

Extra Practice

Chapter 2

Lesson 2-1

Determine whether each relation is a function. Justify your answer.

- $\{(0, 1), (1, 0), (2, 1), (3, 1), (4, 2)\}$
- $\{(7, 4), (4, 9), (-3, 1), (1, 7), (2, 8)\}$
- $\{(1, 4), (3, 2), (5, 2), (1, -8), (6, 7)\}$
- $\{(-5, 1), (0, -3), (-2, 1), (10, 11), (7, 1)\}$
- $\{(9, 3), (6, 2), (3, 2), (3, 1), (6, -2)\}$
- $\{(4, 9), (5, 3), (-2, 0), (5, 4), (8, 1)\}$

Evaluate each function for the given value of x , and write the input x and output $f(x)$ in an ordered pair.

- $f(x) = -2x + 11$ for $x = 5$
- $f(x) = \frac{4}{3}x - \frac{2}{3}$ for $x = 8$
- Make a mapping diagram and a graph for the relation $\{(1, 3), (-2, 2), (1, 4), (0, 1)\}$. Then determine whether the relation is a function.
- A garden has the shape of an isosceles triangle. The base of the triangle is 42 ft long, with an altitude of h ft. Write an equation that describes the area A of the garden as a function of h . What is the area of the garden for $h = 38$ ft?
- To avoid air turbulence, a plane climbs from an altitude of 20,700 feet to a higher altitude at the rate of 325 feet per minute. Write a function that describes the altitude, y , of the plane x minutes after it begins its climb. Then find the altitude of the plane for $x = 5$.

Lesson 2-2

Determine whether y varies directly with x . If so, find the constant of variation.

- $y = 5x$
- $y = 2x + 2$
- $2y = -7x$

In Exercises 15–16, y varies directly with x .

- If $y = 15$ when $x = 6$, find x when $y = 10$.
- If $y = 3$ when $x = 2$, find y when $x = -5$.

Write an equation of a direct variation that passes through each point.

- $(3, 7)$
- $(5, -8)$
- $(-4, -10)$
- $(-2, 9)$
- $(-6, 6)$
- $(6, -3)$
- $(12, 8)$
- $(-15, -1)$
- When a pump is turned on, it pumps water at a rate of 12 gal/min. What information do you need to know to decide if the volume of water in the tank varies directly with the time the pump is on? Explain.

Extra Practice (continued)

Chapter 2

Lesson 2-3

Find the slope of the line through each pair of points.

26. (1, 5) and (2, 8)

27. (2, 3) and (-1, 5)

28. (3, 1) and (3, -1)

Write an equation for each line.

29. $m = 0$ and the y-intercept is 2

30. $m = \frac{2}{3}$ and the y-intercept is 3

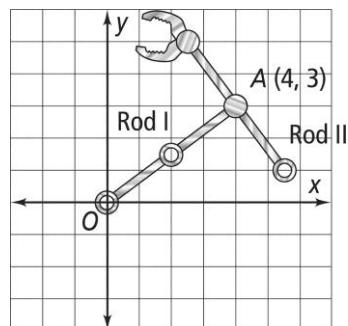
Graph each equation.

31. $y = x - 7$

32. $y = -x + 4$

33. $y = -4x + 3$

34. The blueprint for a toy, shown at the right, identifies two perpendicular rods, each 5 in. long. Suppose each square in the coordinate grid measures 1 in.^2 and the origin is O . Rods I and II are connected at point $A(4, 3)$.



- Write an equation in slope-intercept form for the line containing Rod I.
- Write an equation in slope-intercept form for the line containing Rod II.

Lesson 2-4

Write in standard form the equation of each line.

35. slope = 3; (-1, 4)

36. slope = -1; (0, 7)

37. slope = $\frac{3}{4}$; (2, 8)

38. slope = $-\frac{2}{5}$; (3, -9)

39. slope = $\frac{8}{3}$; (-2, 0)

40. slope = -5; (-3, -12)

Write in point-slope form the equation of the line through each pair of points.

41. (-4, -5) and (-1, -8)

42. (-5, 6) and (3, -10)

43. (12, 10) and (0, 0)

Extra Practice (continued)**Chapter 2****Find the slope, y-intercept, and x-intercept of each line.**

44. $y = 2x - 5$

45. $y = \frac{1}{3}x - 15$

46. $x = -7$

Write each equation in standard form.

47. $0.3x + 1.2y = 2.4$

48. $y = \frac{2}{3}x + 15$

49. $x = 8 - y$

Graph each equation.

50. $-6x - 2y = 7$

51. $-2y = x - 2$

52. $3x - 8y = 9$

Lesson 2-5

53. Make a scatter plot for the following set of points: $\{(1, 1), (1.5, 1.5), (2, 1), (2.5, 1.5), (3, 2), (3.5, 3), (4, 3), (5, 3), (5.5, 3.5), (6, 4)\}$.
Discuss the correlation.

54. Write the equation of a trend line for the following set of points:
 $\{(10, 10), (20, 18), (30, 20), (40, 22)\}$.

55. Use a calculator to find the line of best fit for the data in Exercise 54.
How accurate is your line of best fit?

Lesson 2-6**Describe the transformation of parent function $f(x)$.**

56. $h(x) = f(x - 1)$

57. $g(x) = f(x) + 2$

58. $k(x) = -f(x)$

59. $g(x) = 3.4f(x)$

60. $k(x) = f(-x)$

61. $h(x) = \frac{1}{2}f(x)$

Describe the transformation of $f(x)$ that produces $g(x)$.

62. $f(x) = 2x - 1$
 $g(x) = \frac{1}{2}x + 1$

63. $f(x) = 4x$
 $g(x) = 2x - \frac{1}{2}$

64. $f(x) = 3x$
 $g(x) = -(3x - 1)$

65. The graph of $y = x$ is vertically stretched by a factor of 3. It is then translated up 1 unit. What is the equation for the transformation?

Extra Practice (continued)

Chapter 2

Lesson 2-7

Graph each equation by writing two linear equations.

66. $y = \left| x + \frac{1}{2} \right|$

67. $y = |4x + 3|$

68. $y = |4x - 3|$

69. $y = -|x + 4|$

70. $y = 2|x - 3|$

71. $y = |x + 4| - 2$

Lesson 2-8

Graph each inequality.

72. $y < -x + 5$

73. $0.1x + 0.6y \geq 2$

74. $y \leq 3x - 1$

75. $x + 3y > 12$

76. $y \geq 5x - 3$

77. $6x + 2y \geq 7$

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- 78.** Andrea is going to buy x lbs of pasta salad and y lbs of chicken salad for a party. The pasta salad costs \$4 per pound and the chicken salad costs \$6 per pound. Andrea has at most \$28 to spend. Write and graph an inequality that describes the relationship between x and y .