

# QUADRATIC TRANSFORMATIONS

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

1. Being specific, name 3 ways that a parabola changes with different types of "a" values.
2. If "h" is positive how does the parabola move? If negative?
3. If "k" is positive how does the parabola move? If negative?
4. What conclusion can you make about the variables of h and k together?

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

5.  $y = 3x^2 - 5$
6.  $y = 1/2(x + 1)^2$
7.  $y = -2(x - 3)^2 + 4$
8.  $y = -(x + 5)^2 - 3$

Write the quadratic equations under the specific transformations from  $f(x)$  to form  $h(x)$ .

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

- translated 1 unit to the right
- translated 5 units down

	f(x)	Transformation	h(x)
a			
h			
k			

$h(x) =$

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

- vertical compression of  $\frac{1}{2}$
- reflect across the x-axis
- translated 3 units up

	f(x)	Transformation	h(x)
a			
h			
k			

$h(x) =$

11.  $f(x) = x^2 + 5$

- reflected over the x-axis
- translated 2 units to the left

	f(x)	Transformation	h(x)
a			
h			
k			

$h(x) =$

12.  $f(x) = 2(x + 3)^2 + 1$

- vertical stretch of 3
- translated 4 units to the right
- translated 2 units up

	f(x)	Transformation	h(x)
a			
h			
k			

$h(x) =$