

LESSON
6-2

Transforming Quadratic Functions

Reteach

A parabola has the equation $f(x) = a(x - h)^2 + k$. Identify:

- a. a , a stretch if $a > 1$ or compression if $0 < a < 1$
- b. h , the horizontal translation
- c. k , the vertical translation

The vertex is (h, k) and the parabola opens up if $a > 0$ and opens down if $a < 0$.

In parabola $f(x) = 4(x - 3)^2 + 5$, the stretch is 4, the horizontal translation is 3 to the right, and the vertical translation is up 5. The vertex is $(3, 5)$, and the parabola opens up.

Complete 1–4 for parabola $f(x) = 2(x + 7)^2 + 9$.

- 1. Stretch or shrink? _____
- 2. Open up or down? _____
- 3. Horizontal translation? _____
- 4. Vertical translation? _____

Complete 5–8 for parabola $f(x) = \frac{1}{2}(x - 4)^2 - 8$.

- 5. Stretch or shrink? _____
- 6. Open up or down? _____
- 7. Horizontal translation? _____
- 8. Vertical translation? _____

For a parabola that opens up, the vertex represents the minimum point. For a parabola that opens down, the vertex represents the maximum point.

The following graph is a translation of $y = x^2$.

- 9. The vertex is (_____, _____).
- 10. Is the vertex a maximum or a minimum?

- 11. The quadratic equation for the graph is
_____.

