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In Exercises 1–3, solve the equation and check your answer.

1. $1 - 3x = -17$

2. $11\pi + 2x = 19\pi$

3. $10(x - 1) = -2x + 62$

4. A furnace repair person charges an initial fee of $80 plus $30 per hour to do repairs.

    a. After how many hours would the cost of the repair be at least $320?

    b. How many hours did the repair person work if the total bill was $230?

In Exercises 5–7, solve the equation. Graph the solution(s), if possible.

5. $|3x + 9| = 18$

6. $2|7y - 8| = -28$

7. $\dfrac{|4z + 8|}{-3} = -4$

In Exercises 8–10, solve the inequality. Graph the solution.

8. $2 - 3x \geq -x + 8$

9. $4t - 7 \geq 25$

10. $6x - x + 10 < 9 - 4$

In Exercises 11−13, solve the inequality. Graph the solution, if possible.

11. $|14x + 7| < 35$

12. $|7w - 2| + 8 \leq -9$

13. $-2|4 + 2x| < -20$

14. The ideal width of a certain conveyor belt for a manufacturing plant is 50 inches. The width of an actual conveyor belt can vary from the ideal width by at most $\dfrac{7}{32}$ of an inch.

    a. Write an absolute value inequality to describe this situation.

    b. Solve the inequality to find the acceptable widths, in inches, for this conveyor belt.

In Exercises 15 and 16, determine whether the relation is a function. Explain.

15. $(-3, 2), (0, 3), (3, 4), (6, 5), (-3, 6)$

16. $(3, 1), (-5, 1), (-3, -1), (-5, -1), (3, -1)$

17. The equation $y = 1725 - 75x$ represents the amount of money y (in dollars) left in your lunch account after x weeks.

    a. Identify the independent and dependent variables.

    b. Twenty weeks go by. Find the domain and range of the function.

In Exercises 18–20, graph the linear function.

18. $f(x) = -x - 1$

19. $w(x) = \dfrac{5}{3}x$

20. $h(x) = -4 - \dfrac{1}{5}x$

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21. The function $f(x) = 150 + 35x$ represents the amount of money a hotel charges (in dollars) for x nights, including a $150 charge for parking.

   a. What is the total bill for four nights at the hotel?

   b. How many nights must you stay to have a bill of $430?

In Exercises 22–24, find the x- and y-intercepts of the graph of the linear equation. Use the intercepts to graph the linear equations. Label the intercepts.

22. $4x + 8y = 8$ **23.** $21x + 7y = 28$ **24.** $-3x + 5y = 10$

In Exercises 25–27, find the slope and y-intercept of the graph. Graph the linear equation.

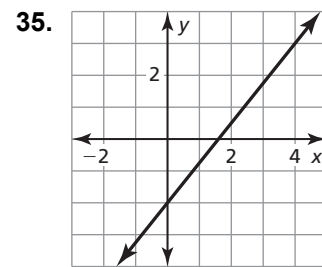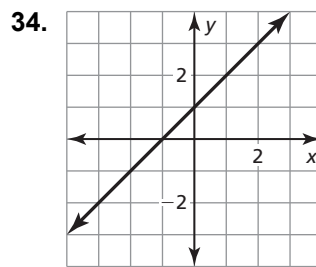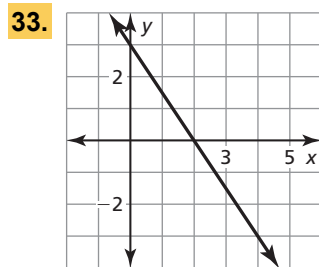**25.** $y = 2x$ **26.** $y = -6$ **27.** $4x - 5y = 25$

In Exercises 28−30, compare the graph to the graph of $f(x) = |x|$. Describe the domain and range.

28. $t(x) = 2|x| + 5$ **29.** $r(x) = |x - 1|$ **30.** $h(x) = -\frac{1}{2}|x - 1|$

In Exercises 31 and 32, write an equation of the line with the given slope and y-intercept.

31. slope: $-\frac{7}{3}$ and y-intercept: 0 **32.** slope: 0 and y-intercept: -10

In Exercises 33–35, write an equation of the line in slope-intercept form.

33.   **34.**   **35.**

In Exercises 36–39, write an equation in point-slope form of the line that passes through the given points.

36. $(1, 2), (3, 4)$ **37.** $(-8, -9), (-6, -5)$

38. $(2, -7), (-7, 2)$ **39.** $(0, 2), (10, -3)$

Chapter 5

Cumulative Review (continued)

In Exercises 40–42, write an equation of the line that passes through the given point and is parallel to the given line.

40. $(1, 5)$; $y = -x + 4$ **41.** $(-3, -7)$; $y = \frac{7}{2}x - 9$ **42.** $(0, -6)$; $4x + 2y = 10$

In Exercises 43 and 44, tell whether *x* and *y* show a *positive*, a *negative*, or *no* correlation.

43.

x	−4	−3	−2	0	2	4	5
y	−4	5	2	−1	−2	4	−4

44.

x	−2	−1	−1	0	1	2	2
y	2	3	1	0	−3	0	−2

In Exercises 45–47, determine whether the sequence is arithmetic. If so, find the common difference.

45. $-7, -4, -1, 1, \ldots$ **46.** $-13, -17, -21, -25, \ldots$ **47.** $10, 4, -2, -8, \ldots$

In Exercises 48 and 49, graph the function. Describe the domain and range.

48. $y = \begin{cases} \frac{3}{2}x + 7, & \text{if } x < -2 \\ -\frac{5}{2}x - 4, & \text{if } x \geq -2 \end{cases}$ **49.** $y = \begin{cases} -3, & \text{if } x < -1 \\ 4x + 2, & \text{if } x > -1 \end{cases}$

In Exercises 50–52, solve the system of linear equations by graphing.

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

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

52. $x - 3y = 9$
$2x + 2y = 2$

53. A company is hiring a truck driver to deliver the company's product. Truck driver A charges an initial fee of $50 plus $7 per mile. Truck driver B charges an initial fee of $175 plus $2 per mile.

     a. Write a linear equation the represents each truck driver's total cost *y* (in dollars) as a function of miles driven *x*.

     b. Solve the system of linear equations by graphing. Interpret your solution.

In Exercises 54–56, solve the system of linear equations by substitution. Check your solution.

54. $y = 6x - 11$
$-2x - 3y = -7$

55. $2x + y = 20$
$6x - 5y = 12$

56. $5x - 2y = 18$
$-2x - y = -9$

57. You spend $27 on seven bags of candy to throw while you participate in a parade. The bags cost either $5 or $3. How many bags of each amount did you purchase?

Chapter 5

Cumulative Review (continued)

In Exercises 58–60, solve the system of linear equations by elimination. Check your solution.

58. $-4x - 2y = -12$
$4x + 8y = -24$

59. $-3x + 7y = -16$
$-9x + 5y = 16$

60. $5x + 4y = -30$
$3x - 9y = -18$

61. School A and school B have taken a field trip to a professional baseball game. School A took 8 vans and 8 buses to get its 240 students to the game. School B took 4 vans and 1 bus to get its 54 students to the game. Find the number of students that were in each van and bus.

In Exercises 62–64, use only the slopes and *y*-intercepts of the graphs of the equations to determine whether the system of linear equations has *one solution*, *no solution*, or *infinitely many solutions*. Explain.

62. $y = -\frac{1}{4}x + 5$
$2x + 8y = 40$

63. $6x + 3y = 6$
$6x + 3y = -6$

64. $x - y = 11$
$2x + y = 19$

In Exercises 65–68, solve the equation by graphing. Check your solution(s).

65. $4x + 1 = -2x + 7$

66. $3x - 4 = 5(x + 2)$

67. $|x - 2| = |3x + 6|$

68. $|x + 4| = |2x - 1|$

In Exercises 69–71, graph the inequality in a coordinate plane.

69. $y > 2x - 1$

70. $y \le \frac{2}{3}x + 1$

71. $14x - 7y < -21$

72. Your work truck can haul at most 1000 pounds. The inequality $10x + 50y \le 1000$ represents the number x of bags of potting soil and the number y of bags of mulch your truck can haul. Can you haul 20 bags of potting soil and 20 bags of mulch? Explain.

In Exercises 73–75, graph the system of linear inequalities.

73. $4x + y < 2$
$y > -2$

74. $y \ge \frac{2}{3}x + 3$
$y > -\frac{4}{3}x - 3$

75. $2x - 3y \ge 6$
$-3x + 2y < 6$