Algebra Graph each line.

1. $y = x + 2$ 2. $y = 3x + 4$ 3. $y = \frac{1}{2}x - 1$ 4. $y = -\frac{5}{3}x + 2$

Algebra Graph each line using intercepts.

5. $2x + 6y = 12$ 6. $3x + y = 15$ 7. $5x - 2y = 20$

8. $6x - y = 3$ 9. $10x + 5y = 40$ 10. $1.2x + 2.4y = 2.4$

Example 3
(page 153)

Algebra Write each equation in slope-intercept form and graph the line.

11. $y = 2x + 1$ 12. $y - 1 = x$ 13. $y + 2x = 4$

14. $8x + 4y = 16$ 15. $2x + 6y = 6$ 16. $\frac{3}{4}x - \frac{1}{2}y = \frac{1}{8}$

Example 4
(page 154)

Algebra Write an equation in point-slope form of the line that contains the given points and has the given slope.

17. $P(2, 3)$, slope 2   18. $X(4, -1)$, slope 3   19. $R(-3, 5)$, slope -1

20. $A(-2, -6)$, slope -4 21. $V(6, 1)$, slope $\frac{1}{2}$ 22. $C(0, 4)$, slope 1

Example 5
(page 154)

Write an equation in point-slope form of the line that contains the given points.

23. $D(0, 5)$, $E(5, 8)$ 24. $F(6, 2)$, $G(2, 4)$ 25. $H(2, 6)$, $K(-1, 3)$

26. $A(-4, 4)$, $B(2, 10)$ 27. $L(-1, 0)$, $M(-3, -1)$ 28. $P(8, 10)$, $Q(-4, 2)$
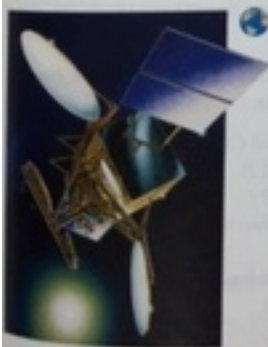
Example 6
(page 154)

Write equations for (a) the horizontal line and (b) the vertical line that contain the given point.

29. $A(4, 7)$ 30. $Y(3, -2)$ 31. $N(0, -1)$ 32. $E(6, 4)$

Graph each line.

33. $x = 3$ 34. $y = -2$ 35. $x = 9$ 36. $y = 4$ 37. $y = 6$

38. **Telephone Rates** The equation $C = \$.05m + \$4.95$ represents the cost (C) of a long distance telephone call of m minutes.
   a. What is the slope of the line?
   b. What does the slope represent in this situation?
   c. What is the y-intercept (C-intercept)?
   d. What does the y-intercept represent in this situation?

39. **Error Analysis** A classmate claims that having no slope and having a slope of 0 are the same. Is your classmate correct? Explain.

40. a. What is the slope of the x-axis? Explain.
   b. Write an equation for the x-axis.

41. a. What is the slope of the y-axis? Explain.
   b. Write an equation for the y-axis.

Identify the form of each equation. To graph the line, would you use the given form or change to another form? Explain.

42. $-5x - y = 2$ 43. $y = \frac{1}{4}x - \frac{2}{3}$ 44. $y + 2 = -(x - 4)$

Critical Thinking Graph three different lines having the given property. Describe how the equations of these lines are alike and how they are different.

45. The lines have slope 2.

46. The lines have y-intercept 2.

47. Graphing Calculator Graphing calculators use slope-intercept form (rather than standard form or point-slope form) to graph lines. Choose either Exercise 45 or Exercise 46 and write three equations for the lines you graphed. Use the **Y=** window of your graphing calculator to enter your equations. Press **GRAPH**. Do the graphs on the screen confirm the description you wrote previously?

Graph each pair of lines. Then find their point of intersection.

48. $y = -4, x = 6$ **49.** $x = 0, y = 0$ **50.** $x = -1, y = 3$ **51.** $y = 5, x = 4$

52. Building Access By law, the maximum slope of a ramp in new construction is $\frac{1}{12}$. The plan for the new library shows a 3-ft height from the ground to the main entrance. The distance from the sidewalk to the building is 10 ft. Can you design a ramp for the library that complies with the law? Explain.

53. Writing Describe the similarities of and the differences between the graphs of the equations $y = 5x - 2$ and $y = -5x - 2$.

54. Open-Ended Write equations for three different lines that contain the point $(5, 6)$.

55. Critical Thinking The x-intercept of a line is 2 and the y-intercept is 4. Use this information to write an equation for the line.

56. The vertices of a triangle are $A(0, 0)$, $B(2, 5)$, and $C(4, 0)$.
  a. Write an equation for the line through A and B.
  b. Write an equation for the line through B and C.
  c. Compare the slopes and y-intercepts of the two lines.

Do the three points lie on one line? Justify your answer.

57. $A(5, 6), B(3, 2), C(6, 8)$

58. $D(-2, -2), E(4, -4), F(0, 0)$

59. $G(5, -4), H(2, 3), I(-1, 10)$

60. $J(-2, 9), K(1, -1), L(4, -11)$

A line passes through the given points. Write an equation for the line in point-slope form. Then, rewrite the equation in standard form with integer coefficients.

61. $R(-2, 2), S(0, 8)$ **62.** $T(5, 5), W(7, 6)$ **63.** $X(2, 6), Y(5, 8)$