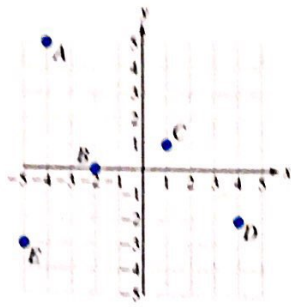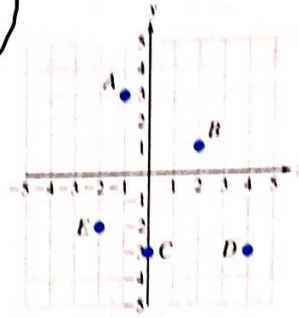For Exercises 9–10, give the coordinates of the labeled points, and state the quadrant or axis where the point is located.

9.

10.

Concept 2: Linear Equations in Two Variables

For Exercises 11–14, determine if the ordered pair is a solution to the linear equation. **(See Example 2.)**

11. $2x - 3y = 9$

    a. $(0, -3)$

    b. $(-6, 1)$

    c. $\left(1, -\dfrac{7}{3}\right)$

12. $-5x - 2y = 6$

    a. $(0, 3)$

    b. $\left(-\dfrac{6}{5}, 0\right)$

    c. $(-2, 2)$

13. $x = \dfrac{1}{3}y + 1$

    a. $(-1, 0)$

    b. $(2, 3)$

    c. $(-6, 1)$

14. $y = -\dfrac{3}{2}x - 4$

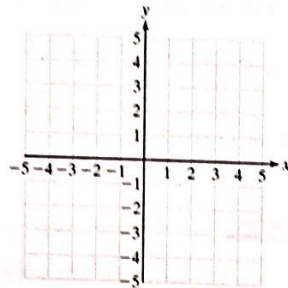   a. $(0, -4)$

    b. $(2, -7)$

    c. $(-4, -2)$

Concept 3: Graphing Linear Equations in Two Variables

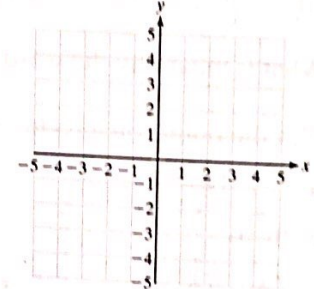For Exercises 15–18, complete the table. Then graph the line defined by the points. **(See Examples 3–4.)**
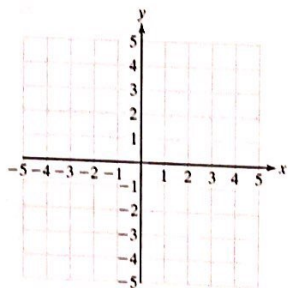
15. $3x - 2y = 4$

x	y
0	
	4
-1	

16. $4x + 3y = 6$

x	y
	2
3	
	-1

17. $y = -\dfrac{1}{5}x$

x	y
0	
5	
-5	

18. $y = \dfrac{1}{3}x$

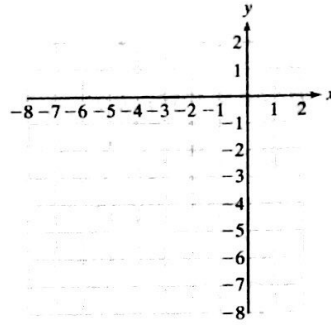| x	y
0	
3	
6	

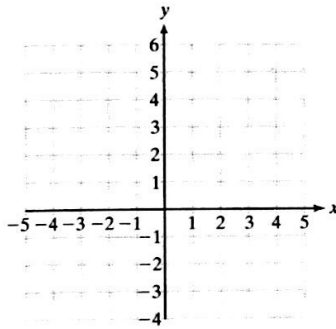In Exercises 19–30, graph the linear equation. (See Examples 3–4.)
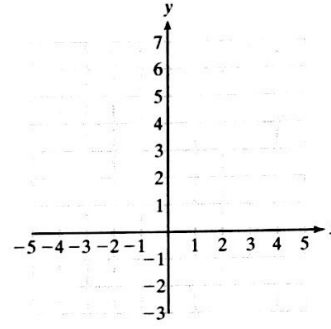
19. $x + y = 5$
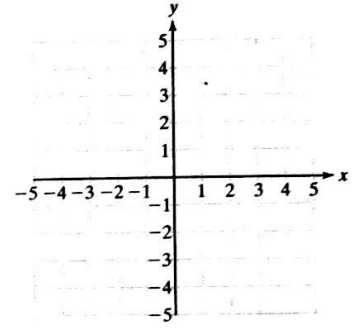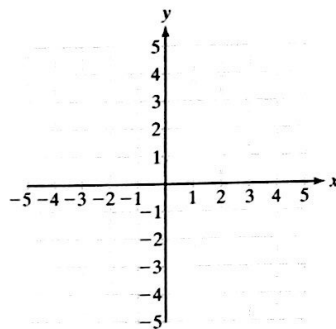
20. $x + y = -8$

21. $3x - 4y = 12$

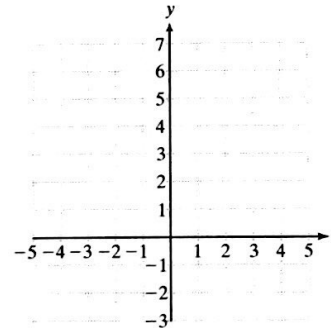**22.** $5x + 3y = 15$

23. $y = -3x + 5$
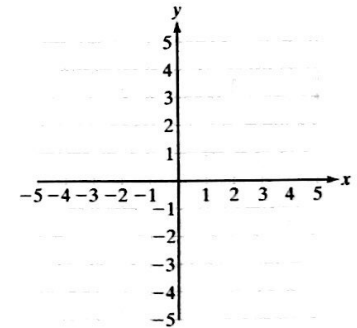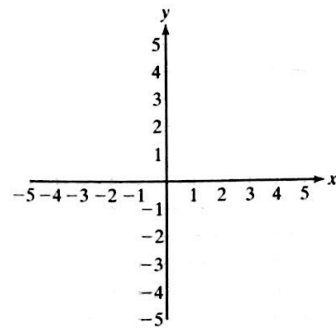
24. $y = -2x + 2$

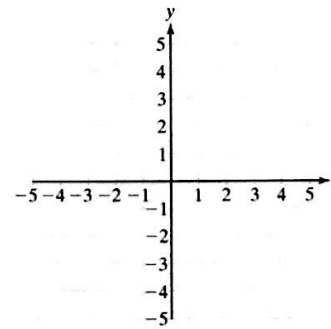**25.** $y = \dfrac{2}{5}x - 1$
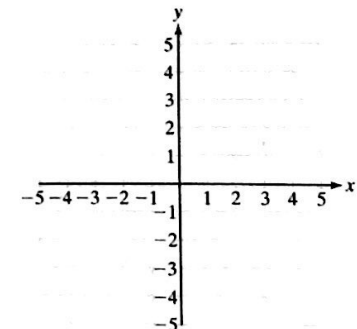
26. $y = \dfrac{5}{3}x + 1$

27. $x = -5y - 5$

28. $x = 4y + 2$

29. $x = 2y$

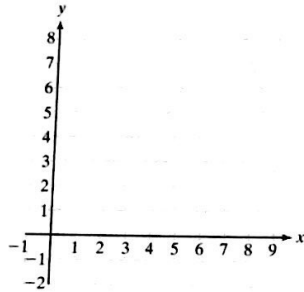**30.** $x = -3y$

Scanned with CamScanner
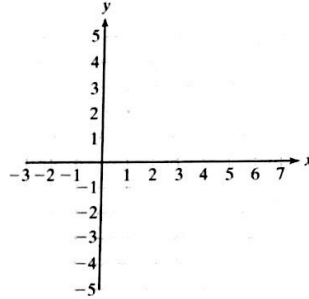
Concept 4: *x*- and *y*-Intercepts

31. Given a linear equation, how do you find an *x*-intercept? How do you find a *y*-intercept?

32. Can the point $(4, -1)$ be an *x*- or *y*-intercept? Why or why not?

For Exercises 33–44, **a.** find the *x*-intercept, **b.** find the *y*-intercept, and **c.** graph the equation. (See Examples 5–6.)
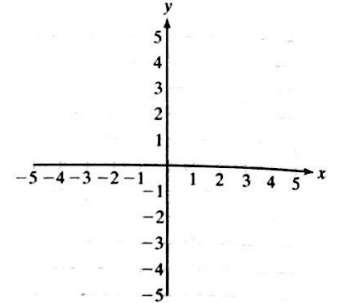
33. $2x + 3y = 18$

34. $2x - 5y = 10$

35. $x - 2y = 4$

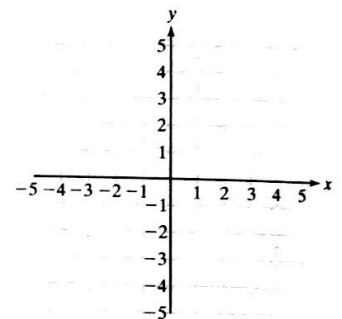

36. $x + y = 8$

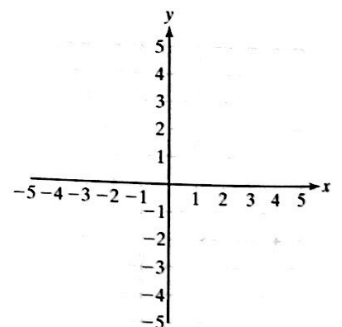**37.** $5x = 3y$

38. $3y = -5x$

39. $y = 2x + 4$

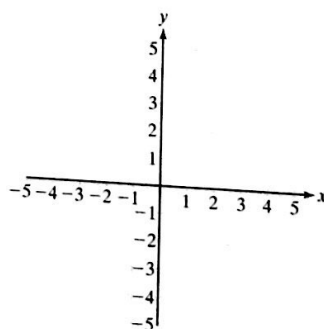

40. $y = -3x - 1$

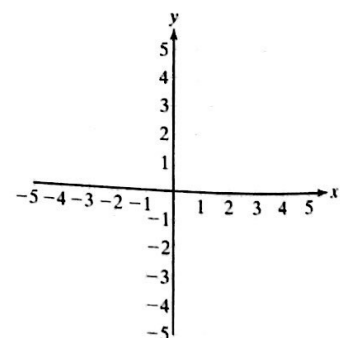**41.** $y = -\dfrac{4}{3}x + 2$

42. $y = -\dfrac{2}{5}x - 1$
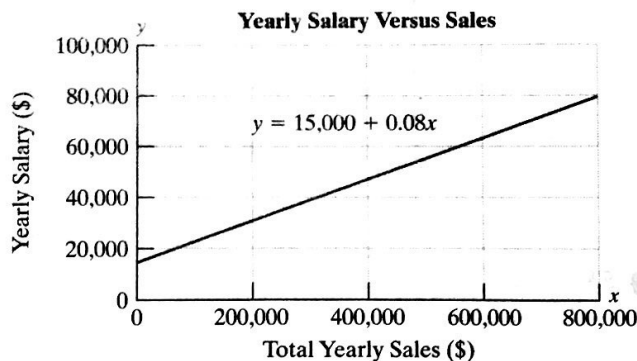

43. $x = \dfrac{1}{4}y$

44. $x = \dfrac{2}{3}y$

45. A salesperson makes a base salary of $15,000 a year plus an 8% commission on total sales for the year. The yearly salary can be expressed as a linear equation. **(See Example 7.)**
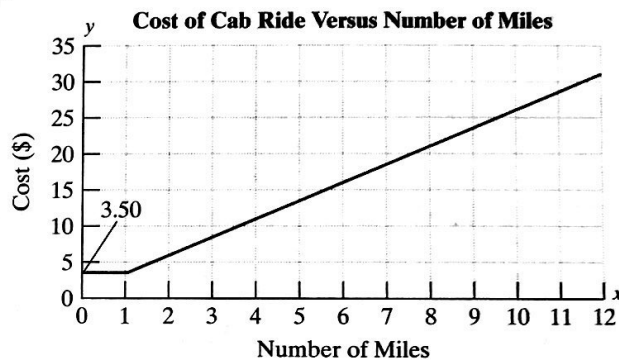
$$y = 15,000 + 0.08x$$

a. What is the salesperson's salary for a year in which his sales total $500,000?

b. What is the salary for a year in which sales total $300,000?

c. What does the y-intercept mean in the context of this problem?

d. Why is it unreasonable to use negative values for x in this equation?

Yearly Salary Versus Sales

46. A taxi company in Portland charges $3.50 for any distance up to the first mile and $2.50 for every mile thereafter. The cost of a cab ride can be modeled graphically.
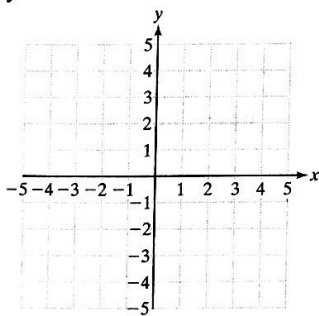
a. Explain why the first part of the model is represented by a horizontal line.

b. What does the y-intercept mean in the context of this problem?

c. Explain why the line representing the cost of traveling more than 1 mi is not horizontal.

d. How much would it cost to take a cab 3.5 mi?

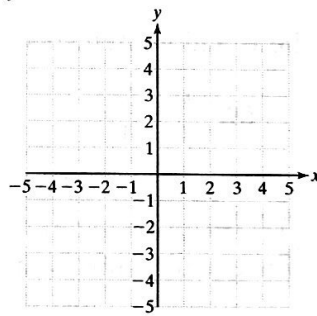**Cost of Cab Ride Versus Number of Miles**

Concept 5: Horizontal and Vertical Lines

For Exercises 47–54, determine if the equation represents a horizontal line or a vertical line. Then graph the line and identify the x- and y-intercepts. **(See Examples 8–9.)**
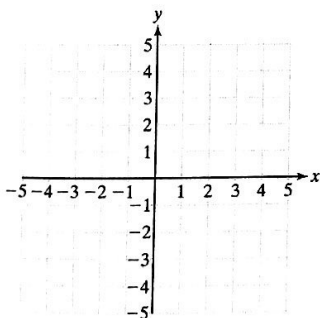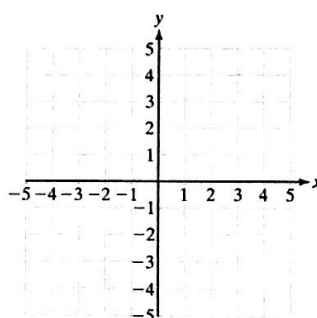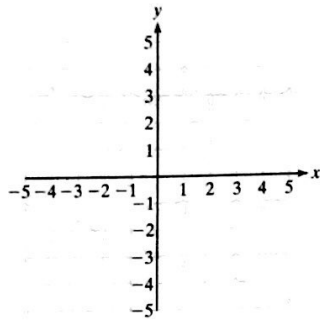
47. $y = -1$

48. $y = 3$

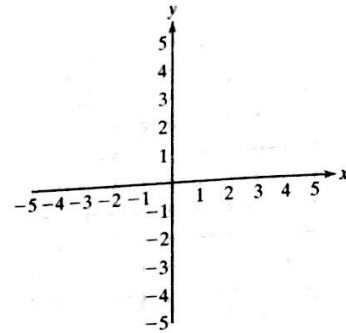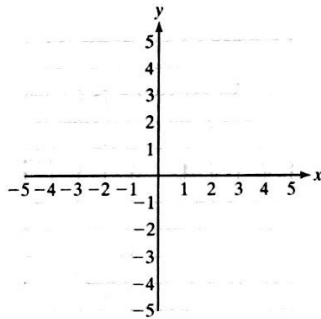

49. $x = 2$

50. $x = -5$

51. $2x + 6 = 5$
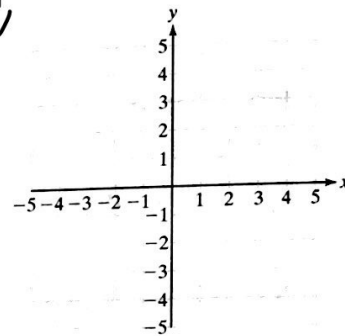

52. $-3x = 12$

53. $-2y + 1 = 9$

54. $-5y = -10$

55. Explain why not every line has both an x-intercept and a y-intercept.

56. Which of the lines defined here has only one unique intercept?

   a. $2x - 3y = 8$ **b.** $x = 7$ **c.** $3y = 9$ **d.** $-x + y = 0$

57. Which of the lines defined here has only one unique intercept?

   a. $y = -5$ **b.** $x + 2y = 0$ **c.** $3x - 4 = 2$ **d.** $x + 3y = 6$

Expanding Your Skills

For Exercises 58–61, find the x- and y-intercepts.

58. $\dfrac{x}{2} + \dfrac{y}{3} = 1$ **59.** $\dfrac{x}{7} + \dfrac{y}{4} = 1$ **60.** $\dfrac{x}{a} + \dfrac{y}{b} = 1$ **61.** $Ax + By = C$

Graphing Calculator Exercises

For Exercises 62–65, solve the equation for y. Use a graphing calculator to graph the equation on the standard viewing window.

62. $2x - 3y = 7$ **63.** $4x + 2y = -2$ **64.** $3y = 9$ **65.** $2y + 10 = 0$