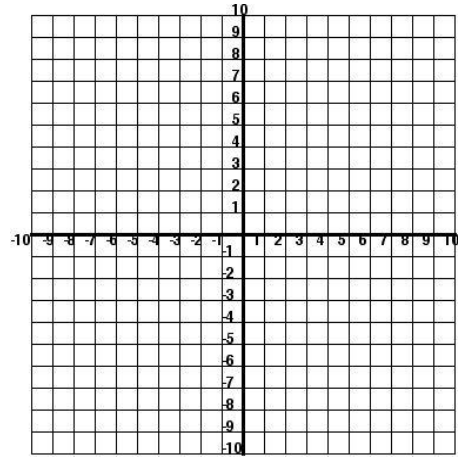Name: _____
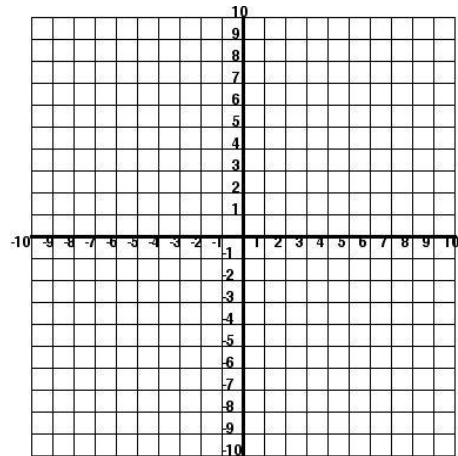
b) $y = 4(x+5)^2 - 2$ a:_____   h:_____   k:_____

Does it open up or down?_____

What is the vertex?_____

What is the axis of symmetry?_____

c) $y = (x+1)^2 + 3$ a:_____   h:_____   k:_____
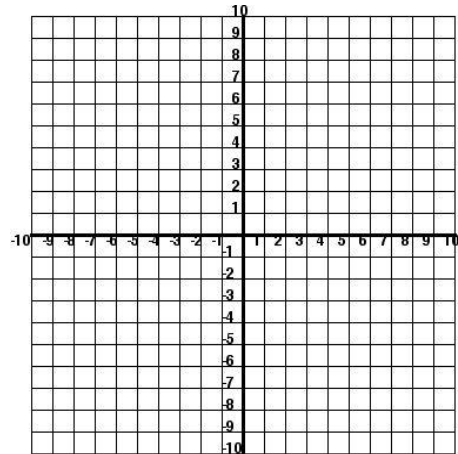
Does it open up or down?_____

What is the vertex?_____

What is the axis of symmetry?_____

d) $y = -0.5(x-6)^2 - 1$ a:_____   h:_____   k:_____

Does it open up or down?_____

What is the vertex?_____

What is the axis of symmetry?_____