

TRANSFORMATIONS

AGENDA

Warm-Up

HW Wheel

Notes

HW: Practice
(1 page)



REMINDERS

Practice:
Quadratics Day 3
DUE NOW

Quiz Wednesday

HW 5.5 due
Friday

EOC Simulation
Wednesday 4/2

WARM-UP (MONDAY)

TURN IN PRACTICE NOW - LATE
HW IS GRADED FOR ACCURACY.

1. The line $y=x$ is transformed to $y = -4x - 1$.
Which of the following statements does not describe this transformation?

- a) The slope is steeper.
- b) The graph shifts down 1 unit.
- c) The new graph goes through the origin.
- d) The line is reflected.


$$y_1 = x$$
$$y_2 = -4x - 1$$

2. Write the equation and sketch a graph of the quadratic parent function.

$$y = x^2$$




SPIN THE WHEEL



2nd - completion
3rd - FREE
4th - completion
5th - FREE
7th - completion

Good luck!!

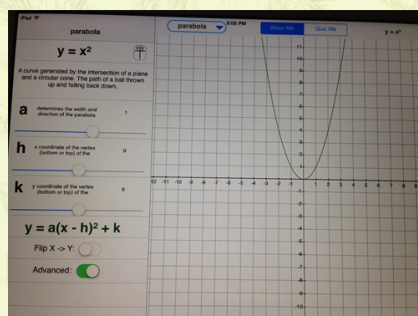
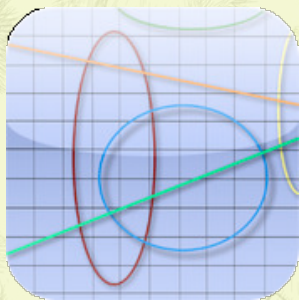


TRANSFORMATIONS

"MATHGRAPH" APP

On the Challenge Box:

Using the iPad app set on "parabola", drag the sliders for "a" and "k" (leave "h" as zero). What happens to the quadratic function as "a" gets bigger or smaller? What happens if you change "k"? Write down your observations on the challenge box of your warm-up page.




TRANSFORMATIONS

FOLDABLE (PAGE 110)

$f(x) = 2x^2$
 $g(x) = 5x^2$

x	y
-2	-8
-1	-2
0	0
1	2
2	8


Verbal:
Domain:
Range:



$f(x) = -x^2$

x	y
-2	-4
-1	-1
0	0
1	-1
2	-4


Verbal:
Domain:
Range:



$f(x) = x^2 + k$

x	y
-2	-2
-1	-1
0	0
1	1
2	2


Verbal:
Domain:
Range:



$f(x) = \frac{1}{2}x^2$
 $g(x) = 0.2x^2$

x	y
-2	-2
-1	-0.5
0	0
1	0.5
2	2


Verbal:
Domain:
Range:



$f(x) = x^2 - 3$

x	y
-2	-5
-1	-4
0	-3
1	-4
2	-5

Verbal:
Domain:
Range:



Summary: Effects of "a"

Summary: Effects of "c"

Fold along this line

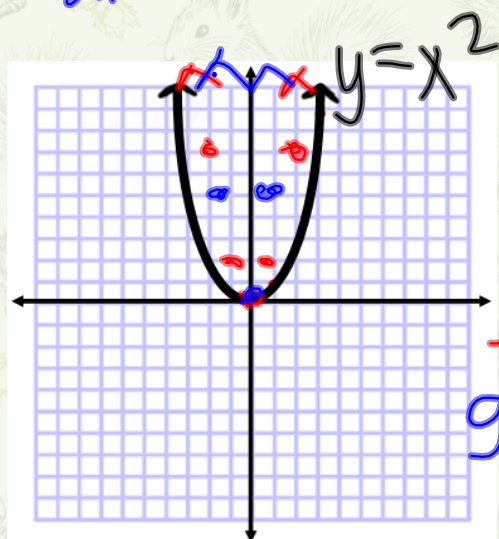
Cut along these lines

Summary: Effects of "a"

Summary: Effects of "c"

$$f(x) = 2x^2$$

$$g(x) = 6x^2$$



$$y = ax^2$$

x	f(x)	g(x)
-2	8	24
-1	2	6
0	0	0
1	2	6
2	8	24

Verbal:

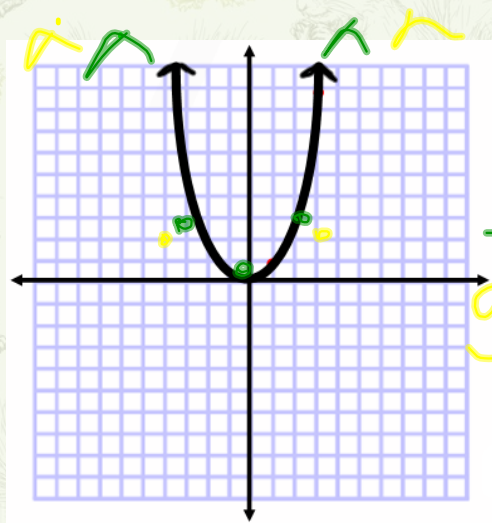
$f(x)$ is more narrow
 $g(x)$ is even more narrow

Domain: \mathbb{R}
 \mathbb{R}

Range: $y \geq 0$
 $y \geq 0$

$$f(x) = \frac{1}{2}x^2 = 0.5x^2$$

$$g(x) = 0.2x^2$$



x	f(x)	g(x)
-2	2	0.8
-1	1/2	0.2
0	0	0
1	1/2	0.2
2	2	0.8

Verbal:

$f(x)$ is wider
 $g(x)$ is even wider

Domain: \mathbb{R}
 \mathbb{R}

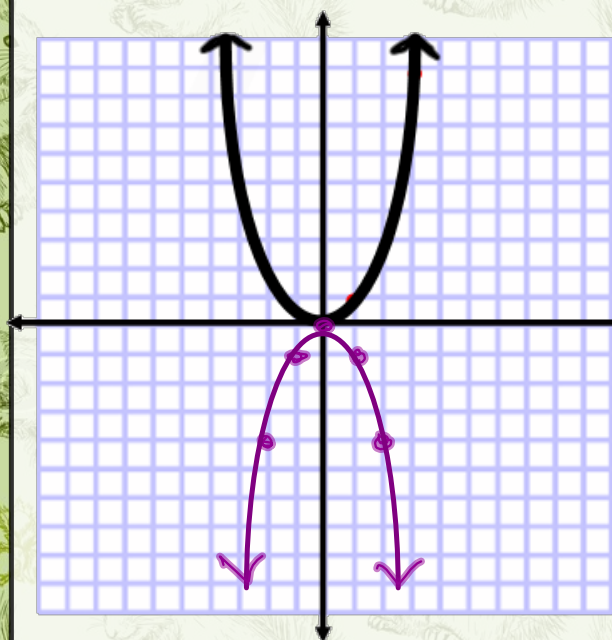
Range: $y \geq 0$
 $y \geq 0$

$$y = ax^2, \text{ } a \text{ is negative}$$

$$f(x) = -x^2$$

2nd Flap

x	y
-2	-4
-1	-1
0	0
1	-1
2	-4



Verbal:

$f(x)$ flipped over
the x -axis
(REFLECT)

Domain:

 \mathbb{R}

Range:

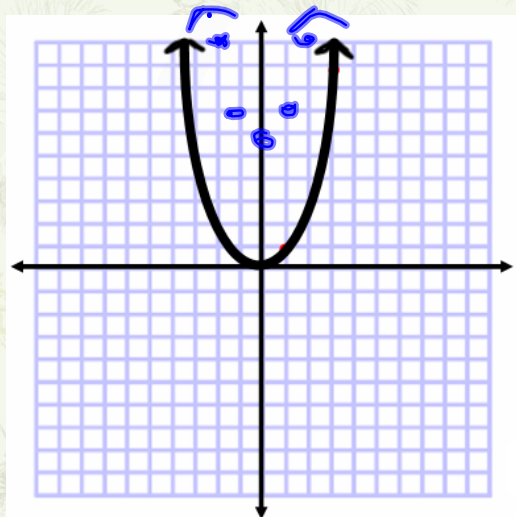
 $y \leq 0$

$$y = x^2 + \textcolor{red}{c}$$

3rd Flap

$$f(x) = x^2 + \textcolor{blue}{6}$$

x	y
-2	10
-1	7
0	6 ←
1	7
2	10



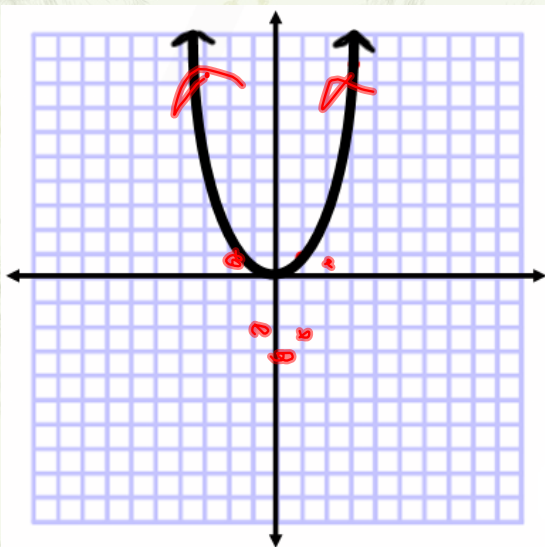
Verbal:

$f(x)$ moved up 6
(shifted,
translated)

Domain: \mathbb{R} Range: $y \geq 6$

$$f(x) = x^2 - 3$$

x	y
-2	1
-1	-2
0	-3
1	-2
2	1



Verbal:

$f(x)$ moved down 3
(shift,
translate)

Domain: \mathbb{R}

Range:

 $y \geq -3$

TRANSFORMATIONS SUMMARIES

At the bottom of your foldable, write a summary of what changing the coefficient or constant does to the graph of the quadratic function. Think about what happens if "a" is a fraction, a whole number, or negative.

Summary: Effects of "a"

"a" bigger \rightarrow narrower

"a" smaller \rightarrow wider
(fraction)

"a" negative
 \rightarrow FLIPS

Summary: Effects of "c"

positive "c" (+) \rightarrow moves up

negative "c" (-) \rightarrow moves down

1 PAGE

Algebra I - Unit 9: Topic 2 – Transformations of Quadratics

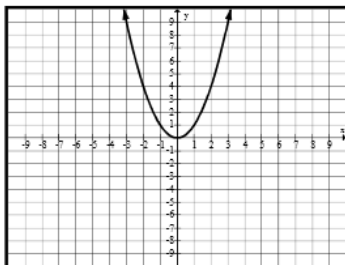
Practice – Transformations of Quadratics

pp 613-616

Name _____ Date _____ Period _____

- Describe how the graph of $y = x^2 + c$ differs from the graph of $y = x^2$ when the value of c is positive and when the value of c is negative.
- How does the absolute value of " a " affect whether a graph of a function is wider or narrower than the graph of $f(x) = x^2$?

- The graph of the function of $y = x^2$ is given below.



How will the graph be affected if the coefficient of x^2 is decreased to $\frac{1}{8}$.

- The parabola will be wider.
 - The parabola will be narrower.
 - The parabola will be translated up.
 - The parabola will be translated down.
- Which quadratic function has a vertex above the origin and opens upward?
 - $y = -x^2 + 2$
 - $y = -x^2 - 3$
 - $y = x^2 + 7$
 - $y = x^2 - 5$
 - How does the graph of $y = x^2$ differ from the graph of $y = x^2 - 4$?
 - The graph of $y = x^2 - 4$ is wider than the graph of $y = x^2$.
 - The graph of $y = x^2 - 4$ is shifted up from the graph of $y = x^2$.
 - The graph of $y = x^2 - 4$ is shifted down from the graph of $y = x^2$.
 - The graph of $y = x^2 - 4$ is narrower than the graph of $y = x^2$.
 - Which equation is the parent function of a quadratic equation?
 - $y = x$
 - $y = x^2$
 - $y = |x|$
 - $y = \sqrt{x}$
 - Which of the following does not describe the graph of the parent function of a quadratic equation?
 - The graph has a minimum value at $(0, 0)$.
 - The graph has its vertex at the origin.
 - The graph has the x -axis as its line of symmetry.
 - The graph is a parabola that opens upward.

