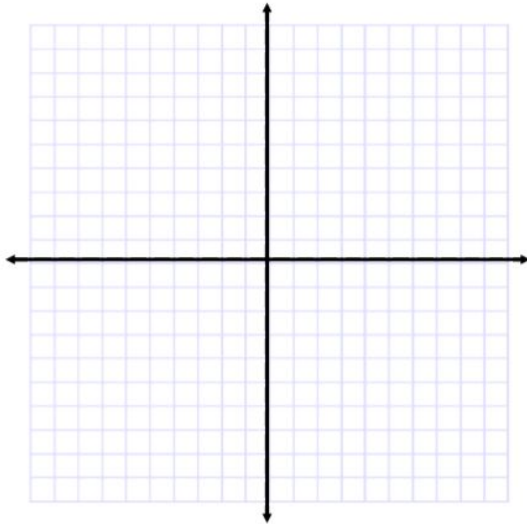


Name: _____

Date: _____

Transformations: Shifts

The "Parent" Function



Graph the equation $y = x^2$

Vertex: _____

AoS: _____

Roots: _____

Y - intercept: _____

Every graph of a parabola comes from a version of this parent function.

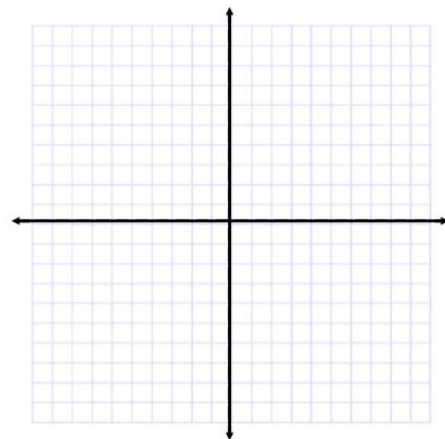
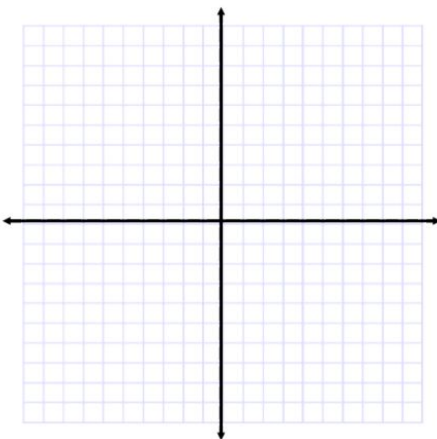
List the vertex of each parabola. How does this change from the original parent function?

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

2. $y = (x - 14)^2$

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

4. $y = (x - 6)^2 + 1$



General Rules:

$y = (x + h)^2$ shifts _____

$y = (x - h)^2$ shifts _____

$y = x^2 + k$ shifts _____

$y = x^2 - k$ shifts _____

Practice:

Describe the transformations that turn $f(x) = x^2$ into the new function $g(x)$:

1.	2.	3.
4.	5.	6.

7. If the original function $f(x) = 2x^2 - 1$ is shifted to the left 3 units to make the function $g(x)$, write an equation to represent $g(x)$.

8. If $f(x) = (x - 4)^2 + 2$ is shifted down five units to make the function $g(x)$, what would the equation be for $g(x)$?

9. The graph of $y = (x + 3)^2$ is shifted right 4 units and up 2 units. What is the axis of symmetry of the transformed graph?

10. The vertex of the parabola represented by $f(x) = x^2 - 4x + 3$ has coordinates $(2, -1)$. Find the coordinates of the vertex of the parabola defined by $g(x) = f(x - 2)$.