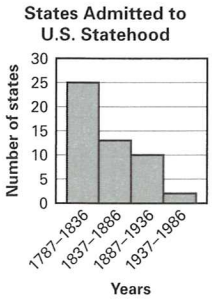
Selected Answers

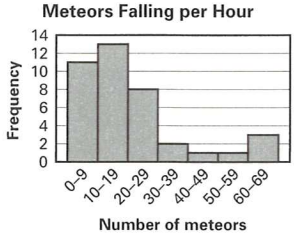
Chapter 1

1.1 Getting Ready to Practice (p. 7) **1.** intervals **3.** 3 times **5.** Step 1: histogram; Steps 2–3:



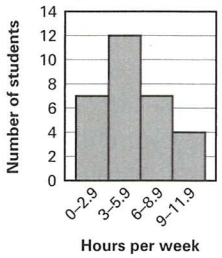
1.1 Practice and Problem Solving (pp. 7–9) **7.** department stores **9.** No. *Sample answer:* The category with the most stores might not have the most floor space if each store is small, while a category with fewer stores might have the most floor space if each store is large. **11.** Table; exact amounts are given in a table but may be difficult to read from a bar graph.

13.



15. 52 hurricanes **17.** No; there does not appear to be a pattern in the data.

19.



21. about 4000 schools **25.** 136 **27.** 7 **29.** 45.44 **31.** 58.78

1.2 Getting Ready to Practice (p. 12) **1.** Multiply 2 by 5. Add the result (10) to 8. Subtract 4 from this sum (18) to obtain the final result (14). **3.** Multiply 5 by 15; 25. **5.** Subtract 7 from 15; 18. **7.** Subtract 2 from 5; 30. **9.** In the second step, 63 must be divided by 9 before being added to 9: $3 \times 3 + 63 \div 9 = 9 + 63 \div 9 = 9 + 7 = 16$.

1.2 Practice and Problem Solving (pp. 12–13) **11.** 29 **13.** 24 **15.** 15 **17.** 5 **19.** \$250 **21.** $\frac{3}{4}$ **23.** 12 **25.** 10.1 **27.** 54.6 **29.** 7 **31.** $12 \div (6 + 4 - 7) = 4$ **33.** 372 cookies **35.** $\times$; $12 \times (4 + 2) = 72$ **37.** 32 students **39.** 4 **41.** 6

1.2 Technology Activity (p. 14) **1.** 106.8 **3.** 7 **5.** 5 **7.** 2 **9.** \$10.44

1.3 Getting Ready to Practice (p. 17) **1.** variable; numerical **7.** 44 **9.** 5

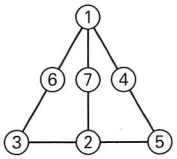
1.3 Practice and Problem Solving (pp. 18–19) **11.** 23 **13.** 39.5 **15.** 5 **17.** 6 **19.** $\frac{2}{5}x$ **21.** $12 + x$ **23.** 18 mi **25.** *Sample answer:* Serena is saving to buy a gift for her sister. She starts with \$2 and saves an additional \$8 per week. **27.** $4 + 17n$; \$106 **29.** 32.8 **31.** 96 **33.** 1.6 **35.** 10 **37.** A good answer will include an expression that can only be evaluated correctly by using the order of operations. The explanation of the correct order to use will follow the rules for the order of operations. **39.** $2.75p + 1.25d$; \$13.25 **41.** 50 **43.** 18 **45.** 4095 **47.** 42

1.4 Getting Ready to Practice (p. 22) **1.** *Sample answer:* base $\rightarrow 3^2 \leftarrow$ exponent **3.** 1331 **5.** 64 **7.** 0 **9.** 6 **11.** 7^2 means 7×7; $7^2 = 7 \times 7 = 49$.

1.4 Practice and Problem Solving (pp. 22–23) **13.** 3^3; 3 to the third power, or 3 cubed **15.** 6 **17.** 128 **19.** 1 **21.** 109 **23.** 12 **25.** 3 **27.** 16 **29.** 119 **31.** $1000 \cdot 2^3$ **33.** $<$ **35.** 17.17 **37.** 1030.301 **39.** No; $16 \cdot 2^2 = 64$, so the divers have fallen 64 feet after 2 seconds. **41.** 302 **45.** 9 **47.** 6 outfits. *Sample answer:* I used Draw a Diagram because a tree diagram allowed me to find the total number of outfits in an organized way.

1.1–1.4 Notebook Review (pp. 24–25) **1.** Evaluate expressions inside grouping symbols. **2.** The question cannot be answered using the bar graph because the depth does not determine the area of the lake. **3.** Erie **4.** 18 **5.** 3 **6.** 7 **7.** 57 **8.** 1000 **9.** 370 **10.** The number of zeros is the same as the exponent.

1.5 Problem Solving Strategies (p. 27) **1.** 106, 107 **3.** 17 blue chips; 3 green chips **5.** *Sample:*



7. twice **9.** Bob, Kelly, Justin, Tim, Michelle

1.5 Getting Ready to Practice (p. 30) **1.** *Sample answer:* $4 + x = 7$; use mental math and ask "4 plus what number is 7?" The answer is 3. **3.** 44 **5.** 7 **7.** yes **9.** no

1.5 Practice and Problem Solving (pp. 30–31) **15.** yes **17.** no **19.** 11 **21.** 29 **23.** 2 **25.** 15 **27.** $14 + r = 43$; 29 in. **29.** $5033 + b = 5396$; 363 lb **31.** $4p = 60$; 15 invitations **37.** $x + 220 = 245$; 25 min **39.** 96 **41.** 6000 **43.** 1000

1.6 Getting Ready to Practice (p. 35) **1.** Area is the surface a figure covers, while perimeter is the distance around the figure. **3.** $P = 30$ in., $A = 56$ in.^{2} **5.** 159 cm

1.6 Practice and Problem Solving (pp. 36–37) **7.** $P = 22$ cm, $A = 24$ cm^2 **9.** $P = 40$ ft, $A = 100$ ft^2 **11.** $P = 72$ in., $A = 324$ in.^{2} **13.** $P = 54$ cm, $A = 182$ cm^2 **15.** 6 m **17.** 9 km/h **19.** 10.5 mi **21.** 225 mi **23.** 90 mi/h **25.** about 4 h **27.** 1560 ft **29.** 2 bags **33.** 9 **35.** 30 **37.** 15.54

1.7 Getting Ready to Practice (p. 41) **1.** Step 1. Read and Understand, Step 2. Make a Plan, Step 3. Solve the Problem, Step 4. Look Back **3.** Step 1: Trains in one hour = people in one hour ÷ people per train, so trains in one hour = people in one hour ÷ (cars per train • passengers per car); Step 2: 45 trains; Step 3: 45 • 20 = 900

1.7 Practice and Problem Solving (pp. 41–43) **5.** 15 h **7.** 16 h **9.** 12 oz **11.** 3, 1 **13.** 9, 5 **15.** $5060 **17.** $8x$, $10x$ **19.** $31x^2$, $39x^2$ **21.** 7 ft; 49 ft^2 **23.** 5 **25.** 4 **29.** 0 **31.** $P = 38$ in., $A = 48$ in.^{2} **33.** > **35.** >

1.5–1.7 Notebook Review (pp. 44–45) **1.** $P = 2l + 2w$ **2.** 13 **3.** 12 **4.** 3 **5.** 18 **6.** $P = 22$ m, $A = 28$ m^2 **7.** 9 teaspoons **8.** Yes; perimeter is measured in linear units and area is measured in square units.

Chapter Review (pp. 46–47) **1.** histogram **3.** order of operations **5.** base **7.** false **9.** true **11.** No; the age group that includes teenagers also includes other ages. **13.** 1 **15.** 2 • 28.5 − 20; $37 **17.** 4 **19.** 72 **21.** 225 **23.** 10,000 **25.** 27 **27.** 261 **29.** 7 **31.** $P = 32$ m, $A = 60$ m^2 **33.** $P = 32$ in., $A = 64$ in.^{2} **35.** B, C, and D

Chapter 2

2.1 Getting Ready to Practice (p. 55) **1.** opposites **3.** −130, −56, 0, 62, 74, 120 **5.** 8, 8 **7.** −1327, 1327

2.1 Practice and Problem Solving (pp. 55–56) **9.** > **11.** < **13.** > **15.** > **17.** −20, −12, 18, 44, 59, 64 **23.** Gieselmann Lake **25.** 32 **27.** −29 **29.** 81 **31.** −3 **33.** = **35.** < **37.** Flight crew departs for launch pad. Pilot starts auxiliary power units. Main engine starts. Liftoff. Shuttle clears launch tower, and control switches to the Mission Control Center. **41.** 19 **43.** 34 pages

2.2 Getting Ready to Practice (p. 60) **1.** absolute values **3.** −12 **5.** 0 **7.** −32 **9.** −34 **11.** −17

2.2 Practice and Problem Solving (pp. 61–62) **13.** −3 **15.** 4 **17.** Since the signs are different, the lesser absolute value should be subtracted from the greater absolute value and the sign of the number with the greater absolute value should be used; $-8 + 5 = -3$. **19.** −109 **21.** −82 **23.** 12 **25.** −3 **27.** always **29.** sometimes **31.** *Sample answer:* when you are balancing your checkbook **33.** $-1200 + 800 = -400$; 400 B.C. **35.** 90 **37.** 146 **39.** −1207 **41.** −999 **43.** 0; at **45.** 0; no **47.** 5 **49.** −19 **51.** 122 **53.** 512 **55.** −921, −346, −125, 128, 724

2.3 Getting Ready to Practice (p. 65) **1.** $-2 - 6$ **3.** −7 **5.** −4 **7.** −10 **9.** −23 **11.** Step 1: 55 ft, 0 ft, 55 ft; Step 2: $55 - 0 = 55$ ft, $0 - (-35) = 35$ ft, $55 - (-35) = 90$ ft; Step 3: 55, 35, 90

2.3 Practice and Problem Solving (pp. 65–67) **13.** 0 **15.** −8 **17.** −27 **19.** 44 **21.** −1000 points **23.** 5 **25.** Subtract −137 from 123. **27.** 42°F

29. -259 **31.** 1802 **33.** -10 **35.** -18 **37.** 12 **39.** -71 **41.** Triassic Period: 37 million yr; Jurassic Period: 64 million yr; Cretaceous Period: 79 million yr **43.** 5 **45.** -31 **49.** 8 **51.** 3 **53.** 2 **55.** 168 **57.** 5649

2.4 Problem Solving Strategies (p. 69)

1. 55 dots **3.** 144 blue tiles **5.** Scott: 12 yr old, Ben: 15 yr old, Kelly: 9 yr old **7.** \$40 **9.** 19 ways

2.4 Getting Ready to Practice (p. 72)

1. negative **3.** 0 **5.** -6 **7.** 270 **9.** The product of two negative integers is positive; $-8(-12) = 96$.

2.4 Practice and Problem Solving (pp. 72–73)

11. 17 **13.** 44 **15.** -15 **17.** 32 **19.** -288 **21.** 0 **23.** 70 **25.** -133 **27.** -132 **29.** -4 **31.** -4 **33.** The power is positive when the exponent is even and negative when the exponent is odd. **35.** 64 **37.** 9216 **39.** $-\$81.70$ **41.** $-104{,}832$ **43.** -682 **45.** 17 ft **47.** -23 **49.** 15 **51.** 2

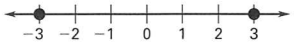
2.5 Getting Ready to Practice (p. 76)

1. mean **3.** 0 **5.** -5 **7.** -3 **9.** -3

2.5 Practice and Problem Solving (pp. 76–77)

11. 7 **13.** -9 **15.** 7 **17.** 0 **19.** 1 **21.** Always. *Sample answer:* The mean of -3, -5, and -1 is $\frac{-9}{3} = -3$. **23.** 4 **25.** -4 **27.** -1.5 **29.** 0.8 **31.** $-29.2°\text{F}$ **35.** 5^5 **37.** b^4 **39.** -72

2.1–2.5 Notebook Review (pp. 78–79)

1. 

2. $-15, -5, 1, 4, 8, 16$ **3.** $-85, -60, -6, 40, 42, 98$ **4.** 38 **5.** -55 **6.** -119 **7.** -66 **8.** -65 **9.** -15 **10.** 312 **11.** -62 **12.** -6 **13.** 4 **14.** Yes. *Sample answer:* The opposite of the sum can be written as $-1(a + b)$. Using the distributive property you get $-a + (-b)$ which is the sum of the opposites.

2.6 Getting Ready to Practice (p. 82)

7. 45; commutative and associative properties of addition **9.** -290; commutative and associative properties of multiplication **11.** -36; associative property of addition **13.** 15 in.^{3}

2.6 Practice and Problem Solving (pp. 83–84)

15. 54; commutative property of multiplication **17.** 9; associative property of addition **19.** 69 **21.** 21 **23.** -700 **25.** -900 **27.** $70x$ **29.** $70 + x$ **31.** No. *Sample answer:* $20 \div 4 = 5$, but $4 \div 20 = 0.2$. **33.** 5.7 **35.** 35 **37.** 420 **39.** \$60 **41.** The student grouped the first and last numbers, the second and next to last numbers, and so on, to make 10, and then all of the 10s and the 5 were added to find the sum; 190. **45.** 26 in. and 34 in. *Sample answer:* I used Guess, Check, and Revise because I decided to choose two numbers whose sum was 60 and then check to see if the difference was 8. I revised my guess until it was correct. **47.** $1.35 < 1.53$

2.7 Getting Ready to Practice (p. 87)

1. like terms: $7x$ and x, $-3y$ and $-6y$; coefficients: 7, -3, -6, 1 **3.** $-7(3) + (-7)(2)$ **5.** $9y$ **7.** $6m + n - 4b$

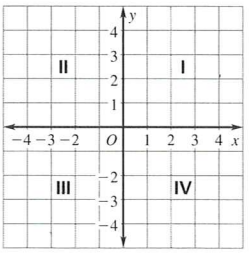
2.7 Practice and Problem Solving (pp. 88–89)

13. $9x - 27$ **15.** 56 **17.** $-34z + 884$ **19.** $4r + 2s$ **21.** $5a + 6b$ **23.** $-3x - 9y$ **25.** Add \$2.35 and \$.65 to get \$3.00. Multiply \$3.00 by 6 to find the total, \$18. **27.** $7y - 14$ **29.** $2x + 2$ **31.** $12d$ **33.** \$786.24 **35.** $3x - 5$ **37.** $1.7y - 6.7$ **39.** *Sample answer:* $4(30 + 4) = 120 + 16 = 136$; mental math can be used to multiply and then add. **41.** *Sample answer:* $24(10 + 2) = 240 + 48 = 288$; mental math can be used to multiply and then add. **43.** Yes; by the commutative property of multiplication, $xy = yx$. **47.** $-100, -90, -20, 0, 70$ **49.** -21 **51.** -700

2.7 Technology Activity (p. 90)

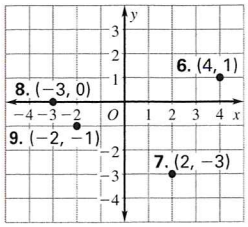
1. $-28{,}546$ **3.** 11,009 **5.** $-2{,}105{,}804$ **7.** $-262{,}890{,}144$ **9.** -101 **11.** about 13,904 km; about 10,428 km

2.8 Getting Ready to Practice (p. 93)

1. 

3. (0, 1) **5.** (1, -2)

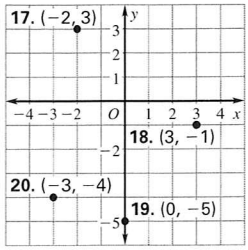
6–9.



2.8 Practice and Problem Solving (pp. 93–95)

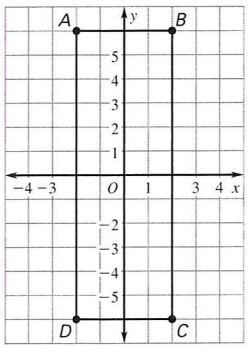
11. (−3, 3) **13.** (−5, 0) **15.** (0, −2)

17–20.



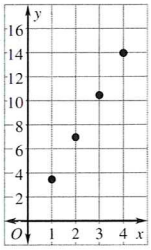
17. Quadrant II
19. y-axis

21.



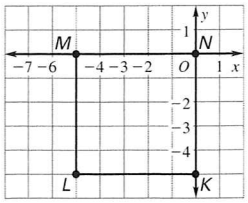
rectangle; 32 units

23.



The points lie along a line; $8.75.

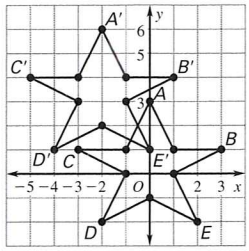
25.



20 units; 25 square units

27. $.70, $1.40, $2.10 **29.** $4.20

31.



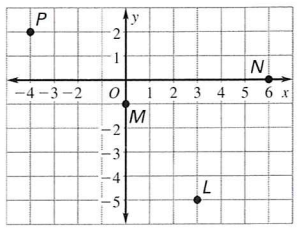
$A(-2, 6)$, $B(1, 4)$, $C(-5, 4)$, $D(-4, 1)$, $E(0, 1)$

33. −1 **35.** $4x + 36$ **37.** $-9z + 18$

2.6–2.8 Notebook Review (pp. 96–97)

1. −5 **2.** −190 **3.** −1300 **4.** −83 **5.** $27a + 95$ **6.** $76b + 36$ **7.** $-70c + 40$

8–11.



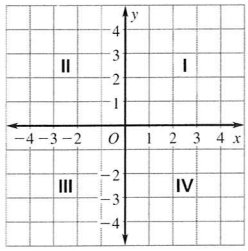
8. Quadrant IV
9. y-axis
10. x-axis
11. Quadrant II

12. Use $4(6 + 0.11) = 4(6) + 4(0.11) = 24 + 0.44 = 24.44$.

Chapter Review (pp. 98–99)

1. 2; 15, −15

3. 4;



5. coordinate plane **7.** −42, −31, −5, 8, 11, 53
9. −22, 22 **11.** 512, 512 **13.** −172 **15.** 176
17. −86 **19.** 79 **21.** −54 **23.** 0 **25.** −192
27. −140 **29.** 152 ft **31.** 14 **33.** −9 **35.** 1
37. 97; commutative and associative properties of addition **39.** 1900; commutative and associative properties of multiplication **41.** 0; multiplication property of zero **43.** $63 + 77y$ **45.** $7x - 2y$
47. $38.70 **49.** (−4, 3) **51.** (−2, −3)

Chapter 3

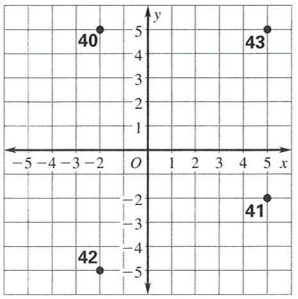
3.1 Getting Ready to Practice (p. 111)

1. inverse **3.** 20 **5.** Step 1: Sales tax; Step 2: $54.99 + x = 58.29$; Step 3: $3.30

3.1 Practice and Problem Solving (pp. 111–112)

7. subtracting 4.5 **9.** 5 **11.** 13 **13.** 2 **15.** 24 **17.** −28 **19.** 64 **21.** yes **23.** no; $t = 29 - 3$ **25.** *Sample answer:* There are 55 cats at the shelter. There are 13 more cats than dogs. How many dogs are at the shelter? **27.** 0 **29.** 1 **31.** 4.7 **33.** 8 **35.** −31 **39.** $3.52

40–43.



41. Quadrant IV **43.** Quadrant I

45. *Sample answer:* 130, 220 **47.** *Sample answer:* 2800, 4000

3.2 Getting Ready to Practice (p. 115)

1. divide **3.** $\frac{y}{9} = -3$ [original equation]; $\frac{y}{9} \cdot 9 = (-3) \cdot 9$ [Multiply each side by 9.]; $y = -27$ [Simplify.]

3.2 Practice and Problem Solving (pp. 115–116)

5. 18 **7.** 70 **9.** 3 **11.** 105 **13.** 216 **15.** 2.5 **19.** dividing by 5 **21.** subtracting −6, or adding 6 **23.** −216 **25.** 10 **27.** 29.9 **29.** 30 **31.** 3 **33.** −2.1 **35.** *Sample answer:* $3x = 18$, $\frac{x}{2} = 3$ **37.** about 17 eggs; about 4 eggs **39.** < **41.** > **43.** sixteen and two hundredths **45.** seven million, five hundred forty thousand, six hundred eighty-eight

3.3 Getting Ready to Practice (p. 121)

1. addition, division; 3 **3.** 3 **5.** 1 **7.** −4

3.3 Practice and Problem Solving (pp. 121–123)

11. 4 **13.** 7 **15.** $\frac{1}{4}$, or 0.25 **17.** 3 **19.** 9 **21.** $-\frac{1}{2}$, or −0.5 **23.** $2\frac{2}{3}$; because 3 miles is an estimate, $3h$ is an estimate for the number of miles of trail cleaned per hour, so the number of hours will also be an estimate. **25.** 7 **27.** $-1\frac{2}{3}$ **29.** 40 **31.** 55 **33.** −7 **35.** 24 **37.** 19 min **39.** Divide each side by 2; simplify; subtract 3 from each side; simplify. **41.** −15 **45.** 132; the summer pass would be cheaper than paying for 40 day passes. **47.** *Sample answer:* Choose the summer pass if you go to the pool more than 29 days because it is cheaper. Choose the day pass if you go to the pool 29 days or less because it is cheaper. **49.** 19 **51.** 48 **53.** 50% **55.** 20%

3.4 Practice and Problem Solving (pp. 126–128)

7. $4 + 5n = 9$; 1 **9.** 16 sandwiches on rye bread **11.** *Sample answer:* You buy 5 boxes of your favorite cereal at the store. With the store's double-coupon policy, you save $6 with your coupons. You pay $9 for the cereal. What was the original price of each box? **13.** $7 **15.** $2x + 5 = 12$; 3.5 **17.** $-2n + 3.5 = 7.5$; −2 **19.** 85 people **21.** the number of hours worked **27.** $P = 30$ ft; $A = 36$ ft^2 **29.** $P = 84$ m; $A = 432$ m^2 **31.** 35

3.4 Technology Activity (p. 129)

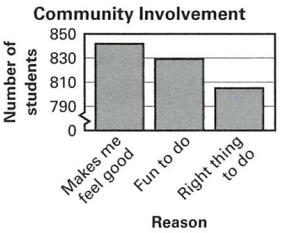
1. *Sample answer:* $35(4) + 10x = 190$; 5 adults

3.1–3.4 Notebook Review (pp. 130–131)

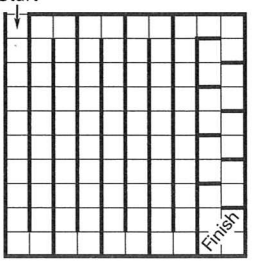
1. addition and subtraction; multiplication and division **2.** −11 **3.** 42 **4.** 12 **5.** 47 **6.** −11 **7.** −9 **8.** 27 **9.** −40 **10.** 55 **11.** −4 **12.** 0 **13.** 2 **14.** 105 envelopes per hour **15.** It uses inverse operations in reverse order to their corresponding operations.

3.5 Problem Solving Strategies (p. 133)

1. 672 ft^2 **3.** $118,125 **5.** the room where students share tables **7.** The total number of students is greater than 1238.



9. 96 ft;



Sample answer: I tried drawing other mazes.

3.5 Getting Ready to Practice (p. 137)

1. base, height **3.** $A = 4$ cm^2; $P = 8$ cm **5.** Step 1: 42 yd^2; Step 2: 9 yd^2; Step 3: 51 yd^2

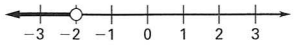
3.5 Practice and Problem Solving (pp. 137–139)

7. $A = 24$ in.^{2}; $P = 32$ in. **9.** 3 ft **11.** 4 cm **13.** 20 m **15.** Area is given in square units; $A = 10$ in.^{2} **17.** 24 in. **19.** $\frac{5}{x}$ m **21.** 16 m^2 **23.** 180 ft^2 **25.** *Sample answer:* about 3 ft by 6 ft; 18 ft^2 **27.** Doubles the area. **29.** Quadruples the area. **31.** No; Kate has 121 square feet and the room has an area of 252 square feet, so Kate has less than half the area of the room. **33.** 37.5 m^2 **35.** -60 **37.** 21 **39.** -32 **41.** 7 **43.** 35 **45.** $>$ **47.** $<$

3.6 Getting Ready to Practice (p. 142)

1. equivalent inequalities

7. $t < -2$;



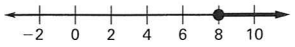
9. Step 1: 360; Step 2: $360 + x \geq 425$, $x \geq 65$; Step 3:

3.6 Practice and Problem Solving (pp. 143–145)

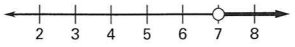
11. $x \geq -5$ **13.** $x < 6$ **15.** no **17.** yes **19.** j is greater than -4. **21.** n is less than 0.

23. $t > -3$;

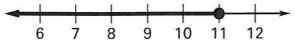
25. $r \geq 8$;



27. $p > 7$;



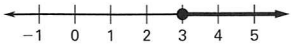
29. $m \leq 11$;



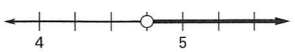
31. $33.96 + x \geq 50$; $x \geq \$16.04$ **33.** 20 min

35. $r < 7.5$;

37. $p \geq 3$;



39. $t > 4\frac{3}{4}$;

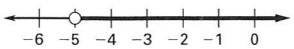


41. $x \geq 13$ is the solution to $x - 3 \geq 10$. **43.** no **45.** $x > 81$ hertz and $x < 1100$ hertz **47.** y is greater than -2 and y is less than 1. **49.** m is greater than or equal to 4 and m is less than or equal to 11. **53.** -53 **55.** -7 **57.** 9.053

3.7 Getting Ready to Practice (p. 148)

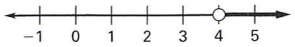
1. reverse **3.** yes **5.** $m \leq -42$;

7. $p > -5$;

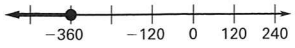


3.7 Practice and Problem Solving (pp. 148–149)

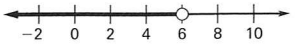
13. $x > 4$;



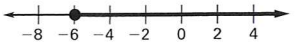
15. $b \leq -360$;



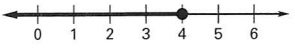
17. $g < 6$;



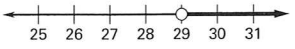
19. $c \geq -6$;



25. No; there are infinitely many solutions. **33.** You undo the operations in the same way. If you multiply or divide by a negative number in an inequality, you must reverse the direction of the inequality. **35.** $x \geq 80$ **37.** $x \geq \frac{1}{2}$ **41.** 12 cm by 16 cm **43.** 1 **45.** $c \leq 4$;



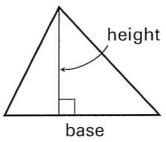
47. $x > 29$;



49. 72

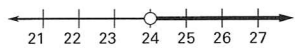
3.5–3.7 Notebook Review (pp. 150–151)

1. *Sample:*



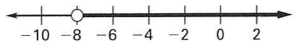
2. 10 cm **3.** 9 ft

4. $h > 24$;

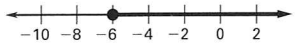


5. $k \leq 10$;

6. $p > -8$;



7. $d \geq -6$;

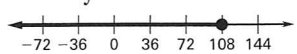


8. $d \leq 204$ **9.** $x \leq -100$ **10.** $c > 5$ **11.** $b > -4$ **12.** $c \geq 54$ **13.** 7; the solution to the inequality is $x < 8$ and the greatest integer that is less than 8 is 7.

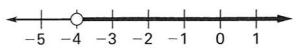
Chapter Review (pp. 152–153)

1. Addition and subtraction, multiplication and division; one operation undoes the other. **3.** equivalent equations **5.** 32 **7.** 15 **9.** 40 **11.** 1288 **13.** -3 **15.** 2.4 **17.** Fuel in tank $-$ Fuel used $=$ Fuel left; $\frac{5}{8} - x = \frac{3}{8}$; $x = \frac{2}{8} = \frac{1}{4}$ **19.** 9 **21.** -5 **23.** 27 **25.** -115 **27.** -45 **29.** 18 baskets **31.** 8 m **33.** 20 in.^{2} **35.** 60 yd^2

37. $c \leq 108$;



39. $h > -4$;



41. The inequality sign should not be reversed when subtracting; $x < 10$.

Chapter 4

4.1 Getting Ready to Practice (p. 170)

1. prime **3.** 1, 3, 9, 27 **5.** 1, 2, 3, 6, 11, 22, 33, 66 **7.** $5 \cdot 11$ **9.** $2^5 \cdot 3$

4.1 Practice and Problem Solving (pp. 171–172)

11. 1, 2, 17, 34 **13.** 1, 2, 3, 4, 6, 9, 12, 18, 27, 35, 54, 108 **15.** composite **17.** prime **19.** $2^3 \cdot 7$ **21.** $2 \cdot 3 \cdot 17$ **23.** second row: 8; fourth row: 2, 2, 2, 11; $2^3 \cdot 11$ **25.** second row: 2; third row: 2, 21; fourth row: 5, 3, 7; $2 \cdot 3 \cdot 5 \cdot 7$ **27.** $3 \cdot 5 \cdot c \cdot d$ **29.** $3 \cdot 3 \cdot a \cdot a \cdot b \cdot b \cdot b \cdot b$ **31.** 3 stars by 5 stars **33.** 5 stars by 6 stars (or 3 stars by 10 stars, or 2 stars by 15 stars) **35.** 1, 13, 23, 299 **37.** 1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 200, 400 **39.** $2^3 \cdot 5 \cdot 7$ **41.** $3^2 \cdot 5^3$ **43.** *Sample answer:* $3 + 7$ **45.** *Sample answer:* $11 + 17$ **47.** No; 40 is not a factor of 140. **49.** 2 and 3 **53.** $-4a + 4b + 2$ **55.** $y \geq 40$ **57.** 850 ft^2. *Sample answer:* I used Draw a Diagram to draw the spaces and find the area. **59.** *Sample answer:* 7000; 9000 **61.** *Sample answer:* 13; 20

4.2 Getting Ready to Practice (p. 175)

1. greatest common factor, or GCF **7.** Step 1: $56 = 2 \cdot 2 \cdot 2 \cdot 7$, $68 = 2 \cdot 2 \cdot 17$; Step 2: 2 and 2; Step 3: 4; the greatest number of teams that can be formed is 4, where each has 14 girls and 17 boys.

4.2 Practice and Problem Solving (pp. 176–177)

9. 7 **11.** 12 **13.** no; 5 **15.** yes **17.** no; 18 **19.** yes **21.** 30 baskets; 2 cans of cranberry sauce, 4 cans of fruit, 3 cans of corn, 2 boxes of muffin mix **23.** $2z^2$ **25.** $4xy^2$ **27.** $15bc$ **29.** always **31.** *Sample answer:* 6 and 25 **33.** 90 bouquets **35.** 12 ft **37.** -8 **39.** $2^2 \cdot 3 \cdot 7$

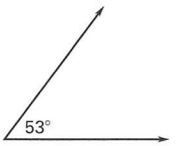
4.3 Getting Ready to Practice (p. 181)

1. yes **3.** yes **5.** $\frac{2}{3}$ **7.** $\frac{5}{8}$ **9.** *Sample answer:* $\frac{2}{10}, \frac{3}{15}$ **11.** 64

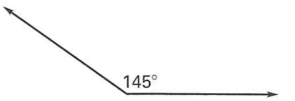
4.3 Practice and Problem Solving (pp. 182–183)

13. $\frac{3}{4}$ **15.** $\frac{-1}{8}$, or $-\frac{1}{8}$ **17.** $\frac{b}{2}$ **19.** $\frac{-3t}{10}$, or $-\frac{3t}{10}$ **21.** yes **23.** yes **25.** *Sample answer:* $\frac{1}{2}, \frac{2}{4}$ **27.** *Sample answer:* $\frac{2}{5}, \frac{4}{10}$ **29.** $\frac{1}{3}$ **31.** 1 **33.** $\frac{9}{50}$ **35.** $\frac{8}{25}$ **37.** $\frac{1}{10}$ **39.** For birds, about $\frac{60}{1500} = \frac{1}{25}$ are threatened; a greater fraction of mammals is threatened than birds; $\frac{1}{40}$ (reptiles), $\frac{64}{1541}$ (birds), $\frac{1}{10}$ (mammals). **41.** $\frac{3}{5}, \frac{3}{5}$; yes **43.** $\frac{3}{4}, \frac{5}{8}$; no **45.** $\frac{5}{6}, \frac{5}{6}$; yes **47.** $\frac{3}{4}, \frac{7}{8}$; no **49.** y^2 **51.** $\frac{-4z}{x^2y}$, or $-\frac{4z}{x^2y}$ **53.** no **55.** yes

61.



63.



4.4 Problem Solving Strategies (p. 185)

1. 10 ways **5.** 16 choices **7.** 44 posts **9.** 168 in., or 14 ft

4.4 Getting Ready to Practice (p. 188)

1. common multiple **7.** 4 is the GCF of 12 and 24. The LCM is $2 \cdot 2 \cdot 2 \cdot 3$, or 24.

4.4 Practice and Problem Solving (pp. 188–189)

9. multiples of 6: 6, 12, 18, 24, 30, 36, 42; multiples of 21: 21, 42; LCM: 42 **11.** multiples of 10: 10, 20, 30; multiples of 15: 15, 30; LCM: 30 **13.** $17 = 17$, $57 = 3 \cdot 19$; 969 **15.** $125 = 5^3$, $500 = 2^2 \cdot 5^3$; 500 **17.** $8 = 2^3$, $16 = 2^4$, $32 = 2^5$; 32 **19.** $20 = 2^2 \cdot 5$, $24 = 2^3 \cdot 3$, $60 = 2^2 \cdot 3 \cdot 5$; 120 **21.** $49s^3t^2$ **23.** $120c^2d^6$ **25.** 180 sec **27.** 4320 **29.** 4788 **31.** 300 **33.** 60 **35.** $120x^4y^7$ **37.** $495g^4h^5k^3$ **39.** 24 min; 1440 sec **43.** $19x + 20 + 2y$ **45.** 73.7 **47.** 134.77

4.1–4.4 Notebook Review (pp. 190–191)

1. prime factorization **2.** $2^3 \cdot 5$ **3.** 7 **4.** $5 \cdot 17$ **5.** $2^3 \cdot 3 \cdot 5$ **6.** 16 **7.** 20 **8.** $7a$ **9.** $20y^4$ **10.** $\frac{1}{3}$ **11.** $\frac{3}{20}$ **12.** $\frac{b}{3}$ **13.** $\frac{n^2}{3}$ **14.** 84 **15.** 270 **16.** $50c^2d$ **17.** $36n^3$ **18.** *Sample answer:* When you list the factors of a number, you list all numbers by which the number is divisible, including 1, composite numbers, and the number itself. When you find the prime factorization of a number, you write the number as a product only of its prime factors.

4.5 Getting Ready to Practice (p. 194)

1. least common multiple or LCM **3.** 20 **5.** 36 **7.** < **9.** >

4.5 Practice and Problem Solving (pp. 194–195)

11. > **13.** < **15.** > **17.** $\frac{1}{8}, \frac{5}{16}, \frac{1}{2}, \frac{3}{4}$ **19.** $\frac{15}{16}, \frac{5}{3}, \frac{35}{15}, 2\frac{2}{5}$ **23.** $\frac{-47}{4}, -11\frac{7}{12}, \frac{-23}{2}, -11\frac{17}{48}, \frac{-34}{3}$ **25.** > **31.** $2^4 \cdot 3 \cdot 7$

4.6 Getting Ready to Practice (p. 198)

1. base **3.** yes **5.** no **7.** 4^6 **9.** a^{12} **11.** c **13.** 8^5 **15.** The bases should not be multiplied;. $2^2 \cdot 2^4 = 2^{2+4} = 2^6$.

4.6 Practice and Problem Solving (pp. 199–200)

17. v^{12} **19.** m^{19} **21.** x^4 **23.** y^2 **25.** $(-4)^5$ **27.** 7^4 **29.** 2^{10} **31.** 9^4 **33.** 5 **35.** 9 **37.** $4y^5$ **39.** $64a^7b^{10}$ **41.** z^5 **43.** $25n^3$ **45.** 10^{12} **47.** 10^{12} **49.** 2^2 **55.** 157 **57.** 18 **59.** >

4.7 Getting Ready to Practice (p. 203)

1. true **3.** $\frac{1}{81}$ **5.** $\frac{1}{16}$ **7.** 5^{-3} means $\frac{1}{5^3}$; $5^{-3} = \frac{1}{5^3} = \frac{1}{5 \cdot 5 \cdot 5} = \frac{1}{125}$.

4.7 Practice and Problem Solving (pp. 203–204)

9. $\frac{1}{36}$ **11.** $\frac{1}{625}$ **13.** $\frac{1}{m^4}$ **15.** $\frac{9}{n^3}$ **17.** $\frac{1}{b^6}$ **19.** $\frac{1}{d^{13}}$ **21.** $\frac{kg}{m \cdot s^2}$ **23.** -8 **25.** 10 **27.** 10^{11} **29.** 10^8 **31.** 10^7 **33.** never **35.** -25 **37.** 52 **39.** 90 **41.** -17

4.8 Getting Ready to Practice (p. 207)

1. yes **3.** yes **5.** 4.68×10^{-1} **7.** 4,350,000 **9.** 96,200,000

4.8 Practice and Problem Solving (pp. 207–208)

11. 7.9×10^3 **13.** 2.13×10^6 **15.** 4.15×10^{-7} **17.** 0.0871 **19.** 0.00000000176 **21.** 2,830,000,000,000 **23.** 6×10^8 **25.** 6.552×10^{14} **27.** 1.5×10^7 **31.** > **33.** 1.066×10^5 **35.** 1.944×10^{-13} **37.** 3.5×10^{11} **39.** 1.19×10^8; 6.205×10^9 **41.** 1.2×10^{-13} cm **43.** 6 **45.** $\frac{2}{3m}$

4.8 Technology Activity (p. 209)

1. 2.7115×10^{14} **3.** 1.584×10^{-11} **5.** 2.682119205×10^7 **7.** $1.365853659 \times 10^{-7}$ **9.** about 2.3×10^2

4.5–4.8 Notebook Review (pp. 210–211)

1. scientific notation **2.** > **3.** < **4.** < **5.** = **6.** n^{13} **7.** y^{16} **8.** x^2 **9.** c^4 **10.** $\frac{12}{a^5}$ **11.** $\frac{1}{n^3}$ **12.** $\frac{1}{m^{11}}$ **13.** $\frac{1}{c^{13}}$ **14.** 3.46×10^{10} **15.** 9×10^{-7} **16.** 5.02×10^{-10} **17.** *Sample answer:* Use the commutative and associative properties to rewrite the product as $(5 \times 4) \times (10^9 \times 10^{15})$. Use multiplication and the product of powers property to simplify this to 20×10^{24}. Move the decimal point to write the product in scientific notation as 2.0×10^{25}.

Chapter Review (pp. 212–213)

1. The greatest common factor is the greatest number that is a factor of both numbers. The least common multiple is the smallest number that is a multiple of both numbers. **3.** *Sample answer:* $3x$, $4s^2$, $7ab^3$ **5.** simplest form **7.** prime factorization **9.** $2 \cdot 3^3$ **11.** $2 \cdot 3 \cdot 5^2$ **13.** $19 \cdot a \cdot a \cdot b$ **15.** $2 \cdot 2 \cdot 2 \cdot 7 \cdot u \cdot u \cdot v \cdot v$ **17.** 10 **19.** 3 **21.** $9xy$ **23.** $\frac{1}{3}$ **25.** $-\frac{16}{51}$ **27.** $\frac{c}{3}$ **29.** $\frac{4}{n}$ **31.** 105 **33.** $25m^2n^4$ **35.** 24 sec **37.** < **39.** > **41.** 8^4 **43.** 7^2 **45.** $\frac{7}{x^4}$ **47.** $\frac{1}{3w^8}$ **49.** 0.000658 **51.** 6×10^6 ft^3/min; 3.6×10^8 ft^3/h

Chapter 5

5.1 Getting Ready to Practice (p. 221)

1. denominator, numerator **3.** $\frac{2}{3}$ **5.** $\frac{1}{5}$ **7.** $1\frac{3}{7}$ **9.** c **11.** $18\frac{3}{4}$ in.

5.1 Practice and Problem Solving (pp. 222–223)

13. $\frac{1}{9}$ **15.** $-\frac{11}{12}$ **17.** $\frac{1}{5}$ **19.** $-\frac{1}{2}$ **21.** $\frac{8}{15}$ **23.** $-8\frac{2}{5}$ **25.** $-\frac{n}{7}$ **27.** $-\frac{q}{p}$ **29.** 15 h; $2\frac{2}{3}$ h **31.** $1\frac{11}{18}$ **33.** $\frac{8}{25}$ **35.** $\frac{15}{16}$ **37.** $-8\frac{1}{5}$ **39.** $3\frac{1}{12}$ **41.** $\frac{1}{4}$ **43.** $1\frac{1}{3}$ **47.** 5 **49.** -42 **51.** 105 **53.** 1850 **55.** 9 **57.** 24 **59.** 16 **61.** 1.25

5.2 Getting Ready to Practice (p. 226)

1. least common denominator or LCD **3.** $1\frac{23}{24}$ **5.** $\frac{36+x}{9x}$

5.2 Practice and Problem Solving (pp. 226–227)

7. $\frac{5}{8}$ **9.** $\frac{13}{18}$ **11.** $-\frac{1}{32}$ **13.** $-\frac{33}{40}$ **15.** $11\frac{19}{36}$ **17.** $13\frac{8}{35}$ **19.** $8\frac{1}{3}$ ft **21.** true **23.** false **25.** $\frac{17s}{20}$ **27.** $\frac{77}{50n}$

29. West; traveling east is $\frac{27}{50}$ of the way around the equator, while traveling west is $1 - \frac{27}{50} = \frac{23}{50}$ of the way. Since $\frac{23}{50} < \frac{27}{50}$, traveling west is shorter. **31.** $1\frac{11}{72}$ **35.** 0 **37.** -126 **39.** $<$ **41.** $<$

5.3 Problem Solving Strategies (p. 229)

1. 7 students. *Sample answer:* Choose 18 classmates. Let 2 classmates represent the students that have both a dog and a cat. Six more classmates are needed to represent the students that have a dog and 3 more to represent those that have a cat. There are 7 classmates left over. **3.** 3 bows. *Sample answer:* Let one floor tile represent $\frac{1}{6}$ of a yard. Mark off $13 \cdot 5 = 65$ tiles to represent the amount of ribbon needed to decorate 5 gifts. Mark off 120 tiles to represent the amount of ribbon you have. The difference, 55 tiles, represents the length of ribbon left from which to make bows. Since 15 tiles represent the amount of ribbon needed to make a bow and $55 \div 15 = 3\frac{2}{3}$, 3 bows can be made with the remaining ribbon. **5.** 16 students; eighth. *Sample answer:* I had 4 classmates stand in front of me and 6 stand behind me. Then I had another classmate stand in front of me, and then two more classmates stood behind her but in front of me. Then I had 2 more classmates join the end of the line. Counting showed 16 classmates in line, of which I was eighth. **7.** 5 sweatshirts and 12 T-shirts

5.3 Getting Ready to Practice (p. 232)

1. numerators, denominators **3.** $-1\frac{7}{8}$ **5.** $\frac{23}{32}$

5.3 Practice and Problem Solving (pp. 232–233)

7. $\frac{7}{66}$ **9.** $\frac{1}{6}$ **11.** $4\frac{1}{2}$ **13.** $8\frac{3}{4}$ **15.** $27\frac{2}{9}$ **17.** $14\frac{2}{5}$ **19.** $1\frac{2}{5}$ km **21.** $-1\frac{3}{4}$ **23.** $-\frac{35}{48}$ **25.** 35 ft. *Sample answer:* Let one floor tile represent $\frac{1}{4}$ foot. Mark off 7 tiles to represent $1\frac{3}{4}$ feet. Mark off 7 tiles 19 more times to get 140 total tiles. Since 140 tiles times $\frac{1}{4}$ foot per tile equals 35, the answer is 35 feet. **27.** $\frac{2}{3}$ ft^2 **29.** $-\frac{9}{100}$ **31.** $-9\frac{3}{4}$ **33.** $3\frac{19}{120}$ **35.** $4\frac{3}{4}$ **37.** 7^5 **39.** 8^2 **41.** $1\frac{1}{2}$ **43.** $\frac{29}{60}$

5.4 Getting Ready to Practice (p. 236)

1. The multiplicative inverse, or reciprocal, of a number is the number that when multiplied by the original number equals 1. **3.** 6 **5.** $1\frac{1}{3}$ **7.** $\frac{2}{9}$ **9.** $-1\frac{2}{3}$ **11.** Step 1: Number of pounds of hamburger = Pounds per hamburger • Number of hamburgers; Step 2: $5 = \frac{1}{4}h$; Step 3: 20 hamburgers

5.4 Practice and Problem Solving (pp. 237–238)

13. $-\frac{9}{14}$ **15.** $1\frac{1}{2}$ **17.** $-\frac{3}{40}$ **19.** $-\frac{7}{8}$ **21.** $-3\frac{1}{2}$ **23.** $-7\frac{1}{12}$ **25.** $-\frac{2}{7}$ **27.** $2\frac{11}{35}$ **29.** $\frac{1}{6}$ **31.** $1\frac{3}{4}$ **33.** about $8\frac{1}{3}$ days **35.** Yes. *Sample answer:* When the two fractions are written with the same denominator c, then they can be represented as $\frac{a}{c}$ and $\frac{b}{c}$. Then $\frac{a}{c} \div \frac{b}{c} = \frac{a}{c} \cdot \frac{c}{b} = \frac{a}{b}$, so Juan's method works. **37.** 40 **39.** $1\frac{1}{5}$ **41.** 875 people. *Sample answer:* I solved the equation $\frac{2}{5}p = 350$. **43.** $\frac{2}{5}$ **45.** $\frac{3}{14}$ **47.** $\frac{x}{3}$ **49.** $\frac{7x^2}{9y^2}$ **51.** $1\frac{8}{9}$ **53.** $9\frac{1}{3}$

5.4 Technology Activity (p. 239)

1. $\frac{47}{55}$ **3.** $\frac{2}{3}$ **5.** $1\frac{1}{27}$ **7.** $11\frac{1}{5}$ **9.** $1\frac{1}{16}$ qt

5.1–5.4 Notebook Review (pp. 240–241)

1. 1 **2.** $\frac{1}{2}$ **3.** $-1\frac{1}{8}$ **4.** $1\frac{7}{8}$ **5.** $\frac{22x}{15}$ **6.** $\frac{5}{14}$ **7.** 2 **8.** $-8\frac{1}{2}$ **9.** $10\frac{5}{6}$ **10.** 9 **11.** $-1\frac{3}{7}$ **12.** $1\frac{3}{4}$ **13.** Multiply the answer by the divisor. The answer should be the dividend. *Sample answer:* $\frac{2}{5} \div \frac{5}{6} = \frac{12}{25}$ and $\frac{12}{25} \cdot \frac{5}{6} = \frac{2}{5}$ **14.** Greater than. *Sample answer:* Since dividing by a number is the same as multiplying by its reciprocal, and the reciprocal of a fraction between 0 and 1 will be greater than 1, the quotient will be greater than the original number.

5.5 Getting Ready to Practice (p. 244)

1. rational number, integer, whole number **3.** rational number, integer **5.** 0.8 **7.** $0.\overline{3}$ **9.** $\frac{3}{5}$ **11.** $\frac{8}{9}$ **13.** 1.8 in., $1\frac{7}{8}$ in., 2.1 in., $2\frac{1}{9}$ in.

5.5 Practice and Problem Solving (pp. 245–246)

15. $-0.\overline{1}$ **17.** $0.58\overline{3}$ **19.** 0.54 **21.** −0.4125 **23.** $-14.6\overline{3}$ **25.** $0.6\overline{136}$ **27.** $-\frac{14}{25}$ **29.** $2\frac{79}{100}$ **31.** $7\frac{253}{1000}$ **33.** $-5\frac{2}{625}$ **35.** $\frac{8}{9}$ **37.** $\frac{5}{33}$ **39.** $\frac{14}{333}$ **41.** $20\frac{41}{198}$ **43.** $9\frac{9}{13}$, $9\frac{5}{7}$, 9.72, 9.74, $9\frac{3}{4}$ **45.** $0.0\overline{9}$, $0.1\overline{8}$, $0.2\overline{7}$; $0.\overline{36}$, $0.\overline{45}$ **47.** 200 students **49.** 0.049; $\frac{1}{20}$ **53.** 17 **55.** 13 **57.** *Sample answer:* 170 **59.** *Sample answer:* 60

5.6 Getting Ready to Practice (p. 249)

1. 13, 11, 25 **3.** 7.37 **5.** 2.4 **7.** 5.61 **9.** 32

5.6 Practice and Problem Solving (pp. 249–250)

11. 38.103 **13.** −3.419 **15.** 4.988 **17.** −1.63 **19.** −7.71 **21.** 22.1 **23.** 18.985 **25.** −5.027 **27.** 7.31 **29.** −0.17 **31.** −6.347 **33.** 60 **35.** 300 + 40 + 5 + 0.6 + 0.09 + 0.002 **37.** 67.75 ft **39.** 26.42 m **45.** −1 **47.** $\frac{1}{b^{14}}$ **49.** $\frac{40}{63}$ **51.** $7\frac{1}{2}$

5.7 Getting Ready to Practice (p. 253)

1. divisor → $9\overline{)7.2}$ ← dividend, $\frac{0.8}{}$ ← quotient **3.** 1.5; 4 • 0.4 = 1.6 **5.** 0.4; 0.5 ÷ 1 = 0.5

5.7 Practice and Problem Solving (pp. 253–254)

7. 5 **9.** −5.74 **11.** 4 **13.** −50 **15.** 1.8935 **17.** 8.65 **19.** 8.7 **21.** 290.405 **23.** The answer should have 2 + 1 = 3 decimal places; 33.252. **27.** −8.1 **29.** 0.2675 **31.** 37.414 **33.** If you multiply both 4.6 and 0.23 by 100, you get 460 and 23; yes; because you have multiplied $\frac{4.6}{0.23}$ by $\frac{100}{100} = 1$ to get $\frac{460}{23}$. **37.** 6,890,000,000 **39.** 0.000007405 **41.** $-0.46, -\frac{9}{20}, -\frac{5}{12}, -0.4, -\frac{3}{8}$ **43.** 25 R2 **45.** 204 R39

5.8 Getting Ready to Practice (p. 259)

1. mean **3.** range **5.** −56; −56; −56; 27 **7.** Step 1: 1365 sec, 1316 sec, 1263 sec, 1233 sec, 1228 sec; Step 2: 6405 sec; 1281 sec; Step 3: 21:21

5.8 Practice and Problem Solving (pp. 259–261)

9. 191; 185; 185; 174 **11.** $181.1\overline{6}$ ft; 87 ft; none; 531 ft **13.** $9\frac{3}{4}$ in.; 10 in.; $10\frac{1}{2}$ in.; $2\frac{3}{8}$ in. **15.** Isaac: 9.375, Carl: 9.6, Kurt, 9.425; Carl's **17.** *Sample answer:* The median; there are equally many salaries above and below it, so it should reflect the most likely salary for me in each career. **19.** $\frac{7b}{6}$ **21.** Yes. *Sample answer:* I prefer Roberta's method because it is shorter and can be used for any value of a. **25.** −5 **27.** 0 **29.** −16 **31.** 66 **33.** −16

5.5–5.8 Notebook Review (pp. 262–263)

1. mean, median, mode **2.** $6\frac{3}{8}$, 6.4, $6\frac{5}{12}$, $6\frac{4}{9}$ **3.** 1.87 **4.** 42.598 **5.** 1.315 **6.** 98.11 **7.** 2.34 **8.** 3.0132 **9.** −24.8 **10.** 2 **11.** 24; 24; 24; 10 **12.** 7.45; 7.4; 7.2 and 7.7; 0.8 **13.** *Sample answer:* 3, 4, 12, 12 **14.** They both can be written as ratios. *Sample answer:* $0.2 = \frac{1}{5}$ and $0.\overline{2} = \frac{2}{9}$.

Chapter Review (pp. 264–265)

1. reciprocals **3.** front-end estimation **5.** mean **7.** $1\frac{1}{3}$ **9.** $-1\frac{1}{5}$ **11.** $\frac{17}{20}$ **13.** $-\frac{47}{56}$ **15.** $-\frac{4n}{3}$ **17.** $-\frac{1}{2c}$ **19.** $\frac{1}{4}$ in. **21.** $-\frac{1}{4}$ **23.** $-16\frac{1}{14}$ **25.** $\frac{3}{35}$ **27.** $-7\frac{7}{11}$ **29.** 30 **31.** $-7\frac{1}{7}$ **33.** 2, $\frac{11}{5}$, 2.25, $2\frac{3}{10}$, 2.32, $\frac{5}{2}$ **35.** 25.88 **37.** 6.045 **39.** −53.44 **41.** 0.425 **43.** 92.79 lb **45.** 238.05 mi^2 **47.** 0.125°C; 1°C; −7°C and 2°C; 15°C **49.** $3\frac{1}{10}$ in.; $3\frac{1}{8}$ in.; no mode; $\frac{3}{4}$ in.

Chapter 6

6.1 Getting Ready to Practice (p. 273)

1. $5x$ and $-9x$, 6 and −2 **3.** −15, 1, and −20 **5.** 5 **7.** 7 **9.** 82

6.1 Practice and Problem Solving (pp. 274–275)

11. no; −6 **13.** no; 3 **15.** −2 **17.** −4 **19.** −5 **21.** −5 **23.** 37 **25.** length: 40 mm, width: 17 mm, perimeter: 114 mm; 46 **27.** $-1\frac{1}{3}$ **29.** −4 **31.** $\frac{2}{3}$ **33.** 167 **35.** $\frac{19(x + 11)}{2} = 228$; 13

37. Yes. *Sample answer:* If you divide each side by 3, you get $x + 2 = 3$, so $x = 1$. This is the same answer you get using the distributive property. **39.** $x = 5$, $y = 8$; 34 **41.** > **43.** 34, 34, 32, 7 **45.** 28,800

6.2 Problem Solving Strategies (p. 277)

1. 18,320 mi **3.** 60 min **5.** 60 pages **7.** 165, 167, 169 **9.** 2012

6.2 Getting Ready to Practice (p. 280)

1. the sum of the lengths of the sides, or twice the length plus twice the width **3.** 5 **5.** $-1\frac{2}{3}$

6.2 Practice and Problem Solving (pp. 280–281)

7. 3 **9.** 5 **11.** 3 **13.** 41 **15.** -2 **17.** 132 **19.** 12 wk **21.** $-\frac{4}{5}$ **23.** $\frac{3}{4}$ **25.** $1\frac{1}{2}$ **27.** \$.80; \$60 **29.** $\frac{3}{8}$ **31.** -21 **33.** 17 **37.** 36 **39.** 9.558 **41.** 21.038 **43.** 14 **45.** 7 **47.** 47

6.3 Getting Ready to Practice (p. 284)

1. least common denominator or LCD **3.** 100; 4 **5.** 8; $\frac{7}{13}$ **7.** 20; 20

6.3 Practice and Problem Solving (pp. 284–285)

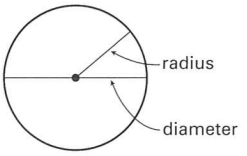
9. -12 **11.** $3.\overline{63}$ **13.** $-1\frac{2}{5}$ **15.** $1\frac{1}{5}$ **17.** $7x - 2 = 2x + 3$; 1; it is about 1; about 1.0097; the answers are very close. **19.** -5.36 **21.** $-1\frac{14}{17}$ **23.** \$3 on red, \$10 on purple, and \$3.50 on blue **25.** Yes. *Sample answer:* The extra factor(s) will divide out, so the simplified result will be the same. **27.** 18.439 **29.** 33.7635 **31.** -3 **33.** 2.25 **35.** $-15y + 60$

6.1–6.3 Notebook Review (pp. 286–287)

1. *Sample answer:* To combine like terms, find the terms with the same variable part, including exponents, and add or subtract the coefficients. The result is the coefficient of the term with that same variable part. Constants are like terms. **2.** -4 **3.** -6 **4.** $\frac{3}{4}$ **5.** 4.8 **6.** $\frac{1}{5}$ **7.** Multiply each side by 1000.

6.4 Getting Ready to Practice (p. 292)

1.



3. 10.5 in.; I used $\frac{22}{7}$ because 66 is divisible by 22. **5.** 34.5 cm; I used 3.14 because 11 is not divisible by 7. **7.** 105 yd; I used $\frac{22}{7}$ because 330 is divisible by 22.

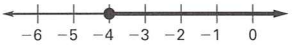
6.4 Practice and Problem Solving (pp. 293–294)

9. 2; 6.28 cm **11.** 7; 44.0 mm **13.** 25 yd **15.** 62.8 mm **17.** 44 in. **19.** 10.5 km **21.** Ex. 9: 6 cm; Ex. 10: 2.25 in.; Ex. 11: 42 mm; the actual answers should be close to these estimates. **23.** about 301 ft **25.** about 24,900 mi **27.** about 4620 mi **29.** 7.64 in. **37.** $x \leq 23$ **39.** $a \leq 2$ **41.** 3 **43.** $4\frac{1}{2}$

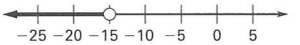
6.5 Getting Ready to Practice (p. 297)

1. less than; greater than; less than or equal to; greater than or equal to

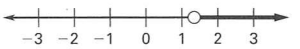
3. $x \geq -4$;



5. $x < -15$;

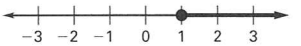


7. $x > 1\frac{1}{3}$;

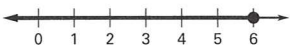


6.5 Practice and Problem Solving (pp. 297–299)

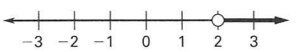
9. $a \geq 1$;



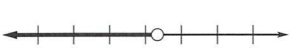
11. $p \leq 6$;



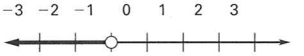
13. $w > 2$;



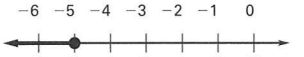
15. $c < \frac{1}{3}$;



17. $z < -4$;



19. $n \leq -2$;



21. $x \geq 750$; the salesperson must sell at least \$750 in clothes in that week to make at least \$500 for the week. **23.** at least 23 pledges; $925 + 25p \geq 1500$; $p \geq 23$ **25.** $k \leq 9$ **27.** $d \geq -20$ **29.** $x > 4.8$ **31.** $z \leq 4.9$ **33.** $3.95m - 1.2m \geq 25{,}000$; $m \geq 9090.\overline{90}$; the publisher must sell at least 9091 magazines each month to make a profit. **39.** *Sample answer:* You cannot buy a negative number of soft drinks.

41. 18 sandwiches. *Sample answer:* I used Make a List to list all of the possibilities. **43.** $22\frac{1}{3}$, 22.5, 22 **45.** 3.4

6.5 Technology Activity (p. 300) **1.** $y < 13$ **3.** $n \leq -1$ **5.** $t > -3$ **7.** 16 pencils

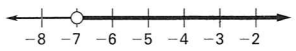
6.6 Getting Ready to Practice (p. 303) **1.** $x \geq 5$ **3.** $8 - x \leq 6$ **5.** Step 1: $32m + 50$; Step 2: $32m + 50 \leq 200$; Step 3: $m \leq 4.6875$; you can be a member up to 4 months without spending more than \$200.

6.6 Practice and Problem Solving (pp. 304–305) **7.** $9 < x + 1$; $x > 8$ **9.** $8x \geq 40$; $x \geq 5$ **15.** "3 less than a number" is equivalent to the expression $n - 3$, while "3 is less than a number" is equivalent to the inequality $3 < n$. **17.** more than 15 dances **19.** $2 + 0.5n \geq 6$; 3 A.M.; no. *Sample answer:* If there are 6 inches of snow at 3 A.M., and it keeps snowing at the same rate, then there will be 7.5 inches of snow at 6 A.M. **21.** $2 + 0.4 \cdot 5 \cdot m$; $2.50 + 0.25 \cdot 7 \cdot m$ **23.** $m < 2$ mi **25.** 213.52 in. **27.** 89 **29.** 25

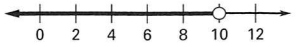
6.4–6.6 Notebook Review (pp. 306–307) **1.** circumference; diameter **2.** 44 **3.** 38.5 **4.** 50 **5.** $b < 42$ **6.** $j > 6$ **7.** $y \leq 9$ **8.** $8\frac{1}{3}$ min **9.** *Sample answer:* Use < if the expressions "is less than" or "is fewer than" are used. Use > if "is greater than" or "is more than" are used. Use ≤ if "is less than or equal to," "is at most," or "is not more than" are used. Use ≥ if "is greater than or equal to," "is at least," or "is not less than" are used.

Chapter Review (pp. 308–309) **1.** circle **7.** 6 **9.** 9 **11.** 7 **13.** $-\frac{5}{12}$ **15.** In the last step, the values of x and y were substituted for the length and the width to find the perimeter. Instead, the values of x and y must first be substituted into the expressions for the length and width of the rectangle. The length is $4x + 2 = 4(3) + 2 = 14$. The width is $2y = 2(4) = 8$. So, $P = 2(14) + 2(8) = 44$. **17.** $2w + 50 = 3w - 87$; 137 teams **19.** $1\frac{1}{2}$ mi **21.** 25.1 mm **23.** 1.91 in.

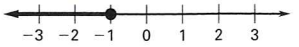
25. $x > -7$;



27. $a < 10$;



29. $g \leq -1$;



31. $14 - 3x \leq 11$; $x \geq 1$ **33.** $7(15 - x) \geq 56$; $x \leq 7$

Chapter 7

7.1 Getting Ready to Practice (p. 319) **1.** rates **3.** $\frac{3}{2}$, 3 to 2, 3 : 2 **5.** yes **7.** yes **9.** Multiply by $\frac{7 \text{ days}}{1 \text{ week}}$: $\frac{14 \text{ times}}{1 \text{ day}} \cdot \frac{7 \text{ days}}{1 \text{ week}} = \frac{98 \text{ times}}{1 \text{ week}}$.

7.1 Practice and Problem Solving (pp. 319–320) **11.** $\frac{4}{5}$, 4 to 5, 4 : 5 **13.** $\frac{5}{7}$, 5 to 7, 5 : 7 **15.** $\frac{2}{3}$, 2 to 3, 2 : 3 **17.** $\frac{-3}{1}$, −3 to 1, −3 : 1 **19.** 2 **21.** 4.32 **23.** $\frac{4 \text{ adults}}{1 \text{ car}}$ **25.** $\frac{1.5 \text{ lb}}{1 \text{ dollar}}$ **27.** $\frac{5}{5} = \frac{1}{1}$ **29.** 2 **31.** 25 **33.** Check work; $\frac{1}{10}$ of the people in the class are left-handed, so divide the number of people by 10. **35.** 1134 people/mi^2 **37.** 6.25 ft **39.** 6 **41.** −8

7.2 Getting Ready to Practice (p. 324) **1.** Find the cross products and solve the resulting equation to solve the proportion. **3.** 6 **5.** 6 **7.** 2640 ft

7.2 Practice and Problem Solving (pp. 325–326) **9.** no **11.** yes **13.** 9 **15.** 9 **17.** 38.5 **19.** 1513 **21.** 12 in. **23.** 27.25 in. **25.** \$90 **27.** 34,375 mi **29.** 1 **31.** 23 **35.** length: 5 in.; width: 1.75 in.; height: 1.25 in. **37.** $\frac{3 \text{ people}}{1 \text{ taxi}}$ **39.** $\frac{2 \text{ dogs}}{1 \text{ household}}$

7.3 Getting Ready to Practice (p. 329) **1.** percent **3.** 25% **5.** 550

7.3 Practice and Problem Solving (pp. 329–330) **7.** 4% **9.** 90% **11.** 110.25 **13.** 589 **15.** 560 **17.** 925 **19.** 40.08 ft **21.** 135% **23.** 2860 **25.** 540 **27.** 60% **29.** $4y$ **31.** 28.5% **35.** $1\frac{43}{50}$ **37.** $\frac{78}{125}$ **39.** 45.216

7.4 Getting Ready to Practice (p. 333) **1.** 100%; 1 **3.** 9% **5.** 150% **7.** 0.125, $\frac{1}{8}$ **9.** 1.1, $1\frac{1}{10}$ **11.** The numerator of the fraction should be 0.1; $0.001 = \frac{0.1}{100} = 0.1\%$.

7.4 Practice and Problem Solving (pp. 334–335)

13. 5.7% **15.** 0.4% **17.** 15% **19.** 0.5% **21.** 105.6% **23.** 52.5% **25.** $85\frac{1}{3}\%$ **27.** 70% **29.** 0.87, $\frac{87}{100}$ **31.** 1.01, $1\frac{1}{100}$ **33.** 0.042, $\frac{21}{500}$ **35.** 1.24, $1\frac{6}{25}$ **37.** 0.004, $\frac{1}{250}$ **39.** 0.4455, $\frac{891}{2000}$ **41.** 0.6%, $\frac{3}{50}$, 0.0606, 6.6%, 0.606 **43.** $\frac{21}{100}$, 0.212, $\frac{21}{20}$, 212%, 21.2 **45.** Spanish **47.** 23% **49.** < **51.** > **53.** = **55.** *Sample answer:* when referring to part or all of a group of people **59.** $13 + 4x \leq 9$; $x \leq -1$ **61.** $6. *Sample answer:* I used Work Backward because it allowed me to start with the known final amount and then "undo" each of the steps one at a time. **63.** 3.5 **65.** 11.88

7.1–7.4 Notebook Review (pp. 336–337)

1. proportion **2.** $\frac{7.5 \text{ ft}}{1 \text{ sec}}$ **3.** $\frac{\$1.68}{1 \text{ gal}}$ **4.** 6% **5.** 24.7 **6.** 0.74, $\frac{37}{50}$ **7.** 0.038, $\frac{19}{500}$ **8.** 0.168, $\frac{21}{125}$ **9.** 1.3, $1\frac{3}{10}$ **10.** If the cross products are equal, then the ratios form a proportion.

7.5 Getting Ready to Practice (p. 340)

1. increase **3.** decrease; 20% **5.** 23.1

7.5 Practice and Problem Solving (pp. 340–341)

7. increase; 60% **9.** decrease; $6.\overline{6}\%$ **11.** decrease; 10% **13.** 1144 **15.** 12.8 **17.** 77,393.75 **19.** about 15,390 tons **21.** 50% increase **23.** 50% decrease **25.** False; multiplying by 5 gives a 400% increase. **27.** True; to find an 80% decrease, multiply by 80% and subtract. The final result is 20% of the original number, and finding 20% of a number is the same as dividing by 5. **29.** 9.9% **31.** 9 in. by 6 in.; 125% **33.** −5.36 **35.** −14 **37.** 26 **39.** 12

7.6 Getting Ready to Practice (p. 344)

1. markup **3.** $11.40 **5.** $34.80 **7.** $37.80

7.6 Practice and Problem Solving (pp. 345–346)

9. $39.90 **11.** $16.80 **13.** $101.37 **15.** $61.61 **17.** $22.50 **21.** discount; 10% **23.** markup; 120% **25.** discount; about 40% **27.** 19% **29.** 40% **33.** 3 **35.** 28 **37.** 45 **39.** 40

7.7 Getting Ready to Practice (p. 349)

1. principal **3.** 82% **5.** 399

7.7 Practice and Problem Solving (pp. 349–350)

7. 208 **9.** 66 **11.** 250 **13.** 78 **15.** 0.5% **17.** $15 **19.** 31% **21.** = **23.** Row 1: 1.1, 3.3; Row 2: 2.5, 5, 7.5; Row 3: 3.8, 7.6, 11.4; for 22, the number increased by 1.1 each time; for 50, the number increased by 2.5 each time; for 76, the number increased by 3.8 each time. **25.** $142.50; $1342.50 **29.** $\frac{5}{6}$ **31.** −3 **33.** $n \leq 11\frac{3}{8}$

7.7 Technology Activity (p. 351)

1. $7577.03 **3.** $3744.89

7.8 Problem Solving Strategies (p. 353)

1. 62 red, 38 blue. *Sample answer:* In the 5 trials, 31 red marbles were chosen and 19 blue marbles were chosen. So $\frac{31}{50} = \frac{x}{100}$, or $x = 62$, and $\frac{19}{50} = \frac{y}{100}$, or $y = 38$. **3.** *Sample answer:* Draw and then replace a letter 20 times and record the results. Write a proportion comparing the ratio of the number of consonants drawn in the experiment to the ratio that would be drawn in 60 trials. Solve the proportion to find the predicted number of consonants drawn. **5.** $20; $34 **7.** 27 triangles

7.8 Getting Ready to Practice (p. 356)

1. 2, 4, 6 **3.** The experimental probability is the ratio of favorable outcomes to total outcomes, not to unfavorable outcomes as shown. The number of total outcomes is 20, so the experimental probability of spinning red is $\frac{7}{20}$.

7.8 Practice and Problem Solving (pp. 356–357)

5. $\frac{1}{5}$ **7.** $\frac{3}{10}$ **9.** 1 **11.** 16.8% **13.** 49.2% **15.** 24 **17.** 56 **19.** about 46% **21.** $\frac{3}{4}$ **25.** *Sample answer:* Each time she rolls the number cube has no effect on any other time she rolls the number cube. **27.** 10% **29.** −28 **31.** −32

7.5–7.8 Notebook Review (pp. 358–359)

1. Find the ratio of the number of favorable outcomes to the number of possible outcomes. **2.** $51 **3.** $59.04 **4.** 96 **5.** 291.04 **6.** red: $\frac{8}{17}$; yellow: $\frac{5}{17}$; blue: $\frac{4}{17}$ **7.** $525

Chapter Review (pp. 360–361) **1.** unit rate **3.** favorable outcomes; possible outcomes **7.** 4.78 **9.** 360 **11.** 8 **13.** 10 **15.** 308 **17.** 0.5% **19.** 0.3% **21.** 145% **23.** $\frac{7}{20}$ **25.** 23% **27.** $14.45 **29.** $127.05 **31.** $\frac{1}{2}$ **33.** $\frac{3}{4}$

Chapter 8

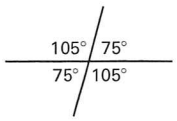
8.1 Getting Ready to Practice (p. 378)

1. supplementary **3.** supplementary **5.** Vertical angles have the same measure, so $m\angle 2 = 112°$.

8.1 Practice and Problem Solving (pp. 378–379)

7. 109° **9.** $m\angle 6 = 45°$, $m\angle 5 = m\angle 7 = 135°$

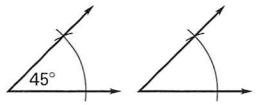
11.



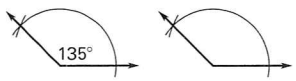
13. *Sample answer:* Together, the angles form a straight angle, so the sum of their measures is 180°. So, $135° + m\angle 2 = 180°$, and $m\angle 2 = 180° - 135° = 45°$. **17.** $y = 2$; $m\angle 6 = 90°$, $m\angle 3 = 90°$ **19.** $\frac{113}{500}$ **21.** $\frac{9}{2000}$ **23.** 3 in.^{2} **25.** 32.5 ft^2

Special Topic Exercises (p. 381) **1–7.** Sample answers are given.

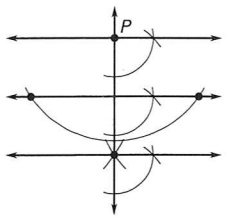
1.



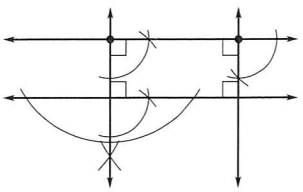
3.



5.



7.



8.2 Getting Ready to Practice (p. 384)

1. scalene **3.** equilateral **5.** The triangle has one right angle, so it is a right triangle.

8.2 Practice and Problem Solving (pp. 384–385)

7. right **9.** scalene **11.** isosceles **13.** 24; right **15.** Isosceles; an isosceles triangle has two sides of equal length. **17.** Yes; the sum of the measures of the angles is 180°. **19.** 20°, 70°, 90° **21.** 60°, 60°, 60° **23.** $m\angle 1 = 75°$, $m\angle 2 = 35°$, $m\angle 3 = 70°$ **25.** 5.2 yd, 1.2 yd^2 **27.** 148,941,024 km^2

8.3 Getting Ready to Practice (p. 387)

1. parallelogram **3.** rectangle **5.** parallelogram, rectangle **7.** 91

8.3 Practice and Problem Solving (pp. 388–389)

9. 1.6 cm; parallelogram, rhombus **11.** 109 **13.** 65 **15.** $x = 65$, $y = 115$ **17.** dark blue rectangle, red square, green trapezoid, light blue parallelogram, purple parallelogram, yellow trapezoid **19.** sometimes **21.** never **23.** 5; $m\angle E = 121°$, $m\angle H = 119°$ **27.** 5 **29.** 1 **31.** never **33.** sometimes

8.4 Getting Ready to Practice (p. 392)

1. polygon **3.** not a polygon **5.** 1440° **7.** 1620° **9.** 128.6°

8.4 Practice and Problem Solving (pp. 392–393)

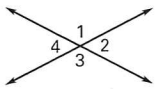
11. yes **13.** yes **15.** about 154° **17.** about 176.9° **19.** 78 **21.** $x = 72$; $m\angle R = m\angle N = 72°$; $m\angle L = m\angle M = m\angle P = m\angle Q = 144°$ **23.** $x = 45$; $m\angle B = m\angle E = 135°$ **27.** 360°; 360°; 360° **29.** $\frac{49}{50}$ **31.** $\frac{7}{5000}$ **33.** about 103.5%

8.1–8.4 Notebook Review (pp. 394–395) **1.** one **2.** 122; obtuse **3.** 26; right **4.** 52° **5.** 720°

6. Yes;

Sample answer: The sum of the other four angles just needs to be 540°.

7. Two;



Sample answer: There are two pairs of angles that do not share a side: $\angle 1$ and $\angle 3$, and $\angle 2$ and $\angle 4$.

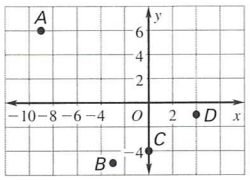
8.5 Getting Ready to Practice (p. 399)

1. congruent **3.** $\angle K$ and $\angle S$, $\angle L$ and $\angle P$, $\angle M$ and $\angle Q$, $\angle N$ and $\angle R$ **5.** 12 in. **7.** The corresponding vertices are not listed in the correct order; $\triangle ABC \cong \triangle DFE$ by Side-Angle-Side.

8.5 Practice and Problem Solving (pp. 400–401)

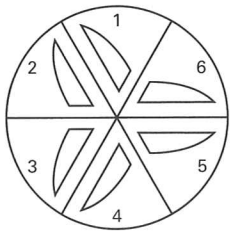
9. 80° **11.** 100° **13.** Side-Angle-Side **15.** Side-Side-Side; $x - 6 = 4$; 10 **17.** Angle-Side-Angle; $2x - 24 = x$; 24 **19.** 127.5° **23.** 59.15 **25.** 103

27–30.



8.6 Problem Solving Strategies (p. 403)

1. *Sample:*



mirror images: 1 and 2, 3 and 4, 5 and 6, 1 and 6, 2 and 3, 4 and 5, 1 and 4, 2 and 5, 3 and 6

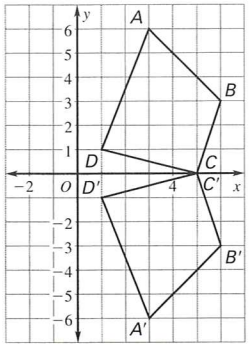
3. Scott, Alan, David, Mary, Peter; Scott, Alan, Peter, Mary, David **5.** 96 oz **7.** 92

8.6 Getting Ready to Practice (p. 406)

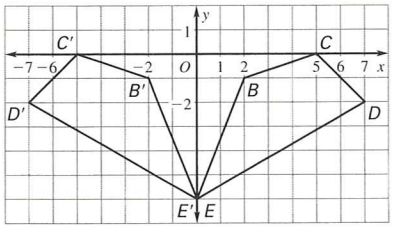
1. reflection **3.** no **5.** no **7.** none

8.6 Practice and Problem Solving (pp. 407–408)

11.

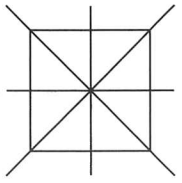


13.



15. two

17.



square

19. Lines of Symmetry entries in table: 3, 4, 5, 6, 8

21. A good answer will include a clearly drawn reflection. **25.** 280% **27.** 150°

8.7 Getting Ready to Practice (p. 411)

1. reflection **3.** rotation

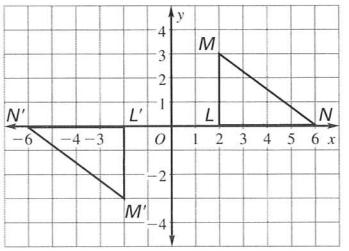
8.7 Practice and Problem Solving (pp. 412–413)

5. reflection **7.** translation **9.** reflection

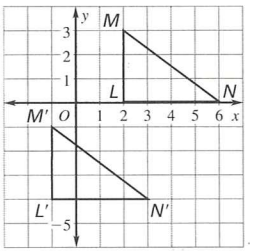
11. rotation **13.** rotation **15.** $(x + 5, y + 4)$

17. $P'(-5, 0)$, $Q'(-2, 0)$, $R'(0, -2)$

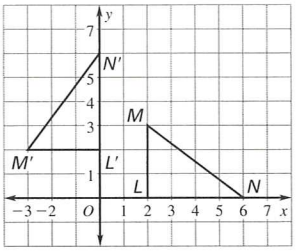
19.



21.



23.



27. *Sample answer:* Reflect in the y-axis and then the x-axis; make two 90° clockwise rotations; make two 90° counterclockwise rotations; reflect in the x-axis and then the y-axis. **29.** 384

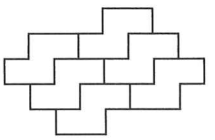
31. 49.5; right **33.** 74.8; acute **35.** 110.2, 110, 110

Special Topic Exercises (p. 415)

1. no **3.** no

5. Check work.

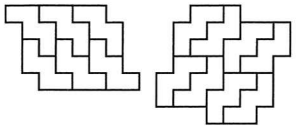
7. *Sample:*



translation

9. A good answer will include a rectangle with a piece cut from one side and slid to another side. The translation of that figure forms a tessellation.

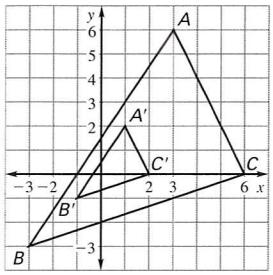
11. *Sample:*



8.8 Getting Ready to Practice (p. 418)

1. scale factor **3.** $\triangle MNL \sim \triangle PQR$

5. Steps 1, 3:

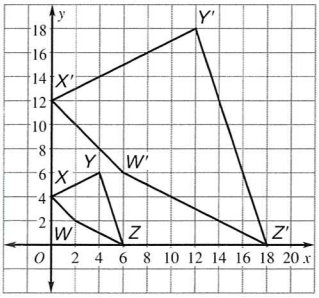


Step 2: $A'(1, 2)$, $B'(-1, -1)$, $C'(2, 0)$

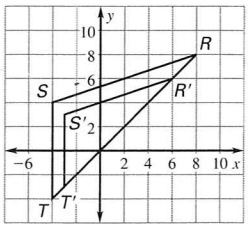
8.8 Practice and Problem Solving (pp. 419–421)

7. $ABCD \sim EDGF$ **9.** 40 **11.** 3 in. **13.** $x = 90$, $y = 6.75$ cm

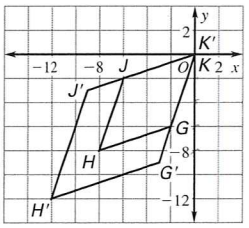
15.



17.



19.

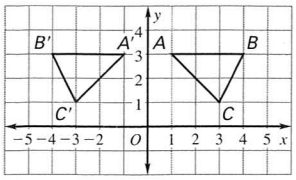


21. 4 in. by 8 in. **23.** $x = 44$, $y = 136$ **27.** \$27.50

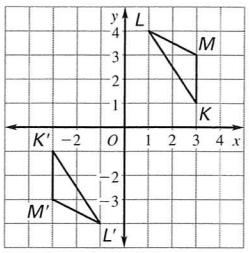
8.5–8.8 Notebook Review (pp. 422–423)

1. reflection **2.** translation **3.** 3 cm

4.



5.

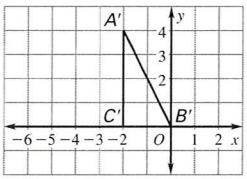


6. 25 m **7.** *Sample answer:* The perimeter of the image is the product of the scale factor and the perimeter of the original figure. **8.** *Sample answer:* A person turning around to face the opposite way

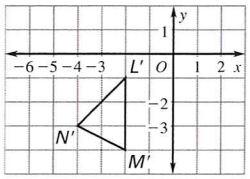
Chapter Review (pp. 424–425)

9. 109° **11.** 25° **13.** rectangle **15.** 900° **17.** $\angle A \cong \angle P$, $\angle B \cong \angle Q$, $\angle C \cong \angle R$, $\angle D \cong \angle S$, $\angle E \cong \angle T$ **19.** $\triangle ABC \cong \triangle GFH$; two sides and the included angle of one triangle are congruent to two sides and the included angle of the other triangle, so the triangles are congruent by Side-Angle-Side. **21.** no **23.** no

25.



27.



29. $A'(-4, 0)$, $B'(-4, 8)$, $C'(-12, 16)$, $D'(-24, 12)$

Chapter 9

9.1 Getting Ready to Practice (p. 434)

1. $b^2 = c$ **3.** ± 4 **5.** ± 11 **7.** -22.0 **9.** 49.4 **11.** ± 7 **13.** ± 9

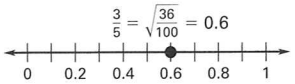
9.1 Practice and Problem Solving (pp. 434–436)

15. -1 **17.** 12 **19.** 6 **21.** 11 **23.** 4.7 **25.** -38.4 **27.** 0 **29.** ± 13 **31.** ± 6 **33.** No. *Sample answer:* There is no real number whose square is a negative number. **35.** ± 6.40 **37.** ± 11.66 **39.** ± 14.14 **41.** 4 **43.** 9 **45.** ± 1.2 **47.** ± 1.4 **49.** No. *Sample answer:* The table measures $\sqrt{34.5} \approx 5.9$ feet on a side. Since 5.9 feet is over 70 inches, the tablecloth is not big enough. **51.** $\frac{1}{2}$ **53.** $\frac{7}{8}$ **55.** $\frac{12}{13}$ **59.** neither **61.** supplementary **63.** 34 ways. *Sample answer:* I used the strategy Draw a Diagram so that I could draw all the ways that 3 stamps can be arranged and still be attached. **65.** $5\frac{7}{20}$ **67.** $-9\frac{1}{20}$

9.2 Getting Ready to Practice (p. 439)

1. irrational **3.** Irrational. *Sample answer:* 5 is not a perfect square. **5.** Rational. *Sample answer:* $\sqrt{\frac{25}{49}} = \frac{5}{7}$ which is a quotient of two integers.

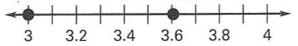
7. $\frac{3}{5} = \sqrt{\frac{36}{100}} = 0.6$ = **9.** 9.5 ft by 9.5 ft



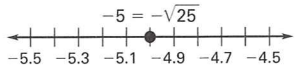
9.3 Practice and Problem Solving (pp. 440–441)

11. Rational. *Sample answer:* $\frac{9}{46}$ is a quotient of two integers. **13.** Irrational. *Sample answer:* neither 3 nor 5 is a perfect square.

15. $\sqrt{13} \approx 3.6056$ >



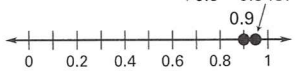
17. $-5 = -\sqrt{25}$ =



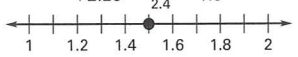
19. $0.\overline{262}$, $0.2\overline{6}$, 0.266, $0.26\overline{0}$ **21.** $\sqrt{4} = 2$; rational

23. $\sqrt{20}$; irrational

25. $\sqrt{0.9} \approx 0.9487$ >



27. $\sqrt{2.25} = \frac{3.6}{2.4} = 1.5$ =



29. $-4, -3.75, 1.5, \sqrt{8}$ **31.** $-3.5, -\sqrt{12}, -\frac{3}{4}, -\sqrt{\frac{1}{4}}$

33. Yes; too small. *Sample answer:* Because $\sqrt{110} \approx 10.5$, the piece of carpet should about fit the 10.5 foot dimension, but will be about 0.7 foot too short in the other dimension. **37.** $30a^{11}$ **39.** -5

41. c^4 **43.** $-\frac{2}{3n^4}$ **45.** rotation; $(x, y) \rightarrow (y, -x)$

47. translation; $(x, y) \rightarrow (x - 3, y + 1)$

9.3 Getting Ready to Practice (p. 445)

1. hypotenuse **3.** 15 **5.** 25 **7.** yes **9.** no

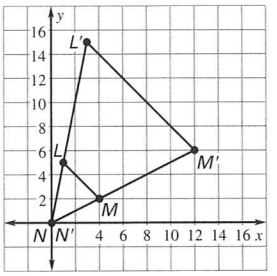
9.3 Practice and Problem Solving (pp. 446–447)

11. 34 ft **13.** 19.6 ft **15.** 24.5 in. **17.** no **19.** yes

21. 8.9 ft **23.** 9 m **25.** 4.24 ft **27.** no **29.** yes

31. 2 **33.** 5.3 **35.** 3

39.



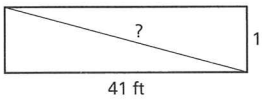
9.4 Problem Solving Strategies (p. 449)

1. 7.1 m **3.** 37 ft **5.** yes **7.** \$140 **9.** 6 possibilities

9.4 Getting Ready to Practice (p. 452)

1. Pythagorean triple **3.** 96 ft

5. Steps 1–2:



Step 3: 42.4 ft

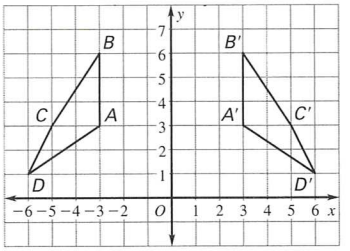
9.4 Practice and Problem Solving (pp. 452–453)

7. 15 ft; 60 ft^2, 40 ft **9.** 6 in.; 8.64 in.^{2}, 14.4 in.

11. 44 m; 2574 m^2, 286 m **13.** yes **15.** no

17. 30 in. **19.** 18 in. **21.** 24 m **23.** 182 cm

25.

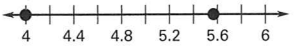


27. −12 **29.** 8.5

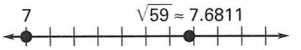
9.1–9.4 Notebook Review (pp. 454–455)

1. real numbers **2.** ± 13 **3.** ± 11 **4.** ± 8

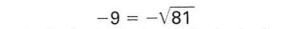
5. 4 $\sqrt{31} \approx 5.5678$ >



6. 7 $\sqrt{59} \approx 7.6811$ <



7. $-9 = -\sqrt{81}$ =



8. 6.3 $\sqrt{48} \approx 6.9282$ >

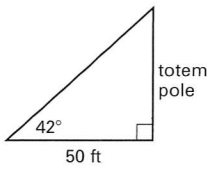
9. 15 **10.** 32 **11.** 2.5

12. *Sample answer:* The decimal form of a rational number terminates or repeats, while the decimal form of an irrational number does neither. For example, $\frac{3}{4}$ and $\frac{1}{3}$ are rational because $\frac{3}{4} = 0.75$ (terminates) and $\frac{1}{3} = 0.\overline{3}$ (repeats), but $\pi \approx 3.1415926535\ldots$, which never terminates or repeats.

9.5 Getting Ready to Practice (p. 458) **1.** The length of the hypotenuse is $\sqrt{2}$ times the length of a leg. **3.** 50 ft **5.** Step 1: $\frac{5\sqrt{3}}{2}$ in.; Step 2: 7.5 in.

9.5 Practice and Problem Solving (pp. 459–460)
7. 28 cm **9.** $x = 11$ in., $y = 11\sqrt{3}$ in.
11. $y = 36\sqrt{3}$ m, $z = 72$ m **13.** 115 ft **15.** 10 in.
17. $x = 8$ m, $y = 8\sqrt{3}$ m **19.** $x = 32\frac{1}{2}$ cm, $y = \frac{65\sqrt{3}}{2}$ cm **21.** $x^2 + (x\sqrt{3})^2 \stackrel{?}{=} (2x)^2$, $x^2 + 3x^2 \stackrel{?}{=} 4x^2$, $4x^2 = 4x^2$. *Sample answer:* $3^2 + (3\sqrt{3})^2 \stackrel{?}{=} 6^2$, $9 + 27 \stackrel{?}{=} 36$, $36 = 36$. **25.** $1\frac{1}{2}$ **27.** $\frac{7 \text{ people}}{1 \text{ team}}$ **29.** $\frac{61 \text{ rotations}}{1 \text{ min}}$ **31.** 10

9.6 Getting Ready to Practice (p. 466)
5. Step 1:



Step 2: $\tan 42° = \frac{x}{50}$; Step 3: 45 ft

9.6 Practice and Problem Solving (pp. 466–468)
7. $\sin P = \frac{11}{61}$, $\cos P = \frac{60}{61}$, $\tan P = \frac{11}{60}$, $\sin R = \frac{60}{61}$, $\cos R = \frac{11}{61}$, $\tan R = \frac{60}{11}$ **9.** 1.2349 **11.** 0.5878
13. 3.440 in. **15.** 20.796 m **19.** The tangent ratio is the length of the opposite side over the length of the adjacent side, not over the length of the hypotenuse. So $\tan 25° = \frac{x}{13}$, and $x \approx 6$ cm.
21. $m\angle C = 60°$, $AC = 10$ in.; $\sin A = \frac{1}{2}$, $\cos A = \frac{8.7}{10}$, $\tan A = \frac{5}{8.7}$ **23.** $m\angle A = 19.7°$, $BC \approx 17.2$ cm; $\sin A = \frac{17.2}{51}$, $\cos A = \frac{48}{51}$, $\tan A = \frac{17.2}{48}$
25. about 1813 m **27.** 84.4 in. **29.** 119 ft
33. 10.73 **35.** Rational. *Sample answer:* 484 is a perfect square, $22^2 = 484$. **37.** Irrational. *Sample answer:* Neither 17 nor 29 is a perfect square.
39. 3.625 mi/h

9.6 Technology Activity (p. 469) **1.** 14.0° **3.** 42.6° **5.** 87.7° **7.** $\tan^{-1}$ (32.46). *Sample answer:* The greater the tangent of an angle, the larger the angle.

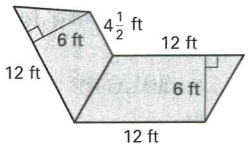
9.5–9.6 Notebook Review (pp. 470–471)
1. opposite; hypotenuse **2.** $8\sqrt{2}$ in. **3.** 20 cm
4. $x = 6$ m, $y = 6\sqrt{3}$ m **5.** $\sin A = \frac{3}{5}$, $\cos A = \frac{4}{5}$, $\tan A = \frac{3}{4}$, $\sin B = \frac{4}{5}$, $\cos B = \frac{3}{5}$, $\tan B = \frac{4}{3}$
6. $\sin A = \frac{48}{73}$, $\cos A = \frac{55}{73}$, $\tan A = \frac{48}{55}$, $\sin B = \frac{55}{73}$, $\cos B = \frac{48}{73}$, $\tan B = \frac{55}{48}$ **7.** $\sin A = \frac{36}{85}$, $\cos A = \frac{77}{85}$, $\tan A = \frac{36}{77}$, $\sin B = \frac{77}{85}$, $\cos B = \frac{36}{85}$, $\tan B = \frac{77}{36}$
8. *Sample answer:* Use the Pythagorean theorem to find that the length of the other leg is 4. Use this fact to find the cosine ratio, $\frac{4}{5}$.

Chapter Review (pp. 472–473) **1.** *Sample answer:* A rational number can be written as a quotient of two integers, while an irrational number cannot. A rational number has a decimal representation that either terminates or repeats, while an irrational number does not. **3.** *Sample answer:* $\sqrt{2}$, π, $\sqrt{7}$ **5.** perfect square **7.** shorter **9.** 9.7
11. −46.02 **13.** ± 14 **15.** ± 8 **17.** Rational. *Sample answer:* 100 is a perfect square, since $10^2 = 100$.
19. Rational. *Sample answer:* $\frac{16}{25}$ is the quotient of two integers. **21.** $0.\overline{181}$, $0.\overline{18}$, 0.188, $0.1\overline{8}$ **23.** 11 in.
25. no **27.** yes **29.** 679.23 m **31.** $x = 15\sqrt{3}$ m, $y = 30$ m **33.** $\sin P = \frac{21}{29}$, $\cos P = \frac{20}{29}$, $\tan P = \frac{21}{20}$, $\sin Q = \frac{20}{29}$, $\cos Q = \frac{21}{29}$, $\tan Q = \frac{20}{21}$ **35.** $\sin P = \frac{21}{29}$, $\cos P = \frac{20}{29}$, $\tan P = \frac{21}{20}$, $\sin Q = \frac{20}{29}$, $\cos Q = \frac{21}{29}$, $\tan Q = \frac{20}{21}$ **37.** 0.3346 **39.** 0.8391

Chapter 10

10.1 Getting Ready to Practice (p. 483) **1.** $A = bh$ **3.** $A = \frac{1}{2}(b_1 + b_2)h$ **5.** 56 in.^{2}

7. Step 1:

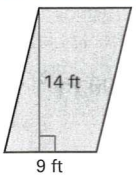


Step 2: trapezoid: $49\frac{1}{2}$ ft^2; parallelogram: 72 ft^2;

Step 3: $121\frac{1}{2}$ ft^2

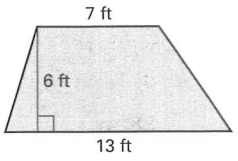
10.1 Practice and Problem Solving (pp. 483–485)

9.



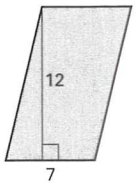
126 ft^2 **11.** 35 ft^2 **13.** 70 in.^{2}

15.



60 ft^2 **17.** 162 in.^{2} **19.** 480 m^2

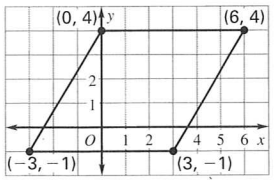
21.



7 units **23.** 10 cm^2, 11 cm^2

25. 90 cm^2, 99 cm^2; the new areas are nine times the original areas. **27.** *Sample answer:* about 112,500 mi^2 **29.** 79.85 in.^{2} **31.** 162 m^2 **33.** 360 ft^2

35.



30 units^2

41. $11\frac{2}{3}$ **43.** $\sin P = \frac{8}{17}$, $\cos P = \frac{15}{17}$, $\tan P = \frac{8}{15}$, $\sin R = \frac{15}{17}$, $\cos R = \frac{8}{17}$, $\tan R = \frac{15}{8}$

10.2 Getting Ready to Practice (p. 488)

1. radius **3.** 314 cm^2 **5.** about 7 m

10.2 Practice and Problem Solving (pp. 488–490)

7. 555 m^2 **9.** 340 cm^2 **11.** 314 ft^2 **13.** 615 mm^2 **15.** 1256 in.^{2} **17.** 1 m **19.** 6 in. **21.** 9 cm **23.** 10 mm; 314 mm^2 **25.** 239 in.^{2} **27.** 5 ft **29.** $18.84 = 2(3.14)r$; 3 ft; 28.3 ft^2 **31.** $37.68 = 2(3.14)r$; 6 cm; 113 cm^2

33. Larger square: 400 mm^2, smaller square: 200 mm^2, estimate: 300 mm^2; actual: 314 mm^2. *Sample answer:* The estimate is close to the actual area of the circle. **37.** no

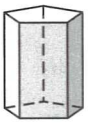
10.2 Technology Activity (p. 491)

1. multiplied by 3 **3.** multiplied by 5 **5.** Multiplied by $\sqrt{2}$; multiplied by $\sqrt{3}$. *Sample answer:* If the area of a circle is multiplied by n, then the radius is multiplied by $\sqrt{n}$.

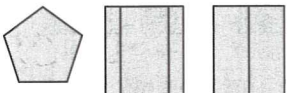
10.3 Getting Ready to Practice (p. 494)

1. cylinder; no **3.** sphere; no

5.



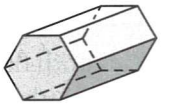
7 faces, 15 edges, 10 vertices



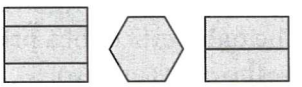
10.3 Practice and Problem Solving (pp. 494–495)

7. sphere; no **9.** cylinder; no

11.

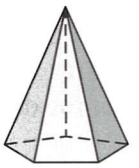


4 faces, 6 edges, 4 vertices



19. pentagonal prisms **21.** cylinder and cone

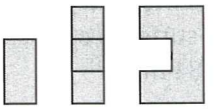
23.



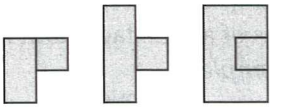
25. 346 in.^{2}

Special Topic Exercises (p. 497)

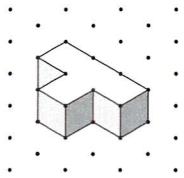
1.



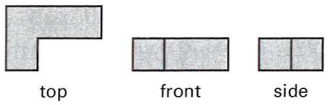
3.



5.



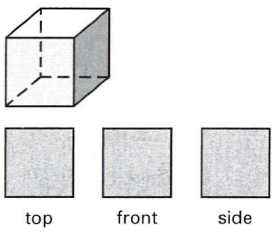
7.



9.

10.1–10.3 Notebook Review (pp. 498–499)

1. polyhedron **2.** 160 ft^2 **3.** 1810 $in.^2$ **4.** 50.2 mm^2
5. 254 yd^2 **6.** *Sample:*



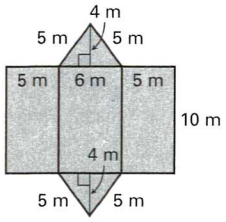
7. *Sample answer:* A cone and a cylinder both have circular bases, but a cone has only one circular base while a cylinder has two. A cross-section of either solid parallel to a base is a circle, but for the cone these circles get smaller toward the vertex, while for the cylinder they are all the same size. A cylinder and a prism both have two parallel bases, but the bases of a cylinder are circles, while the bases of a prism are polygons.
8. No. *Sample answer:* The only vertices of a prism are on its bases. Because the bases are two congruent polygons, the total number of vertices is twice the number on one base, so it is an even number.

10.4 Problem Solving Strategies (p. 501)

1. 396 $in.^2$ **3.** 11 0's, 21 1's, 20 of each of the digits 2–9 **5.** 12 sandwiches **7.** 4 and 13

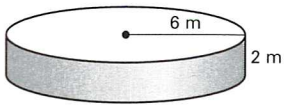
10.4 Getting Ready to Practice (p. 505)

1. *Sample answer:* Surface area is the sum of the areas of all the faces and lateral surfaces of a solid.
3. *Sample:* 184 m^2

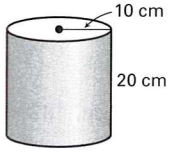


10.4 Practice and Problem Solving (pp. 505–506)

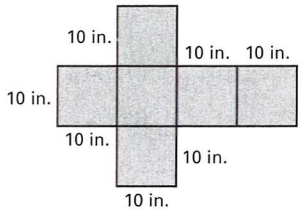
5. 48 $in.^2$ **7.** 150 yd^2
9. 301.6 m^2



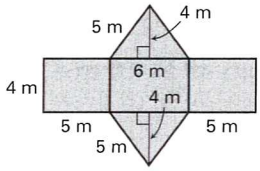
11. 1885.0 cm^2



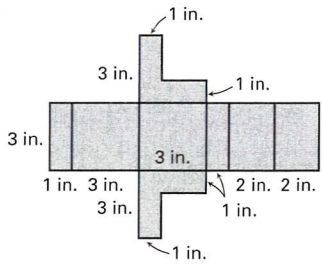
13. triangular prism; 680 $in.^2$
15. *Sample:* 600 $in.^2$



17. *Sample:* 88 m^2



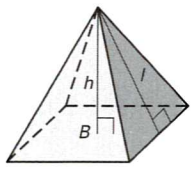
19. 1062 ft^2 **21.** 76 cm^2
23. *Sample:* 46 $in.^2$



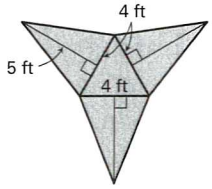
27. yes **29.** 0.4245 **31.** 0.9135 **33.** 216 $in.^2$

10.5 Getting Ready to Practice (p. 509)

1.



3. *Sample:* 36.9 ft^2

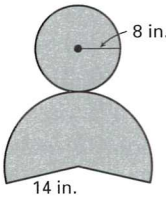


5. Step 1: $(\pi r^2 + \pi rl) - \pi r^2 = \pi rl$; Step 2: $\pi(1)\left(4\frac{1}{4}\right)$; Step 3: 13.4 in.^{2}

10.5 Practice and Problem Solving (pp. 510–511)

7. 144 m^2 **9.** 525 yd^2 **11.** 138.2 in.^{2} **13.** 119.4 mm^2

15. *Sample:*



552.9 in.^{2}

17. 261 in.^{2} **19.** 1508.0 m^2 **21.** 373.8 ft^2 **23.** 243.3 in.^{2} **25.** 6π in.^{2} **27.** 54π in.^{2}

29. $S = B + \frac{1}{2}Pl = \pi r^2 + \frac{1}{2}(2\pi r)l = \pi r^2 + \pi rl$; the simplified expression is the same as the formula for the surface area of a cone. **33.** rational **35.** irrational

10.6 Getting Ready to Practice (p. 515)

1. *Sample answer:* Area is the measure of the region inside a two-dimensional shape, while volume is the measure of the space inside a solid. **3.** 200 in.^{3} **5.** The area of the base is πr^2, not $2\pi r$; $V = Bh = \pi r^2 h = \pi(4^2)5 \approx 251.3$ m^3.

10.6 Practice and Problem Solving (pp. 516–517)

7. 343 in.^{3} **9.** 120 ft^3 **11.** 254.5 cm^3 **13.** 64 yd^3 **15.** 1260 m^3 **17.** 25,446.9 mm^3 **19.** surface area **21.** volume **23.** 3820.2 cm^3 **25.** 8.6 mm^3 **27.** 336 m^3 **29.** 11 times **31.** They would have the same effect. *Sample answer:* Since $V = lwh$, if any dimension is doubled, the volume is doubled. **33.** 36 **35.** 192 in.^{2} **37.** 75.4 ft^2

10.7 Getting Ready to Practice (p. 521)

5. 96 cm^3 **7.** 3141.6 ft^3

10.7 Practice and Problem Solving (pp. 522–523)

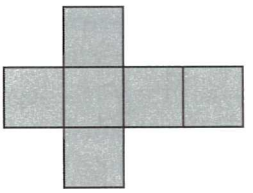
9. 60 ft^3 **11.** 2560 m^3 **13.** 247.5 ft^3 **15.** 144 yd^3 **17.** 3421.2 cm^3 **19.** 5399.6 ft^3 **21.** 506.8 ft^3 **23.** 134.0 m^3 **25.** 70.7 ft^3 **27.** 0.2 cm^3 **29.** Doubling the radius. *Sample answer:* The radius is squared in the volume formula, but the height is not. **31.** Find the volume of the rectangular pyramid and the volume of the rectangular prism and add; $V = \frac{1}{3}lwh_1 + lwh_2$. **33.** 28.8 ft; 36.7 ft **37.** 2770.9 in.^{3}

10.4–10.7 Notebook Review (pp. 524–525)

1. For a regular pyramid, it is the height of a face that is not a base; for a cone, it is the length of any segment joining the edge of the base to the top point of the cone. **2.** 471.24 m^2 **3.** 146 in.^{2} **4.** 105 m^2 **5.** 785.40 ft^2 **6.** 126 m^3 **7.** *Sample answer:* Area is the measure of the region inside a two-dimensional figure, while surface area is the sum of the areas of all faces or surfaces of a solid.

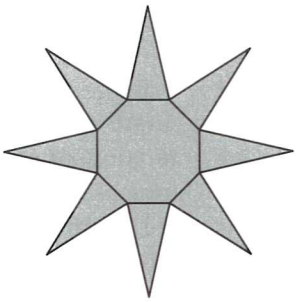
Chapter Review (pp. 526–527)

5. *Sample:*



7. $S = 2\pi r^2 + 2\pi rh$; $V = \pi r^2 h$ **9.** $S = B + \frac{1}{2}Pl$; $V = \frac{1}{3}Bh$ **11.** 112 ft^2 **13.** $53\frac{1}{4}$ in.^{2} **15.** 90 yd^2 **17.** 707 yd^2 **19.** 1.77 m^2

21. *Sample:*



9 faces,
16 edges,
9 vertices

23. 2921.7 yd^2 **25.** 785.4 ft^2 **27.** 144 in.^{2} **29.** 103.8 mm^3 **31.** 20 in.^{3} **33.** 314.2 ft^3 **35.** No. *Sample answer:* The volume of the pyramid is 15 cubic inches, which is greater than the 12 cubic inches of candle wax.

Chapter 11

11.1 Getting Ready to Practice (p. 543)

1. function **3.** yes **5.** 18, 13, 8, 3 **7.** $y = -5x$

11.1 Practice and Problem Solving (pp. 543–544)

9. No; one input, 4, has two output values.

11. Yes; each input has exactly one output value.

13.

Input x	−2	−1	0	1	2
Output y	−3	−2	−1	0	1

range: −3, −2, −1, 0, 1

15.

Input x	-2	-1	0	1	2
Output y	-10	-5	0	5	10

range: $-10, -5, 0, 5, 10$

17. $y = 5x$ **19.** No; the weight of the cans that Stanley recycles is a function of the amount of money. **21.** $t = 3r - 2$ **23.** Yes; each input has exactly one output value. **25.** 113.5 m^2 **27.** 6670 ft^2

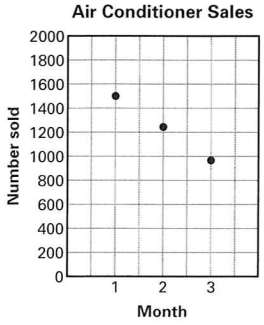
11.2 Getting Ready to Practice (p. 547)

1. scatter plot

11.2 Practice and Problem Solving (pp. 547–548)

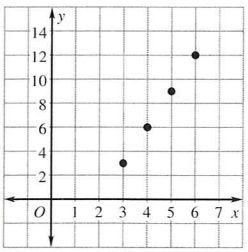
3. no relationship **5.** negative relationship

7.



There is a negative relationship. As the summer turns to fall, sales of air conditioners decrease.

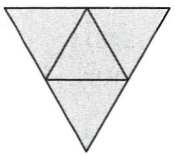
9.



There is a positive relationship, with each increase of 1 in x corresponding to an increase of 3 in y; (7, 15).

11. positive relationship **13.** *Sample answer:* When the weather is nicer, more people will vote; no, because it would be hard to find a single measure that would accurately indicate how "nice" the weather is. **15.** 90 m^2

17.



21. 19 **23.** 19

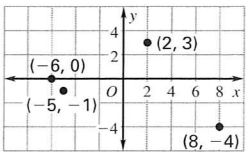
11.3 Getting Ready to Practice (p. 551)

1. solution **3.** $y = 2x + 4$ **5.** The x value was substituted for y and the y value was substituted for x. The second step should be $2(-5) + 3(4) \stackrel{?}{=} -7$, followed by $-10 + 12 \stackrel{?}{=} -7$ and $2 \neq -7$. So, $(-5, 4)$ is not a solution.

11.3 Practice and Problem Solving (pp. 551–553)

7. y values in the table: 3, 8, 13, 18 **9.** y values in the table: $-25, -20, -15, -10$ **11.** no **13.** yes **15.** yes **17.** *Sample answer:* $(-1, -6)$, $(0, -10)$, $(1, -14)$, $(2, -18)$ **19.** no **21.** yes **23–27.** Sample answers are given. **23.** $(-1, -15)$, $(0, -13)$, $(1, -11)$, $(2, -9)$ **25.** $(-1, 8)$, $(0, 3)$, $(1, -2)$, $(2, -7)$ **27.** $(-1, -45)$, $(0, -51)$, $(1, -57)$, $(2, -63)$ **29.** 20 wk **31.** $y = -x + 8$. *Sample answer:* $(-1, 9)$, $(0, 8)$, $(1, 7)$, $(2, 6)$ **33.** $y = 3x + 33$. *Sample answer:* $(-1, 30)$, $(0, 33)$, $(1, 36)$, $(2, 39)$ **35.** $y = 2 - 3x$. *Sample answer:* $(-1, 5)$, $(0, 2)$, $(1, -1)$, $(2, -4)$ **37.** $y = 2x + 4$ **39.** *Sample answer:* $9x = 24$ and $8y \approx -6$, so $9x + 8y \approx 18$, which is greater than 16.

41. $(2, -1)$ **43.**



45.

Input x	-2	-1	0	1	2
Output y	3	2.5	2	1.5	1

range: 1, 1.5, 2, 2.5, 3

47.

Input x	-2	-1	0	1	2
Output y	12	10	8	6	4

range: 4, 6, 8, 10, 12 **49.** -8.75

11.4 Problem Solving Strategies (p. 555)

1. 2nd row: 140, 120, 100, 80 **3.** 60 ft **5.** Krystal **7.** 27 rectangles; 81 rectangles **9.** Leslie

11.4 Getting Ready to Practice (p. 558)

1. line

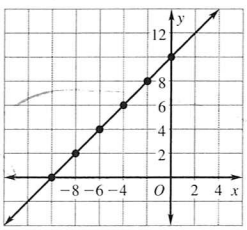
3. *Sample:*

Input x	-2	-1	0	1	2
Output y	-4	-4	-4	-4	-4

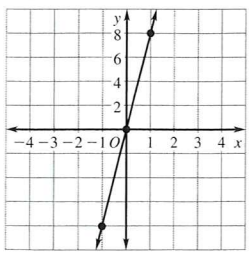
11.4 Practice and Problem Solving (pp. 559–560)

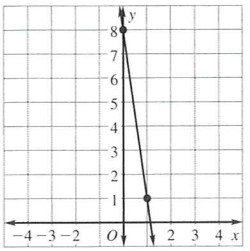
9. yes **11.** *Sample answer:* $(-1, -3)$, $(0, -2)$, $(1, -1)$ **13.** *Sample answer:* $(-1, 6)$, $(0, 6)$, $(1, 6)$

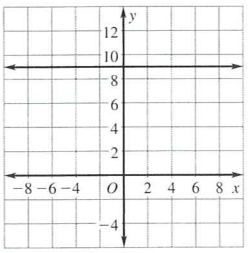
15.



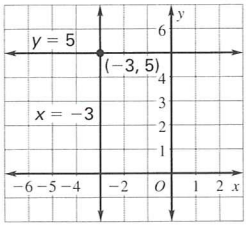
17.



19. 

23. 

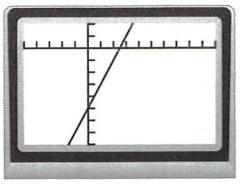
27. $x = 5$

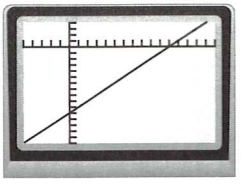
29. 

$(-3, 5)$. *Sample answer:* Since $x = -3$ and $y = 5$, $(-3, 5)$ will be the coordinates of the point of intersection.

37. $y = 2$ **39.** *Sample answer:* The line must be horizontal and contain all points with a y-coordinate of -8.6, so the equation of the line is $y = -8.6$. **41.** 140 square units **43.** 1056 square units **45.** y values in table: -14, -8, 1, 4, 13 **47.** -252

11.4 Technology Activity (p. 561)

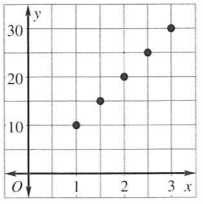
1. 

3. 

5. yes

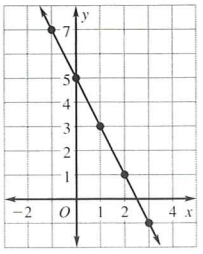
11.1–11.4 Notebook Review (pp. 562–563)

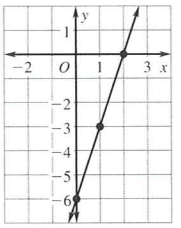
1. input-output table **2.** $y = -4x$ **3.** $y = x + 3$

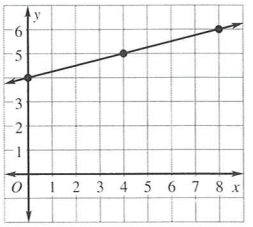
4. 

The data have a positive relationship, with every increase of 0.5 in x there is a corresponding increase of 5 in y.

5–7. Sample solutions are given.

5. $(0, 5)$, $(1, 3)$, $(2, 1)$ 

6. $(0, -6)$, $(1, -3)$ $(2, 0)$ 

7. $(0, 4)$, $(4, 5)$, $(8, 6)$ 

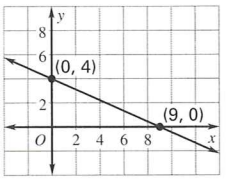
8. *Sample answer:* $4y = -2x + 16$ can be rewritten as $16 = 2x + 4y$, or $8 = x + 2y$, so the equations are equivalent and have the same solutions.

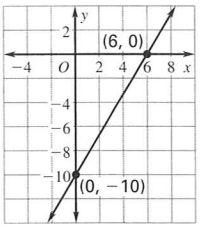
11.5 Getting Ready to Practice (p. 566)

1. y-intercept, x-intercept **3.** x-intercept: 3, y-intercept: -1

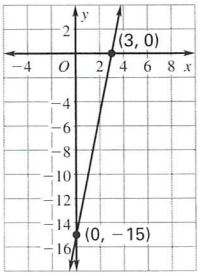
11.5 Practice and Problem Solving (pp. 566–567)

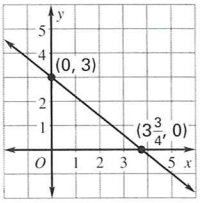
5. x-intercept: $\frac{1}{2}$, y-intercept: -3 **7.** x-intercept: -2, y-intercept: 10 **9.** x-intercept: 5, y-intercept: 4

11. 

13. 

15. Up. *Sample answer:* The x-intercept will be on the positive side of the x-axis and the y-intercept will be on the negative side of the y-axis, so the line will slant up from left to right. **17.** x-intercept: none, y-intercept: 14

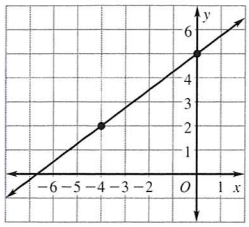
19. 

21. 

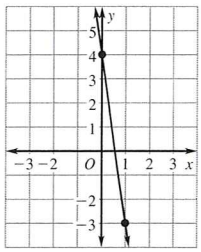
25. x-intercept: 1.71, y-intercept: 3.65

27. x-intercept: -3.64, y-intercept: -15.01

31.



33.

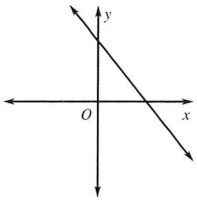


35. 60 km/h

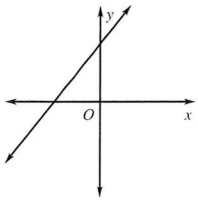
11.6 Getting Ready to Practice (p. 572)

1. rise **3, 5.** Sample answers are given.

3.



5.



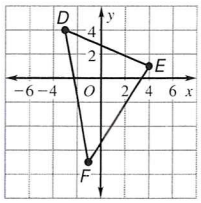
7. 3 **9.** 1

11.6 Practice and Problem Solving (pp. 573–574)

11. (1, 0), (−2, 6); −2 **13.** $-\frac{1}{5}$ **15.** 1 **17.** $\frac{3}{5}$

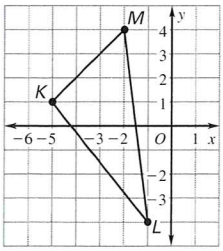
19. $-\frac{5}{12}$ **21.** $\frac{3}{32}$

23.



slope of $\overline{DE} = -\frac{3}{7}$,
slope of $\overline{EF} = \frac{8}{5}$,
slope of $\overline{FD} = -\frac{11}{2}$

25.



slope of $\overline{KL} = -\frac{5}{4}$,
slope of $\overline{LM} = -8$,
slope of $\overline{MK} = 1$

27. The line through (1, 1) and (3, 4); the line with the greater slope is steeper; the line with the greater slope has a greater number for the slope.

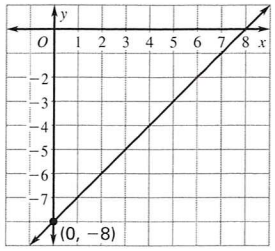
31. $x = 12$ **33.** $x = 4, y = 3$ **37.** yes **39.** no **41.** 63

11.7 Getting Ready to Practice (p. 579)

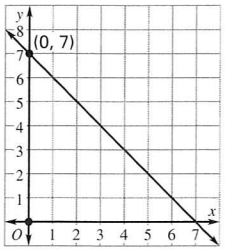
1. −5, 7 **3.** $y = 2x - 5$ **5.** 1, 3 **7.** 2, −1

11.7 Practice and Problem Solving (pp. 579–580)

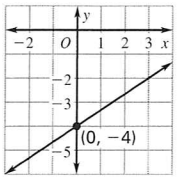
9. 1, −8;



11. −1, 7;



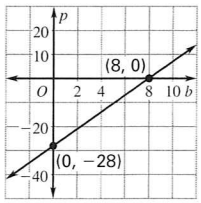
13. $\frac{2}{3}$, −4;



15. $y = -6x + 10$; −6, 10 **17.** $y = \frac{2}{3}x - 3$; $\frac{2}{3}$, −3

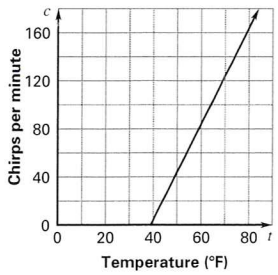
19. $y = -12x$; −12, 0

21.



9 bracelets **23.** $y = -\frac{3}{2}x - 3$

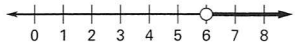
25.



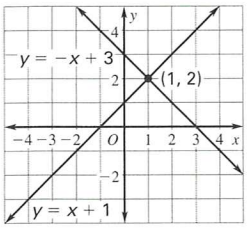
At 39°F, the number of chirps per minute is 0.

27. $y = -\frac{a}{b}x - \frac{c}{b}$ **29.** $5x \geq 35$; $x \geq 7$ **31.** 75 ft^3

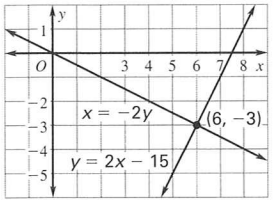
33. $t > 6$;



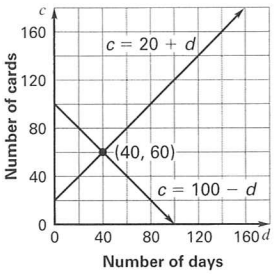
Special Topic Exercises (p. 582)

1. 

(1, 2)

3. 

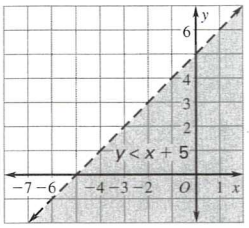
(6, −3) **5.** (−1, 5)

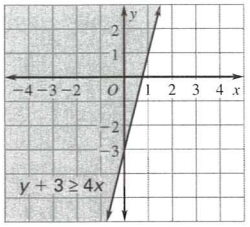
7. 

in 40 days

11.8 Getting Ready to Practice (p. 585)

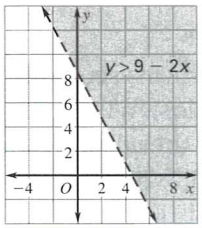
1. half-planes **3.** yes **5.** no

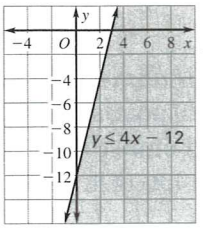
7. 

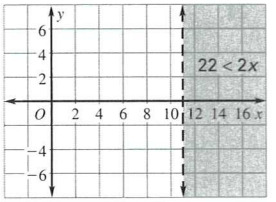
9. 

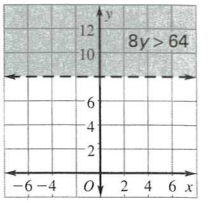
11.8 Practice and Problem Solving (pp. 586–587)

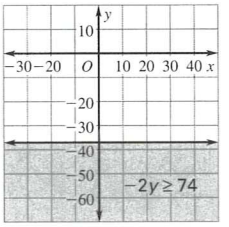
11. yes **13.** no **15.** Use a dashed line when the inequality symbol is < or >. Use a solid line when the inequality symbol is ≤ or ≥.

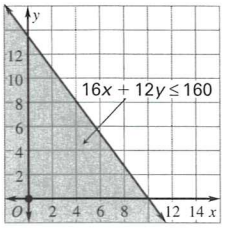
21. 

23. 

27. 

29. 

31. 

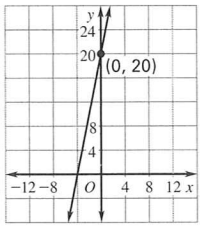
33. 

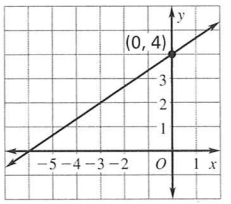
37. $y < -\frac{1}{3}x + 5$; $y > \frac{1}{3}x - 5$; $y > \frac{2}{3}x - 6$; $y < -\frac{2}{3}x + 6$

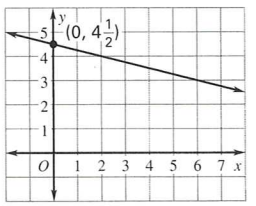
39. $\frac{6}{5}$ **41.** $3\frac{3}{4}$ **43.** $7\frac{41}{250}$

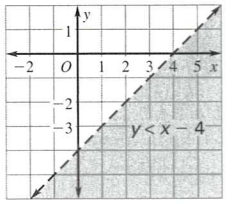
11.5–11.8 Notebook Review (pp. 588–589)

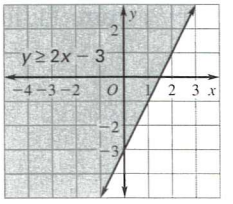
1. slope; y-intercept **2.** $\frac{4}{3}$ **3.** $\frac{2}{5}$ **4.** $-\frac{5}{3}$

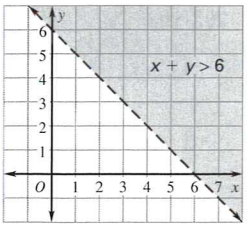
5. 5, 20; 

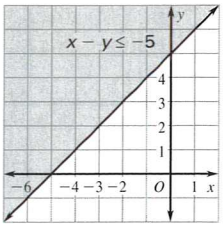
6. $\frac{2}{3}$, 4; 

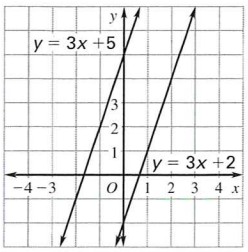
7. $-\frac{1}{4}$, $4\frac{1}{2}$; 

8. 

9. 

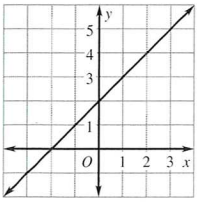
10. 

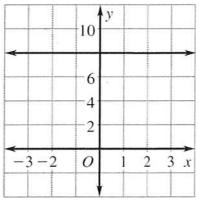
11. 

12. 

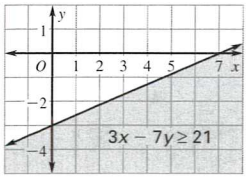
They are parallel.

Chapter Review (pp. 590–591) **1.** half-plane **3.** rise, run **5.** A good answer will include a situation that changes over time, such as time and distance traveled, and an explanation that the slope tells you how quickly something changes. **7.** No; each input has more than one output. **9.** Yes; each input has exactly one output. **11.** $141

15. 

17. 

19. *Sample answer:* (−2, 3), (2, 3); 0 **21.** $y = 4x + 10$; 4, 10 **23.** $y = -\frac{3}{7}x - 3$; $-\frac{3}{7}$, −3

25. 

Chapter 12

12.1 Getting Ready to Practice (p. 599) **1.** stem, leaf **3.** 11 | 7; stem: 11, leaf: 7 **5.** 4 | 6; stem: 4, leaf: 6

12.1 Practice and Problem Solving (pp. 599–600)

7.

4	5 8
5	0
6	3 5 7
7	4
8	2

60–69

Key: 5 | 0 = 50

9.

8	9
9	4 5
10	3 8 9
11	2

100–109

Key: 10 | 3 = 103

11.

18	1 3 7
19	
20	2
21	
22	5 6

18.0–18.9

Key: 18 | 1 = 18.1

13. Count the total number of values in the data set. Then count from the first leaf to half the total number of values to find the median value.

15.

4	3 7
5	5 8 9
6	5
7	2 8
8	4 4
9	5 6

53; greater than

Key: 4 | 3 = 43

17.

Set C		Set D
	6	5
7 0	7	
	8	7 8
8 2	9	3 5
2	10	2
8 1	11	5

Key: 2 | 9 | 3 = 92 and 93

19.

Wins		Losses
	0	6 7 7
8	1	0 2 4 5 6
7 4 4 3 0	2	1
	3	
1	4	

Key: 0 | 2 | 1 = 20 and 21

Sample answer: When the Browns scored less than 20 points, they usually lost. When they scored more than 20 points, they usually won.

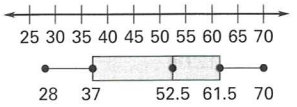
21. 13.8, 14.2, 14.4, 15.6, 17.1, 18.7, 20.6, 21.4, 21.1, 19.3, 16.4, 13.8 **23.** 3.5, 6, 6 and 14, 42

12.2 Getting Ready to Practice (p. 603)

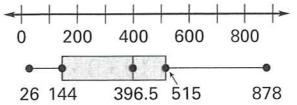
1. lower quartile; upper quartile

12.2 Practice and Problem Solving (pp. 603–604)

3.

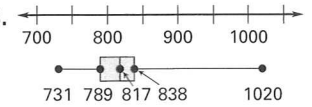


5.



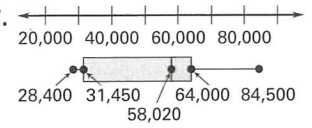
7. 15 in. **9.** 22 in. **11.** 28 in.

13.



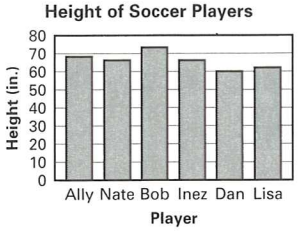
Sample answer: The middle half of the pumpkin weights clustered within about a 50 pound range, from 789 pounds to 838 pounds, but the range was much wider, nearly 300 pounds.

17.

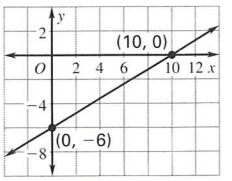


Sample answer: The outlier does not have much of an effect on the quartiles, but it makes a whisker very long and thus greatly increases the range.

19.

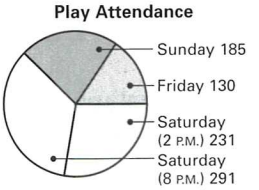


21. x-intercept: 10, y-intercept: -6, slope: $\frac{3}{5}$



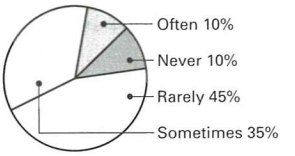
12.3 Getting Ready to Practice (p. 607)

1. circle graph **3.** 112° **5.** 50° **7.**

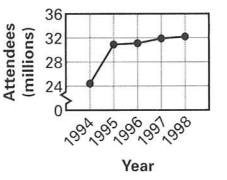


12.3 Practice and Problem Solving (pp. 608–609)

9.



11.

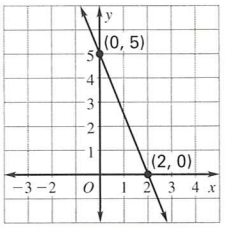


Sample answer: The number of people who attend symphony orchestra concerts increased rapidly from 1994 to 1995, and then at a slower rate from 1995 to 1998.

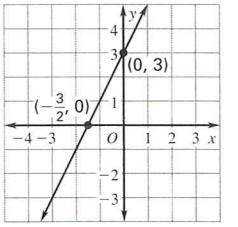
13.

15. *Sample answer:* Line graph; the data is collected over time. **17.** *Sample answer:* Histogram; the data is the frequency of occurrence in equal intervals for a certain range. **19.** red; dark blue **21.** No; it does not show a change in data over time; yes; it shows data in distinct categories.

23.

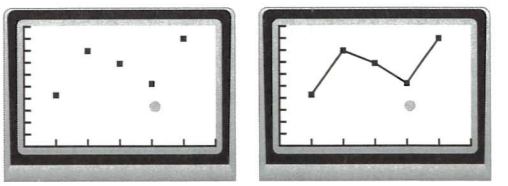


25.

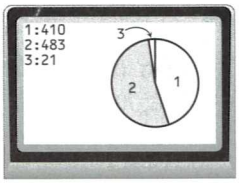


12.3 Technology Activity (pp. 610–611)

1.

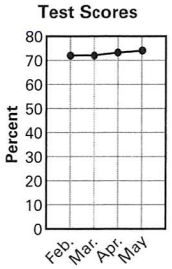


3.

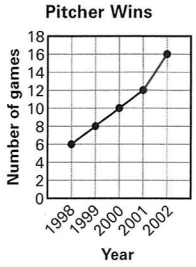


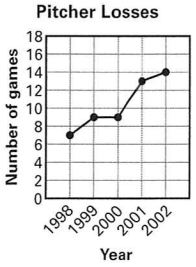
Special Topic Exercises (p. 613)

1. No. *Sample answer:* There is a break in the vertical scale, so the relative change is smaller than it appears.



3.





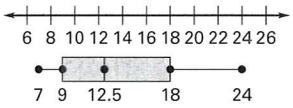
12.1–12.3 Notebook Review (pp. 614–615)

1. lower extreme, upper extreme

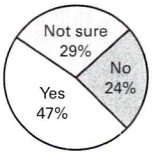
2.

0	7 8 9
1	1 1 4 5 8 9
2	4

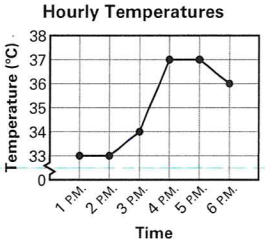
Key: 1 | 4 = 14



3.



4.



5. *Sample answer:* movie attendance each night for two weeks **6.** No. *Sample answer:* It does not show data that vary over time; bar graph.

12.4 Problem Solving Strategies (p. 617)

1. 60 people; no **3.** 10 games **5.** 2500
7. 58 palindromes **9.** 55 squares **11.** Saturday

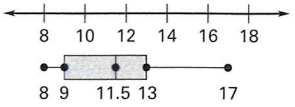
12.4 Getting Ready to Practice (p. 620)

1. $m \cdot n$ **3.** 9 choices **5.** 6 choices **7.** $\frac{1}{64}$

12.4 Practice and Problem Solving (pp. 621–622)

9. 24 choices **11.** 16 choices **13.** 26,000 PINs
15. $\frac{1}{64}$ **21.** 3 desserts **25.** $\frac{1}{2}$

27.



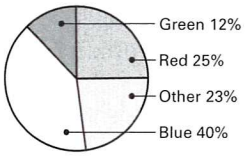
12.5 Getting Ready to Practice (p. 625)

1. ${}_{15}P_7$ **3.** 1 **5.** 362,880 **7.** 60,480 **9.** 120

12.5 Practice and Problem Solving (pp. 625–626)

11. 24 orders **13.** 20 **15.** 504 **17.** 840 **19.** 6840
21. 360,360 ways **23.** yes; $11! = 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 11 \cdot 10!$ **25.** 32,760 ways

29.



12.6 Getting Ready to Practice (p. 629)

1. 9; 5 **3.** 4 **5.** 7 **7.** combination; 6 pairs

12.6 Practice and Problem Solving (pp. 630–631)

11. 1 **13.** 70 **15.** 8 **17.** 126 **19.** 78 **21.** 100
23. 792 teams **25.** No. *Sample answer:* You cannot choose more items than you have to start with, that is, r must be less than or equal to n.
27. combination; 10 sets **29.** permutation; 1,814,400 ways; combination, 45 ways **31.** 4845
35. 30,240 **37.** 4896 **39.** $\frac{2}{3}$

12.7 Getting Ready to Practice (p. 634)

1. odds in favor **3.** $\frac{3}{5}$ **5.** $\frac{1}{10}$ **7.** $\frac{1}{3}$ **9.** $\frac{3}{7}$

12.7 Practice and Problem Solving (pp. 635–636)

11. $\frac{4}{13}; \frac{9}{4}$ **13.** $\frac{3}{7}; \frac{5}{9}$ **15.** $\frac{5}{1}$ **17.** $\frac{1}{2}$ **21.** $\frac{7}{25}$ **23.** $\frac{4}{1}$
27. 0.04 **29.** 51 in. **31.** $-\frac{1}{10}$ **33.** $\frac{7}{15}$ **35.** $\frac{3}{56}$

12.8 Getting Ready to Practice (p. 641)

1. independent **3.** dependent; $\frac{1}{506}$

12.8 Practice and Problem Solving (pp. 642–643)

5. 0.1 **7.** 0.375 **9.** 0.13 **11.** dependent; $\frac{2}{21}$
13. $\frac{1}{17{,}018}$

17. 

Sample answer: About 46 min; if you extend the graph, it passes through 46 on Saturday.

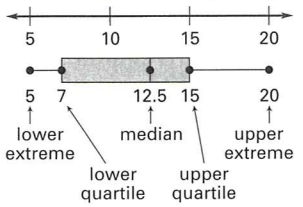
19. 57 **21.** 5

Special Topic Exercises (p. 645) **1.** Yes; people who call in to a sports talk show are likely to favor sports. **3.** Yes; people who enter a sporting goods store are likely to favor sports. **5.** *Sample answer:* Yes; this question suggests the mall is noisy and crowded. It encourages respondents to favor staying at home. So, the question could lead to biased results. **7.** *Sample answer:* No; this question is straight forward with no suggestions. It is not likely to lead to biased results.

12.4–12.8 Notebook Review (pp. 646–647)

1. permutation **2.** 20 birdhouses **3.** 35 ways **4.** $\frac{3}{11}$ **5.** $\frac{2}{121}$ **6.** *Sample answer:* Ordering toppings on a pizza

Chapter Review (pp. 648–649)

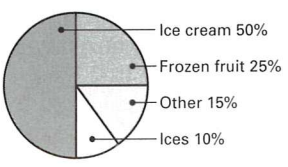
7. 

9.

6	7
7	5
8	
9	
10	
11	2 3
12	
13	
14	
15	0 1 7

Key: 7 | 5 = 7.5

15.0–15.9

11. 

13. 1680 **15.** 36 **17.** 5040 ways **19.** permutation; 120 ways **21.** $\frac{7}{13}$ **23.** $\frac{1}{380}$

Chapter 13

13.1 Getting Ready to Practice (p. 659)

1. trinomial **3.** monomial **5.** $3m + 7$ **7.** $6b^3 + 4b - 4$ **9.** $5y - 1$ **11.** $-3x^2$ and $-20x$ are not like terms and cannot be combined. The expression $-3x^2 - 20x - 4$ cannot be simplified.

13.1 Practice and Problem Solving (pp. 659–660)

13. $4x^{10} - 13x^3$; binomial **15.** $4x - 4$ **17.** $-7q^5 + 3q^3 + 3q$ **19.** $-3b + 17$ **21.** $2(2x + 3) + 4x$; $8x + 6$ **23.** $12m^2 + m - 6$ **25.** $8x^2 - 15x + 30$ **27.** 98 ft **29.** 122 ft **31.** $18t^2 + 12t - 37$ **33.** always **35.** never **41.** $\frac{1}{4}$ **43.**

34	2
35	8
36	2 3 4 6
37	5 6
38	6 6

Key: 35 | 8 = 35.8

45. −21 **47.** 60

13.2 Getting Ready to Practice (p. 663) **1.** like terms **3.** $6x + 12$ **5.** $3p + 8$ **7.** $-a + 6$

13.2 Practice and Problem Solving (pp. 664–665)

9. $5x + 4$ **11.** $7n - 2$ **13.** $6g^2 + g + 3$ **15.** $-10d - 7$ **17.** $-11h^2 + 10h$ **19.** $3r^2 + 2r + 4$ **21.** $(x + 7) + (3x - 2) + (4x - 1)$; $8x + 4$ **23.** $6k^2$ **25.** $6x^3 + 8x^2 - 12x - 3$ **27.** $12n + 3$ **29.** $16r^2 - 4(\pi r^2)$; $3.44r^2$; yes; one coaster needs $3.14r^2$ of clay, which is less than what is left over. **31.** $-7s^2 + 5s - 9$ **33.** $-14t^3 - 10t^2 + 22t$ **35.** $-14v^4 + 15v^3 - 21v^2 + 37$ **39.** b^{10} **41.** m^4n^3 **43.** 10,000 passwords

13.3 Getting Ready to Practice (p. 668)

5. $2x^3 - 2x$ **7.** z^{16}

13.3 Practice and Problem Solving (pp. 669–670)

9. $-20x^4$ **11.** $3x^3$ **13.** b^{11} **15.** $m^2 + 4m$ **17.** $-t^3 + 4t$ **19.** $-2w^3 - w^2$ **21.** $\frac{1}{2}(b - 6)(3b + b)$; $2b^2 - 12b$ **23.** $x^5y^5z^5$ **25.** $-216z^3$ **27.** $9r^2s^2$ **29.** $100{,}000b^5h^5$ **31.** y^4 **33.** x^{20} **35.** x^6y^6 **37.** $8r^9$ **39.** $(2w^2 + 4w)$ in.^{2} **41.** $-3a^{26}b^8c^4$ **43.** $\frac{\pi r^2}{(2r)^2}$; $\frac{\pi}{4}$ **45.** 2.7×10^{13} **47.** 6.25×10^{30} **49.** about 7.36×10^8 km^3 **55.** $\frac{71}{100}$ **57.** $\frac{9}{50}$ **59.** $\frac{1}{36}$

13.1–13.3 Notebook Review (pp. 671-672)

1. monomial **2.** polynomial **3.** $a^2 + 18$ **4.** $2z^2 - 3z + 1$ **5.** $2n^3 + 5n^2 - 2n - 3$ **6.** $-5x^2 + 4x + 4$ **7.** $48x^{10}$ **8.** $36n^6m^2$ **9.** $16a^4b^4$ **10.** $4r^3 - 20r^2$

11. *Sample answer:* By the associative property of multiplication, $(2x)(x^2y) = 2(x \cdot x^2)y$. By the product of powers property, $2(x \cdot x^2)y = 2x^3y$. So $(2x)(x^2y) = 2x^3y$. **12.** $24\pi h^2$ or $\frac{8\pi r^2}{3}$

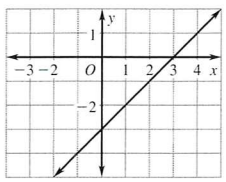
13.4 Getting Ready to Practice (p. 676)

1. binomial **3.** $6m^2 + 2m$ **5.** $y^2 - 3y - 4$ **7.** $z^2 + 2z - 8$

13.4 Practice and Problem Solving (pp. 676-677)

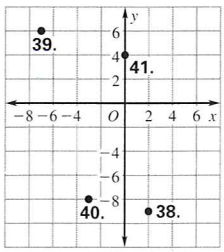
9. $x^2 + 7x - 18$ **11.** $a^2 + 6a - 40$ **13.** $3q^2 - 4q + 1$ **15.** $6r^2 + r - 7$ **17.** $-11x^2 - 43x + 60$ **19.** $x^2 - 16$ **23.** $4\pi(0.6875 + x)^2 = 4\pi(0.4727 + 1.375x + x^2) = 1.8908\pi + 5.5\pi x + 4\pi x^2$ **25.** $3b^2 - 58b + 72$ **27.** $(30 - 2x)(20 - x) = 600 - 70x + 2x^2$; 300 ft^2 **31.** $x + 1$

33.



35. $-4r^2 - 24r$ **37.** $15x^2 - 10x$

38-41.



13.5 Problem Solving Strategies (p. 679)

1. 128 e-mails **3.** 10 cuts

5.

Hours	0.5	1	1.5	2
Points	2.5	5	7.5	10

about 9 points

7. 50 squares **9.** 1809.56 cm^3

13.5 Getting Ready to Practice (p. 682)

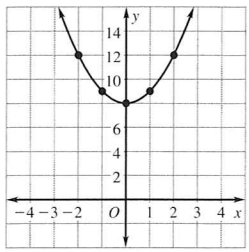
3. -1, -5, -1 **5.** yes **7.** yes

13.5 Practice and Problem Solving (pp. 682-684)

9. $f(x) = 2x^2 - x$ **11.** $f(t) = -16t^2 + 4$; -140 ft

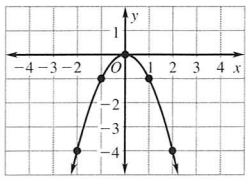
13.

x	-3	-2	-1	0	1	2	3
$f(x)$	17	12	9	8	9	12	17



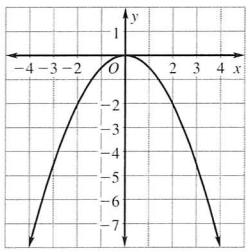
15.

x	-3	-2	-1	0	1	2	3
$f(x)$	-9	-4	-1	0	-1	-4	-9

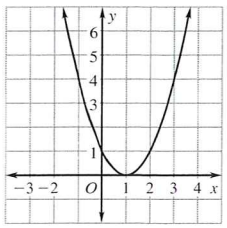


19. yes **21.** $f(x) = 1500x$

23.



27.



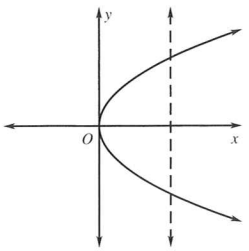
33. $f(x) = x^3$ **35.** $f(t) = (2.8 \times 10^8)(1.008)^t$; about 2.9×10^8 **37.** 4 **39.** $-1\frac{2}{3}$ **41.** 3 **43.** -3 **45.** $x^2 + 4x + 4$ **47.** $5a^2 + 14a - 3$

13.5 Technology Activity (p. 685)

1-4. *Sample answer:* The graphs are all parabolas with the same shape and with vertices on the y-axis, but the graph moves up or down compared to the graph of $y = x^2$ by the number of units that are added to or subtracted from x^2. The graph moves up if this number is positive and down if this number is negative. **5-8.** *Sample answer:* The graphs are all downward-opening parabolas with vertices at the origin, but opening to different widths. As the absolute value of the coefficient of x^2 gets larger, the parabola becomes narrower (rises more steeply).

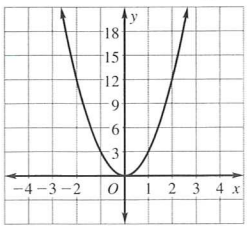
13.4–3.5 Notebook Review (pp. 686–687)

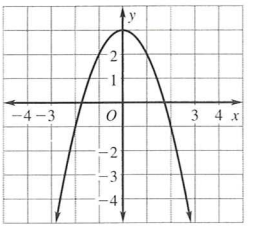
1. function notation **2.** vertical line test **3.** $f(x) = 5x - 12$ **4.** $f(x) = 2x^3 + 8$ **5.** $f(x) = x^3 + 3x^2 - 10$

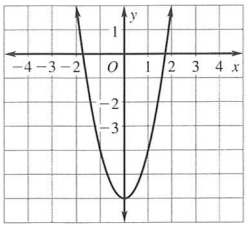
6. 

Sample answer: The graph is not that of a function because there are vertical lines that pass through more than one point of the graph.

7. $x^2 + 12x + 35$ **8.** $g^2 + 8g - 20$ **9.** $3y^2 - 13y + 4$

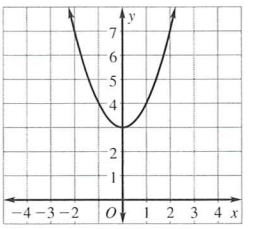
10. 

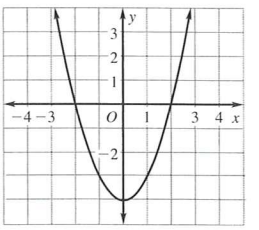
11. 

12. 

13. *Sample answer:* If there is any vertical line that intersects a graph at more than one point, then the graph does not represent a function. If every vertical line intersects a graph in at most one point, then the graph does represent a function.

Chapter Review (pp. 688–689) **1.** trinomial **3.** vertical line test **5.** monomial **7.** binomial **9.** $-3x^3 + x^2 + 5x - 4$ **11.** $6t^3 - t^2 + 9t + 8$ **13.** $-3n^4 + n^2 + 5n + 25$ **15.** $2w^2 + 3w - 8$ **17.** $-x^2 + 16x + 28$ **19.** $-10y^2 + 20y + 44$ **21.** $-3p^2$ **23.** $8y^2 - 5$ **25.** $-5v^3 - 10v^2 - 2v$ **27.** $8x^3y^3$ **29.** $-216a^6b^{12}$ **31.** $-21{,}609p^8n$ **33.** $-3a^3 + 6a^2$ **35.** $y^5 - 11y^4$ **37.** $-18g^3 - 60g^2$ **39.** $9x^2 + 27x$ **41.** $t^2 - t - 12$ **43.** $q^2 - 16q + 63$ **45.** $3d^2 - 10d - 48$ **47.** $-8k^2 + 34k + 9$ **49.** $2b^2 + 7b - 4$

51. 

53. 

55. yes **57.** yes

Skills Review Handbook

Place Value (p. 704) **1.** $5 \times 10{,}000 + 6 \times 1000 + 8 \times 100 + 9$ **3.** $1 \times 1000 + 2 \times 1 + 3 \times 0.001$ **5.** 500,069.007

Rounding (p. 705) **1.** 1300 **3.** 8.2 **5.** 40,000 **7.** 450 **9.** 62.8 **11.** 164.5 **13.** 52.96 **15.** 3,501,700

Divisibility Tests (p. 706) **1.** 2 **3.** 3, 5 **5.** 2, 3, 4, 6, 9 **7.** 5 **9.** 2, 4

Mixed Numbers and Improper Fractions (p. 707) **1.** 38 **3.** 3 **5.** $\frac{7}{2}$ **7.** $\frac{35}{8}$ **9.** $\frac{43}{4}$ **11.** $7\frac{1}{2}$ **13.** $5\frac{2}{3}$

Ratio and Rate (p. 708) **1.** $\frac{13}{12}$; 13 to 12; 13 : 12 **3.** $\frac{11}{23}$; 11 to 23; 11 : 23 **5.** $\frac{\$24}{8 \text{ pens}} = \frac{\$3}{1 \text{ pen}}$ **7.** $\frac{280 \text{ words}}{5 \text{ min}} = \frac{56 \text{ words}}{1 \text{ min}}$ **9.** $\frac{8 \text{ in.}}{6 \text{ days}} = 1\frac{1}{3}$ in. per day

Adding and Subtracting Decimals (p. 709) **1.** 6.3 **3.** 31.1 **5.** 10.956 **7.** 2.91 **9.** 18.88 **11.** 57.8 **13.** 286.19 **15.** 88.064

Adding and Subtracting Fractions (p. 710) **1.** $\frac{2}{3}$ **3.** $\frac{3}{7}$ **5.** 1 **7.** $\frac{11}{15}$ **9.** $\frac{2}{9}$ **11.** $1\frac{7}{12}$ **13.** $\frac{1}{9}$ **15.** $\frac{9}{14}$ **17.** $\frac{7}{12}$ **19.** $1\frac{4}{7}$

Estimation in Addition and Subtraction (p. 711) **1–5.** Estimates may vary. **1.** 2700 **3.** 20,000 **5.** 2200

Solving Problems Using Addition and Subtraction (p. 712) **1.** \$93 **3.** \$2.01 **5.** 248 min

Multiplying Fractions (p. 713) **1.** $\frac{4}{5}$ **3.** $2\frac{2}{9}$ **5.** $5\frac{1}{4}$ **7.** $2\frac{4}{7}$ **9.** $\frac{8}{15}$ **11.** $\frac{3}{40}$ **13.** $\frac{10}{27}$ **15.** $\frac{25}{72}$

Multiplication of a Decimal by a Whole Number (p. 714) **1.** 225.4 **3.** 671.5 **5.** 35.28 **7.** 644.36 **9.** 1707.2 **11.** 18,663.6 **13.** 15,093.8 **15.** 36,833.5 **17.** 949.992 **19.** 3707.352 **21.** 4998.7 **23.** 1809.665 **25.** 5477.336 **27.** 120,455.25 **29.** 7564.91

Dividing Decimals (p. 715) **1.** 0.45 **3.** 0.85 **5.** 4.57 **7.** 6R2 **9.** 8R604

Estimation in Multiplication and Division (p. 716) **1–19.** Estimates may vary. **1.** 400 and 1000 **3.** 40,000 and 54,000 **5.** 30 and 40 **7.** 200 and 300 **9.** 12,000 and 20,000 **11.** 70,000 and 160,000 **13.** 12,000 and 21,000 **15.** 90 and 100 **17.** 700 and 800 **19.** 10 and 20

Solving Problems Using Multiplication and Division (p. 717) **1.** \$9.48 **3.** 576 flowers

Points, Lines, and Planes (p. 718) **5.** *Sample answer:* $\overrightarrow{SR}$ and $\overrightarrow{ST}$ **7.** *Sample answer:* $\overline{SR}$

Angles (p. 719) **5.** $\angle HJK$, $\angle J$, $\angle KJH$ **7.** $\angle TUV$, $\angle U$, $\angle VUT$ **9.** $\angle FGH$, $\angle G$, $\angle HGF$

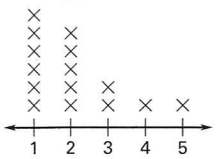
Using a Ruler (p. 720) **1–7.** Check drawings.

Using a Protractor (p. 721) **1.** 110° **3.** 88°

Using a Compass (p. 722) **1.** A good answer will show a circle with radius 4 centimeters.
3. ———

Reading and Making Line Plots (p. 723)

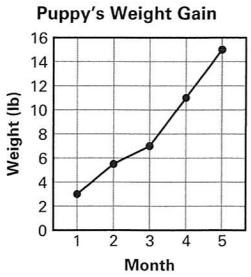
1.



3. 19 people
5. 5 people

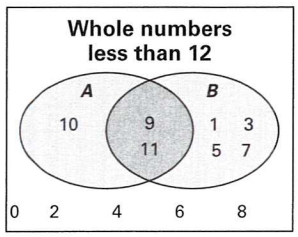
Reading and Making Bar Graphs (p. 724) **1.** 9 students **3.** Vanilla and Rocky Road

Reading and Making Line Graphs (p. 725) **1.** Thursday and Friday **3.**



Venn Diagrams and Logical Reasoning (p. 726)

1.

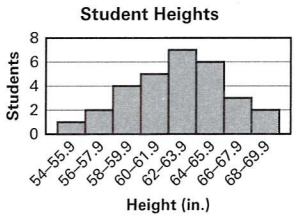


3. false; both 9 and 11 are odd numbers greater than 8 and less than 12

Extra Practice

Chapter 1 (p. 727)

1.



3. Yes; you can add the frequencies for the intervals 60–61.9, 62–63.9, 64–65.9, 66–67.9, and 68–69.9.

5. 7 **7.** 4 **9.** 36 **11.** 8.4 **13.** 11.7 **15.** 27 **17.** 7 **19.** 63 **21.** 8 **23.** 9 **25.** 42 ft; 104 ft^2 **27.** 8 cm

Chapter 2 (p. 728) **1.** −43, −24, −2, 7, 19, 33 **3.** 25; 25 **5.** 0; 0 **7.** −409 **9.** 179 **11.** 0 **13.** −16 **15.** 51 **17.** −15 **19.** 68 **21.** 350 **23.** −64 **25.** 0 **27.** 240 **29.** −12 **31.** 0 **33.** −4

35. $7\left(2 \cdot \frac{3}{7}\right)$ [original expression]

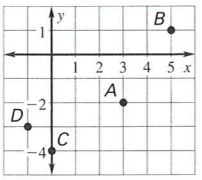
$= 7\left(\frac{3}{7} \cdot 2\right)$ [commutative property of multiplication]

$= \left(7 \cdot \frac{3}{7}\right) \cdot 2$ [associative property of multiplication]

$= 3 \cdot 2$ [Multiply 7 and $\frac{3}{7}$.]

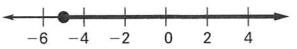
$= 6$ [Multiply 3 and 2.]

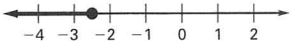
37. $(-5)(-3) + (-5)(8)$; −25 **39.** $-4 - 9r$ **41.** $5x - 2y$ **43.** $-a - 10b$

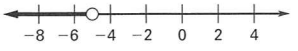
44–47. 

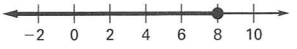
45. Quadrant I
47. Quadrant III

Chapter 3 (p. 729) **1.** 8 **3.** 5 **5.** 64 **7.** 4 **9.** 7 **11.** 7.5 **13.** 20 **15.** -58 **17.** $6n - 5 = 13$; 3 **19.** 1.5 h **21.** 60 in.^{2}; 36 in. **23.** 5 m; 34 m

25. $j \geq -5$; 

27. $z \leq -2.5$; 

29. $x < -5$; 

31. $s \leq 8$; 

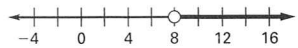
Chapter 4 (p. 730) **1.** $2^3 \cdot 3^2$ **3.** $3^2 \cdot 17$ **5.** $5^2 \cdot p \cdot q$ **7.** $2 \cdot 11 \cdot x \cdot y \cdot y$ **9.** 15 **11.** bc **13.** $3m$ **15.** $17w^2z^2$ **17.** $\frac{1}{2}$ **19.** $-\frac{2}{7}$ **21.** $\frac{2}{9y}$ **23.** $-\frac{3a}{2c}$ **25.** 60 **27.** $15ab^2c^2$ **29.** > **31.** > **33.** < **35.** > **37.** z^6 **39.** $(-7)^9$ **41.** 6^4 **43.** $(-v)^3$ **45.** $\frac{6}{k}$ **47.** $\frac{1}{s^7}$ **49.** 1.24×10^8 **51.** 7.91×10^{-5} **53.** 0.0027 **55.** 588,000,000,000

Chapter 5 (p. 731) **1.** $1\frac{1}{2}$ **3.** $-\frac{2m}{3}$ **5.** $\frac{1}{15}$ **7.** $8\frac{1}{8}$ **9.** $\frac{3}{16}$ **11.** $-\frac{10}{27}$ **13.** $\frac{5}{18}$ **15.** $-3\frac{3}{32}$ **17.** -0.384 **19.** $-\frac{7}{25}$ **21.** $\frac{3}{500}$ **23.** 3.875 **25.** $-2.5, -2.43, -2\frac{5}{12}, -2\frac{2}{5}, -\frac{7}{3}$ **27.** $\frac{26}{5}$, 5.21, $5\frac{2}{9}$, 5.3, $5\frac{3}{8}$ **29.** 3.81 **31.** 13.1 **33.** -16.55 **35.** -8.115 **37.** 3.9104 **39.** 1.5 **41.** -31.866 **43.** -8.2 **45.** 43; 39; no mode; 57 **47.** 88; 87; 78 and 95; 22

Chapter 6 (p. 732) **1.** 7 **3.** -9 **5.** 2 **7.** -2 **9.** 5 **11.** -1 **13.** 0.13 **15.** -4 **17.** -4 **19.** 4.5 cm **21.** 7 yd; use $\frac{22}{7}$ for π since 44 is divisible by 22.

23. $c < 2$; 

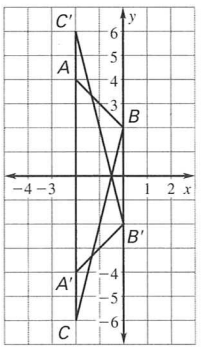
25. $s \geq -1$; 

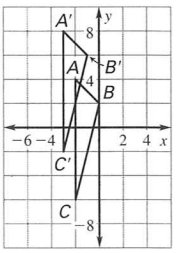
27. $b > 8$; 

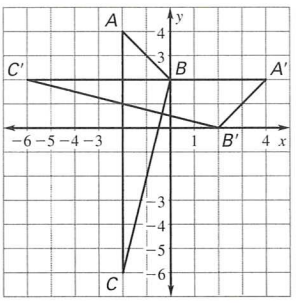
29. $\frac{1}{2}n + 12 \leq 8$; $n \leq -8$ **31.** $4n \geq 16$; $n \geq 4$ **33.** at least $1\frac{1}{2}$ h

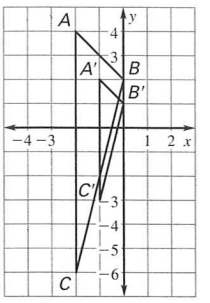
Chapter 7 (p. 733) **1.** $\frac{3}{1}$, 3 : 1, 3 to 1 **3.** $\frac{2}{3}$, 2 : 3, 2 to 3 **5.** 4 **7.** 225 **9.** 9.3 **11.** 12% **13.** 8.96 **15.** 12.5% **17.** 72% **19.** 0.31; $\frac{31}{100}$ **21.** 1.75; $\frac{7}{4}$ **23.** increase; 12% **25.** decrease; 1% **27.** $22.08 **29.** $83\frac{1}{3}$ **31.** 0.084 **33.** $\frac{1}{6}$

Chapter 8 (p. 734) **1.** $m\angle 1 = 50°$ **3.** $m\angle 5 = 50°$; $m\angle 6 = 50°$; $m\angle 7 = 130°$ **5.** $x = 90$; right **7.** rhombus **9.** trapezoid **11.** 160° **13.** $\angle A \cong \angle P$; $\angle B \cong \angle Q$; $\angle C \cong \angle R$

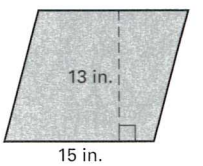
15. 

17. 

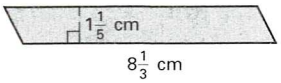
19. 

21. 

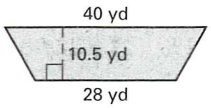
Chapter 9 (p. 735) **1.** 7.2 **3.** -27.2 **5.** 30, -30 **7.** 15, -15 **9.** 9, -9 **11.** 8, -8 **13.** > **15.** > **17.** $0.\overline{1}$, $0.12, 0.\overline{12}, 0.123, 0.\overline{123}$ **19.** 35 **21.** 33 **23.** 75 **25.** yes **27.** yes **29.** $x = 7\sqrt{2}$; $y = 7$ **31.** $x = 19\sqrt{3}$; $y = 38$ **33.** $\sin A = \frac{36}{85}$; $\cos A = \frac{77}{85}$; $\tan A = \frac{36}{77}$; $\sin B = \frac{77}{85}$; $\cos B = \frac{36}{85}$; $\tan B = \frac{77}{36}$ **35.** $\sin 62° \approx 0.8829$; $\cos 62° \approx 0.4695$; $\tan 62° \approx 1.8807$

Chapter 10 (p. 736) **1.** 

195 in.^{2}

3. 

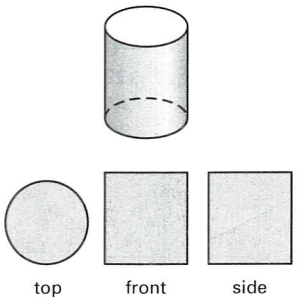
10 cm^2

5. 

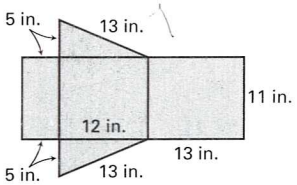
357 yd^2

7. 5020 in.^{2} **9.** 26.4 ft^2 **11.** 0.283 cm^2 **13.** 201 mi^2

15.



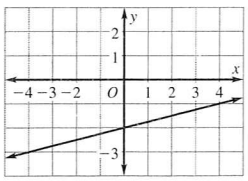
It is not a polyhedron because circles are not polygons.

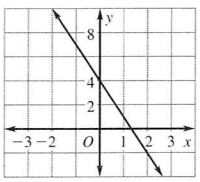
17. 

390 in.^{2}

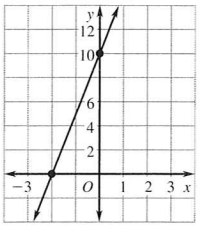
19. 360 m^2 **21.** 369.9 m^2 **23.** 330 in.^{3}
25. 266.7 ft^3 **27.** 252 cm^3

Chapter 11 (p. 737) **1.** Yes; each input has exactly one output. **3.** $y = x - 1$ **5.** no **7.** yes
9. *Sample answer:* $(-2, 3)$, $(-1, 5)$, $(0, 7)$, $(1, 9)$
11. *Sample answer:* $(-2, 2)$, $(-1, 1)$, $(0, 0)$, $(1, -1)$
13. $(-2, 4)$, $(-1, 1)$, $(0, -2)$, $(1, -5)$ **15.** $(-2, -5)$, $(1, -1)$, $(4, 3)$, $(7, 7)$

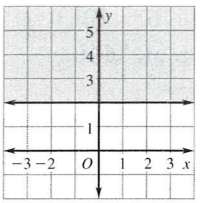
17. 

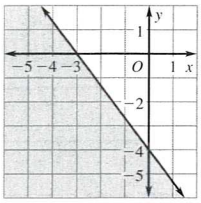
19. 

21. x-intercept, $\frac{1}{5}$; y-intercept, -1 **23.** x-intercept, 6; y-intercept, -4

25. 

27. undefined **29.** 1
31. -1 **33.** $\frac{17}{3}$ **35.** 0; 2
37. 2; -8

39. 

41. 

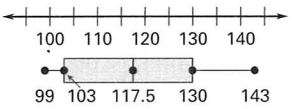
Chapter 12 (p. 738)

1.

9	9
10	0 1 3 5
11	6 7 8
12	7 9
13	0
14	0 0 3

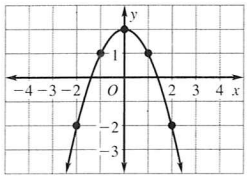
Key: 13 | 0 = 130

100 to 109

3. 

Sample answer: About 50% of the lengths were between 103 inches and 130 inches.

5. Line graph; a line graph is used to represent data that change over time. **7.** 17,576,000 license plates
9. 11 **11.** 720 **13.** 5 **15.** 20 **17.** 4060 ways
19. $\frac{3}{4}$ **21.** $\frac{2}{9}$

Chapter 13 (p. 739) **1.** $-x^2 - 2x + 7$ **3.** $-k^2 + 21$
5. $-2x^3 + 4x^2 + 14x - 4$ **7.** $3x^3 - 9x^2 + 6x - 3$
9. $x^3 - 2x^2 + 9x + 6$ **11.** $-28z^6$ **13.** $-6n^2 + 15n$
15. $125a^3b^3$ **17.** p^{24} **19.** $2x^2 - 9x - 5$
21. $d^2 + 10d + 24$ **23.** $a^2 - 15a + 56$ **25.** $f(x) = 2x - 5$ **27.** $f(x) = 5x^2 + 1$ **29.** 1; $\frac{1}{4}$; 0; $\frac{1}{4}$; 1
31. -16; -5; 0; -1; -8 **33.** -7; -4; -3; -4; -7
35. 

37. no **39.** yes