Selected Answers

Section 1.1 Integers and Absolute Value
(pages 6 and 7)

1. 9, −1, 15

3. −6; All of the other expressions are equal to 6.

5. 6 **7.** 10 **9.** 13 **11.** 12 **13.** 8 **15.** 18

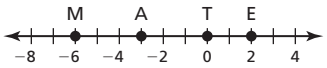
17. 45 **19.** 125 **21.** $|-4| < 7$ **23.** $|-4| > -6$ **25.** $|5| = |-5|$

27. Because $|-5| = 5$, the statement is incorrect. $|-5| > 4$

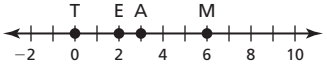
29. −8, 5 **31.** −7, −6, $|5|$, $|-6|$, 8 **33.** −17, $|-11|$, $|20|$, 21, $|-34|$

35. −4

37. **a.** MATE



b. TEAM



39. $n \geq 0$ **41.** The number closer to 0 is the greater integer.

43. **a.** Player 3 **b.** Player 2 **c.** Player 1

45. false; The absolute value of zero is zero, which is neither positive nor negative.

47. 144 **49.** 3170

Section 1.2 Adding Integers
(pages 12 and 13)

1. Change the sign of the integer.

3. positive; 20 has the greater absolute value and is positive.

5. negative; The common sign is a negative sign.

7. false; A positive integer and its absolute value are equal, not opposites.

9. −10 **11.** 7 **13.** 0 **15.** 10

17. −7 **19.** −11 **21.** −4 **23.** −34

25. −10 and −10 are not opposites. $-10 + (-10) = -20$

27. $48 **29.** −27 **31.** 21 **33.** −85

35. Use the Associate Property to add 13 and −13 first. −8

37. *Sample answer:* Use the Commutative Property to switch the last two terms. −12

39. *Sample answer:* Use the Commutative Property to switch the last two terms. 11

41. −13 **43.** *Sample answer:* $-26 + 1; -12 + (-13)$

45. $b = 2$ **47.** $6 + (-3) + 8$

49. Find the number in each row or column that already has two numbers in it before guessing.

51. 8 **53.** 183

Section 1.3

Subtracting Integers
(pages 18 and 19)

1. You add the integer's opposite.

3. What is 3 less than -2?; -5; 5

5. C

7. B

9. 13

11. -5

13. -10

15. 3

17. 17

19. 1

21. -22

23. -20

25. $-3 - 9$

27. 6

29. 9

31. 7

33. $m = 14$

35. $c = 15$

37. 2

39. 3

41. *Sample answer:* $x = -2, y = -1$; $x = -3, y = -2$

43. sometimes; It's positive only if the first integer is greater.

45. always; It's always positive because the first integer is always greater.

47. all values of a and b

49. when a and b have the same sign and $|a| > |b|$ or $|a| = |b|$, or $b = 0$

51. -45

53. 468

55. 2378

Section 1.4

Multiplying Integers
(pages 26 and 27)

1. **a.** They are the same. **b.** They are different.

3. negative; different signs

5. negative; different signs

7. false; The product of the first two negative integers is positive. The product of the positive result and the third negative integer is negative.

9. -21

11. 12

13. 27

15. 12

17. 0

19. -30

21. 78

23. 121

25. $-240{,}000$

27. 54

29. -105

31. 0

33. -1

35. -36

37. 54

39. The answer should be negative. $-10^2 = -(10 \cdot 10) = -100$

41. 32

43. $-7500,\ 37{,}500$

45. -12

47. **a.**

Month	Price of Skates
June	$165 = \$165$
July	$165 + (-12) = \$153$
August	$165 + 2(-12) = \$141$
September	$165 + 3(-12) = \$129$

b. The price drops \$12 every month.

c. no; yes; In August you have \$135 but the cost is \$141. In September you have \$153 and the cost is only \$129.

49. 3

51. 14

53. D

Selected Answers

Section 1.5 Dividing Integers
(pages 32 and 33)

1. They have the same sign. They have different signs. The dividend is zero.

3. *Sample answer:* $-4, 2$ **5.** negative **7.** negative

9. -3 **11.** 3 **13.** 0 **15.** -6 **17.** 7 **19.** -10

21. undefined **23.** 12

25. The quotient should be 0. $0 \div (-5) = 0$ **27.** 15 pages

29. -8 **31.** 65 **33.** 5

35. 4 **37.** -400 ft/min **39.** 5

41. *Sample answer:* $-20, -15, -10, -5, 0$; Start with -10, then pair -15 with -5 and -20 with 0.

43.

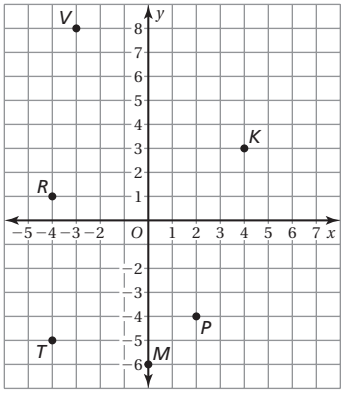
45. B

Section 1.6 The Coordinate Plane
(pages 38 and 39)

1. 4 **3.** $(2, -2)$ is in Quadrant IV, $(-2, 2)$ is in Quadrant II.

5. $(3, 1)$ **7.** $(-2, 4)$ **9.** $(2, -2)$ **11.** $(-4, 2)$ **13.** $(4, 0)$

15–25. See graph below.



15. Quadrant I

17. y-axis

19. Quadrant IV

21. Quadrant II

23. Quadrant III

25. Quadrant II

27. The numbers are reversed. To plot (4, 5), start at (0, 0) and move 4 units right and 5 units up.

29. $(-2, 1)$ **31.** sometimes; It is true only for (0, 0).

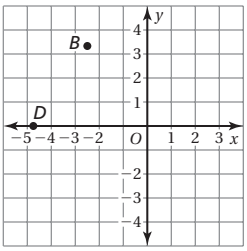
33. always; The x-coordinate of a point in Quadrant II is negative, and so is the y-coordinate of a point in Quadrant IV.

35. Flamingo Café

37. Because the rainforest is in Quadrant IV, the x-coordinate of the point will be positive and the y-coordinate of the point will be negative.

39. (2, 2)

41–43. See graph below.



41. Quadrant II

43. x-axis

45. $-\frac{16}{2} < -\frac{12}{3}$

47. $3.45 > 3\frac{3}{8}$

Section 2.1 Rational Numbers

(pages 54 and 55)

1. A number is rational if it can be written as $\frac{a}{b}$ where a and b are integers and $b \neq 0$.

3. rational numbers, integers

5. rational numbers, integers, whole numbers

7. repeating

9. terminating

11. 0.875

13. $-0.\overline{7}$

15. $1.8\overline{3}$

17. $-5.58\overline{3}$

19. The bar should be over both digits to the right of the decimal point. $-\frac{7}{11} = -0.\overline{63}$

21. $\frac{9}{20}$

23. $-\frac{39}{125}$

25. $-1\frac{16}{25}$

27. $-12\frac{81}{200}$

29. $-2.5, -1.1, -\frac{4}{5}, 0.8, \frac{9}{5}$

31. $-\frac{9}{4}, -0.75, -\frac{6}{10}, \frac{5}{3}, 2.1$

33. $-2.4, -2.25, -\frac{11}{5}, \frac{15}{10}, 1.6$

35. spotted turtle

37. $-1.82 < -1.81$

39. $-4\frac{6}{10} > -4.65$

41. $-2\frac{13}{16} < -2\frac{11}{14}$

43. Michelle

45. No; The base of the skating pool is at -10 feet, which is deeper than $-9\frac{5}{6}$ feet.

47. **a.** when a is negative

b. when a and b have the same sign, $a \neq 0 \neq b$

49. $\frac{7}{30}$

50. 21.15

Selected Answers

Section 2.2

Adding and Subtracting Rational Numbers
(pages 60 and 61)

1. Because $|-8.46| > |5.31|$, subtract $|5.31|$ from $|-8.46|$ and the sign is negative.

3. What is 3.9 less than -4.8?; -8.7; -0.9

5. $-\frac{5}{14}$ **7.** $2\frac{3}{10}$ **9.** -0.9 **11.** 1.844

13. $1\frac{1}{2}$ **15.** $\frac{1}{18}$ **17.** $-18\frac{13}{24}$ **19.** -2.6

21. 14.963 **23.** $\frac{3}{8} - \frac{5}{6} = -\frac{11}{24}$ **25.** $\frac{1}{18}$ **27.** $-3\frac{9}{10}$

29. No, the cook needs $\frac{1}{12}$ cup more.

31–33. Subtract the least number from the greatest number.

35. $-\frac{n}{4}$ **37.** $-\frac{b}{24}$ **39.** 35.88

41. $8\frac{2}{3}$ **43.** C

Section 2.3

Multiplying and Dividing Rational Numbers
(pages 66 and 67)

1. The same rules for signs of integers are applied to rational numbers.

3. $-\frac{1}{3}$ **5.** $-\frac{3}{7}$ **7.** negative **9.** positive

11. $-\frac{2}{3}$ **13.** $-\frac{1}{100}$ **15.** $2\frac{5}{14}$ **17.** $3.\overline{63}$

19. -6 **21.** -2.5875 **23.** $\frac{1}{3}$ **25.** $2\frac{1}{2}$

27. $-4\frac{17}{27}$ **29.** 0.025 **31.** 47.43 **33.** -0.064

35. The wrong fraction was inverted.

$$-\frac{1}{4} \div \frac{3}{2} = -\frac{1}{4} \times \frac{2}{3}$$
$$= -\frac{2}{12}$$
$$= -\frac{1}{6}$$

37. 8 packages **39.** 1.3

41. $-4\frac{14}{15}$ **43.** $-1\frac{11}{36}$

45. $191\frac{11}{12}$ yd

47. How many spaces are between the boards?

49. **a.** $-2,\ 4,\ -8,\ 16,\ -32,\ 64$

b. When -2 is raised to an odd power, the product is negative. When -2 is raised to an even power, the product is positive.

c. negative

51. -5.4 **53.** $-8\frac{5}{18}$

Lesson 2.3b Number Properties *(pages 67A and 67B)*

1. $2 + 3 + (-2) = 2 + (-2) + 3$ Comm. Prop. of Add.
$= 0 + 3$ Additive Inverse Property
$= 3$ Addition Prop. of Zero

3. $4 \cdot 19 \cdot \frac{1}{2} = 4 \cdot \frac{1}{2} \cdot 19$ Comm. Prop. of Mult.
$= 2 \cdot 19$ Multiply 4 and $\frac{1}{2}$.
$= 38$ Multiply 2 and 19.

5. $5\left(\frac{7}{8} \cdot \frac{2}{5}\right) = 5\left(\frac{2}{5} \cdot \frac{7}{8}\right)$ Comm. Prop. of Mult.
$= \left(5 \cdot \frac{2}{5}\right) \cdot \frac{7}{8}$ Assoc. Prop. of Mult.
$= 2 \cdot \frac{7}{8}$ Multiply 5 and $\frac{2}{5}$.
$= \frac{7}{4}$ Multiply 2 and $\frac{7}{8}$.

7. 0

9. *Sample answer:* Find a map, Lose a compass, Lose a compass

Section 2.4 Solving Equations Using Addition or Subtraction *(pages 74 and 75)*

1. Subtraction Property of Equality

3. No, $m = -8$ not -2 in the first equation.

5. $a = 19$

7. $k = -20$

9. $c = 3.6$

11. $q = -\frac{1}{6}$

13. $g = -10$

15. $y = -2.08$

17. $q = -\frac{7}{18}$

19. $w = -1\frac{13}{24}$

21. The 8 should have been subtracted rather than added.

$$\begin{array}{r} x + 8 = 10 \\ -8 \quad -8 \\ \hline x = 2 \end{array}$$

23. $c + 10 = 3;\ c = -7$

25. $p - 6 = -14;\ p = -8$

27. $P + 2.54 = 1.38;\ -\$1.16$ million

29. $x + 8 = 12;\ 4$ cm

31. $x + 22.7 = 34.6;\ 11.9$ ft

33. Because your first jump is higher, your second jump went a farther distance than your first jump.

35. $m + 30.3 + 40.8 = 180;\ 108.9°$

37. -9

39. $6, -6$

41. -56

43. -9

45. B

Section 2.5 Solving Equations Using Multiplication or Division *(pages 80 and 81)*

1. Multiplication is the inverse operation of division, so it can undo division.

3. dividing by 5

5. multiplying by -8

7. $h = 5$

9. $n = -14$

11. $m = -2$

13. $x = -8$

15. $p = -8$

17. $n = 8$

19. $g = -16$

21. $f = 6\frac{3}{4}$

23. They should divide by -4.2.

$-4.2x = 21$

$\frac{-4.2x}{-4.2} = \frac{21}{-4.2}$

$x = -5$

25. $\frac{2}{5}x = \frac{3}{20}$; $x = \frac{3}{8}$

27. $\frac{x}{-1.5} = 21$; $x = -31.5$

29. $\frac{x}{30} = 12\frac{3}{5}$; 378 ft

31–33. Sample answers are given.

31. **a.** $-2x = 4.4$ **b.** $\frac{x}{1.1} = -2$

33. **a.** $4x = -5$ **b.** $\frac{x}{5} = -\frac{1}{4}$

35. $-1.26n = -10.08$; 8 days

37. -50 ft

39. $-5, 5$

41. -7

43. 12

45. B

Lesson 2.5b Algebraic Expressions *(pages 81A and 81B)*

1. Terms: y, 10, $-\frac{3}{2}y$

Like terms: y and $-\frac{3}{2}y$

3. Terms: 7, $4p$, -5, p, $2q$

Like terms: 7 and – 5, $4p$ and p

5. $-\frac{3}{8}b$

7. $3q + 2$

9. $7g + 3$

Section 2.6 Solving Two-Step Equations *(pages 86 and 87)*

1. Eliminate the constants on the side with the variable. Then solve for the variable using either division or multiplication.

3. D

5. A

7. $b = -3$

9. $t = -4$

11. $g = 4.22$

13. $p = 3\frac{1}{2}$

15. $h = -3.5$

17. $y = -6.4$

19. Each side should be divided by -3, not 3.

$-3x + 2 = -7$

$-3x = -9$

$\frac{-3x}{-3} = \frac{-9}{-3}$

$x = 3$

21. $a = 1\frac{1}{3}$ **23.** $b = 13\frac{1}{2}$ **25.** $v = -\frac{1}{30}$

27. $2.5 + 2.25x = 9.25$; 3 games

29. $v = -5$ **31.** $d = -12$ **33.** $m = -9$

35. *Sample answer:* You travel halfway up a ladder. Then you climb down two feet and are 8 feet above the ground. How long is the ladder? $x = 20$

37. the initial fee

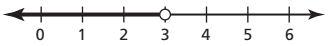
39. Find the number of insects remaining and then find the number of insects you caught.

41. decrease the length by 10 cm; $2(25 + x) + 2(12) = 54$

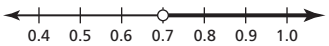
43. $-6\frac{2}{3}$ **45.** 6.2

Lesson 2.6b Solving Inequalities *(pages 87A–87D)*

1. $x < 3$;



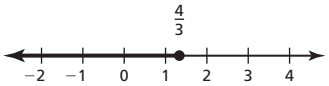
3. $r > 0.7$;



5. $z \leq \frac{1}{5}$;

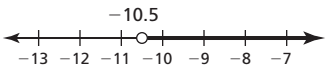
7. $b \geq -40$;

9. $m \leq \frac{4}{3}$;

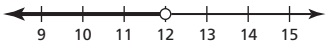


11. $x \geq 25$;

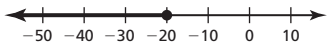
13. $j > -10.5$;



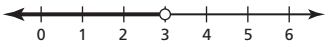
15. $k < 12$;



17. $z \leq -20$;



19. $n < 3$;



21. $c \geq 18$;

Section 3.1 Ratios and Rates *(pages 102 and 103)*

1. It has a denominator of 1.

3. *Sample answer:* A basketball player runs 10 ft down the court in 2 sec.

5. \$0.10 per fl oz **7.** \$72 **9.** 840 MB

11. $\frac{5}{9}$ **13.** $\frac{7}{3}$ **15.** $\frac{4}{3}$

17. 60 mi/h **19.** \$2.40 per lb **21.** 54 words per min

23. 90 calories per serving **25.** 4.5 servings per package **27.** 4.8 MB per min

Selected Answers

Section 3.1

Ratios and Rates *(continued)*
(pages 102 and 103)

29. **a.** It costs \$122 for 4 tickets.

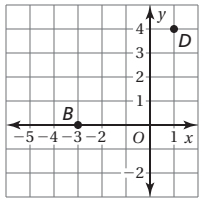
b. \$30.50 per ticket

c. \$305

31. The 9-pack is the best buy at \$2.55 per container.

33. Try searching for "fire hydrant colors."

35–37.



Section 3.2

Slope
(pages 108 and 109)

1. yes; Slope is the rate of change of a line.

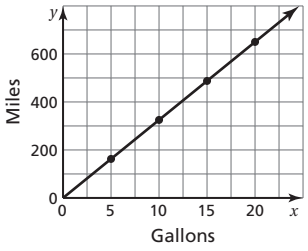
3. 5; A ramp with a slope of 5 increases 5 units vertically for every 1 unit horizontally. A ramp with a slope of $\frac{1}{5}$ increases 1 unit vertically for every 5 units horizontally.

5. $\frac{3}{2}$

7. 1

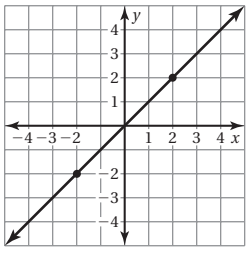
9. $\frac{4}{5}$

11.



slope = 32.5

13.

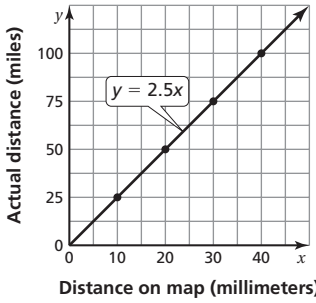


slope = 1

15. The change in y should be in the numerator. The change in x should be in the denominator.

Slope = $\frac{5}{4}$

17. **a.**



b. 2.5; Every millimeter represents 2.5 miles.

c. 120 mi

d. 90 mm

19. $y = 6$

21. <

23. $-\frac{4}{5}$

25. 3

Section 3.3

Proportions
(pages 114 and 115)

1. Both ratios are equal.

3. *Sample answer:* $\frac{6}{10}, \frac{12}{20}$

5. yes **7.** no **9.** yes **11.** no **13.** yes

15. yes **17.** yes **19.** no **21.** yes

23. yes; Both can do 45 sit-ups per minute.

25. yes **27.** yes **29.** yes; They are both $\frac{4}{5}$.

31. **a.** Pitcher 3 **b.** Pitcher 2 and Pitcher 4

33. **a.** no

b. *Sample answer:* If the collection has 50 quarters and 30 dimes, when 10 of each coin are added, the new ratio of quarters to dimes is 3 : 2.

35. -13 **37.** -18 **39.** D

Section 3.4

Writing Proportions
(pages 120 and 121)

1. You can use the columns or the rows of the table to write a proportion.

3. *Sample answer:* $\frac{x}{12} = \frac{5}{6}$; $x = 10$

5. $\frac{x}{50} = \frac{78}{100}$ **7.** $\frac{x}{150} = \frac{96}{100}$

9. $\frac{n \text{ winners}}{85 \text{ entries}} = \frac{34 \text{ winners}}{170 \text{ entries}}$ **11.** $\frac{100 \text{ meters}}{x \text{ seconds}} = \frac{200 \text{ meters}}{22.4 \text{ seconds}}$

13. $\frac{\$24}{3 \text{ shirts}} = \frac{c}{7 \text{ shirts}}$

15. $\frac{5 \text{ 6th grade swimmers}}{16 \text{ swimmers}} = \frac{s \text{ 6th grade swimmers}}{80 \text{ swimmers}}$

17. $y = 16$ **19.** $c = 24$ **21.** $g = 14$

23. $\frac{1}{200} = \frac{19.5}{x}$; Dimensions for the model are in the numerators and the corresponding dimensions for the actual space shuttle are in the denominators.

25. Draw a diagram of the given information.

27. $x = 9$

29. $x = 140$

Section 3.5

Solving Proportions
(pages 126 and 127)

1. mental math; Multiplication Property of Equality; Cross Products Property

3. yes; Both cross products give the equation $3x = 60$.

5. $h = 80$ **7.** $n = 15$ **9.** $y = 7\frac{1}{3}$ **11.** $k = 5.6$

13. $n = 10$ **15.** $d = 5.76$ **17.** $m = 20$ **19.** $d = 15$

21. $k = 5.4$ **23.** 108 pens **25.** $x = 1.5$ **27.** $k = 4$

29. \$769.50 **31.** **a.** 16 mo **b.** 40 mo

33. Make a table to solve the problem.

35. 2; $\frac{1/2}{1/4} = \frac{1}{2} \times \frac{4}{1} = 2$

37. 6400 **39.** 7920

Section 3.6

Converting Measures Between Systems
(pages 134 and 135)

1. To convert between measurements, multiply by the ratio of the given relationship such that the desired unit is in the numerator, or set up and solve a proportion using the given relationship as one of the ratios.

3. Find the number of inches in 5 cm; 5 cm ≈ 1.97 in.; 5 in. ≈ 12.7 cm

5. > **7.** > **9.** < **11.** 9.5

13. 21.08 **15.** 3.13 **17.** 121.92 **19.** 64.96

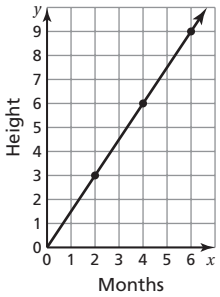
21. 2.38 **23.** about 584 km **25.** > **27.** >

29. < **31.** 72 **33.** 4.72 **35.** 77,400 kg

37. A kilometer is shorter than a mile. So, the given speed when converted should be greater than 110.

39. about 3.7 gal

41.



slope = $\frac{3}{2}$

43. C

Section 3.7 Direct Variation
(pages 140 and 141)

1. As one quantity increases, the other quantity increases.

3. the second graph; The points do not lie on a line.

5. no; The line does not pass through the origin.

7. yes; The points lie on a line that passes through the origin.

9. no; The line does not pass through the origin.

11. yes; The line passes through the origin.

13. yes; The line passes through the origin.

15. yes; The equation can be written as $y = kx$.

17. no; The equation cannot be written as $y = kx$.

19. yes; The equation can be written as $y = kx$.

21. no; The equation cannot be written as $y = kx$.

23. yes

25. $y = 5x$

27. $y = 24x$

29. $y = \frac{9}{8}x$

31. You can draw the ramp on a coordinate plane and write a direct variation equation.

33. no

35. Every graph of direct variation is a line; however, not all lines show direct variation because the line must pass through the origin.

37. $y = -60$

39. $d = -59\frac{1}{2}$

Lesson 3.7b Proportional Relationships
(pages 141A and 141B)

1. (0, 0): You earn \$0 for working 0 hours.

(1, 15): You earn \$15 for working 1 hour; unit rate: $\frac{\$15}{1\text{ h}}$

(4, 60): You earn \$60 for working 4 hours; unit rate: $\frac{\$60}{4\text{ h}} = \frac{\$15}{1\text{ h}}$

3. $y = 1.5$

Section 3.8 Inverse Variation
(pages 146 and 147)

1. As x increases, y decreases.

3. *Sample answer:* The wingspan of a bird varies inversely with its wing beat frequency.

5. inverse variation; The equation can be written as $y = \frac{k}{x}$.

7. direct variation; The equation can be written as $y = kx$.

9. neither; The equation cannot be written as $y = kx$ or $y = \frac{k}{x}$.

Section 3.8

Inverse Variation *(continued)*

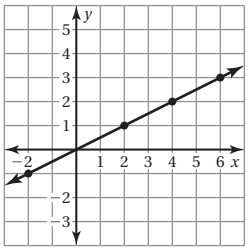
(pages 146 and 147)

11. direct variation; The equation can be written as $y = kx$.

13. inverse variation; The equation can be written as $y = \frac{k}{x}$.

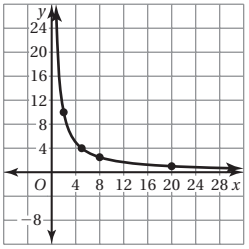
15. neither; The equation cannot be written as $y = kx$ or $y = \frac{k}{x}$.

17.



direct variation

19.



inverse variation

21. inverse variation; The equation can be written as $y = \frac{k}{x}$.

23. $y = \frac{4}{x}$

25. **a.** yes; $t = \frac{12}{s}$ **b.** 3 h

27. decreases **29.** 88 **31.** 63 **33.** yes **35.** yes **37.** B

Section 4.1

The Percent Equation

(pages 162 and 163)

1. A part of the whole is equal to a percent times the whole.

3. 55 is 20% of what number?; 275; 11

5. 37.5% **7.** 84 **9.** 64

11. $45 = p \cdot 60$; 75% **13.** $a = 0.32 \cdot 25$; 8

15. $12 = 0.005 \cdot w$; 2400 **17.** $102 = 1.2 \cdot w$; 85

19. 30 represents the part of the whole.

$30 = 0.6 \cdot w$

$50 = w$

21. \$5400 **23.** 26 years old **25.** 56 signers

27. If the percent is less than 100%, the percent of a number is less than the number. If the percent is equal to 100%, the percent of a number will equal the number. If the percent is greater than 100%, the percent of a number is greater than the number.

29. Remember when writing a proportion that either the units are the same on each side of the proportion, or the numerators have the same units and the denominators have the same units.

31. 92% **33.** 0.88 **35.** 0.36

Section 4.2 Percents of Increase and Decrease
(pages 168 and 169)

1. If the original amount decreases, the percent of change is a percent of decrease. If the original amount increases, the percent of change is a percent of increase.

3. The new amount is now 0.

5. decrease; 66.7%

7. increase; 225%

9. decrease; 12.5%

11. decrease; 37.5%

13. 10 m

15. 37 points

17. 153 students

19. 42.16 kg

21. They should have subtracted 10 in the last step because 25 is decreased by 40%.
40% of $25 = 0.4 \cdot 25 = 10$
So, $25 - 10 = 15$.

23. increase; 100%

25. increase; 133.3%

27. Increasing 20 to 40 is the same as increasing 20 by 20. So, it is a 100% increase. Decreasing 40 to 20 is the same as decreasing 40 by one-half of 40. So, it is a 50% decrease.

29. **a.** 100% increase **b.** 300% increase

31. less than; *Sample answer:* Let x represent the number. A 10% increase is equal to $x + 0.1x$, or $1.1x$. A 10% decrease of this new number is equal to $1.1x - 0.1(1.1x)$, or $0.99x$. Because $0.99x < x$, the result is less than the original number.

33. 10 girls

35. 35%

37. 56.25

Section 4.3 Discounts and Markups
(pages 176 and 177)

1. *Sample answer:* Multiply the original price by 100% − 25% = 75% to find the sale price.

3. **a.** 6% tax on a discounted price; The discounted price is less, so the tax is less.

b. 30% markup on a $30 shirt; 30% of $30 is less than $30.

5. $35.70

7. $76.16

9. $53.33

11. $450

13. $172.40

15. 20%

17. no; Only the amount of markup should be in the numerator, $\frac{105 - 60}{60} = 0.75$.
So, the markup is 75%.

19. $36

21. "Multiply $45.85 by 0.1" and "Multiply $45.85 by 0.9, then subtract from $45.85." Both will give the sale price of $4.59. The first method is easier because it is only one step.

23. no; $31.08

25. $30

27. 180

29. C

Selected Answers

Section 4.4

Simple Interest
(pages 182 and 183)

1. I = simple interest, P = principal, r = annual interest rate (in decimal form), t = time (in years)

3. You have to change 6% to a decimal and 8 months to years.

5. **a.** \$300 **b.** \$1800

7. **a.** \$292.50 **b.** \$2092.50

9. **a.** \$308.20 **b.** \$1983.20

11. **a.** \$1722.24 **b.** \$6922.24

13. 3%

15. 4%

17. 2 yr

19. 1.5 yr

21. \$1440

23. 2 yr

25. \$2720

27. \$6700.80

29. \$8500

31. 5.25%

33. 4 yr

35. 12.5 yr; Substitute \$2000 for P and I, 0.08 for r, and solve for t.

37. Year 1 = \$520; Year 2 = \$540.80; Year 3 = \$562.43

39. $n = 5$

41. $z = 9$

Section 5.1

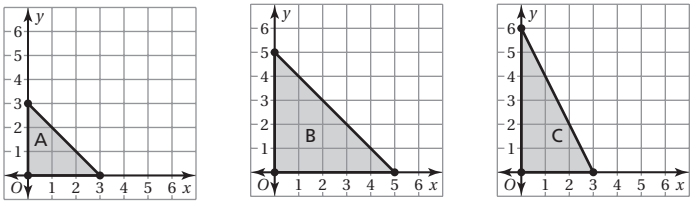
Identifying Similar Figures
(pages 198 and 199)

1. They have the same measure.

3. *Sample answer:* A photograph of size 3 in. × 5 in. and another photograph of size 6 in. × 10 in.

5. $\angle A$ and $\angle W$, $\angle B$ and $\angle X$, $\angle C$ and $\angle Y$, $\angle D$ and $\angle Z$;
Side AB and Side WX, Side BC and Side XY, Side CD and Side YZ, Side AD and Side WZ

7.



A and B; Corresponding side lengths are proportional and corresponding angles have the same measure.

9. similar; Corresponding angles have the same measure. Because $\frac{4}{6} = \frac{6}{9} = \frac{8}{12}$, the corresponding side lengths are proportional.

11. no

13. 48°

15. 42°

17. Simplify the ratios of length to width for each photo to see if any of the photos are similar.

19. yes; One could be a trapezoid and the other could be a parallelogram.

21. **a.** yes

b. yes; This is true for all similar triangles because the height of a triangle is a dimension of the triangle like the side lengths.

23. $\frac{16}{81}$

25. $\frac{49}{16}$

27. B

Section 5.2 Perimeters and Areas of Similar Figures
(pages 204 and 205)

1. The ratio of the perimeters is equal to the ratio of the corresponding side lengths.

3. 120 in.^{2}; Because the ratio of the corresponding side lengths is $\frac{1}{2}$, the ratio of the areas is equal to $\left(\frac{1}{2}\right)^2$. To find the area, solve the proportion $\frac{30}{x} = \frac{1}{4}$.

5. $\frac{5}{8}$; $\frac{25}{64}$

7. $\frac{14}{9}$; $\frac{196}{81}$

9. perimeter triples

11. Area is 16 times larger.

13. 45 in.

15. false; $\frac{\text{Area of } \triangle ABC}{\text{Area of } \triangle DEF} = \left(\frac{AB}{DE}\right)^2$

17. 39,900%; The ratio of the corresponding lengths is $\frac{6 \text{ in.}}{120 \text{ in.}} = \frac{1}{20}$. So, the ratio of the areas is $\frac{1}{400}$ and the area of the actual merry-go-round is 180,000 square inches. The percent of increase is $\frac{180{,}000 - 450}{450} = 399 = 39{,}900\%$.

19. $\frac{3}{4}$

21. 25% increase

23. 42.7% decrease

Section 5.3 Finding Unknown Measures in Similar Figures
(pages 210 and 211)

1. You can set up a proportion and solve for the unknown measure.

3. 15

5. 14.4

7. 8.4

9. 35 ft

11. 108 yd

13. 3 times

15. 12.5 bottles

17. 31.75

19. 3.88

21. 41.63

Section 5.4 Scale Drawings
(pages 216 and 217)

1. A scale is the ratio that compares the measurements of the drawing or model with the actual measurements. A scale factor is a scale without any units.

3. Convert one of the lengths into the same units as the other length. Then, form the scale and simplify.

5. 10 ft by 10 ft

7. 112.5%

9. 50 mi

11. 110 mi

13. 15 in.

15. 21.6 yd

17. The 5 cm should be in the numerator.

$$\frac{1 \text{ cm}}{20 \text{ m}} = \frac{5 \text{ cm}}{x \text{ m}}$$

$$x = 100 \text{ m}$$

19. 2.4 cm; 1 cm : 10 mm

Section 5.4

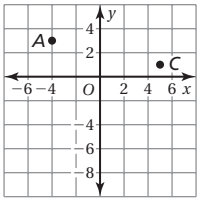
Scale Drawings *(continued)*
(pages 216 and 217)

21. **a.** *Answer should include, but is not limited to:* Make sure words and picture match the product.

b. Answers will vary.

23. Find the size of the object that would represent the model of the Sun.

25–27.



29. C

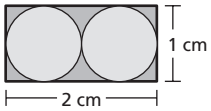
Lesson 5.4b

Scale Drawings
(pages 217A and 217B)

1. 15 ft^2

3. 3 ft^2

5.



Section 5.5

Translations
(pages 224 and 225)

1. A

3. yes; Translate the letters T and O to the end.

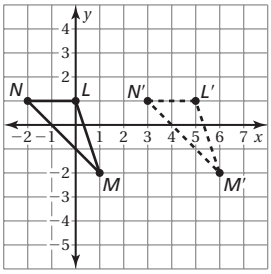
5. no

7. yes

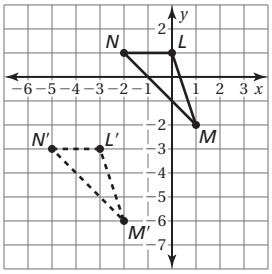
9. no

11. $A'(-3, 0)$, $B'(0, -1)$, $C'(1, -4)$, $D'(-3, -5)$

13.



15.



17. 2 units left and 2 units up

19. 6 units right and 3 units down

21. **a.** 5 units right and 1 unit up

b. no; It would hit the island.

c. 4 units right and 4 units up

23. If you are doing more than 10 moves and have not moved the knight to g5, you might want to start over.

25. no

27. yes

Section 5.6 Reflections
(pages 230 and 231)

1. The third one because it is not a reflection.

3. Quadrant IV

5. yes

7. no

9. no

11. $M'(-2, -1), N'(0, -3), P'(2, -2)$

13. $D'(-2, 1), E'(0, 2), F'(1, 5), G'(-1, 4)$

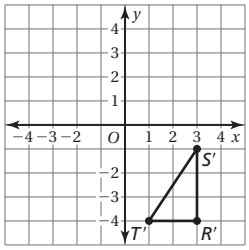
15. $T'(-1, -1), U'(-4, 2), V'(-6, -2)$

17. $J'(-2, 2), K'(-7, 4), L'(-9, -2), M'(-3, -1)$

19. x-axis

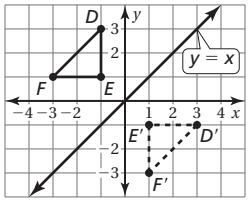
21. y-axis

23.



25. the first one; The left side of the face is a mirror image of the right side.

27.



The x-coordinate and y-coordinate for each point are switched in the image.

29. straight

31. acute

Section 5.7 Rotations
(pages 236 and 237)

1. **a.** reflection **b.** rotation **c.** translation

3. Quadrant I

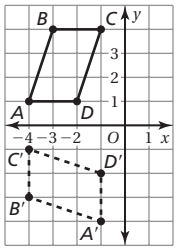
5. Quadrant III

7. No

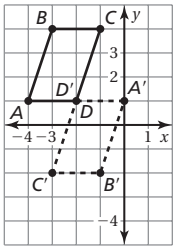
9. yes; 180° clockwise or counterclockwise

11. It only needs to rotate 90° to produce an identical image.

13. $A'(-1, -4), B'(-4, -3), C'(-4, -1), D'(-1, -2)$



15. $A'(0, 1), B'(-1, -2), C'(-3, -2), D'(-2, 1)$



17. because both ways will produce the same image

19. Use Guess, Check, and Revise to solve this problem.

21. triangular prism

23. C

Selected Answers

Section 6.1

Drawing 3-Dimensional Figures
(pages 254 and 255)

1. Prisms and cylinders both have two parallel, identical bases. The bases of a cylinder are circles. The bases of a prism are polygons. A prism has lateral faces that are parallelograms or rectangles. A cylinder has one smooth, round lateral surface.

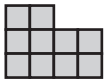
3. *Sample answer:* Prisms: A cereal box is a rectangular prism. A pup tent with parallel triangular bases at the front and back is a triangular prism.

Pyramids: The Egyptian pyramids are rectangular pyramids. A house roof forms a pyramid if it has lateral faces that are triangles that meet at a common vertex.

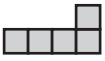
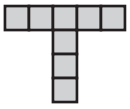
Cylinders: Some examples of cylinders are a soup can, a tuna fish can, and a new, unsharpened, round pencil.

Cones: some examples of cones are a traffic cone, an ice cream sugar cone, a party hat, and the sharpened end of a pencil.

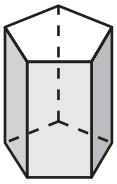
5. base: circle; solid: cylinder

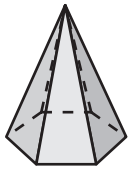
7. front:  side:  top: 

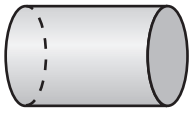
surface area: 34 units^2; volume: 10 units^3

9. front:  side:  top: 

surface area: 38 units^2; volume: 9 units^3

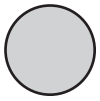
11. 

13. 

15. 

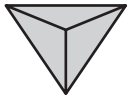
17. front: 

side: 

top: 

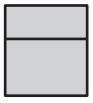
19. front: 

side: 

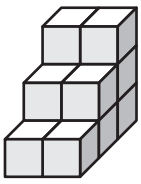
top: 

21. front: 

side: 

top: 

23. The Washington Monument is an *obelisk*. It consists of a pyramid sitting on top of a solid that tapers as it rises.

25. 

27. Use cubes to create solids that are possible.

29. 28 m^2

31. 15 ft^2

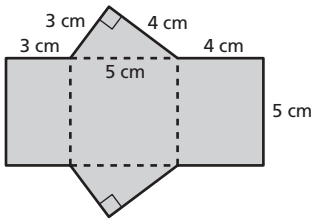
Section 6.2

Surface Areas of Prisms
(pages 260 and 261)

1. *Sample answer:* You want to paint a large toy chest in the form of a rectangular prism, and in order to know how much paint to buy, you need to know the surface area.

3. 18 cm^2 **5.** 108 cm^2

7.



72 cm^2

9. 130 ft^2 **11.** 76 yd^2 **13.** 136 m^2

15. 448 $in.^2$; The surface area of the box is 448 square inches, so that is the least amount of paper needed to cover the box.

17. 156 $in.^2$ **19.** 83 ft^2 **21.** 2 qt

23. $S = 2B + Ph$ **25.** 48 units **27.** C

Lesson 6.2b

Circles
(pages 261A and 261B)

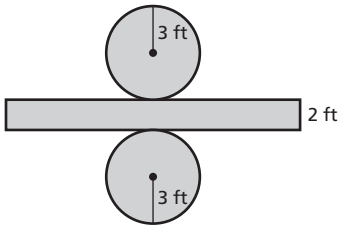
1. 18 in. **3.** $C \approx 440$ cm; $A \approx 15{,}400$ cm^2 **5.** $C \approx 31.4$ in.; $A \approx 78.5$ $in.^2$

Section 6.3

Surface Areas of Cylinders
(pages 266 and 267)

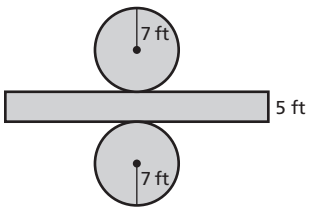
1. $2\pi rh$ **3.** $36\pi \approx 113.0$ cm^2

5.



$30\pi \approx 94.2$ ft^2

7.



$168\pi \approx 527.5$ ft^2

9. $156\pi \approx 489.8$ ft^2 **11.** $120\pi \approx 376.8$ ft^2 **13.** $28\pi \approx 87.9$ m^2

15. The error is that only the lateral surface area is found. The areas of the bases should be added;

$S = 2\pi r^2 + 2\pi rh$
$= 2\pi(6)^2 + 2\pi(6)(11)$
$= 72\pi + 132\pi$
$= 204\pi$ ft^2

17. The surface area of the cylinder with the height of 8.5 inches is greater than the surface area of the cylinder with the height of 11 inches.

19. After removing the wedge, is there any new surface area added?

21. 117 **23.** 56.52

Selected Answers

Section 6.4

Surface Areas of Pyramids
(pages 274 and 275)

1. the triangle and the hexagon

3. Knowing the slant height helps because it represents the height of the triangle that makes up each lateral face. So, the slant height helps you to find the area of each lateral face.

5. 178.3 mm^2 **7.** 144 ft^2 **9.** 170.1 yd^2

11. 1240.4 mm^2 **13.** 6 m

15. Determine how long the fabric needs to be so you can cut the fabric most efficiently.

17. 124 cm^2

19. $A \approx 452.16$ units^2; $C \approx 75.36$ units

21. $A \approx 572.265$ units^2; $C \approx 84.78$ units

Section 6.5

Surface Areas of Cones
(pages 280 and 281)

1. no; The base of a cone is a circle. A circle is not a polygon.

3. $\ell > r$ **5.** $36\pi \approx 113.0$ m^2 **7.** $119\pi \approx 373.7$ ft^2

9. $64\pi \approx 201.0$ yd^2 **11.** 15 cm **13.** $130\pi \approx 408.2$ $in.^2$

15. $360\pi \approx 1130.4$ $in.^2$; $2.5\pi \approx 7.85$ ft^2 **17.** $96\pi \approx 301.44$ ft^2; $\frac{32}{3}\pi \approx 33.49\overline{3}$ yd^2

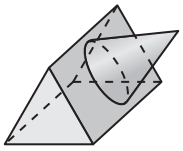
19. 12% **21.** the lateral surface area

23. 45 $in.^2$ **25.** 16 ft^2

Section 6.6

Surface Areas of Composite Solids
(pages 286 and 287)

1. *Sample answer*:



3. three cylinders

5. rectangular prism, half of a cylinder

7. cones; $104\pi \approx 326.6$ m^2

9. trapezoidal prism, rectangular prism; 152 cm^2 **11.** two rectangular prisms; 308 ft^2

13. 63.4% **15.** $144\pi \approx 452.2$ $in.^2$ **17.** $806\pi \approx 2530.84$ mm^2

19. 10 ft^2 **21.** 47.5 $in.^2$

Section 7.1 Volumes of Prisms
(pages 302 and 303)

1. cubic units

3. *Sample answers:* Volume because you want to make sure the product will fit inside the package. Surface area because of the cost of packaging.

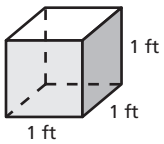
5. 288 cm^3 **7.** 160 yd^3 **9.** 420 mm^3 **11.** 645 mm^3

13. The area of the base is wrong.

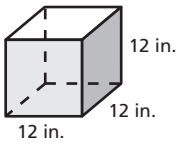
$V = \frac{1}{2}(7)(5) \cdot 10 = 175 \text{ cm}^3$

15. 225 $in.^3$ **17.** 7200 ft^3

19. 1728 $in.^3$



$1 \times 1 \times 1 = 1 \text{ ft}^3$



$12 \times 12 \times 12 = 1728 \text{ in.}^3$

21. 20 cm

23. You can write the volume in cubic inches and use prime factorization to find the dimensions.

25. reflection **27.** rotation

Section 7.2 Volumes of Cylinders
(pages 308 and 309)

1. How much does it take to cover the cylinder?; $170\pi \approx 533.8 \text{ cm}^2$; $300\pi \approx 942 \text{ cm}^3$

3. $486\pi \approx 1526.0 \text{ ft}^3$ **5.** $245\pi \approx 769.3 \text{ ft}^3$ **7.** $90\pi \approx 282.6 \text{ mm}^3$ **9.** $63\pi \approx 197.8 \text{ in.}^3$

11. $256\pi \approx 803.8 \text{ cm}^3$ **13.** $\frac{125}{8\pi} \approx 5$ ft **15.** $\frac{240}{\pi} \approx 76$ cm

17. Divide the volume of one round bale by the volume of one square bale.

19. $8325 - 729\pi \approx 6036 \text{ m}^3$ **21.** $a = 0.5 \cdot 200$; 100

23. D

Section 7.3 Volumes of Pyramids
(pages 314 and 315)

1. The volume of a pyramid is $\frac{1}{3}$ times the area of the base times the height. The volume of a prism is the area of the base times the height.

3. 3 times greater **5.** 20 mm^3 **7.** 80 $in.^3$ **9.** 252 mm^3

11. 700 mm^3 **13.** 30 $in.^2$ **15.** 7.5 ft

17. 12,000 $in.^3$; The volume of one paperweight is 12 cubic inches. So, 12 cubic inches of glass is needed to make one paperweight. So it takes $12 \times 1000 = 12{,}000$ cubic inches to make 1000 paperweights.

19. *Sample answer:* 5 ft by 4 ft **21.** 28 **23.** 60 **25.** B

Section 7.4 Volumes of Cones
(pages 320 and 321)

1. The height of a cone is the distance from the vertex to the center of the base.

3. Divide by 3.

5. $9\pi \approx 28.3 \text{ m}^3$

7. $\frac{2\pi}{3} \approx 2.1 \text{ ft}^3$

9. $27\pi \approx 84.8 \text{ yd}^3$

11. $\frac{125\pi}{6} \approx 65.4 \text{ in.}^3$

13. The diameter was used instead of the radius.

$V = \frac{1}{3}(\pi)(3)^2(8) = 24\pi \text{ m}^3$

15. 1.5 ft

17. $\frac{40}{3\pi} \approx 4.2$ in.

19. 24.1 min

21. $3y$

23. 315 m^3

25. $152\pi \approx 477.28 \text{ ft}^3$

Section 7.5 Volumes of Composite Solids
(pages 328 and 329)

1. A composite solid is a solid that is made up of more than one solid.

3. In Example 2, you had to subtract the volume of the cylinder-shaped hole from the volume of the entire cylinder. In Example 1, you had to find the volumes of the square prism and the square pyramid and add them together.

5. $125 + 16\pi \approx 175.2 \text{ in.}^3$

7. 220 cm^3

9. 173.3 ft^3

11. $216 - 24\pi \approx 140.6 \text{ m}^3$

13. **a.** *Sample answer:* 80% **b.** *Sample answer:* $100\pi \approx 314 \text{ in.}^3$

15. 13.875 in.^3; The volume of the hexagonal prism is 10.5(0.75) and the volume of the hexagonal pyramid is $\frac{1}{3}(6)(3)$.

17. $\frac{25}{9}$

19. B

Section 7.6 Surface Areas and Volumes of Similar Solids
(pages 335–337)

1. Similar solids are solids of the same type that have proportional corresponding linear measures.

3. **a.** $\frac{4}{9}$ **b.** $\frac{8}{27}$

5. no

7. no

9. $b = 18$ m; $c = 19.5$ m; $h = 9$ m

11. 1012.5 in.^2

13. $13{,}564.8 \text{ ft}^3$

15. 673.75 cm^2

17. **a.** yes; Because all circles are similar, the slant height and the circumference of the base of the cones are proportional.

b. no; because the ratio of the volumes of similar solids is equal to the cube of the ratio of their corresponding linear measures

19. Choose two variables, one to represent the surface area of the smallest doll and one to represent the volume of the smallest doll. Use these variables to find the surface areas and volumes of the other dolls.

21. 1 **23.** C

Section 8.1 Stem-and-Leaf Plots

(pages 352 and 353)

1. 3 is the stem; 4 is the leaf

3. From the leaves, you can see where most of the data lies and whether there are many values that are low or high.

5. 4; 42

7. no; There is no 2 as a leaf for the stem 3.

9. **Hours Online**

Stem	Leaf
0	0 2 6 8
1	2 2 4 5 7 8
2	1 4

Key: 2 | 1 = 21 hours

11. **Points Scored**

Stem	Leaf
3	8
4	2 2 3 3 5
5	0 1 6 8 8
6	
7	0 1 1 5

Key: 3 | 8 = 38 points

13. **Weights**

Stem	Leaf
0	8
1	2 5 7 8
2	4 4
3	1

Key: 2 | 4 = 24 pounds

Most of the weights are in the middle.

15. **Minutes in Line**

Stem	Leaf
1	6 9
2	0 2 6 7 9
3	1 1 6 8
4	0

Key: 4 | 0 = 4.0 minutes

17. mean: 56.6; median: 53; modes: 41, 43, 63; range: 56

19. 97; It increases the mean.

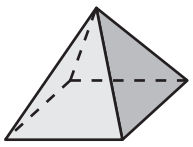
21. *Sample answer:* Points by a basketball player in his first 8 games

Points

Stem	Leaf
2	1 3 4
3	2 4
4	0 1 5

Key: 3 | 2 = 32 points

23.



25.

27. B

Selected Answers

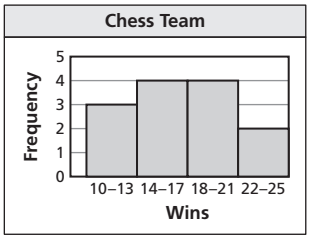
Section 8.2 Histograms
(pages 358 and 359)

1. The *Test Scores* graph is a histogram because the number of students (frequency) achieving the test scores are shown in intervals of the same size (20).

3. No bar is shown on that interval.

5. flat

7.



9. **a.** 4–5

b. 20 students

c. 85%

11. Pennsylvania; You can see from the intervals and frequencies that Pennsylvania counties are greater in area, which makes up for it having fewer counties.

13. Don't use a smaller interval because the distribution will appear flat.

15. 27 **17.** 51.2

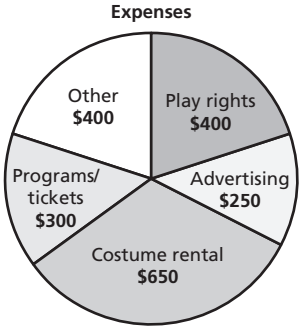
Section 8.3 Circle Graphs
(pages 366 and 367)

1. Multiply the decimal form of each percent by 360° to find the angle measure for each section.

3. $\frac{1}{2}$ does not belong because it does not represent an entire circle.

5. orange **7.** 20 students **9.** 54° **11.** 10.8°

13.



15. no; The sum of the percentages is greater than 100%. This would occur when students like more than one of these activities.

17. *Sample answer:* Knowledge of percentages, proportions, and degrees of a circle. How to convert from one form to another.

19. $x = 40$ **21.** $w = 1.5$

Section 8.4

Samples and Populations
(pages 372 and 373)

1. Samples are easier to obtain.

3. *Sample answer:* The results may be similar for middle school students, but not for children in first grade. Children in first grade probably do not know all of these nuts.

5. *Sample answer:* You could send a survey home with your classmates and have them ask one of their parents what their favorite nut is.

7. Population: All quarters in circulation
Sample: 150 quarters

9. Population: All books in library
Sample: 10 books

11. a. Population: All students at your school
Sample: First 15 students at band class

b. no; Your sample includes 15 students arriving at band class, and students who take band class play a musical instrument.

13. Sample A because it is representative of the population.

15. A population because there are few enough students in your homeroom to not make the surveying difficult.

17. 1260 students

19. Use the survey results to find the number of students in the school that plan to attend college.

21. 31.25%

23. $81.\overline{81}\%$

Lesson 8.4b

Comparing Populations
(pages 373A and 373B)

1. a. *Sample answer:* randomly asking students at lunch

b. *Sample answer:* randomly asking students on the football team

3. In general, boys are taller than girls.

Section 9.1 Introduction to Probability
(pages 388 and 389)

1. event; It is a collection of several outcomes.

3. *Sample answer:* flipping a coin and getting both heads and tails; rolling a number cube and getting a number between 1 and 6

5. no; They both have the same number of forward outcomes.

7. 6 **9.** 6, 7, 8, 9 **11.** 1, 2

13. **a.** 2 ways **b.** blue, blue **15.** **a.** 2 ways **b.** purple, purple

17. **a.** 6 ways **b.** yellow, green, blue, blue, purple, purple

19. There are 7 marbles that are *not* purple, even though there are only 4 colors. Choosing *not* purple could be red, red, red, blue, blue, green, or yellow.

21. false; five **23.** false; red

25. no; More sections on a spinner does not necessarily mean you are more likely to spin red. It depends on the size of the sections of the spinner.

27. Do the number of outcomes increase, decrease, or stay the same?

29. 30

31. $-3\frac{1}{2}$

Section 9.2 Theoretical Probability
(pages 394 and 395)

1. There is a 50% chance you will get a favorable outcome.

3. Spinner 4; The other three spinners are fair.

5. $\frac{1}{6}$ or about 16.7% **7.** $\frac{1}{2}$ or 50% **9.** 0 or 0% **11.** 9 chips

13. not fair, your friend **15.** $\frac{1}{44}$ or about 2.3%

17. **a.** $\frac{4}{9}$ or about 44.4% **b.** 5 males **19.** There are 2 combinations for each.

21. $\frac{1}{4}$ **23.** $-\frac{21}{40}$ **25.** C

Section 9.3 Experimental Probability
(pages 402 and 403)

1. Perform an experiment several times. Count how often the event occurs and divide by the number of trials.

3. $\frac{2}{5}$ or 40% **5.** $\frac{2}{5}$ or 40% **7.** $\frac{7}{50}$ or 14% **9.** $\frac{21}{25}$ or 84% **11.** $\frac{17}{50}$ or 34%

13. The theoretical probability was found, not the experimental probability. $P(4) = \frac{11}{50}$

15. 45 tiles **17.** 25

19. The experimental probability of 60% is close to the theoretical probability of 50%.

21. Make a list of all the possible ways to get each sum.

23. *Sample answer:* Roll two number cubes 50 times and find each product. Record how many times the product is at least 12. Divide this number by 50 to find the experimental probability.

25. $x = 5$ **27.** $x = 24$

Section 9.4 Independent and Dependent Events *(pages 409–411)*

1. Draw a tree diagram or multiply $P(A)$ by $P(B)$.

3. *Sample answer:* independent events: a traffic jam and a sunny day; dependent events: temperatures below freezing and ice

5. independent; The outcome of the first roll does not affect the outcome of the second roll.

7. independent; You replace the marble, so the probability doesn't change.

9. dependent; There is one less person to choose from on the second draw.

11. $\frac{2}{9}$ **13.** $\frac{2}{9}$ **15.** $\frac{1}{20}$ or 5% **17.** $\frac{3}{20}$ or 15%

19. $\frac{1}{42}$ or about 2.4% **21.** $\frac{1}{21}$ or about 4.8% **23.** $\frac{4}{21}$ or about 19% **25.** $\frac{1}{2520}$ or about 0.04%

27. a. $\frac{1}{100}$ or 1%

b. It increases the probability that your choice is correct to $\frac{1}{25}$ or 4%, because each digit could be 0, 2, 4, 6, or 8.

29. a. $\frac{1}{9}$ or about 11.1%

b. It increases the probability that your guesses are correct to $\frac{1}{4}$ or 25%, because you are only choosing between 2 choices for each question.

31. $\frac{16}{25}$ or 64% **33.** 1 : 5; 5 : 1 **35.** 1 : 35; 35 : 1

37. $n = -10.8$ **39.** B

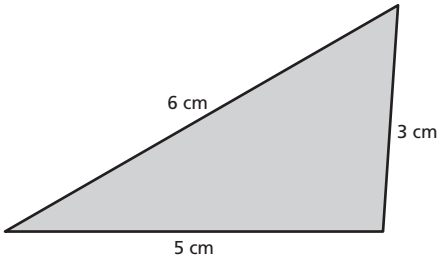
Topic 1 Angles *(pages 422 and 423)*

1. complementary **3.** neither **5.** vertical; 90 **7.** 76

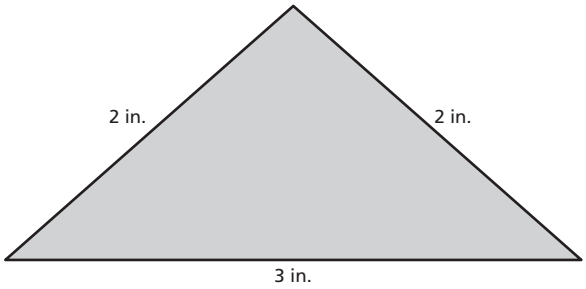
Topic 2 Geometry

(pages 424–427)

1.



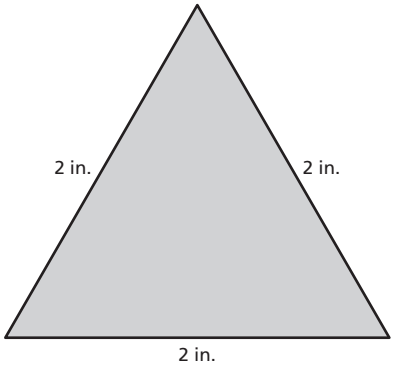
3.



5. not possible

7. not possible

9.



11. Side lengths in Exercise 5:

Side length	2 cm	4 cm	1 cm
Sum of other two side lengths	5 cm	3 cm	6 cm

Side lengths in Exercise 6:

Side length	6 cm	8 cm	10 cm
Sum of other two side lengths	18 cm	16 cm	14 cm

Side lengths in Exercise 7:

Side length	1 in.	2 in.	1 in.
Sum of other two side lengths	3 in.	2 in.	3 in.

Side lengths in Exercise 8:

Side length	5 cm	7 cm	4 cm
Sum of other two side lengths	11 cm	9 cm	12 cm

Side lengths in Exercise 9:

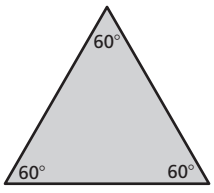
Side length	2 in.	2 in.	2 in.
Sum of other two side lengths	4 in.	4 in.	4 in.

Side lengths in Exercise 10:

Side length	1 in.	5 in.	3 in.
Sum of other two side lengths	8 in.	4 in.	6 in.

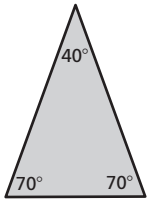
The sum of any two side lengths must be greater than the remaining side length.

13.



15. not possible

17.



19. triangle

21. rectangle

23. triangle

25. The intersection is the shape of the base.