

## Now

In Chapter 10, you will apply the big ideas listed below and reviewed in the Chapter Summary on page 695. You will also use the key vocabulary listed below.

## Big Ideas

- 1 Graphing quadratic functions
- 2 Solving quadratic equations
- 3 Comparing linear, exponential, and quadratic models

### KEY VOCABULARY

- quadratic function, p. 628
- parabola, p. 628
- parent quadratic function, p. 628
- vertex, p. 628
- axis of symmetry, p. 628
- minimum value, p. 636
- maximum value, p. 636
- quadratic equation, p. 643
- completing the square, p. 663
- quadratic formula, p. 671
- discriminant, p. 678

## Why?

You can use a quadratic model for real-world situations involving vertical motion. For example, you can write and solve a quadratic equation to find the time a snowboarder is in the air during a jump.

## Animated Algebra

The animation illustrated below for Exercise 50 on page 668 helps you answer this question: How many seconds is the snowboarder in the air during a jump?

The screenshot shows an interactive algebra interface. On the left, a video player shows a snowboarder in mid-air. Below the video, text reads: "You need to find the time that the snowboarder is in the air." A "Start" button is visible. On the right, a text box contains the instruction: "Now solve for  $t$  by completing the square. Use the buttons below to perform operations on both sides of the equation." Below this, it says "First, simplify all of the terms." and shows the equation  $13.2 = -16t^2 + 24t + 16.4$ . A list of operation buttons (Add, Subtract, Multiply, Divide, Sqrt) is provided. A "Check Answer" button is at the bottom right.

**Animated Algebra** at [classzone.com](http://classzone.com)

**Other animations for Chapter 10:** pages 634, 636, 642, 662, 668, 672, 684, and 695