## 2.4 Exercises

*Solve each inequality, then graph the solution. See Examples 1–5.*

**1.** $4x > 8$ **2.** $6y > 18$ **3.** $2m \le -6$

**4.** $5k \le -15$ **5.** $3r + 1 \ge 16$ **6.** $2m - 5 \ge 15$

**7.** $\frac{3k - 1}{4} > 2$ **8.** $\frac{5z - 6}{8} < 3$ **9.** $-\frac{3}{4}r \ge 21$

**10.** $-\frac{2}{3}y < -10$ **11.** $-\frac{3}{2}y \le -\frac{9}{2}$ **12.** $-\frac{2}{5}x \ge -4$

**13.** $-1.3m > 3.9$ **14.** $-2.5y \le -7.5$ **15.** $\frac{2k - 5}{-4} > 1$

**16.** $\frac{3z - 2}{-5} \le 4$ **17.** $-r \le -7$ **18.** $-m > -12$

**19.** $-4x + 3 < 15$ **20.** $-6p - 2 \ge 16$ **21.** $-3 < x - 5 < 6$

**22.** $-6 < x + 1 < 8$ **23.** $-6 \le 2z + 4 \le 12$ **24.** $-15 < 3p + 6 < -9$

**25.** $-19 \le 3x - 5 \le -9$ **26.** $-16 < 3t + 2 < -11$ **27.** $-4 \le \frac{2x - 5}{6} \le 5$

**28.** $-8 \le \frac{3m + 1}{4} \le 3$ **29.** $4.2817z \ge -13.27327$ **30.** $9.1428p < -7.31424$

**31.** $3(x + 2) - 5x < x$ **32.** $2(3k - 5) + 7 > k + 12$ **33.** $y + 4(2y - 1) \ge 5y$

**34.** $-2(m - 4) \le -3(m + 1)$ **35.** $-(4 + r) + 2 - 3r < -10$ **36.** $-(9 + k) - 5 + 4k \ge 1$

**37.** $-3(z - 6) > 2z - 5$ **38.** $-2(y + 4) \le 6y + 8$

**39.** $\frac{2}{3}(3k - 1) \ge \frac{1}{2}(2k - 3)$ **40.** $\frac{7}{5}(10m - 1) < \frac{2}{3}(6m - 5)$

**41.** $-\frac{1}{4}(p + 6) + \frac{3}{2}(2p - 5) < 0$ **42.** $\frac{3}{5}(k - 2) - \frac{1}{4}(2k - 7) < 3$

**43.** $-(6.17y + 8.29) + 2(3y - 5.117) \le 9.25y + 1.258$

**44.** $-(2.14z - 1.23) + 5(4z - 7.213) \ge 5.13z + 5.901$

*Solve each of the following word problems. See Example 7.*

**45.** Samantha has a total of 815 points so far in her algebra class. At the end of the course she must have 82% of the 1100 points possible in order to get a B. What is the lowest score she can earn on the 100-point final to get a B in the class?

**46.** Bill has twice as many dimes as nickels and he has at least 15 coins. At least how many nickels does he have?

**47.** A nearby pharmacy school charges a tuition of $12,800 annually. Tom makes no more than $3220 per year in his summer job. What is the least number of summers that he must work in order to make enough for one year's tuition?

**48.** A nurse must make sure that Ms. Carlson receives at least 30 units of a certain drug each day. This drug comes from red pills or green pills, each of which provides 3 units of the drug. The patient must have twice as many red pills as green pills. Find the smallest number of green pills that will satisfy the requirement.

*A business firm can make a profit only if its revenue, R, exceeds its costs, C. In Exercises 49–50, find the smallest number of units, x, that must be sold for each of the following companies to make a profit.*

**49.** $C = 20x + 100$; $R = 24x$ **50.** $C = 85x + 900$; $R = 105x$

*Solve each inequality. Check to be sure each one makes sense before solving. See Example 6.*

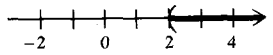
**51.** $5 < x - 1 < 0$ **52.** $3 > m + 2 > 8$

**53.** $5 > 2y + 4 > 12$ **54.** $3 < 2k - 3 < 1$

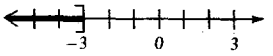
**55.** $\frac{1}{2} \le 4 - 3x \le \frac{2}{3}$ **56.** $-2 \le \frac{3}{4}(x - 5) \le 3$

**Section 2.4 (page 68)**

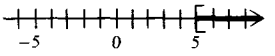
**1.** $(2, +\infty)$



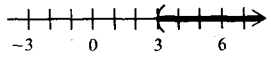

**3.** $(-\infty, -3]$



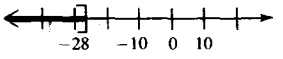

**5.** $[5, +\infty)$



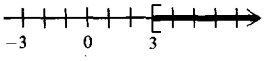

**7.** $(3, +\infty)$



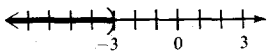

**9.** $(-\infty, -28]$



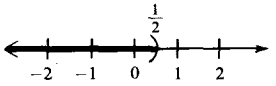

**11.** $[3, +\infty)$



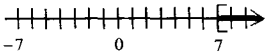

**13.** $(-\infty, -3)$



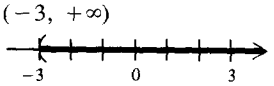

**15.** $(-\infty, 1/2)$



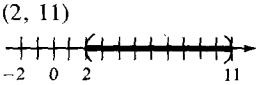

**17.** $[7, +\infty)$



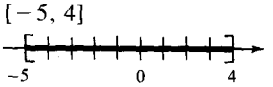

**19.** $(-3, +\infty)$



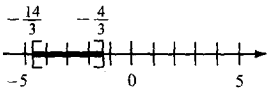

**21.** $(2, 11)$



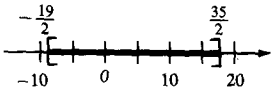

**23.** $[-5, 4]$



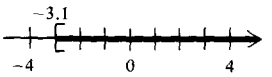

**25.** $[-14/3, -4/3]$



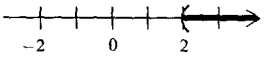

**27.** $[-19/2, 35/2]$



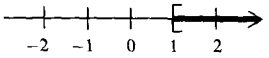

**29.** $[-3.1, +\infty)$



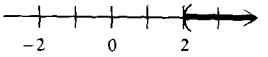

**31.** $(2, +\infty)$



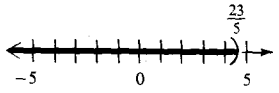

**33.** $[1, +\infty)$



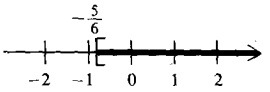

**35.** $(2, +\infty)$



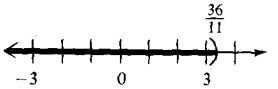

**37.** $(-\infty, 23/5)$



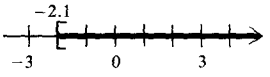

**39.** $[-5/6, +\infty)$




**41.** $(-\infty, 36/11)$




**43.** $[-2.1, +\infty)$




**45.** 87 points **47.** 4 summers **49.** More than 25 units will produce a profit **51.** Does not make sense; $5 \not< 0$ **53.** Does not make sense; $5 \not> 12$ **55.** [10/9, 7/6] **57.** All numbers between $-2$ and 2, that is, $(-2, 2)$ **59.** All numbers greater than or equal to 3, that is, $[3, +\infty)$ **61.** All numbers greater than or equal to $-9$, that is, $[-9, +\infty)$ **63.** $1 > -x > -5$, or $-5 < -x < 1$ **65.** 5 **67.** 1 **69.** 11 **71.** $-3$ and 3