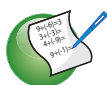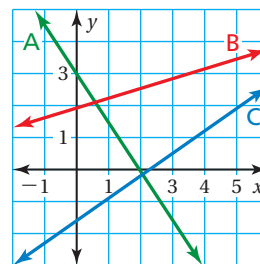## Vocabulary and Concept Check

1. **CRITICAL THINKING** Refer to the graph.

   a. Which lines have positive slopes?

   b. Which line has the steepest slope?

   c. Do any lines have an undefined slope? Explain.

2. **OPEN-ENDED** Describe a real-life situation in which you need to know the slope.

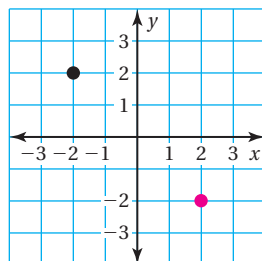3. **REASONING** The slope of a line is 0. What do you know about the line?

Practice and Problem Solving

Draw a line through each point using the given slope. What do you notice about the two lines?
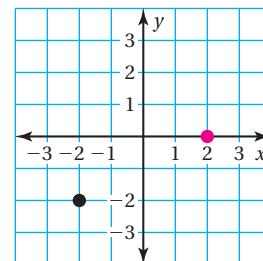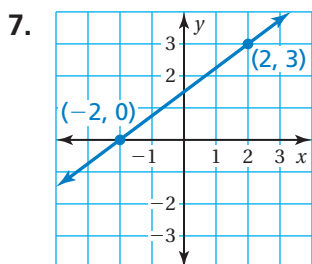
4. slope $= 1$
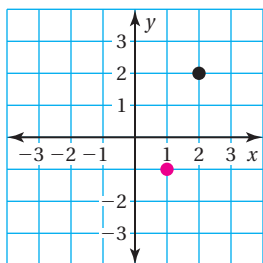
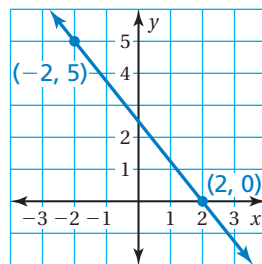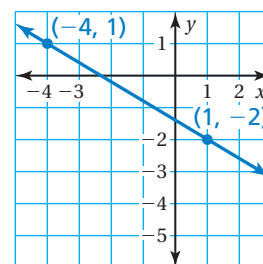5. slope $= -3$
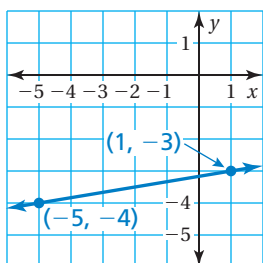
6. slope $= \dfrac{1}{4}$

Find the slope of the line.

7.

8.

9.

10.

11.
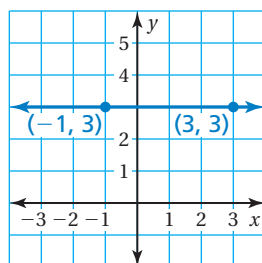
12.
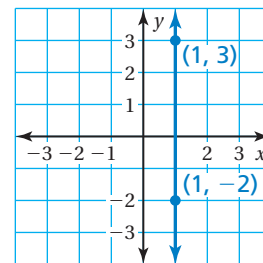
Find the slope of the line through the given points.

2 **3** **13.** $(4, -1), (-2, -1)$ **14.** $(5, -3), (5, 8)$ **15.** $(-7, 0), (-7, -6)$

16. $(-3, 1), (-1, 5)$ **17.** $(10, 4), (4, 15)$ **18.** $(-3, 6), (2, 6)$

19. ERROR ANALYSIS Describe and correct the error in finding the slope of the line.

20. CRITICAL THINKING Is it more difficult to walk up the ramp or the hill? Explain.

$$m = \frac{3-1}{4-2}$$
$$= \frac{2}{2}$$
$$= 1$$
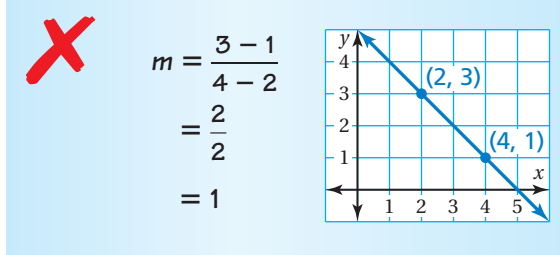
The points in the table lie on a line. Find the slope of the line.

4 **21.**

x	1	3	5	7
y	2	10	18	26

22.

x	−3	2	7	12
y	0	2	4	6

23.

x	−6	−2	2	6
y	8	5	2	−1

24.

x	−8	−2	4	10
y	8	1	−6	−13
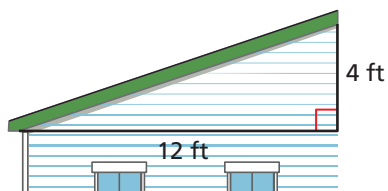
25. PITCH Carpenters refer to the slope of a roof as the *pitch* of the roof. Find the pitch of the roof.

26. PROJECT The guidelines for a wheelchair ramp suggest that the ratio of the rise to the run be no greater than $1 : 12$.

    a. CHOOSE TOOLS Find a wheelchair ramp in your school or neighborhood. Measure its slope. Does the ramp follow the guidelines?

    b. Design a wheelchair ramp that provides access to a building with a front door that is 2.5 feet above the sidewalk. Illustrate your design.
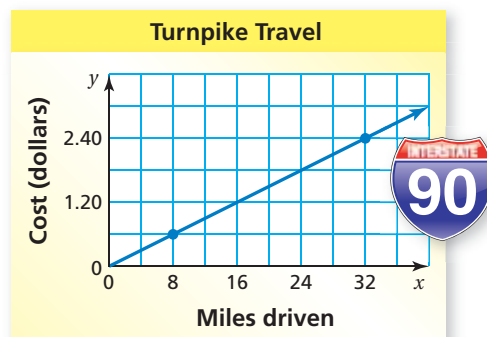
Use an equation to find the value of k so that the line that passes through the given points has the given slope.

27. $(1, 3), (5, k); m = 2$ **28.** $(-2, k), (2, 0); m = -1$
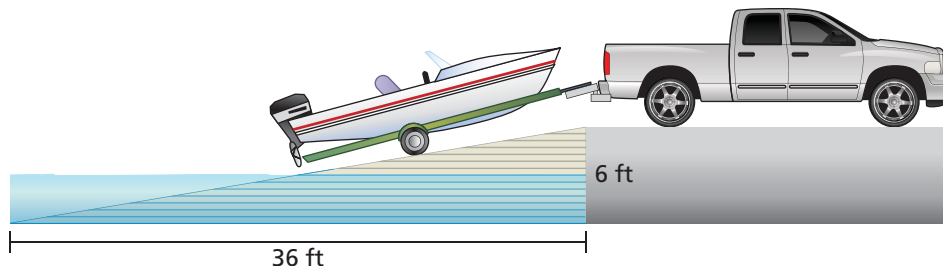
29. $(-4, k), (6, -7); m = -\dfrac{1}{5}$ **30.** $(4, -4), (k, -1); m = \dfrac{3}{4}$

31. TURNPIKE TRAVEL The graph shows the cost of traveling by car on a turnpike.

   a. Find the slope of the line.

   **b.** Explain the meaning of the slope as a rate of change.

Turnpike Travel

32. BOAT RAMP Which is steeper: the boat ramp or a road with a 12% grade? Explain. (*Note:* Road grade is the vertical increase divided by the horizontal distance.)

6 ft
36 ft

33. REASONING Do the points $A(-2, -1)$, $B(1, 5)$, and $C(4, 11)$ lie on the same line? Without using a graph, how do you know?

34. BUSINESS A small business earns a profit of $6500 in January and $17,500 in May. What is the rate of change in profit for this time period?

35. STRUCTURE Choose two points in the coordinate plane. Use the slope formula to find the slope of the line that passes through the two points. Then find the slope using the formula $\dfrac{y_1 - y_2}{x_1 - x_2}$. Explain why your results are the same.

36. **Critical Thinking** The top and the bottom of the slide are level with the ground, which has a slope of 0.

   a. What is the slope of the main portion of the slide?

   b. How does the slope change when the bottom of the slide is only 12 inches above the ground? Is the slide steeper? Explain.

1 ft
8 ft
1 ft
18 in.
12 ft
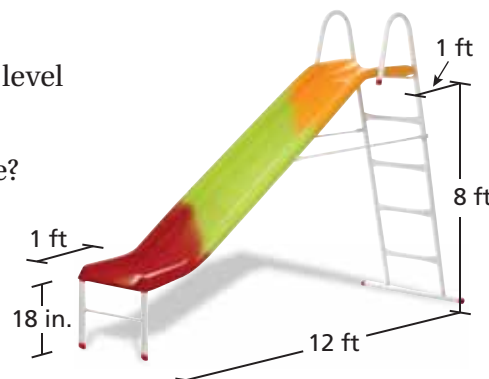
Fair Game Review *What you learned in previous grades & lessons*

Solve the proportion. *(Skills Review Handbook)*

37. $\dfrac{b}{30} = \dfrac{5}{6}$

38. $\dfrac{7}{4} = \dfrac{n}{32}$

39. $\dfrac{3}{8} = \dfrac{x}{20}$

40. MULTIPLE CHOICE What is the prime factorization of 84? *(Skills Review Handbook)*

   (A) $2 \times 3 \times 7$ (B) $2^2 \times 3 \times 7$ (C) $2 \times 3^2 \times 7$ (D) $2^2 \times 21$