

**Chapter  
5****Cumulative Review**

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

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  $\frac{7}{32}$  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.  $w(x) = \frac{5}{3}x$
20.  $h(x) = -4 - \frac{1}{5}x$

**Chapter 5** **Cumulative Review** (continued)

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.
- What is the total bill for four nights at the hotel?
  - 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.  $4x - 5y = 25$

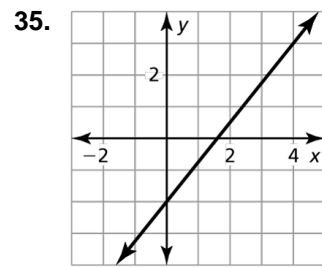
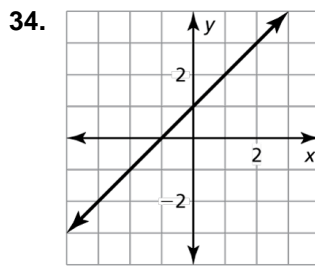
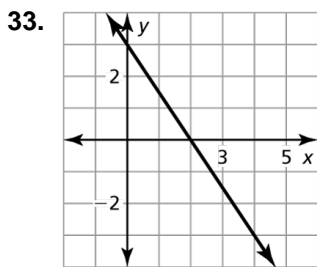
In Exercises 28–30, compare the graph to the graph of  $f(x) = |x|$ . Describe the domain and range.

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.



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. 

<b>x</b>	-4	-3	-2	0	2	4	5
<b>y</b>	-4	5	2	-1	-2	4	-4

44. 

<b>x</b>	-2	-1	-1	0	1	2	2
<b>y</b>	2	3	1	0	-3	0	-2

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

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

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

51.  $y = 4$

52.  $x - 3y = 9$

$y = \frac{1}{3}x - 3$

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

$2x + 2y = 2$

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 that 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.  $y = 6x - 11$

55.  $2x + y = 20$

56.  $5x - 2y = 18$

$-2x - 3y = -7$

$6x - 5y = 12$

$-2x - y = -9$

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.

$$\begin{aligned} 58. \quad -4x - 2y &= -12 \\ 4x + 8y &= -24 \end{aligned}$$

$$\begin{aligned} 59. \quad -3x + 7y &= -16 \\ -9x + 5y &= 16 \end{aligned}$$

$$\begin{aligned} 60. \quad 5x + 4y &= -30 \\ 3x - 9y &= -18 \end{aligned}$$

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.

$$\begin{aligned} 62. \quad y &= -\frac{1}{4}x + 5 \\ 2x + 8y &= 40 \end{aligned}$$

$$\begin{aligned} 63. \quad 6x + 3y &= 6 \\ 6x + 3y &= -6 \end{aligned}$$

$$\begin{aligned} 64. \quad x - y &= 11 \\ 2x + y &= 19 \end{aligned}$$

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

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

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

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

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

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

$$69. \quad y > 2x - 1$$

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

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

72. Your work truck can haul at most 1000 pounds. The inequality  $10x + 50y \leq 1000$  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.

$$\begin{aligned} 73. \quad 4x + y &< 2 \\ y &> -2 \end{aligned}$$

$$\begin{aligned} 74. \quad y &\geq \frac{2}{3}x + 3 \\ y &> -\frac{4}{3}x - 3 \end{aligned}$$

$$\begin{aligned} 75. \quad 2x - 3y &\geq b \\ -3x + 2y &< b \end{aligned}$$