Topic: IM2 – 3.4 (N – 2) Transforming Quadratic Graphs & Equations	**Standard(s):** F.IF.7a F.BF.3	Notes
Essential Question: How can I describe the transformation of quadratics given graphs and equations?		

Questions / Big Ideas

Key Terms

Quadratic Parent Form ≡ $y = x^2$ and $y = ax^2$

Vertex Form ≡ $y = a(x - h)^2 + k$

Shift ≡ a horizontal or vertical slide of a graph on a coordinate plane.

Reflection ≡ a flip of a graph over an axis or line on a coordinate plane.

Parameter "a" ≡ a variable that represents dilation and concavity of a graph on a coordinate plane.

- How does changing the "a" parameter affect the graph of a quadratic function in terms of…
  a. Dilation: _____
  _____
  _____
  b. Concavity: _____
  _____

Changing Parameters of the Vertex, (h, k)

- How does changing the "h" parameter affect the graph of a quadratic function?
  a. a positive h-value shifts the graph: _____
  b. a negative h-value shifts the graph: _____

- How does changing the "k" parameter affect the graph of a quadratic function?
  a. a positive k-value shifts the graph: _____
  b. a negative k-value shifts the graph: _____

Questions / Big Ideas	Guided Practice

<u>When Parameter $a = 1$</u>

1. Describe how the following equations are transformed from $y = x^2$

   a. $y = (x - 3)^2 - 5$: _____

   b. $y = (x + 1)^2$: _____

   c. $y = (x + 7)^2 + 2$: _____

   d. $y = x^2 - 4$: _____

<u>When Parameter $a \neq 1$</u>

2. Describe how the following equations are transformed from $y = x^2$

   a. $y = -9(x + 8)^2$: _____

   _____

   b. $y = 0.3x^2 + 11$: _____

   _____

   c. $y = 2(x - 6)^2 - 4$: _____

   _____

   d. $y = -\frac{1}{2}(x - 3)^2 + 7$: _____

   _____

<u>Given Parameters</u>

3. Write the transformed quadratic equation in vertex form given the following parameters:

   a. Parabola that is concave down, neither stretched nor compressed, shifted down by 8: _____

   b. Parabola that is concave up, stretched by 7, shifted left by 4, and down by 5: _____

Questions / Big Ideas

Quadratics on a Coordinate Plane

4. Describe the concavity, dilation, and shift from the parent function, then write the equation of the transformed parabola.

   a. Describe the transformation from $f(x)$ to $g(x)$: _____

   _____

   _____

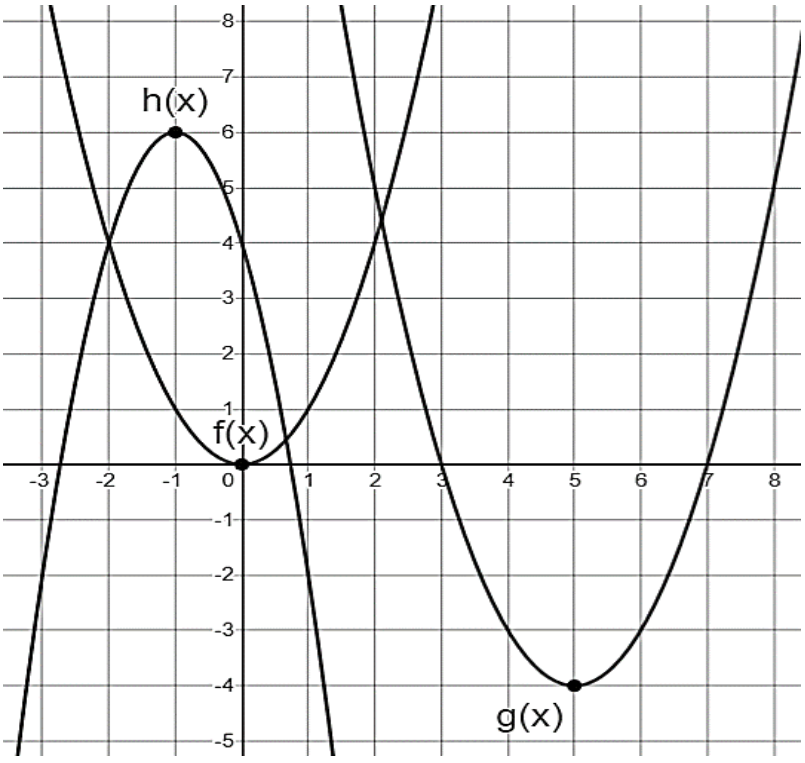
   b. Write the function: $g(x) =$_____

   c. Describe the transformation from $f(x)$ to $h(x)$: _____

   _____

   _____

   d. Write the function $h(x) =$_____



Summary: _____

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