

## Now

In Chapter 4, you will apply the big ideas listed below and reviewed in the Chapter Summary on page 270. You will also use the key vocabulary listed below.

### Big Ideas

- 1 Graphing linear equations and functions using a variety of methods
- 2 Recognizing how changes in linear equations and functions affect their graphs
- 3 Using graphs of linear equations and functions to solve real-world problems

#### KEY VOCABULARY

- quadrant, p. 206
- standard form of a linear equation, p. 216
- linear function, p. 217
- $x$ -intercept, p. 225
- $y$ -intercept, p. 225
- slope, p. 235
- rate of change, p. 237
- slope-intercept form, p. 244
- parallel, p. 246
- direct variation, p. 253
- constant of variation, p. 253
- function notation, p. 262
- family of functions, p. 263
- parent linear function, p. 263

## Why?

You can graph linear functions to solve problems involving distance. For example, you can graph a linear function to find the time it takes and in-line skater to travel a particular distance at a particular speed.

### Animated Algebra

The animation illustrated below for Exercise 41 on page 267 helps you answer this question: How can you graph a function that models the distance an in-line skater travels over time?

The screenshot shows an interactive learning environment. On the left, a 3D-rendered in-line skater in a yellow shirt and black shorts is shown in a starting crouch on a paved path. A 'Start' button is visible at the bottom right of the skater's image. On the right, a graphing interface is displayed. It features a coordinate plane with a grid. The vertical axis is labeled  $d(x)$  and the horizontal axis is labeled  $x$ . A red line is graphed, starting from the origin and extending upwards and to the right. To the right of the graph is a table with two rows: 'x' and 'd(x)'. The 'x' row has columns for values 1 through 6, and a 'Domain' column. The 'd(x)' row has a value of 10 under 'x=1' and 20 under 'x=2', with empty cells for 'x=3', 'x=4', 'x=5', and 'x=6', and a 'Range' column. Below the table, there are two input fields: 'Line 1' (containing the equation  $d(x) = 10x$  for  $0 < x < 7$ ) and 'Line 2' (which is empty). A 'Check Answer' button is located at the bottom right of the graphing area. Below the graphing area, there is a text prompt: 'Click on the table to enter an appropriate value of  $d(x)$ .'

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

Other animations for Chapter 4: pages 207, 216, 226, 238, 245, and 254