

## Now

In Chapter 14, you will apply the big ideas listed below and reviewed in the Chapter Summary on page 964. You will also use the key vocabulary listed below.

## Big Ideas

- 1 Graphing trigonometric functions
- 2 Solving trigonometric equations
- 3 Applying trigonometric formulas

### KEY VOCABULARY

- amplitude, p. 908
- period, p. 908
- trigonometric identity, p. 924
- periodic function, p. 908
- frequency, p. 910
- sinusoid, p. 941
- cycle, p. 908

## Why?

You can use trigonometric functions to model characteristics of a projectile's path. For example, you can find the horizontal distance traveled by a soccer ball using trigonometric functions.

## Animated Algebra

The animation illustrated below for Exercise 51 on page 961 helps you answer this question: How does changing the initial speed and angle of a soccer ball kicked from ground level affect the horizontal distance the ball travels?

The screenshot shows an interactive learning environment. On the left, a video player shows a soccer player kicking a ball. Below the video is the text: "The angle and speed at which a ball is kicked influence the distance it travels." On the right, a problem-solving interface contains the following text: "Use the equation below to determine the maximum angle at which the ball can be kicked at an initial velocity of 50 ft/sec and still travel 150 ft." Below this is the equation  $x = \frac{1}{32} v^2 \sin 2\theta$  with a "Start" button. A "Check Answer" button is also present. The interface includes a diagram of a soccer field with a 150 ft horizontal distance and a 70° kick angle. To the right of the diagram, the known values are listed:  $x = 150$  ft,  $v = 50$  ft/sec, and  $\theta = ?^\circ$ . Below the diagram is the text: "Given a speed and distance, use the motion equation to solve for the kick angle."

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

Other animations for Chapter 14: pages 912, 917, and 964