EXERCISES

For more practice, see Extra Practi

Practice and Problem Solving

A Practice by Example

Example 1 (page 292)

Find the slope and *y*-intercept of each equation.

1. $y = -2x + 1$
2. $y = -\frac{1}{2}x + 2$
3. $y = x - \frac{5}{4}$
4. $y = 5x + 8$
5. $y = \frac{2}{3}x + 1$
6. $y = -4x$
7. $y = -x - 7$
8. $y = -0.7x - 9$
9. $y = -\frac{3}{4}x - 5$

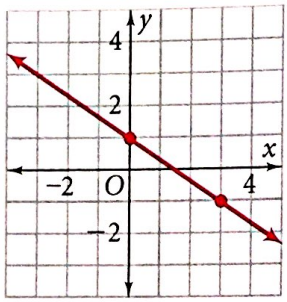
Example 2 (page 292)

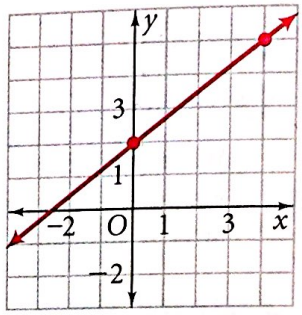
Write an equation of a line with the given slope and *y*-intercept.

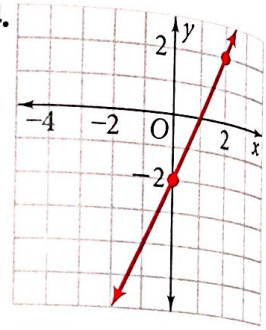
10. $m = \frac{2}{9}, b = 3$
11. $m = 3, b = \frac{2}{9}$
12. $m = \frac{9}{2}, b = 3$
13. $m = 0, b = 1$
14. $m = -1, b = -6$
15. $m = -\frac{2}{3}, b = 5$
16. $m = 0.3, b = 4$
17. $m = 0.4, b = 0.6$
18. $m = -7, b = \frac{1}{3}$
19. $m = -\frac{1}{5}, b = -\frac{2}{5}$
20. $m = -\frac{1}{4}, b = \frac{5}{4}$
21. $m = \frac{8}{3}, b = \frac{2}{3}$

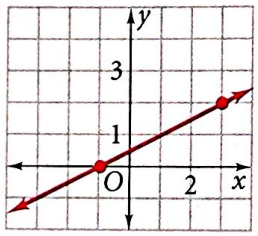
Example 3 (page 292)

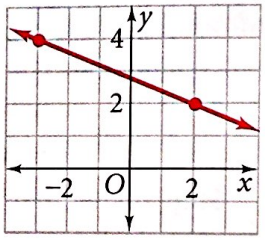
Write the slope-intercept form of the equation for each line.

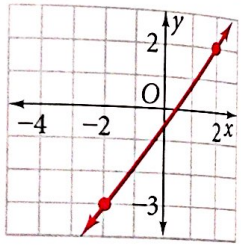
22. 

23. 

24. 

25. 

26. 

27. 

Example 4 (page 293)

Use the slope and *y*-intercept to graph each equation.

28. $y = \frac{1}{2}x + 4$
29. $y = \frac{2}{3}x - 1$
30. $y = -5x + 2$
31. $y = 2x + 5$
32. $y = x + 4$
33. $y = -x + 2$
34. $y = 4x - 3$
35. $y = -\frac{3}{2}x$
36. $y = \frac{2}{5}x - 3$
37. $y = -\frac{2}{3}x + 2$
38. $y = -\frac{4}{5}x + 4$
39. $y = -0.5x + 2$

Example 5 (page 293)

40. **Retail Sales** A music store is offering a coupon promotion on its CDs. The regular price for CDs is \$14. With the coupon, customers are given \$4 off the total purchase. The equation $t = 14c - 4$, where c is the number of CDs and t is the total cost of the purchase, models this situation.
a. Graph the equation.
b. Find the total cost for a sale of 6 CDs.

B Apply Your Skills

Find the slope and *y*-intercept of each equation.

41. $y - 2 = -3x$
42. $y + \frac{1}{2}x = 0$
43. $y - 9x = \frac{1}{2}$
44. $y = 3x - 9$
45. $2y - 6 = 3x$
46. $-2y = 6(5 - 3x)$
47. $y - d = cx$
48. $y = (2 - a)x + a$
49. $2y + 4n = -6x$

Use the slope and y-intercept to graph each equation.

50. $y = 7 - 3x$

51. $2y + 4x = 0$

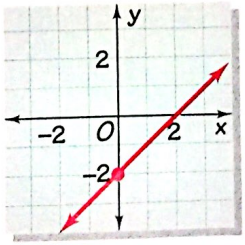
52. $3y + 6 = -2x$

53. $y + 2 = 5x - 4$

54. $4x + 3y = 2x - 1$

55. $-2(3x - 4) + y = 0$

56. Error Analysis Fred drew the graph at the right for the equation $y = -2x + 1$. What error did he make?



57. a. A candle begins burning at time $t = 0$. Its original height is 12 in. After 30 min the height of the candle is 8 in. Draw a graph showing the change in the height of the candle.

b. Write an equation that relates the height of a candle to the time it has been burning.

c. How many minutes after the candle is lit will it burn out?

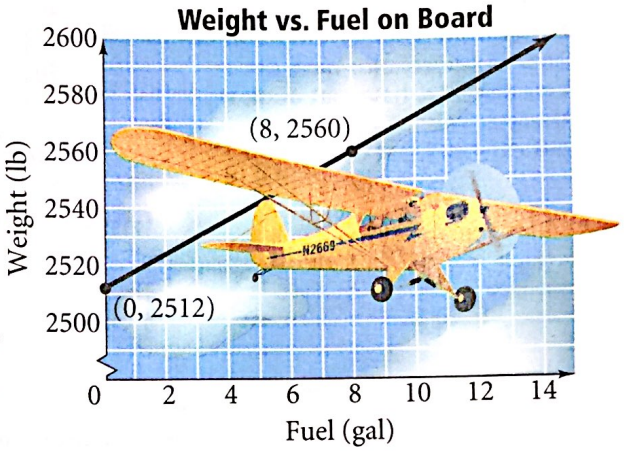
Real-World Connection

Careers Airport ground crews direct airplanes to and from their gates.

58. Airplane Fuel The graph shows the relationship between the number of gallons of fuel in the tank of an airplane and the weight of the airplane. The equation $y = 6x + 2512$, where x is the number of gallons of fuel and y is the weight of the airplane, models this situation.

a. What does the slope represent?

b. Use the equation to predict the weight of the plane when the tank contains 25 gallons of fuel.



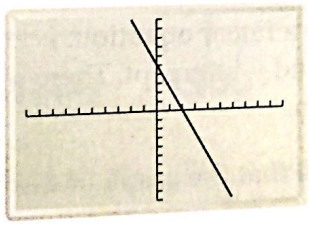
Is the ordered pair on the graph of the given equation?

59. $(-3, 4); y = -2x + 1$ **60.** $(-6, 5); y = -\frac{1}{2}x + 2$ **61.** $(0, -1); y = x - \frac{5}{4}$

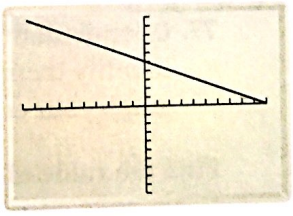
Match the equation with its graph. Each mark on the scale indicates one unit.

62. $y = x + 5$ **63.** $y = -\frac{5}{2}x + 5$ **64.** $y = -\frac{1}{2}x + 5$

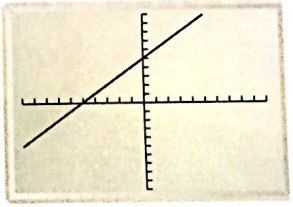
I.



II.



III.



65. a. Math in the Media Write an equation relating the data in the cartoon.

b. How many dog years are 12 human years?

Real-World Connection

In the United States, although 35% of households have pet cats and 37% have pet dogs, there are about 25% more pet cats than pet dogs.

66. Pet Care When the Bryants leave town for a vacation, they put their dog Tyc in a kennel. The kennel charges \$15 for a first-day flea bath and \$5 per day. Th equation $t = 15 + 5d$ relates the total charge t to the number of days d.

a. Rewrite the equation in slope-intercept form.

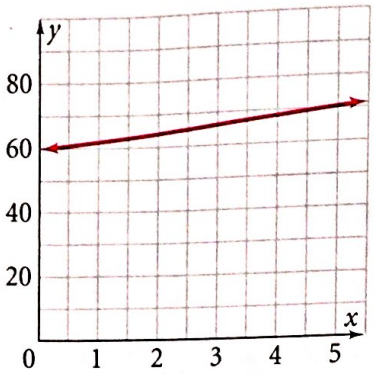
b. Graph the equation.

c. Explain why the line you graph should lie only in Quadrant I.

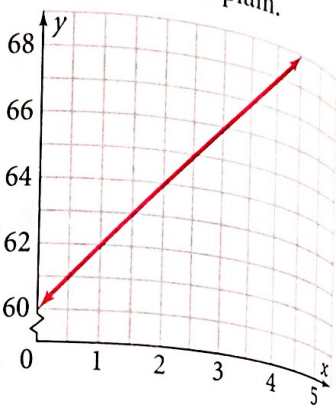
67. Writing Explain the steps you would use to graph $y = \frac{3}{4}x + 5$.

68. Critical Thinking Which graphed line has the greater slope? Explain.

A.



B.



Given two points on a line, write the equation of the line in slope-intercept form.

69. (3, 5), (5, 9)

70. (5, –13), (2, –1)

71. (–4, 10), (6, 5)

72. (8, 7), (–12, 2)

73. (–7, 4), (11, –14)

74. (–1, –9), (2, 0)

75. Graphing Calculator Suppose you want to graph the equation $y = \frac{5}{4}x - 3$. Enter each key sequence and display the graph.

a. Y= 5 ÷ 4 X,T,θ,n − 3

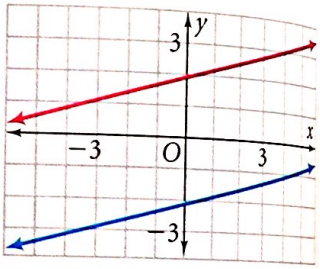
b. Y= 5 ÷ 4) X,T,θ,n − 3

c. Which equation gives you the graph of $y = \frac{5}{4}x - 3$? Explain.

76. a. What is the slope of each line?

b. What is the y-intercept of each line?

c. Geometry The lines in the graph are parallel. What appears to be true about the slopes of parallel lines?



77. Open-Ended Write a linear equation. Identify the slope and y-intercept. Then graph your equation.

Challenge

Find the value of a such that the graph of the equation has the given slope.

78. $y = 2ax + 4; m = -1$ **79.** $y = -\frac{1}{2}ax - 5; m = \frac{5}{2}$ **80.** $y = \frac{3}{4}ax + 3; m = \frac{9}{16}$

81. a. Geometry Graph these equations on the same grid.

$y = 3$ $y = -3$ $x = 2$ $x = -2$

b. Which geometric figure did you draw? Justify your answer.

c. Draw a diagonal of the figure. What is the equation of this line? Explain.

82. Recreation A group of mountain climbers begin an expedition with 265 lb of food. They plan to eat a total of 15 lb of food per day.

a. Write an equation in slope-intercept form relating the remaining food supply r to the number of days d.

b. Graph your equation.

c. The group plans to eat the last of their food the day their expedition ends. Use your graph to find how many days they expect the expedition to last.