Quadratic Transformations Desmos Activity

A) Go to desmos.com

B) Always have $y = x^2$ graphed.

Vocabulary Bank: Shift up, shift down

Vertical Stretch, Vertical Compression

Shift right, shift left, Reflection

1. Now graph each of the following with $y = x^2$ one at a time on the same plot.

$y = x^2 - 1$	$y = x^2 - 3$	$y = x^2 + 2$	$y = x^2 + 7$

This can be represented by $y = x^2 + k$.

2. What happens when we add a number (k is positive) to the graph of $y = x^2$?

3. What happens when we subtract a number (k is negative) to the graph $y = x^2$?

4. Now graph each of the following with $y = x^2$ one at a time on the same plot.

$y = 2x^2$	$y = 4x^2$	$y = \frac{1}{2}x^2$	$y = \frac{1}{4}x^2$

This can be represented by $y = ax^2$.

5. What happens when multiply $y = x^2$ by a number greater than 1 (a > 1)?

6. What happens when multiply $y = x^2$ by a number less than 1 (0<a < 1)?

7. What happens if we put a negative in front of each coefficient?

8. Now graph each of the following with $y = x^2$ one at a time on the same plot.

$y = (x-1)^2$	$y = (x-4)^2$	$y = (x+2)^2$	$y = (x+5)^2$

This can be represented by $y = (x+h)^2$.

9. What happens to the graph of $y = x^2$ when the number inside the parenthesis is positive (h is negative)?

10. What happens to the graph of $y = x^2$ when the number inside the parenthesis is negative (h is positive)?

11. If you have time now explore multiple transformations.

For example: $y = (x+3)^2 - 2$ or $y = -2(x+3)^2$