Algebra 1: 11.7 Guided Notes **Name** _____ **Period** _____
Transformations of Quadratic Functions

Transform means _____.

Transformations change the basic quadratic function, $y = x^2$, into other quadratic functions by:

1) _____
2) _____
3) _____

Moving or Translating the Graph

$f(x) = x^2 + k$ $\Rightarrow$ the graph is **vertically translated** by k units.

If $k > 0$, _____.

If $k < 0$, _____.

$f(x) = (x \pm h)^2$ $\Rightarrow$ the graph is **horizontally translated** by h units.

$(x - h)$ means _____.

$(x + h)$ means _____.

Flipping or Reflecting the Graph

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

_____.

The parabola looks like it is flipped upside down.

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

_____.

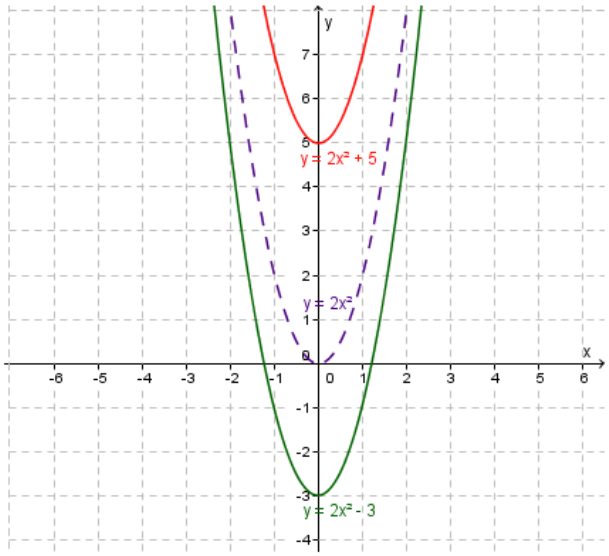
It produces the same graph as $f(x) = x^2$. The function does not change since squared values are always _____.

Dilating the Graph

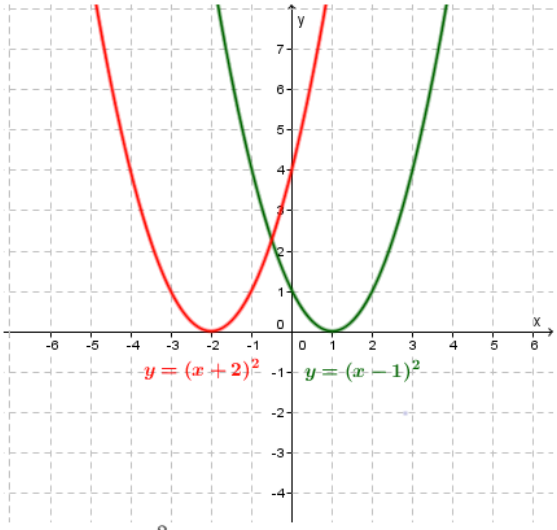
$f(x) = ax^2$ $\Rightarrow$ the graph is **dilated vertically** by a factor of a.

If $a > 1$, _____.

If $0 < a < 1$, _____.

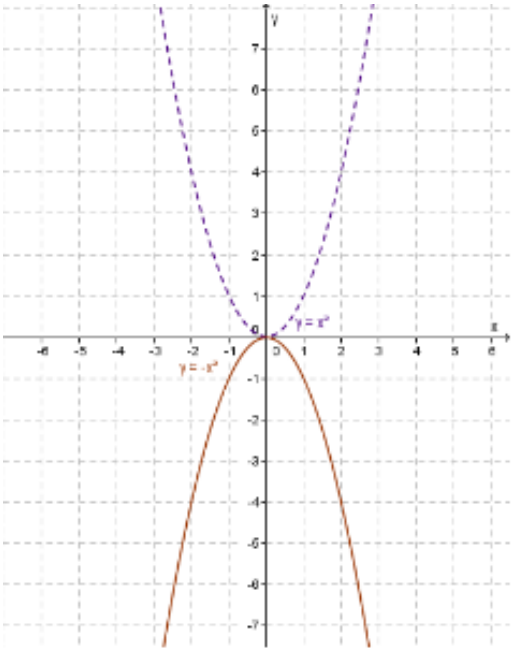


Vertical translation.



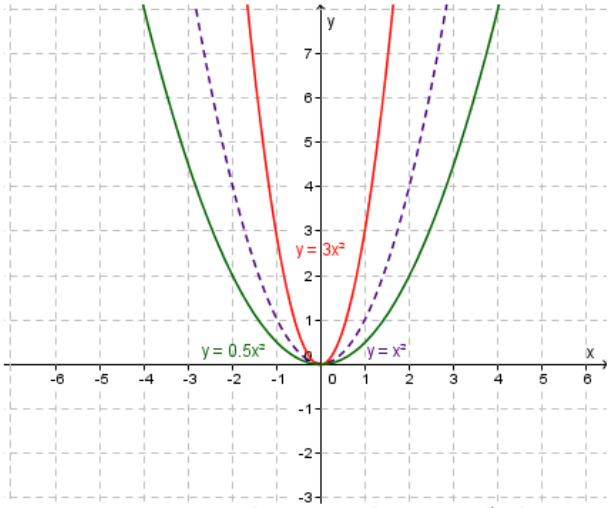
The graph $y = x^2$ being horizontally translated 2 units left

to $y = (x+2)^2$ and 1 unit right to $y = (x-1)^2$



Shows the reflection of

$$y = x^2 \text{ to } y = -x^2$$



Dilation of $y = x^2$ to $y = 3x^2$ and $y = \frac{1}{2}x^2$