

8-Page Bound Book Style Foldables™ are my favorite format to create a daily routine for my students. Each daily lesson that I create has been inspired by the work of Dinah Zike, and is used by permission – see more of her ideas at www.Dinah.com

DIRECTIONS FOR PRINTING:

1. If you have a printer that allows double-sided printing, use the option “flip on short side.”
2. Otherwise, if you are printing single-sided and then photocopying double-sided, you may need to manually flip these pages - Orient the sheets up/down/up/down (shown below). Every printer/ copy machine is different! I suggest that you to print/ photocopy one copy, cut and fold to make sure it is copied correctly.
3. Assemble the Foldable from the directions on the following page.

Using Vertex Form

EX #7: Graph $f(x) = 2(x + 2)^2 - 3$

$a =$ _____
 $h =$ _____
 $k =$ _____

axis of symmetry: _____

vertex: _____

point: _____

reflected point: _____

domain: _____ range: _____

minimum/maximum: _____

Describe and explain the transformation of the parent graph $y = x^2$ to $f(x) = 2(x + 2)^2 - 3$.

QUADRATIC FUNCTIONS and TRANSFORMATIONS

Vocabulary

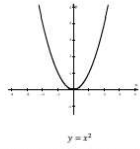
Parabola - the graph of a quadratic function

Quadratic function - any function that can be written in the form $f(x) = ax^2 + bx + c$, where $a \neq 0$.

Vertex form - any quadratic function written as $f(x) = a(x - h)^2 + k$, where $a \neq 0$.

Axis of symmetry - a line that divides the parabola into two mirror images, the equation for an axis of symmetry is $x = h$.

Vertex of the parabola - the intersection of the parabola and its axis of symmetry is (h, k) .



$y = x^2$

VERTEX FORM OF A PARABOLA

$f(x) = a(x - h)^2 + k$

If $a > 0$, then _____

If $a < 0$, then _____

(h, k) is _____

$x = h$ is _____

EXPLORATION:

Use a graphing calculator to discover the rules for vertex form. Then complete the sentences above.

1. $y = (x - 2)^2 + 3$
2. $y = (x + 2)^2 - 3$
3. $y = -2(x - 1)^2 + 2$
4. $y = -0.5(x + 1)^2 + 2$

Graphing a Function of the Form $f(x) = ax^2$

$y = 2x^2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

EX #2: Graph

$y = \frac{1}{2}x^2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

ORIENTATION FOR COPYING SHEETS
1 and 2 then 3 and 4

Graphing a Function of $f(x) = -4x^2$

EX #3: Graph $y = -x^2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

EX #4: Graph $y = -2x^2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

Graphing Transformations of $f(x) = x^2$

$y = x^2 - 2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

EX #5: Graph

Describe the translation from $y = x^2$

$y = (x + 1)^2$

Vertex: _____

Axis of Symmetry: _____

Point: _____

Reflected Point: _____

EX #6: Graph

Describe the translation from $y = x^2$

3. Write the quadratic function: _____

4. Name the domain, range and minimum value: _____

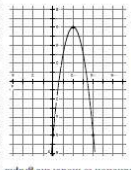
Writing a Quadratic Function

1. Find the following:

EX #8: Write a quadratic function to model the graph.

2. Substitute values into the vertex form and solve for the a value.

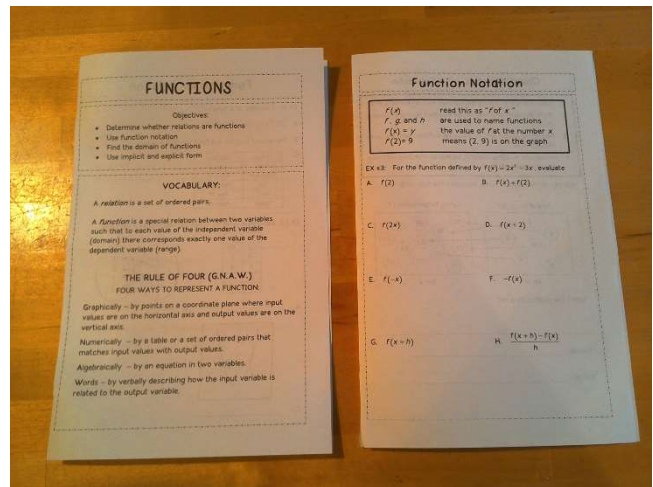
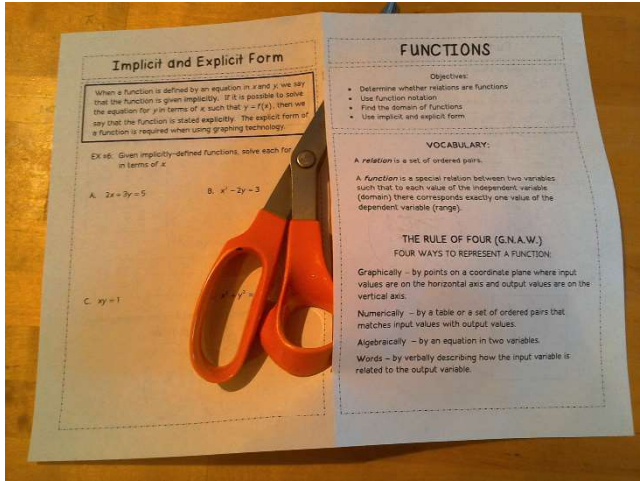
$f(x) = a(x - h)^2 + k$





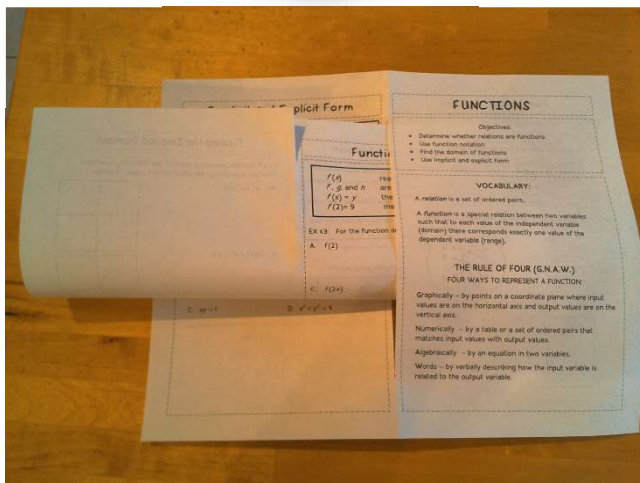
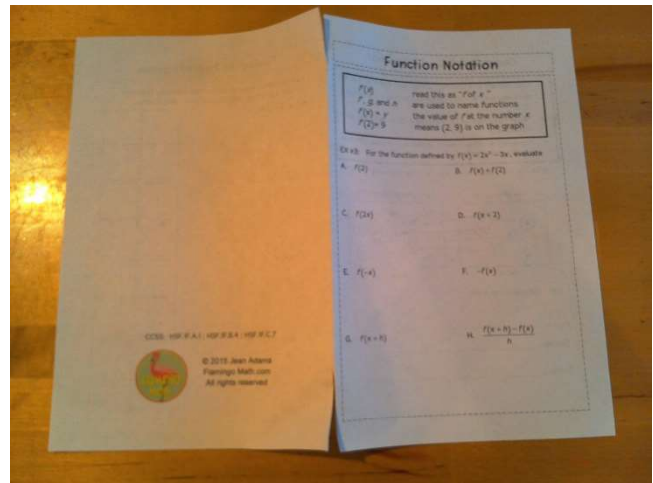
DIRECTIONS TO ASSEMBLE FOLDABLE:

1. Fold each sheet in half, hamburger style.



2. On the title page, cut out (or shave) on the fold within about an inch from the top and bottom. BE CAREFUL NOT TO CUT ALL THE WAY THROUGH. You are making a slit only.

3. On the inside page, cut about an inch from the top and bottom on the fold.



4. Open the title page to show the "slit" in the middle of the fold. Roll the inside page into a "burrito" and stuff it under the title page. (Notice that you can see the front page and the back page at this stage.)

5. Unroll the inner page and the book is now complete.