In Exercises 1–4, describe the slope of the line. Then find the slope. ▶ *Example 1*

1.

2.

3.

4.
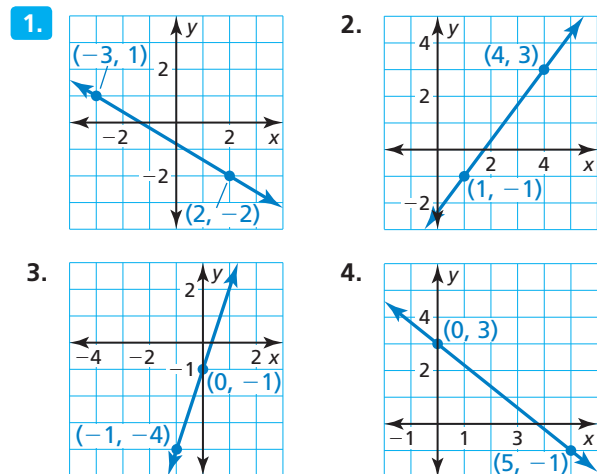
In Exercises 5 and 6, find the slope of the line that passes through the given points.

5. $(1, 4), (3, -6)$

6. $(2, -2), (-7, -5)$

In Exercises 7–10, the points represented by the table lie on a line. Find the slope of the line. ▶ *Example 2*

7.

x	-9	-5	-1	3
y	-2	0	2	4

8.

x	-1	2	5	8
y	-6	-6	-6	-6

9.

x	0	0	0	0
y	-4	0	4	8

10.

x	-4	-3	-2	-1
y	2	-5	-12	-19

11. ANALYZING A GRAPH
The graph shows the distance y (in miles) that a bus travels in x hours. Find and interpret the slope of the line.

Bus Trip
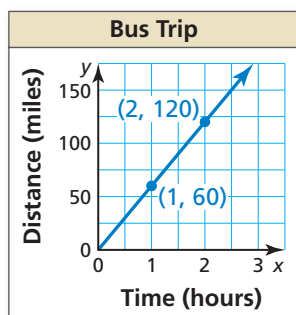
12. ANALYZING A TABLE The table shows the amount x (in hours) of time you spend at a theme park and the admission fee y (in dollars) to the park. The points represented by the table lie on a line. Find and interpret the slope of the line.

Time (hours), x	Admission (dollars), y
6	54.99
7	54.99
8	54.99

In Exercises 13–20, find the slope and the y-intercept of the graph of the linear equation. ▶ *Example 3*

13. $y = -3x + 2$

14. $y = 4x - 7$

15. $y = 6x$

16. $y = -1$

17. $-0.75x + y = 4$

18. $x + y = -6\frac{1}{2}$

19. $\frac{1}{6}x = \frac{1}{3} - y$

20. $0 = 4.5 - 2y + 4.8x$

ERROR ANALYSIS In Exercises 21 and 22, describe and correct the error in finding the slope and the y-intercept of the graph of the equation.

21.

✗ $x = -4y$
The slope is -4, and the y-intercept is 0.

22.

✗ $y = 3x - 6$
The slope is 3, and the y-intercept is 6.

In Exercises 23–30, graph the linear equation. Identify the x-intercept. ▶ *Example 4*

23. $y = -x + 7$

24. $y = \frac{1}{2}x + 3$

25. $y = 2x$

26. $y = -x$

27. $3x + y = -1$

28. $x + 4y = 8$

29. $-y + \frac{3}{5}x = 0$

**30.** $2.5x - y - 7.5 = 0$

In Exercises 31 and 32, graph the function with the given description. Identify the slope and the intercepts of the graph. ▶ *Example 5*

31. A linear function f models a relationship in which the dependent variable decreases 4 units for every 2 units the independent variable increases, and $f(0) = -2$.

32. A linear function h models a relationship in which the dependent variable increases 1 unit for every 5 units the independent variable decreases, and $h(0) = 3$.

33. MODELING REAL LIFE A linear function r models the growth of your right index fingernail. The length of the fingernail increases 0.7 millimeter every week. Graph r when $r(0) = 12$. Identify the slope and interpret the y-intercept of the graph.

34. MODELING REAL LIFE A linear function m models the amount of milk sold by a farm per month. The amount decreases 500 gallons for every \$1 increase in price. Graph m when $m(0) = 3000$. Identify the slope and interpret the intercepts of the graph.

ERROR ANALYSIS In Exercises 35 and 36, describe and correct the error in graphing the function.

35.

$y + 1 = 3x$

36.

$-4x + y = -2$
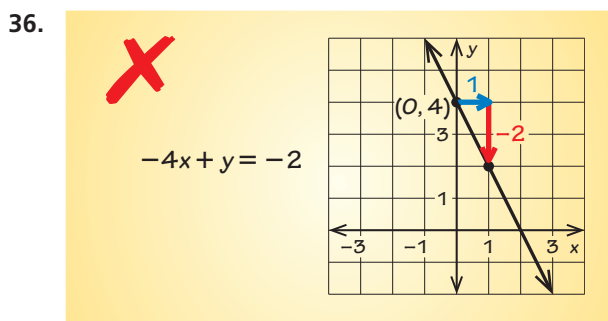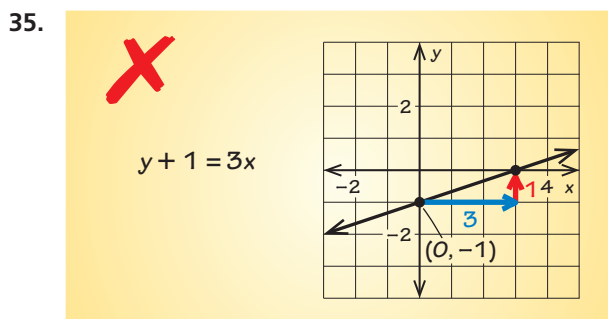
37. MODELING REAL LIFE The function $d(t) = \frac{1}{2}t + 6$ represents the depth (in inches) of snow on the ground during a 9-hour snowfall, where t is the time (in hours) after the snowfall begins. ▶ *Example 6*

   a. Graph the function and find its domain and range.

   b. Interpret the terms and coefficient in the equation.
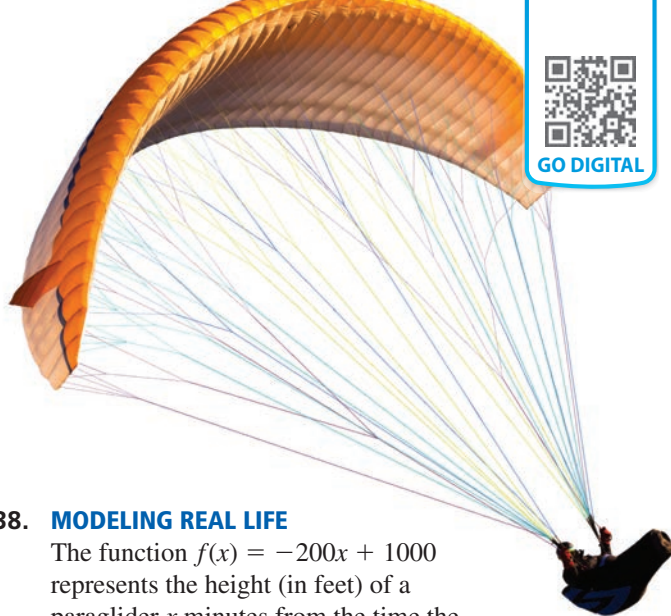
38. MODELING REAL LIFE The function $f(x) = -200x + 1000$ represents the height (in feet) of a paraglider x minutes from the time the paraglider begins to descend.

   a. Graph the function and find its domain and range.

   b. Interpret the terms and coefficient in the equation, and the x-intercept of the graph.

39. COMPARING METHODS Describe two ways to graph the equation $4x - 6y = 18$. Which method do you prefer? Explain.

40. COMPARING FUNCTIONS A linear function models the cost of renting a truck from Moving Company A. The table shows the cost y (in dollars) when you drive the truck x miles. The function $c(x) = 0.5x + 70$ represents the cost (in dollars) of renting a truck from Moving Company B, where x is the number of miles you drive the truck. Graph each function. Which company charges a greater initial fee? Which company charges more per mile?

Miles, x	Cost (dollars), y
0	40
50	80
100	120

41. COLLEGE PREP Which of the following linear functions has a slope of $-\frac{2}{3}$ and a y-intercept of 2? Select all that apply.

Ⓐ

Ⓑ

x	y
-2	6
0	3
2	0
4	-3
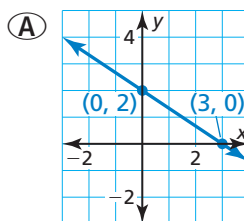
Ⓒ $f(x)$ decreases by 3 units for every 2 units x increases, and $f(0) = 2$.

Ⓓ $-y + 2 = \frac{2}{3}x$

42. WRITING Describe the end behavior of the function $y = mx + b$ when (a) $m > 0$ and (b) $m < 0$.

43. CONNECTING CONCEPTS The graph shows the relationship between the width y (in inches) and the length x (in inches) of a rectangle. The perimeter of a second rectangle is 10 inches less than the perimeter of the first rectangle.

$y = 20 - x$
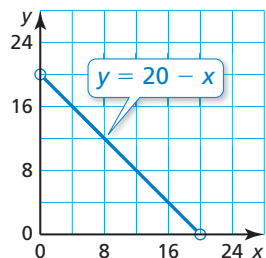
a. Graph the relationship between the width and length of the second rectangle.

b. How does your graph in part (a) compare to the graph shown?

44. CONNECTING CONCEPTS The graph shows the relationship between the base length x (in meters) and the lengths y (in meters) of the two equal sides of an isosceles triangle. The perimeter of a second isosceles triangle is 8 meters more than the perimeter of the first triangle.

$y = 6 - \frac{1}{2}x$
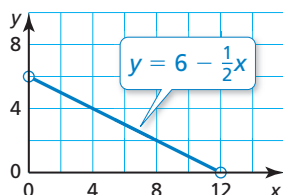
a. Graph the relationship between the base length and the side lengths of the second triangle.

b. How does your graph in part (a) compare to the graph shown?

45. CONNECTING CONCEPTS Graph the equations in the same coordinate plane. What is the area of the enclosed figure?
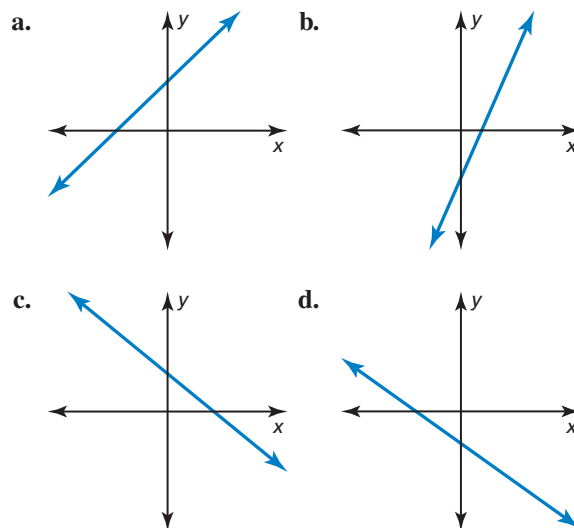
$$3y = -9$$
$$2y - 14 = 4x$$
$$-4x + 5 - y = 0$$
$$y - 1 = 0$$

46. MAKING AN ARGUMENT Your friend says that you can write the equation of any line in slope-intercept form. Is your friend correct? Explain your reasoning.
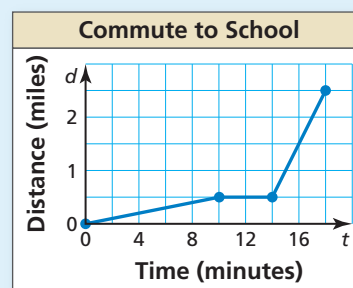
47. ANALYZING EQUATIONS Which equations could be represented by each graph? (The graphs are not drawn to scale.)

$$y = -3x + 8 \qquad y = -x - \frac{4}{3}$$
$$y = -7x \qquad y = 2x - 4$$
$$y = \frac{7}{4}x - \frac{1}{4} \qquad y = \frac{1}{3}x + 5$$
$$y = -4x - 9 \qquad y = 6$$

a.

b.

c.

d.

48. HOW DO YOU SEE IT?
You commute to school by walking and by riding a bus. The graph represents your commute.

Commute to School

a. Describe your commute in words.

b. Calculate and interpret the slopes of the different parts of the graph.

MP PROBLEM SOLVING In Exercises 49 and 50, find the value of k so that the graph of the equation has the given slope or y-intercept.

49. $16kx - 4y = 20$; $m = \frac{1}{2}$

50. $\frac{2}{3}x + 2y - \frac{5}{3}k = 0$; $b = -10$