5-Minute Check

Use with Lesson 1-1

Subtract or divide.

1. 5,678 − 3,479

2. 29,811 ÷ 57

3. Each classroom in a school has 30 student desks. If the average class size is 25 students, and there are 55 classrooms occupied by classes, about how many unused desks are there?

4. Katrina's family wants to order Chinese food for dinner. Using the table at the right, write and solve an equation to find how much money Katrina's family needs to pay for their order.

Chinese Food Order		
Number of Items	Item	Price
2	Fried Dumplings	$2.95
1	Lemon Chicken	$4.95
2	Kung Pao Beef	$5.95
3	Wontons	$1.89

5. How much change should Katrina's father receive if he pays for the Chinese food with a fifty-dollar bill?

6. Test Practice Write $\frac{9}{12}$ as a percent.

A 55% **B** 65% **C** 75% **D** 85%

ANSWERS

1. 2,199
2. 523
3. 275
4. $(2 \times \$2.95) + \$4.95 + (2 \times \$5.95) + (3 \times \$1.89) = x$; $x = \$28.42$
5. $21.58
6. C

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Use the four-step plan to solve each problem.

1. Ryan's living room is 10 feet wide, 12 feet long, and 10 feet high. If one gallon of paint covers 400 square feet of surface area, how many gallons of paint would Ryan need to paint all four walls and the ceiling?

2. Nolan is selling coupon books to raise money for a class trip. The cost of the trip is $400, and the profit from each coupon book is $15. How many coupon books does Nolan need to sell to earn enough money to go on the class trip?

3. Cangialosi's Café made a $6,000 profit during January. Mr. Cangialosi expects profits to increase $500 per month. In what month can Mr. Cangialosi expect his profit to be $\frac{1}{3}$ greater than his January profit?

4. **Test Practice** A comic book store took in $2,700 in sales of first editions during November. December sales of first editions are expected to be double that amount. If the first editions are sold for $75 each, how many first editions are expected to be sold in December?

   A 18 **B** 36 **C** 38 **D** 72

ANSWERS

1. 2 gallons
2. 27 coupon books
3. May
4. D

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Write each power as a product of the same factor.

1. 5^3

2. 2^6

Evaluate each expression.

3. 8^3

4. 2^5

5. A certain type of bacteria reproduces at a rate of 10 • 10 • 10 per hour. Write the rate at which this bacteria reproduces in exponential form.

6. Test Practice Write 8^7 in words.

A seven times eight

B eight times seven

C eight to the seventh power

D seven to the eighth power

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ANSWERS

1. 5 • 5 • 5
2. 2 • 2 • 2 • 2 • 2 • 2
3. 512
4. 32
5. 10^3 per hour
6. C

Find the square of each number.

1. 7

2. 12

3. 13

Find each square root.

4. $\sqrt{81}$

5. $\sqrt{196}$

6. **Test Practice** Find $\sqrt{36} \times (-2)^2 - (-4)$.

A -128 **B** 28 **C** 96 **D** 136

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ANSWERS

1. 49
2. 144
3. 169
4. 9
5. 14
6. B

Evaluate each expression.

1. $7 \cdot 4 + (21 - 5)$

2. $(7 - 4)^3 + 32$

3. $16 \div 4 + 63 \div 9$

4. 3×10^3

5. $144 \div (2)6$

6. **Test Practice** On Mondays, Wednesdays, and Fridays, Adrian runs five miles. On Tuesdays, Thursdays, and Saturdays, he runs two miles. On Sunday, Adrian runs 10 miles. Write a numerical expression to find how many miles Adrian runs in a week. Then evaluate the expression.

A $(3 \cdot 5) + (2 \cdot 2) + 10 = x;\ x = 31$

B $(3 \cdot 5) + (2 \cdot 2) + 10 = x;\ x = 29$

C $(3 \cdot 5) + (3 \cdot 2) + 10 = x;\ x = 31$

D $(3 \cdot 5) + (3 \cdot 2) + 10 = x;\ x = 29$

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ANSWERS

1. 44
2. 59
3. 11
4. 3,000
5. 12
6. C

Solve problems using the *guess and check* strategy.

1. Hot dogs come in packages of 10. Hot dog buns come in packages of 8. How many packages of hot dogs and hot dog buns would you need to buy to have enough buns for every hot dog?

2. A number is multiplied by 8. Then 5 is subtracted from the product. The result is 43. What is the number?

3. The school carnival made $420 from ticket sales. Adult tickets cost $5 and student tickets cost $3. Also, three times as many students bought tickets as adults. How many adult and student tickets were sold?

4. **Test Practice** Which sequence follows the rule 3^n, where n represents the position of a term in the sequence?

   A 3, 9, 27, 81, 243, . . . **C** 3, 6, 9, 12, 15, . . .

   B 1, 8, 27, 64, 125, . . . **D** 1, 4, 7, 10, 13, . . .

ANSWERS

1. 4 packages of hot dogs and 5 packages of hot dog buns
2. 6
3. 30 student tickets and 90 adult tickets
4. A

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Evaluate each expression if $m = 2$, $n = 4$, $r = 7$, and $p = 9$.

1. $\frac{n^2}{m}$

2. $7r - 3p$

3. $(p - m) + 5(2n)$

4. $\frac{(13 - r)^2}{12}$

5. $\frac{3p}{n}$

6. **Test Practice** Kerrie works at an art supply store. Which expression could Kerrie use to find the cost of buying p cases of paintbrushes at \$145 each and e easels at \$59 each?

   A $145e + 59p$

   B $145p + 59e$

   C $(145 + 59) + pe$

   D $p(145 - 59) + e$

ANSWERS

1. 8
2. 22
3. 47
4. 3
5. 6.75
6. B

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Solve each equation mentally.

1. $27 + n = 55$

2. $9y = 45$

Name the number that is the solution of the given equation.

3. $2.4 + a = 4$; 1.6, 2.8, 3.1

4. $18m = 63$; 2.3, 3.5, 4.6

5. Kieran worked for 9.5 hours and earned $80.75. How much does she get paid per hour? Use the equation $9.5w = 80.75$, where w is Kieran's hourly wage.

6. **Test Practice** Warren had 26 bobbleheads in his collection. After he bought some more bobbleheads at an auction, he had a total of 32 bobbleheads. Which equation could be used to find how many bobbleheads he bought at the auction?

A $32 + t = 26$

B $32 \div t = 26$

C $26 - 32 = t$

D $26 + t = 32$

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ANSWERS

1. 28
2. 5
3. 1.6
4. 3.5
5. $8.50
6. D

Use the Distributive Property to write each expression as an equivalent expression. Then evaluate the expression.

1. $3(4 + 8)$

2. $9(8 - 4)$

Name the property shown by each statement.

3. $x + y = y + x$

4. $31 \times 1 = 31$

5. $(m \times n) \times p = m \times (n \times p)$

6. Test Practice Rewrite $a \times (b \times c)$ using the Associative Property of Multiplication.

A $a \times (c \times b)$

C $(b \times c) \times a$

B $c \times (a \times b)$

D $(a \times b) \times c$

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ANSWERS

1. $3 \cdot 4 + 3 \cdot 8$; 36
2. $9 \cdot 8 - 4 \cdot 9$; 36
3. Commutative Property of Addition
4. Identity Property of Multiplication
5. Associative Property of Multiplication
6. D

5-Minute Check (over Lesson 1-9)

Use with Lesson 1-10

Describe the pattern in each sequence and identify the sequence as *arithmetic, geometric,* or *neither.*

1. 2, 16, 128, 1,024, . . .

2. 2.8, 6, 9.2, 12.4, . . .

Write the next three terms of each sequence.

3. 4, 12, 36, 108, . . .

4. 2.1, 2.8, 3.5, 4.2, . . .

5. Every 18 months, National Surveys conducts a population survey of the United States. If they conducted a survey in September of 2003, when will they conduct the next four surveys?

6. Test Practice Find the next term in the sequence 3.2, 12.8, 51.2, 204.8, . . .

A 723.5 **B** 819.2 **C** 845.9 **D** 901.1

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ANSWERS

1. × 8; geometric
2. + 3.2; arithmetic
3. 324, 972, 2,916
4. 4.9, 5.6, 6.3
5. March 2005, September 2006, March 2008, September 2009
6. B

5-Minute Check (over Chapter 1)

Use with Lesson **2-1**

Evaluate each expression.

1. 12^3

2. If $a = 4$ and $b = 3.2$, $ab + a(b + 2) = ?$

3. Solve $8x = 64$ mentally.

4. Name the property shown by $7 + (x + 43) = (7 + x) + 43$.

Copy and complete the function table. Identify the domain and range.

x	$2x + 1$	y
1		
2		
3		

5. $y = 2x + 1$

6. **Test Practice** To cater a party, a restaurant charges $50 per hour for the room plus $15.50 per person. Which expression represents the total cost of a 3-hour party for 45 people?

A $3 \times 50 + 15.50 \times 45$

B $3 \times 45 + 15.50 \times 50$

C $3 + 50 + 15.50 \times 45$

D $3 \times 15.50 + 45 \times 50$

ANSWERS

1. 1,728 2. 33.6
3. 8
4. Associative Property of Addition
6. A

5.

x	$2x + 1$	y
1	$2(1) + 1$	3
2	$2(2) + 1$	5
3	$2(3) + 1$	7

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5-Minute Check (over Lesson 2-1)

Use with Lesson 2-2

Write an integer for each situation.

1. stock market down 56 points
2. a score of 3
3. a bank deposit of $25

Evaluate each expression.

4. $|-19|$
5. $|12| + |-2|$
6. **Test Practice** Find $|k| - |m|$ if $k = -6$ and $m = -2$.

   A -8 **B** -4 **C** 4 **D** 8

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ANSWERS

1. -56
2. 3
3. 25
4. 19
5. 14
6. C

5-Minute Check (over Lesson 2-2)

Use with Lesson **2-3**

Replace each ● with $<$ or $>$ to make a true sentence.

1. -21 ● -15

2. 5 ● -5

3. 0 ● -1

4. Order 7, -1, 0, 4, -6 from least to greatest.

5. If 0 is the second smallest number in a set of 10 integers, what can you conclude about the other 9 numbers?

6. **Test Practice** Which of the following is a true sentence?

A $0 < -7$ **B** $-3 > 6$ **C** $-2 > -5$ **D** $1 < -4$

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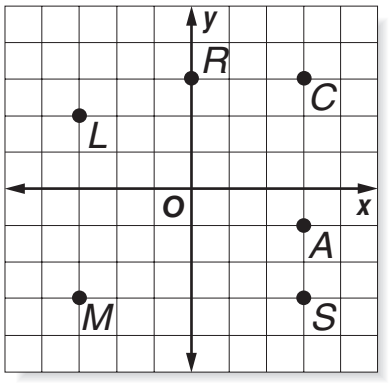
ANSWERS

1. $<$
2. $>$
3. $>$
4. $-6, -1, 0, 4, 7$
5. You can tell that 8 numbers in the set are greater than 0, and 1 number is less than 0.
6. C

5-Minute Check (over Lesson 2-3)

Use with Lesson **2-4**

Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.



1. *C*

2. *L*

3. *S*

Graph and label each point.

4. *W*(4, −2)

5. *N*(−3, 0)

6. **Test Practice** Which ordered pair is 5 units left and 3 units up from the origin?

A (−5, −3) **B** (5, −3) **C** (5, 3) **D** (−5, 3)

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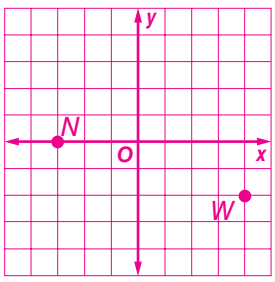
ANSWERS

1. (3, 3), I
2. (−3, 2), II
3. (3, −3), IV
6. D

4–5.



Add.

1. $-4 + 4$
2. $8 + (-7)$
3. $-3 + (-5)$

Write an addition expression to describe each situation. Then find each sum.

4. A bird flies up 50 feet and swoops back down 10 feet.
5. Teresa loses $14 at poker and then wins $10.
6. **Test Practice** Evaluate $x + y$ if $x = -3$ and $y = -9$.

   A -12 **B** -6 **C** 6 **D** 12

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ANSWERS

1. 0
2. 1
3. -8
4. $50 - 10 = 40$
5. $-14 + 10 = -4$
6. A

Subtract.

1. $4 + (-5)$

2. $-14 - 34$

3. $-45 - (-8)$

Evaluate each expression if $a = -2$, $b = 3$, and $c = -1$.

4. $c - b$

5. $9 - a$

6. **Test Practice** What is -4 subtracted from -3?

A -7 **B** -1 **C** 1 **D** 7

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ANSWERS

1. -1
2. -48
3. -37
4. -4
5. 11
6. C

Multiply.

1. $21(-5)$
2. $-7(-4)$
3. $(-9)^2$

Evaluate each expression if $x = -4$, and $y = 11$.

4. $9(x^2 + y^2)$
5. Find the product of $-x$ and y.
6. **Test Practice** What is $-3(8g)$ simplified?

   A $-38g$ **C** $-24 + g$

   B $-24g$ **D** $-24 + 3g$

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ANSWERS

1. -105
2. 28
3. 81
4. 1,233
5. 44
6. B

Solve problems by looking for a pattern.

1. Tonya gets a job that pays $35,000 per year. She is promised a $1,500 raise each year. At this rate, what will her salary be in 5 years?

2. A ball that is dropped from the top of a building bounces 48 inches up the first bounce, 24 inches up the second bounce, and 12 inches up the third bounce. At this rate, how far up will the ball bounce on the fifth bounce?

3. Hummingbird wing-beats are about 80 per second. At this rate, how many times does a hummingbird beat its wings in 2 hours?

4. **Test Practice** Kendra created a 5-day study schedule for her exams. If the pattern continues, how many hours will she study on the fifth day?

   The table shows the number of hours she studies in the first three days.

Day	1	2	3
Hours	0.75	1.5	2.25

A 3 **B** 4 **C** 4.5 **D** 3.75

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ANSWERS

1. $42,500
2. 3 inches
3. 576,000 beats
4. D

5-Minute Check (over Chapter 2)

Use with Lesson 3-1

Replace each ● with $<$ or $>$ to make a true sentence.

1. -7 ● 9

2. $|-12|$ ● 6

Add, subtract, or multiply.

3. $15 + (-7)$

4. $-6 - (-12)$

5. $-5(11)$

6. **Test Practice** The temperature at 2:00 P.M. was 58°F. By 9:00 P.M. the temperature was 44°F. What was the average change in the temperature per hour?

A -14°F **B** -7°F **C** -2°F **D** -1°F

ANSWERS

1. $<$
2. $>$
3. 8
4. 6
5. -55
6. C

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5-Minute Check (over Lesson 3-1)

Use with Lesson 3-2

Write each phrase as an algebraic expression.

1. the product of y and 9
2. six dollars more than d

Write each sentence as an algebraic equation.

3. Seven less than a number is 28.
4. Four more than three times a number is 16.
5. Kamaya's biology class requires 580 pages of reading over the course of the school year. Her history class requires 130 more pages than her biology class. Write an equation that models this situation.
6. **Test Practice** A diner charges \$1.35 for a cup of coffee and \$0.59 for refills. Which equation could be used to find the cost c of a cup of coffee with r number of refills?

A $c = 1.35 + 0.59r$ **C** $0.59r - 1.35 = c$

B $1.35c + 0.59 = r$ **D** $c = 1.35 - 0.59r$

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ANSWERS

1. $9y$
2. $d + 6$
3. $x - 7 = 28$
4. $4 + 3b = 16$
5. $h - 130 = 580$
6. A

Solve each equation. Check your solution.

1. $x + 31 = 53$

2. $-5 + y = 13$

3. $r - 7.2 = 22.8$

4. The sum of a number and 8 is -13. Find the number.

5. Using the table, write and solve an equation to determine Dale's top speed at the racetrack if Dale's top speed was 17 mph less than Andy's.

Top Speeds at the Racetrack	
Ken	125 mph
Dale	?
Andy	152 mph

6. Test Practice The combined ages of the students in the 7th grade class at Sunnydale Middle School is 1,582. The combined ages of the students in the 8th grade class is 34 more than the combined ages of the students in the 7th grade class. Which equation can help you find the combined ages of the students in the 8th grade class?

A $h = 1{,}582 - 34$

B $1{,}582 - h = 34$

C $1{,}582 + 34 = h$

D $34 = h + 1{,}582$

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ANSWERS

1. 22
2. 18
3. 30
4. -21
5. $17 + s = 152$; $s = 135$ mph
6. C

5-Minute Check (over Lesson 3-3)

Use with Lesson **3-4**

Solve each equation. Check your solution.

1. $7y = 42$

2. $-8h = 64$

3. $24 = 6r$

4. The product of a number and 5 is -45. Find the number.

5. Lynwood earns $7 per hour working at the coffee shop. How many hours does he need to work to earn $105?

6. **Test Practice** Rita invited 16 friends to her birthday party. If she has 112 party favors, how many party favors can each of her friends receive?

A 4 **B** 5 **C** 7 **D** 9

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ANSWERS

1. 6
2. -8
3. 4
4. -9
5. 15 hours
6. C

Solve problems using the *work backward* strategy.

1. Miguel spent $6 on fast food. Then he spent $3 on ice cream. After buying some comics, he had $9 left, which was one third of what he originally had. How much money did Miguel have originally?

2. Curtis paid $80 on the vet bill for his dog. Then the vet charged him $40 more for his dog's medicine. If he now owes the vet $120, what was his starting balance?

3. A number is divided by 3. Then 5 is added to the quotient. After subtracting 2, the result is 10. What is the number?

4. **Test Practice** Dexter and Roshonda shared a pizza. Dexter ate 3 more than twice as many pieces as Roshonda, who ate 3 pieces. If there are 4 pieces left, how many pieces were there initially?

   A 16 **B** 15 **C** 12 **D** 8

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ANSWERS

1. $27
2. $160
3. 21
4. A

5-Minute Check (over Lesson 3-5)

Use with Lesson **3-6**

Solve each equation. Check your solution.

1. $4x + 8 = 32$

2. $15 - 3a = 45$

3. $-9 + 7x = 68$

4. $-18 = 4m - 68$

5. Four less than six times a number is 32. Find the number.

6. **Test Practice** Daryl can cut 3 lawns in an hour. How many hours will it take him to cut 27 lawns?

A 30 hours

B 24 hours

C 15 hours

D 9 hours

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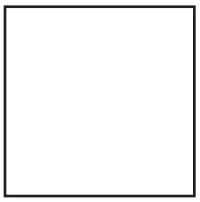
ANSWERS

1. 6
2. −10
3. 11
4. −3
5. 6
6. D

Find the perimeter of each rectangle.

1.

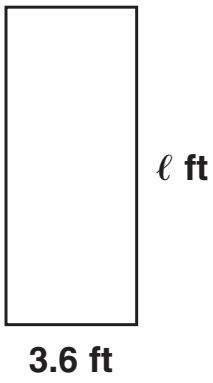
2.



3. Find the area for the rectangle in Question 1.

4. Find the area for the rectangle in Question 2.

5. **Test Practice** The rectangle at the right has an area of A feet. Which of the following could be used to find the length of the rectangle?



A $A = 3.6 \times \ell$

B $A = 3.6 \times 2\ell$

C $A = 7.2 \times 2\ell$

D $A = 7.2 - \ell$

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ANSWERS

1. 42.2 cm
2. 252 mm
3. 55.8 cm^2
4. 3969 mm^2
5. A

5-Minute Check (over Chapter 3)

Use with Lesson **4-1**

Write the sentence as an algebraic equation.

1. Seven years more than Tom's age is 35.

Solve.

2. $n - 7 = -10$ **3.** $6s = 42$ **4.** $r + 4 \leq -3$

5. Copy and complete the function table. Identify the domain and range.

$y = 3x - 2$		
x	$3x - 2$	y
1		
2		
3		

6. **Test Practice** Which algebraic expression matches the phrase below? 15 less than the product of n and 4

A $4n - 15$ **C** $15 - 4 + n$

B $15 - 4n$ **D** $4 + n - 15$

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ANSWERS

1. $t + 7 = 35$
2. -3
3. 7
4. $r \leq -7$
5.

x	$3x - 2$	y
1	$3(1) - 2$	1
2	$3(2) - 2$	4
3	$3(3) - 2$	7

domain: {1, 2, 3}; range: {1, 4, 7}

6. A

Determine whether each number is *prime* or *composite*.

1. 47

2. 63

Find the prime factorization of each number.

3. 54

4. 32

5. Evaluate $2p^2 + 5$ for $p = 0, 1, 2, 3$. List the resulting numbers that are prime numbers.

6. **Test Practice** Zoran needs to rent storage space to store his furniture. He thinks he will need a floor space of 9 ft $\times$ 12 ft. What is the prime factorization of this area?

A $3^2 \times 2^2$

B $3^3 \times 2^2$

C $3^2 \times 2^3$

D $3^3 \times 2^3$

ANSWERS

1. prime
2. composite
3. 2×3^3
4. 2^5
5. The resulting numbers 5, 7, 13, and 23 are all prime.
6. B

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5-Minute Check (over Lesson 4-2)

Use with Lesson **4-3**

Find the GCF of each set of numbers.

1. 12, 36

2. 27, 45

Find the GCF of each set of algebraic expressions.

3. $8b$, $12b$

4. $36r^2$, $18rq$

5. What is the GCF of $2^4 \times 3$ and $2^3 \times 3^2$?

6. **Test Practice** Which set of numbers has a GCF of 9?

A 49, 18, 81

B 72, 117, 153

C 27, 58, 63

D 9, 45, 98

ANSWERS

1. 12
2. 9
3. $4b$
4. $18r$
5. 24
6. B

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Solve problems by making an organized list.

1. A pizzeria offers pizza with pepperoni, sausage, or ham with thick or thin crust. How many different kinds of pizza can be made if you choose one meat and one type of crust?

2. In how many ways can four friends sit in a row at a baseball game?

3. In how many ways can the numbers 1, 5, and 9 be arranged?

4. Ella has pink, blue, red, and black T-shirts and 2 pairs of jeans. How many different outfits can she make?

5. **Test Practice** How many different ice cream cones can Trey order if he can choose a sugar, cake, or waffle cone and one dip from either chocolate, strawberry, vanilla, or chocolate chip ice cream?

   A 6 **B** 8 **C** 10 **D** 12

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ANSWERS

1. 6
2. 24
3. 6
4. 8
5. D

5-Minute Check (over Lesson 4-4)

Use with Lesson 4-5

Write each fraction in simplest form.

1. $\frac{8}{20}$
2. $\frac{12}{21}$
3. $\frac{11}{121}$

Write two fractions that are equivalent to each fraction.

4. $\frac{5}{7}$
5. $\frac{3}{11}$
6. **Test Practice** Which fraction is *not* equivalent to the other fractions?

   A $\frac{32}{48}$ B $\frac{14}{37}$ C $\frac{38}{57}$ D $\frac{18}{27}$

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ANSWERS

1. $\frac{2}{5}$
2. $\frac{4}{7}$
3. $\frac{1}{11}$
4. $\frac{10}{14}; \frac{15}{21}$
5. $\frac{6}{22}; \frac{9}{33}$
6. B

Write each repeating decimal using bar notation.

1. 1.22222

2. 0.15151515

Write each fraction or mixed number as a decimal. Use bar notation if the decimal is a repeating decimal.

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

4. $\frac{5}{8}$

5. $\frac{1}{9}$

6. Test Practice Write 2.65 as a fraction in simplest form.

A $2\frac{13}{25}$

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

C $2\frac{2}{3}$

D $2\frac{13}{20}$

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ANSWERS

1. $1.\overline{2}$
2. $0.\overline{15}$
3. 2.6
4. 0.625
5. $0.\overline{1}$
6. D

5-Minute Check (over Lesson 4-6)

Use with Lesson 4-7

Write each ratio as a percent.

1. $\frac{67}{100}$

2. 32 per 100

Write each fraction as a percent.

3. $\frac{2}{8}$

4. $\frac{17}{20}$

5. Write 55% as a fraction in simplest form.

6. **Test Practice** There are 200 people in the audience of a game show. Fifty are chosen to participate. What percent of the audience will be chosen to participate?

   A 25 percent
   B 40 percent
   C 50 percent
   D 75 percent

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ANSWERS

1. 67%
2. 32%
3. 25%
4. 85%
5. $\frac{11}{20}$
6. A

Write each percent as a decimal.

1. 13.7%
2. $7\frac{1}{4}\%$

Write each decimal as a percent.

3. 0.183
4. 0.07
5. Assuming every student placed a vote, if 0.83 of the student body voted for Afsheen and 0.17 voted for Neal, what percent of the student body voted for Neal?
6. **Test Practice** What is $32\frac{1}{2}\%$ written as a decimal?

   A 0.32 **B** 3.2 **C** $0.32\frac{1}{2}$ **D** 0.325

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ANSWERS

1. 0.137
2. 0.725
3. 18.3%
4. 7%
5. 17%
6. D

5-Minute Check (over Lesson 4-8)

Use with Lesson **4-9**

Find the LCM of each set of numbers.

1. 4, 12

2. 3, 13

3. 12, 15

4. 4, 6, 8

5. Find the LCM of $4^2 \times 2$ and $2^2 \times 4$.

6. Test Practice Find the LCM of 54 and 90.

A 54 **B** 90 **C** 270 **D** 540

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ANSWERS

1. 12
2. 39
3. 60
4. 24
5. 32
6. C

5-Minute Check (over Chapter 4)

Use with Lesson **5-1**

Solve.

1. Find the prime factorization of 63.
2. Find the GCF of $81x^3y$ and $63x^2y$.
3. Write $\frac{40}{256}$ in simplest form.
4. Find the LCM of 9 and 14.
5. Find the LCD for $\frac{1}{3}$ and $\frac{2}{5}$.
6. **Test Practice** Which of the following is *not* equal to 45%?

   A 0.45 **B** $\frac{1}{45}$ **C** $\frac{9}{20}$ **D** $\frac{45}{100}$

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ANSWERS

1. 7×3^2
2. $9x^2y$
3. $\frac{5}{32}$
4. 126
5. 15
6. B

Estimate.

1. $\frac{1}{5} + \frac{4}{9}$

2. $3\frac{2}{3} \div \frac{12}{13}$

3. $\frac{1}{5} \times 19$

4. $6\frac{1}{9} - 2\frac{5}{6}$

5. Estimate the sum of $2\frac{6}{13}$, $\frac{5}{8}$, and $9\frac{9}{10}$.

6. **Test Practice** If Bill's boat gets $7\frac{1}{3}$ miles per gallon, about how many miles can he travel on $3\frac{3}{4}$ gallons?

   A 21 **B** 24 **C** 28 **D** 30

ANSWERS

1. $0 + \frac{1}{2} = \frac{1}{2}$
2. $4 \div 1 = 4$
3. $\frac{1}{5} \times 20 = 4$
4. $6 - 3 = 3$
5. $2\frac{1}{2} + \frac{1}{2} + 10 = 13$
6. C

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5-Minute Check (over Lesson 5-2)

Use with Lesson **5-3**

Add or subtract. Write in simplest form.

1. $\begin{array}{r} \frac{3}{10} \\ +\ \frac{2}{10} \\ \hline \end{array}$

2. $\begin{array}{r} \frac{9}{21} \\ -\ \frac{6}{21} \\ \hline \end{array}$

Evaluate each expression if $r = \frac{2}{3}$ and $s = \frac{3}{5}$.

3. $\frac{1}{10} + s$

4. $1 - r$

5. Jared and his friend Andre ordered a pizza. Jared ate $\frac{2}{5}$ of the pizza and Andre ate $\frac{1}{3}$ of the pizza. How much more of the pizza did Jared eat?

6. **Test Practice** Ethan has $\frac{3}{4}$ of a jar of jelly. After he makes some peanut butter and jelly sandwiches, $\frac{2}{5}$ of the jar of jelly is left. What part of the jar of jelly did Ethan use?

A $\frac{15}{8}$ **B** $\frac{23}{20}$ **C** $\frac{7}{20}$ **D** $\frac{3}{10}$

ANSWERS

1. $\frac{1}{2}$
2. $\frac{1}{7}$
3. $\frac{7}{10}$
4. $\frac{1}{3}$
5. Jared ate $\frac{1}{15}$ more of the pizza.
6. C

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Add or subtract. Write in simplest form.

1. $5\frac{4}{9} + 2\frac{2}{9}$

2. $9\frac{4}{13} - 7\frac{7}{13}$

3. $5\frac{2}{3} + 2\frac{1}{6}$

4. $8\frac{2}{9} - 4\frac{3}{18}$

5. Yesterday Michael ran $3\frac{1}{4}$ miles. Today Michael ran $4\frac{3}{8}$ miles. How many more miles did Michael run today than yesterday?

6. **Test Practice** In January, the town water tower was $\frac{7}{8}$ full. In April, it was $\frac{3}{5}$ full. By what fraction did the water level decrease?

A $\frac{11}{40}$ **B** $\frac{10}{13}$ **C** $1\frac{1}{3}$ **D** $1\frac{19}{40}$

ANSWERS

1. $7\frac{2}{3}$
2. $1\frac{10}{13}$
3. $7\frac{5}{6}$
4. $4\frac{1}{18}$
5. $1\frac{1}{8}$ miles
6. A

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Solve problems by eliminating possibilities.

1. If a 50-ton blue whale eats food equivalent to 4% of its body weight each day, how many tons of food would a blue whale eat in one year?
2. Mr. Malone rented a car for a 3-day trip; he drove 620 miles. He paid $43 per day plus $0.13 per mile after 400 free miles. About how much did the rental car cost?
3. Dasan runs 5 miles in 40 minutes. What is his pace?
4. **Test Practice** Find which room dimensions would give a perimeter of 45 feet.

   A 11 feet by 11 feet

   B 11.75 feet by 9 feet

   C 10.5 feet by 12 feet

   D 13 feet by 9.5 feet

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ANSWERS
1. 720
2. $157.60
3. 7.5 mph
4. D

5-Minute Check (over Lesson 5-5)

Use with Lesson **5-6**

Multiply. Write in simplest form.

1. $\frac{4}{5} \times \frac{7}{9}$

2. $\frac{3}{13} \times 5$

3. $\frac{1}{9} \times \frac{3}{6}$

4. $5\frac{1}{6} \times 2\frac{3}{7}$

5. Jeffrey owns 230 books. Of those books, $\frac{2}{5}$ of them are novels. How many novels does Jeffrey own?

6. **Test Practice** At the school dance, $\frac{3}{4}$ of the students wore the school colors; $\frac{2}{5}$ of them were in the 6th grade. What fraction of the students at the school dance that wore the school colors were in the 6th grade?

   A $\frac{1}{4}$ **B** $\frac{3}{10}$ **C** $\frac{7}{20}$ **D** $1\frac{3}{20}$

ANSWERS

1. $\frac{28}{45}$
2. $1\frac{2}{13}$
3. $\frac{1}{18}$
4. $12\frac{23}{42}$
5. 92 novels
6. B

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Find the multiplicative inverse of each number.

1. $\frac{7}{9}$

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

Solve each equation. Check your solution.

3. $\frac{n}{4} = 6$

4. $\frac{3}{4}y = -\frac{7}{12}$

5. For art class, each student is going to make a piñata using $\frac{4}{5}$ pound of paste. The art teacher bought 20 pounds of paste. Use the equation $\frac{4}{5}s = 20$ to determine the number of students who can make piñatas.

6. **Test Practice** What is the solution to $10 = \frac{2}{3}d$?

   A $\frac{1}{15}$ **B** $\frac{3}{20}$ **C** $6\frac{2}{3}$ **D** 15

ANSWERS

1. $\frac{9}{7}$ or $1\frac{2}{7}$
2. $\frac{5}{13}$
3. 24
4. $-\frac{7}{9}$
5. 25 students
6. D

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Solve.

1. Estimate. $3\frac{4}{5} + 2\frac{1}{3}$

2. Subtract. $7\frac{2}{6} - 4\frac{1}{8}$

3. Solve. Check your solution. $\frac{n}{3} = 7$

4. Divide. $2\frac{4}{5} \div \frac{7}{20}$

5. How many $\frac{3}{4}$-inch lengths can be cut from a 12-inch length of ribbon?

6. **Test Practice** Guy purchased a one-gallon container of ether for a science experiment. When he was finished, $\frac{1}{16}$ of the container was full. How many fluid ounces of ether did Guy use?

   A 8 **B** 12 **C** 64 **D** 120

ANSWERS

1. 6
2. $3\frac{5}{24}$
3. 21
4. 8
5. 16
6. D

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5-Minute Check (over Lesson 6-1)

Use with Lesson **6-2**

Write each ratio as a fraction in simplest form.

1. 36 to 21

2. 16 to 64

3. 22 meters to 180 meters

Determine whether the ratios are equivalent. Explain.

4. 4:6 and 52:78

5. 8:17 and 32:64

6. **Test Practice** Among the staff at Roosevelt Elementary, 68 teachers prefer coffee and 20 prefer tea. Which ratio shows the relationship of coffee drinkers to tea drinkers in simplest form?

A 10:34 **B** 17:5 **C** 5:17 **D** 34:10

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ANSWERS

1. $\frac{12}{7}$ 2. $\frac{1}{4}$ 3. $\frac{11}{90}$

4. Yes; $4:6 = \frac{2}{3}$ and $52:78 = \frac{2}{3}$

5. No; $8:17 = \frac{8}{17}$, $32:64 = \frac{1}{2}$, and $\frac{8}{17} \neq \frac{1}{2}$

6. B

5-Minute Check (over Lesson 6-2)

Use with Lesson **6-3**

Find each unit rate. Round to the nearest hundredth if necessary.

1. $3.99 for 16 ounces

2. 730 miles in 14 hours

3. $28 for 15 cassettes

4. Which is the better unit price: $1.99 for a 3-ounce bottle or $2.49 for a 4-ounce bottle?

Determine whether the following statement is *sometimes, always,* or *never true.* Explain by giving an example or a counterexample.

5. The denominator of a unit rate can be a decimal.

6. **Test Practice** Cassandra leaves college to go home for the summer. She lives 424 miles away and arrives in 8 hours. Which ratio shows her rate of travel in simplest form?

A 53:1 **B** 53 **C** 1:53 **D** 212:4

ANSWERS

1. $0.25 per ounce
2. 52.14 miles per hour
3. $1.87 per cassette
4. $2.49 for a 4-ounce bottle
5. Never; A unit rate is a rate that is simplified so that it has a denominator of 1 unit. For example, the unit rate $\frac{50 \text{ words}}{1 \text{ minute}}$ is read 50 words per minute.
6. A

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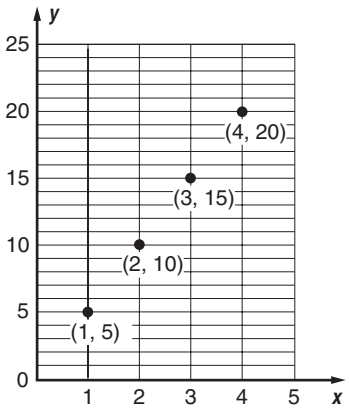
5-Minute Check (over Lesson 6-3)

Use with Lesson **6-4**

1. The table shows the number of miles Greg walked during a walk-a-thon. Use the information to find the approximate rate of change in miles per hour.

Time (hr)	1	2	3
Distance (mi)	4	8	12

2. The graph represents the number of patients that can be seen in a doctor's office based on the number of nurses on duty. Determine the slope.



3. **Test Practice** Use the information in the table to find the rate of change.

Number of Students	Number of Slices of Pizza
10	30
15	45
20	60

A 20 slices per student

B 3 slices per student

C 3 students per slice

D 20 students per pizza

ANSWERS

1. 4 miles per hour
2. 5 patients per nurse
3. B

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Complete.

1. 21 ft = ____ yd

2. 160 oz = ____ lb

3. $1\frac{1}{4}$ mi = ____ ft

4. 2 c = ____ fluid oz

5. Stella lives 2 miles from school. How many feet from the school does Stella live?

6. **Test Practice** If 1,760 yards = 1 mile, then 4 miles = __?__ yards.

   A $\frac{1}{4}$ **B** 4 **C** 440 **D** 7,040

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ANSWERS

1. 7
2. 10
3. 6,600
4. 16
5. 10,560 feet
6. D

Complete.

1. 640 cm = ■ m
2. 0.05 m = ■ mm
3. 894 mg = ■ g
4. 124.5 kL = ■ L
5. 65,000 mL = ■ L
6. **Test Practice** The longest suspension bridge in the United States is the Verrazano-Narrows in the Lower New York Bay. It spans 1,298 meters. How many kilometers long is this bridge?

   A 1,298,000 km
   B 129.8 km
   C 12.98 km
   D 1.298 km

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ANSWERS

1. 6.4
2. 50
3. 0.894
4. 124,500
5. 65
6. D

5-Minute Check (over Lesson 6-6)

Use with Lesson **6-7**

Determine whether each pair of ratios forms a proportion.

1. $\frac{2}{12}$ and $\frac{8}{48}$
2. $\frac{1}{9}$ and $\frac{3}{36}$
3. $\frac{3}{4}$ and $\frac{4}{5}$

Solve each proportion.

4. $\frac{3}{7} = \frac{x}{21}$
5. $\frac{6}{15} = \frac{18}{x}$
6. **Test Practice** The ratio of native Spanish speakers to native English speakers in a local high school is 3 to 8. If there are 254 students at the school that are native English speakers, how many students are native Spanish speakers?

   A 32 **B** 36 **C** 96 **D** 682

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ANSWERS

1. yes
2. no
3. no
4. 9
5. 45
6. C

5-Minute Check (over Lesson 6-7)

Use with Lesson **6-8**

Solve problems by drawing a diagram.

1. The Rockwells have driven 180 miles, which is about $\frac{2}{3}$ of the way to their family reunion. So, how far is the total distance to their family reunion?
2. Tomi is eating a candy bar that is 12 inches long. She has already eaten $\frac{5}{8}$ of the candy bar. How many inches of the candy bar does she have left?
3. Toki has filled $\frac{3}{4}$ or 12 ounces of his glass. Find the total capacity of his glass.
4. If an 8-ounce serving of yogurt provides 10% of the daily requirement for calcium, what percent of the calcium requirement would a 20-ounce serving provide?
5. **Test Practice** Mrs. Jackson has $620 in her checking account after writing checks for $39.70, $211.80, and $65. What was her balance before she wrote the three checks?

   A $303.50 **B** $936.50 **C** $935.50 **D** $896.80

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ANSWERS

1. 270 miles
2. $4\frac{1}{2}$
3. 16
4. 25%
5. B

Suppose you are making a scale drawing. Find the length of each object on the scale drawing with the given scale. Then find the scale factor.

1. a subway car 34 feet long; 1 inch = 5 feet

2. a table 1.5 meters long; 3 centimeters = 0.25 meters

3. a football field that is 120 yards; 1 foot = 30 yards

Solve.

4. The distance between New York City and Washington, D.C., is 3.75 inches on a map of the United States. If the scale on the map is 1 inch to 90 miles, how far is Washington, D.C., from New York City?

5. **Test Practice** Which ratio accurately shows the relationship between the actual distance from Atlanta to New Hope and the scale distance if the actual distance is 425 miles and the scale distance is $6\frac{2}{3}$ inches?

A $6\frac{2}{3}$:425 **B** 1:$63\frac{3}{4}$ **C** $63\frac{3}{4}$:1 **D** 70.8:1

ANSWERS

1. $6\frac{4}{5}$ in.; $\frac{1}{60}$ 2. 18 cm; $\frac{3}{25}$ 3. 4 ft; $\frac{1}{90}$

4. 337.5 mi 5. C

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5-Minute Check (over Chapter 6)

Use with Lesson 7-1

Solve.

1. Write the ratio *35 meters to 1000 centimeters* as a fraction in simplest form.
2. One box of cereal costs $3.98 and weighs 18 ounces, and another box costs $3.39 and weighs 16 ounces. What are the unit prices for each box of cereal? Which is the better deal?
3. If you were making a scale drawing of a building that is 500 feet tall, how large would the drawing be with a scale of 1 inch = 35 feet? Write the answer as a fraction.
4. Write 56% as a decimal and as a fraction in simplest form.
5. 10 c = ____ pt
6. **Test Practice** Choose the term which describes a ratio where the denominator must be 1 when it is in simplest form.

   A rate **B** scale **C** unit rate **D** base

ANSWERS

1. $3\frac{1}{2}$
2. $0.22 per ounce; $0.21 per ounce; $3.39 for 16 ounces is the better deal.
3. $14\frac{2}{7}$ in.
4. .56; $\frac{14}{25}$
5. 5
6. C

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Find each number. Round to the nearest tenth if necessary.

1. What is 165% of 60?
2. What number is 233% of 75?
3. 48% of 90 is what number?
4. Find 20% of $365.
5. What number is 80% of 105?
6. **Test Practice** Tanya earns a perfect score 25% of the time when she performs her gymnastics routine in front of a panel of judges. If she performs 44 times in a season, how many times will she *not* receive a perfect score?

   A 11 **B** 25 **C** 33 **D** 44

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ANSWERS

1. 99
2. 174.8
3. 43.2
4. $73
5. 84
6. C

Use the Percent Proportion to find each number. Round to the nearest tenth if necessary.

1. What percent of 80 is 25?
2. What number is 30% of 80?
3. 30 is 40% of what number?
4. $6 is what percent of $42?
5. What number is 0.2% of 4?
6. **Test Practice** Joseph saves 30% of his allowance each week. If he saves $24 in 5 weeks, how much allowance does Joseph receive each week?

   A $7.20

   B $16

   C $36

   D $80

ANSWERS

1. 31.3%
2. 24
3. 75
4. 14.3%
5. 0.008
6. B

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Estimate by using fractions.

1. 48% of 30
2. 8.5% of 278

Estimate by using 10%.

3. 112% of 49
4. 83% of 79
5. Twenty-two percent of the seventh-grade class at Santa Ana Middle School have blue eyes. If the seventh-grade class has 139 students, about how many have blue eyes?
6. **Test Practice** Estimate 128% of 179.

   A 18 **B** 23 **C** 128 **D** 234

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ANSWERS

1. 15
2. 28
3. 55
4. 64
5. 28
6. D

Write an equation for each problem. Then solve. Round to the nearest tenth if necessary.

1. 38 is what percent of 320?
2. 24% of what number is 72?
3. Find 43% of 128.
4. What percent of 28 is 9?
5. Thirteen percent of the profits from Kendall's business are donated to charities. Write and solve an equation to find out how much Kendall donates if her profits are $1,292.42.
6. **Test Practice** 17 is what percent of 104?

   A 17.7 percent **C** 16.7 percent

   B 17.3 percent **D** 16.3 percent

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ANSWERS

1. $38 = n \cdot 320$; 11.9%
2. $0.24 \cdot n = 72$; 300
3. $0.43 \cdot 128 = n$; 55
4. $n \cdot 28 = 9$; 32.1%
5. $0.13 \cdot 1{,}292.42 = n$; $168.01
6. D

Solve problems by determining reasonable answers.

1. If the speed limit is 65 miles per hour, what is a reasonable amount of time it will take the Blackwells to travel 300 miles?
2. There are 400 boys at Oak Middle School and 12% play football. What is a reasonable number of students that play football?
3. Suppose you are going to dinner and a movie with a friend. If you spend $18 and the movie is 62% of the cost, what is a reasonable cost for dinner?
4. Lisa has 6 coins that total $0.86. What are the coins?
5. **Test Practice** A number is multiplied by 13. Then 5 is subtracted from the product. The result is 60. What is the number?

   A 4 **B** 5 **C** 7 **D** 9

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ANSWERS

1. 5 hours
2. 50
3. $7.00
4. 3 quarters, 2 nickels, 1 penny
5. B

5-Minute Check (over Lesson 7-6)

Use with Lesson **7-7**

Find each percent of change. Round to the nearest whole percent if necessary. State whether the percent of change is an *increase* or *decrease*.

1. original: 50
new: 80

2. original: 138
new: 200

3. original: $21.50
new: $16.25

4. original: 17
new: 143

5. Natalie's kitten weighed 2.7 pounds when she bought it. Now it weighs 4.2 pounds. What is the percent of increase in the kitten's weight?

6. **Test Practice** If the first movie released by a film company this year made $20.4 million dollars at the box office, and the second movie made $13.2 million, what was the percent of change in the film company's revenues?

A 35% increase

B 35% decrease

C 7.2% increase

D 7.2% decrease

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ANSWERS

1. 60% increase
2. 45% increase
3. 24% decrease
4. 741% increase
5. 56%
6. B

5-Minute Check (over Lesson 7-7)

Use with Lesson **7-8**

Find the total cost or sale price to the nearest cent.

1. $120 jacket; 30% discount
2. $12,300 car; 5% sales tax
3. $12 book; 8.5% sales tax
4. Find the percent of discount to the nearest percent. regular priced meal: $32.50 employee meal: $13
5. A shirt at the store is advertised "Buy 2, Get 1 Free." If the original price of the shirt is $12.99 and you take advantage of the special offer, what is the price you would pay per shirt, and what percent is the discount from the original price?
6. **Test Practice** A hotel room costs $155 per night. What is the total cost with a 30% discount and 5.5% sales tax?

   A $46.50 **C** $114.47

   B $108.50 **D** $190.42

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ANSWERS

1. $84
2. $12,915
3. $13.02
4. 60%
5. $8.66 per shirt; 33% discount
6. C

Solve.

1. 55% of 280 is what number?
2. Estimate 23% of 188.
3. Write an equation for the problem. Then solve. Round to the nearest tenth if necessary.
   34% of what number is 49.3?
4. Find the percent of change. If necessary, round to the nearest whole percent. State whether the percent of change is an *increase* or a *decrease*.
   original: 130
   new: 245
5. A calculator priced at $146 goes on sale for 40% off. If sales tax is 5%, how much is the calculator?
6. **Test Practice** Find the interest earned on $350 at 7% for 6 years.

   A $24.50 **B** $147.00 **C** $245.00 **D** $245.50

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ANSWERS

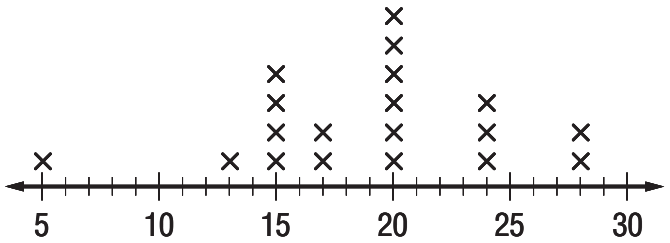
1. 154
2. 38
3. $0.34 \cdot n = 49.3$; 145
4. 88% increase
5. $91.98
6. B

Make a line plot for each set of data. Identify any clusters, gaps, or outliers.

1.

Bicycle Prices							
150	175	130	150	190	230	200	180
175	175	160	150	175	140	140	85

2. Use the line plot at the right that shows the number of students in each classroom throughout the school. What is the most common class size?

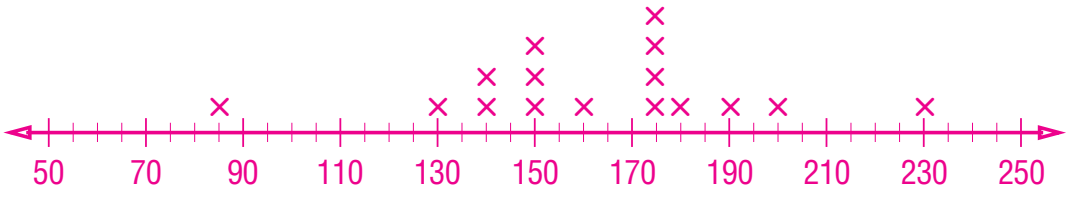


3. Test Practice Using the line plot from Exercise 2, which of the following describes a gap?

A 5–13 **B** 14–20 **C** 31–25 **D** 25–30

ANSWERS

1.



outlier 85; gap 85–130 and 200–230; cluster 130–200

2. 20

3. A

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5-Minute Check (over Lesson 8-2)

Use with Lesson **8-3**

Find the mean, median, and mode for each set of data. Round to the nearest tenth if necessary.

1. 13, 17, 11, 12, 20, 14, 18, 16

2. 14, 32, 35, 40, 37, 45, 48, 50, 43, 43

3. 3, 1, 3, 5, 8, 4, 6, 4, 4, 2, 29

4. In Exercise 2, which measurement of central tendency best describes the data? Explain.

5. The *average* is another common term for which measurement of central tendency?

6. **Test Practice** If the Kentucky State University Orchestra has 42 musicians organized into 7 sections based on types of instruments, what is the mean number of musicians in each section?

A 6 **B** 7 **C** 8 **D** 9

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ANSWERS

1. 15.1; 15; none
2. 38.7; 41.5; 43
3. 6.3; 4; 4
4. Median; because the data set has outliers and there are no big gaps in the middle of the data.
5. mean
6. A

Make a stem-and-leaf plot for each set of data.

1. 11, 32, 21, 43, 57, 5, 53, 45, 75, 25, 37, 73, 56, 45, 28, 15, 3, 72, 39, 20, 22

2. 321, 358, 344, 325, 374, 335, 365, 316, 369, 317, 345, 358, 330, 310

3. Find the median, mode, and range for the data in Exercise 2.

4. **Test Practice** Using the stem-and-leaf plot from Exercise 1, which is the mode for the data?

A 34 **B** 37 **C** 45 **D** 53

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ANSWERS

1.

Stem	Leaf
0	3 5
1	1 5
2	0 1 2 5 8
3	2 7 9
4	3 5 5
5	3 6 7
6	
7	2 3 5

$3|2 = 32$

2.

Stem	Leaf
31	0 6 7
32	1 5
33	0 5
34	4 5
35	8 8
36	5 9
37	4

$32|5 = 325$

3. 340.5; 358; 64

4. C

For Exercises 1–2, refer to the table at the right.

Phone Calls Received per Day	
Number of Phone Calls	**Frequency**
1–5	16
6–10	32
11–15	24
16–20	12
21–25	7
26–30	2

1. Make a histogram of the data.

2. **Test Practice** About what percent received 11 to 15 calls per day?

A 12%

B 24%

C 26%

D 93%

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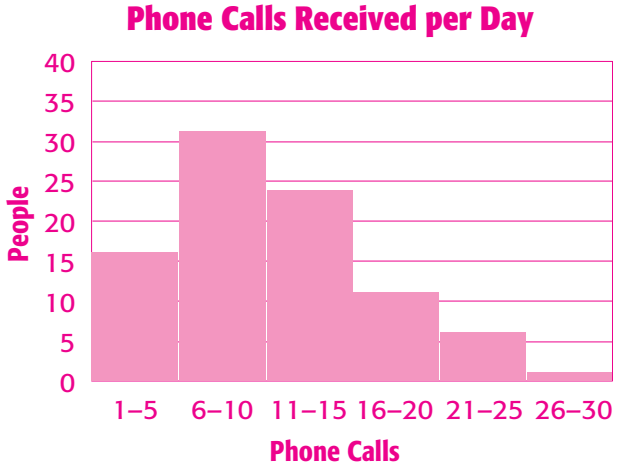
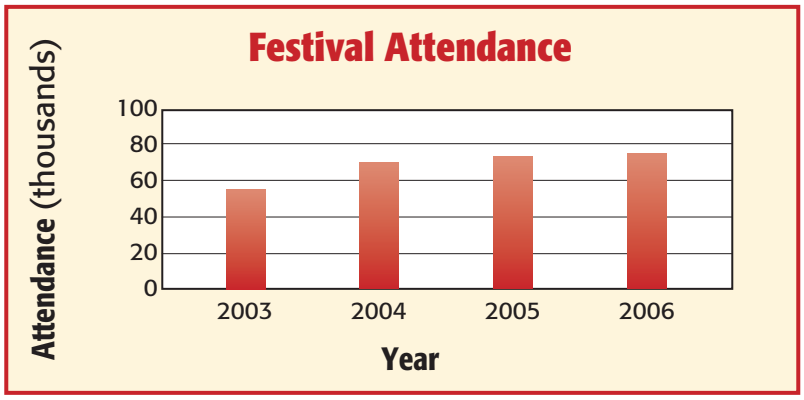
ANSWERS

1.



2. C

Solve problems by using a graph. For Exercises 1–4, use the bar graph that shows festival attendance.



1. How many more people attended in 2006 than in 2003?

2. What year had the greatest increase in attendance?

3. What would you expect the 2007 attendance to be?

4. **Test Practice** Find the median for the following set of data: 10.2, 14.5, 18.6, 7.2, 13.7, 15.1. Round numbers to the nearest hundredth if necessary.

   A 14.5 **B** 14.1 **C** 13.7 **D** 13.2

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ANSWERS

1. 22,500
2. 2004
3. 80,000
4. B

5-Minute Check (over Lesson 8-6)

Use with Lesson **8-7**

For Exercises 1–3, use the table at the right. It shows the population for the town of Cedar Creek from 1990 to 2001.

Cedar Creek Population			
Year	Pop.	Year	Pop.
1990	400	1996	760
1991	470	1997	810
1992	520	1998	880
1993	590	1999	940
1994	630	2000	990
1995	700	2001	1050

1. Make a line graph for the data.

2. Predict in what year the population of Cedar Creek will exceed 1,500.

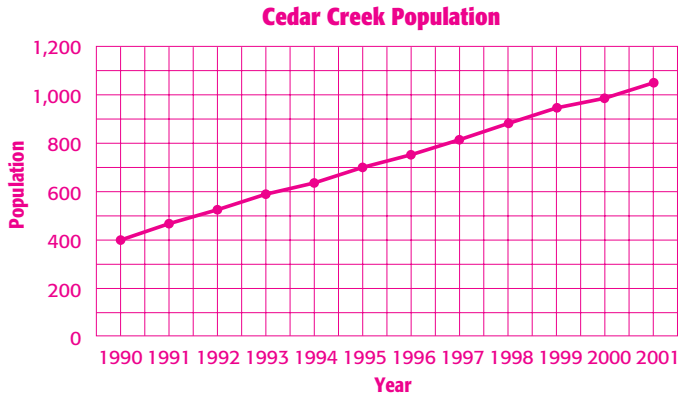
3. What trend can be observed about the population of Cedar Creek?

4. **Test Practice** If Mike timed how fast he ran home after school every day, which of the following could he use to see if he had improved over time?

   A frequency chart **C** line graph

   B scatter plot **D** tally marks

ANSWERS

1. 

2. 2005
3. population is increasing
4. B

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Solve.

1. A survey of high school students said that 63% planned on taking college courses after graduation. Predict how many of the 837 students surveyed are planning on taking college courses?

2. According to a survey, 73% of adults 21–30 years old own at least one car. For a city with about 24,600 adults age 21–30 years, predict how many own a car.

3. 832 families were asked if they ate dinner together at least 4 nights of the week. If 62% of the families said yes, predict how many families eat dinner together at least 4 nights of the week?

4. **Test Practice** In a lumberyard, about 13% of their total stored wood is lost to water damage each year. If the lumberyard stores 250 tons of wood each year, predict how much is lost to water damage?

   A 31 tons
   B 31.5 tons
   C 32.5 tons
   D 33.5 tons

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ANSWERS

1. 527
2. 17,958
3. 516
4. C

5-Minute Check (over Lesson 8-8)

Use with Lesson **8-9**

1. A mathematics class decided to find out if students enjoy gym class. The football team had practice that day so they decided to survey them. Fifty-eight of the sixty players all enjoyed gym class, so the class determined that almost all students enjoy gym class. Determine whether the conclusion is valid. Justify your answer.

2. Mr. Brown's class conducted a survey to determine how many students wanted to listen to music in class. The survey was given to every student in Mr. Brown's Algebra class. Describe the sample and determine if the sampling method is valid.

3. **Test Practice** Fritz wants to conduct a survey to determine if the San Francisco 49ers is the favorite team at school. Which of the following methods is the *best* way for him to choose a random sample at his school?

   A Select students from the 49er Cheering Club.

   B Select students from the football team.

   C Select ten students from each class.

   D Select students from the girls' volleyball team.

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ANSWERS

1. not valid, biased sample
2. biased convenience sample, invalid
3. C

5-Minute Check (over Chapter 8)

Use with Lesson 9-1

Use the table at the right to solve each problem.

Prices of DVD Players ($)					
50	60	70	100	130	150
80	70	60	100	180	150
50	80	50	100	130	180

1. Make a line plot for the set of data.

2. Find the mean, median, and mode for the set of data.

3. **Test Practice** Which measure best represents the data?

   A mean **B** median **C** mode **D** range

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ANSWERS

1.

2. 99.4; 90; 50 and 100

3. B

A 12-sided number die shows the numbers 1 through 12, with one number showing each time the die is rolled. Find the probability of each event. Write as a fraction in simplest form.

1. $P(7)$

2. P(multiple of 7)

3. P(not a prime number)

4. **Test Practice** A box of cookies contains 5 chocolate chip cookies, 5 peanut butter, and 5 sugar. When choosing a cookie at random, which answer does *not* show the probability of getting a peanut butter cookie?

A $\frac{1}{3}$ B $0.\overline{33}$ C $\frac{1}{15}$ D $33\frac{1}{3}\%$

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ANSWERS

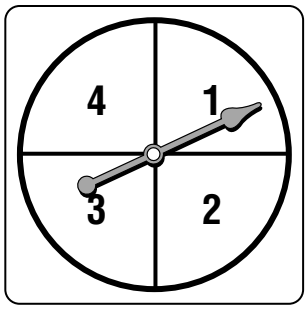
1. $\frac{1}{12}$ 2. $\frac{1}{4}$ 3. $\frac{7}{12}$ 4. C

5-Minute Check (over Lesson 9-2)

Use with Lesson **9-3**

1. Make a tree diagram to show the sample space. Then give the total number of outcomes if picking a cat or dog and choosing the colors black, brown, or spotted.

2. Using the spinner, what is the probability of spinning two odd numbers in two spins?



3. **Test Practice** How many styles of sneakers are possible if Jared can choose from high-top, low-top, shoelaces or Velcro, and the colors black, white, and red?

A 3 **B** 6 **C** 12 **D** 24

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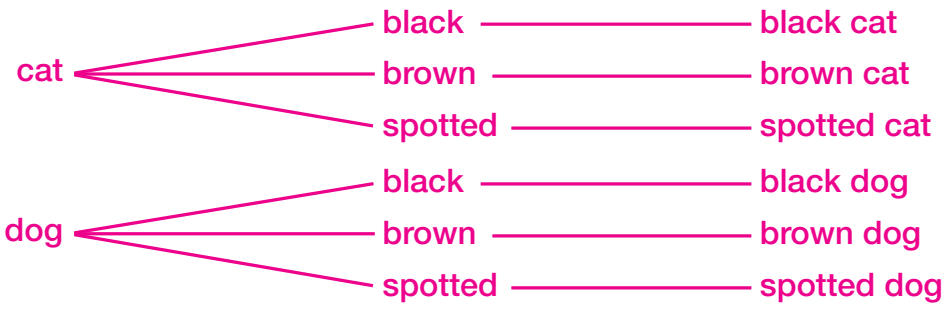
ANSWERS

1. Animal — Color — Sample Space; 6



2. $\frac{1}{4}$

3. C

5-Minute Check (over Lesson 9-3)

Use with Lesson **9-4**

Use the Fundamental Counting Principle to find the total number of outcomes in each situation.

1. choosing North, South, East, or West and one of the 50 states
2. picking a day of the week and a month of the year
3. choosing vanilla, strawberry, chocolate, or mint chip ice cream with fudge, butterscotch, strawberry, or whipped topping, in a cone or a cup
4. plain, barbeque, sour cream and onion, or salt and vinegar potato chips, rippled or regular, in a small or large bag
5. Margarita wants to wear a different outfit to school each day using her new clothes. Margarita bought 5 pairs of pants, 9 shirts, and 4 pairs of shoes. How many days of school does Margarita expect to have?
6. **Test Practice** Ryan has a business screenprinting T-shirts. Ryan offers 12 color options, 3 T-shirt styles, and printing in 1, 2, 3, 4, or 5 colors. How many different styles of shirt does Ryan's business offer?

   A 36 **B** 64 **C** 144 **D** 180

ANSWERS

1. 200 2. 84 3. 32 4. 16 5. 180 6. D

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Solve problems by making an organized list.

1. How many permutations are possible of the letters in the word *secret*?

2. Julie, Dan, Janet, Kevin, and Michael all enter a contest. Their names are pulled out of a hat one at a time. What is the probability that Kevin's name is pulled first and then Dan's?

3. A child has the magnetic letters *V, O, L, E*. Find the probability that the child randomly arranges the letters in the order of *LOVE*.

4. Carlos, Sierra, David, and Nicole go to the movies and will sit in a row of four seats. If each friend is equally likely to sit in any seat, what is the probability that David will sit in the first seat and Nicole will sit in the second seat?

5. **Test Practice** In how many ways can a football coach arrange the first five players in a lineup of eleven players.

A 120 **B** 55,440 **C** 332,640 **D** 39,916,800

ANSWERS

1. 720
2. $\frac{1}{20}$
3. $\frac{1}{24}$
4. $\frac{1}{12}$
5. B

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5-Minute Check (over Lesson 9-5)

Use with Lesson **9-6**

Tell whether each problem represents a *permutation* or a *combination*. Then solve the problem.

1. How many ways can you arrange the 7 natural notes in a musical scale for a three-note arrangement without repeating a note?

2. There are 10 people in a club. In how many ways can a committee of 5 be chosen from the 10 people?

Solve.

3. You are a judge in a battle of the bands. There are 6 bands. You must choose 1st, 2nd, and 3rd place. How many different results can you choose?

4. What is the difference between a permutation and a combination?

5. **Test Practice** How many ways can a coach select 4 members of a 12-person team to go to the State Competition?

A 24 **B** 495 **C** 11,880 **D** 479,001,600

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ANSWERS

1. permutation; 210
2. combination; 252
3. 120
4. In a combination, order is not important.
5. B

Solve problems by acting it out.

1. Four friends all shake hands with one another. How many handshakes take place?
2. Liz needs to clean her room, walk the dog, and do her homework. How many ways can she do these three things?
3. Five friends ran a race. How many possible ways could the friends have finished the race?
4. Diego bought a pair of $58 jeans at a sale price of $47. What was the approximate percent of decrease from the original price to the sale price?
5. **Test Practice** Three students are to be chosen from auditions of 9 students to be in leads in the school play. In how many ways can these three students be chosen?

   A 84 **B** 81 **C** 54 **D** 27

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ANSWERS

1. 24
2. 6
3. 120
4. 23.4%
5. A

5-Minute Check (over Lesson 9-7)

Use with Lesson **9-8**

For Exercises 1–4, a number cube is tossed 24 times and lands on 1 three times and on 2 four times.

1. Find the experimental probability of landing on 1.
2. Find the theoretical probability of *not* landing on 1.
3. Find the theoretical probability of landing on 2.
4. Find the experimental probability of *not* landing on 2.
5. State the difference between theoretical and experimental probabilities.
6. **Test Practice** In one afternoon, 24 restaurant customers order steak, 18 order sandwiches, and 20 order salads. Based on this, what is the probability that the next patron will order a salad?

A $\frac{9}{31}$ **B** $\frac{10}{31}$ **C** $\frac{12}{31}$ **D** $\frac{21}{31}$

ANSWERS

1. $\frac{1}{8}$ 2. $\frac{5}{6}$ 3. $\frac{1}{6}$ 4. $\frac{5}{6}$
5. An experimental probability is based on information gained by an experiment or game, while a theoretical probability is made without referring to any data.
6. B

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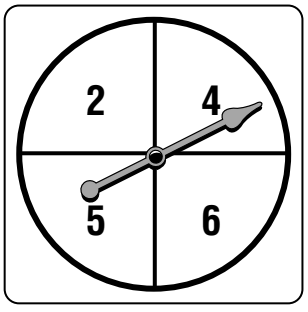
Solve.

1. There are 12 balls in a hat and 3 are red. What is the probability of drawing a red ball?
2. Use the Fundamental Counting Principle to find the total number of outcomes when choosing an outfit from 3 pairs of pants, 5 shirts, and 4 jackets.
3. How many ways can 7 books be stacked in a single pile?
4. A coin is tossed 14 times. It lands on heads 8 times and on tails 6 times. What is the theoretical probability of landing on tails? What is the experimental probability of the coin landing on tails?
5. **Test Practice** A number cube is rolled and the spinner at the right is spun. What is the probability of rolling an even number and spinning an odd number?



A $\frac{1}{12}$ B $\frac{1}{8}$ C $\frac{1}{4}$ D $\frac{1}{2}$

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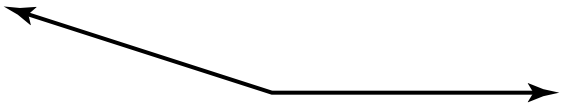
ANSWERS

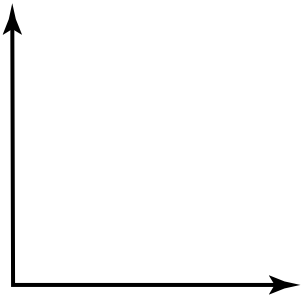
1. $\frac{1}{4}$ 2. 60 3. 5,040 4. $\frac{1}{2}$; $\frac{3}{7}$ 5. B

Classify each angle as *acute, obtuse, right,* or *straight*.

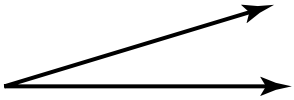
1.



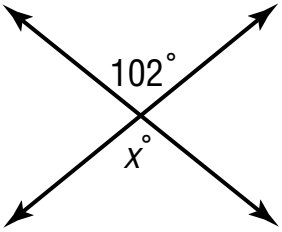
2.



3.

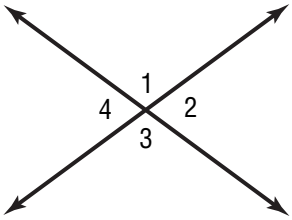


4. Find the value of *x*.



5. Tell whether the following statement is *true* or *false*. A straight angle has a measure of 180°.

6. **Test Practice** **Which of the angles shown in the diagram are adjacent?**



A ∠1 and ∠3

B ∠2 and ∠3

C ∠2 and ∠4

D ∠3 and ∠1

ANSWERS

1. obtuse
2. right
3. acute
4. 102
5. true
6. B

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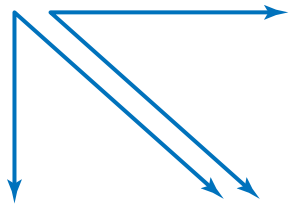
5-Minute Check (over Lesson 10-2)

Use with Lesson **10-3**

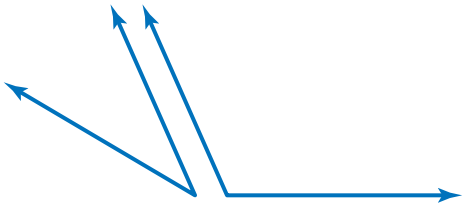
Identify each pair of angles as *complementary*, *supplementary*, or *neither*.

1.

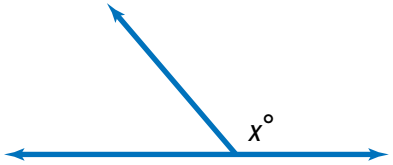


2.

3.



4. Find the value of *x*.



5. Tell whether the following statement is *true* or *false*. Angles are complementary if the sum of their measures is 180°.

6. **Test Practice** **If ∠1 and ∠2 are complementary angles and $m\angle 1 = 57°$, what is the measure of ∠2?**

A 33° **B** 43° **C** 57° **D** 123°

ANSWERS

1. complementary
2. supplementary
3. neither
4. 145°
5. false
6. A

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1. Make a circle graph of the data in the table.

Time Felicia Spent on Homework	
Subject	**Percent**
Math	30%
English	20%
Chemistry	35%
Social Studies	15%

2. **Test Practice** Using the table, what percent of 7th graders who play sports are on the track and field team?

A 12.5%

B 18.75%

C 31.25%

D 37.5%

7th Graders Who Play Sports	
Team	**Number**
Basketball	5
Baseball	3
Track & Field	6
Soccer	2

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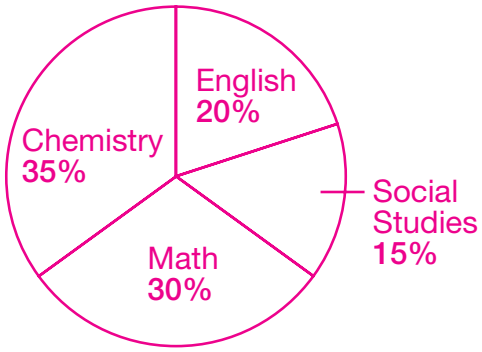
ANSWERS

1. Time Felicia Spent on Homework



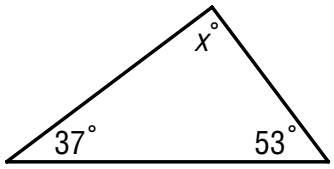
2. D

5-Minute Check (over Lesson 10-4)

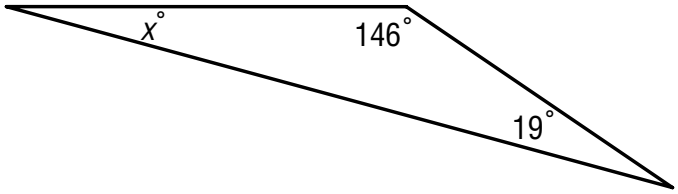
Use with Lesson **10-5**

Find the missing measure in each triangle. Then classify the triangle as *acute, right,* or *obtuse*.

1.



2.



Solve.

3. Three sides of a triangle measure 3 centimeters, 4 centimeters, and 5 centimeters. Classify the triangle by its sides.

4. Two angles of a triangle measure 25° and 45°. Classify the triangle by its angles.

5. All three angles of a triangle measure 60°. Can you classify the triangle by its sides? Explain.

6. **Test Practice** Which of the following triangles could *not* be classified as isosceles?

A equilateral

B scalene

C acute

D right

ANSWERS

1. 90°; right
2. 15°;obtuse
3. scalene
4. obtuse
5. Yes; if all three angles of a triangle are congruent, then all three sides are congruent, and the triangle is equilateral.
6. B

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5-Minute Check (over Lesson 10-5)

Use with Lesson **10-6**

Solve problems by using logical reasoning.

1. Susan pulls out five socks from a drawer. There is a red sock, blue sock, black sock, white sock, and a gray sock. The first sock she pulls out is not blue. The last sock she pulls out is black. She pulls out the blue sock before she pulls out the red sock. The third sock she pulls out is not white or gray. The first sock she pulls out is either gray or red. What color is the third sock?

2. Jo, Leah, Susan, and Brian are in line. Susan is before Brian, Jo is second, and Brian is not last. Who is last in line?

3. On a family vacation, the Jacksons drove 995 miles in two days. On the first day they drove 131 more miles than the second day. How many miles did they drive on the first day?

4. **Test Practice** Which of the following statements is not true about complementary angles?

   A Complementary angles are acute.

   B Complementary angles' sum is 90°.

   C Complementary angles' sum is 180°.

   D Complementary angles are not right angles.

ANSWERS

1. red 2. Leah 3. 563 miles 4. C

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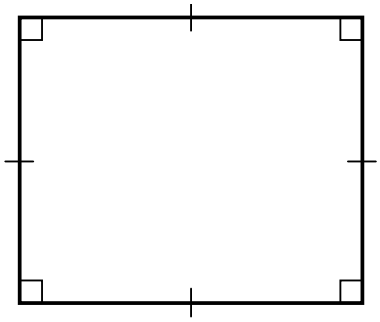
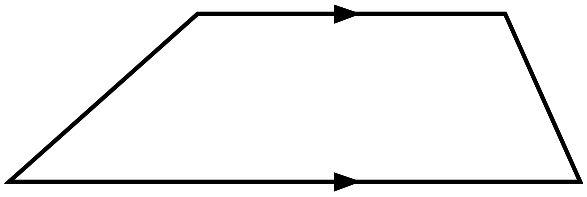
Classify the quadrilateral using the name that *best* describes it.

1.



2.



Determine whether each statement is *sometimes, always,* or *never* true. Explain.

3. A square is a parallelogram.

4. A rhombus is a square.

5. Test Practice Which of the following is *not* a parallelogram?

A square

B quadrilateral

C trapezoid

D rhombus

ANSWERS

1. square
2. trapezoid
3. Always; parallelograms are quadrilaterals with opposite sides parallel and opposite sides congruent.
4. Sometimes; a rhombus is a parallelogram with 4 congruent sides. If a rhombus also has 4 right angles, it is a square.
5. C

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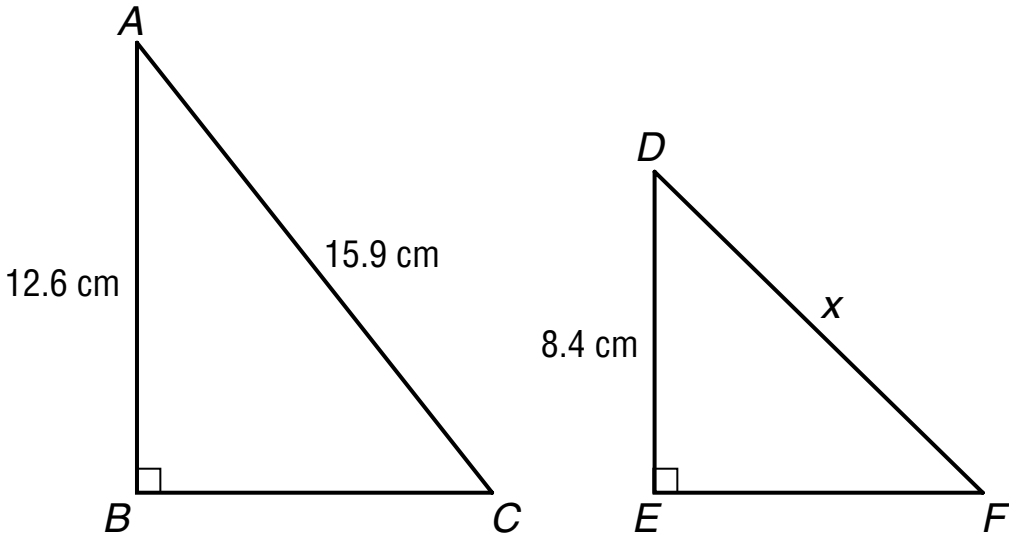
Find the value of x in the pair of similar figures.

1.



2. Caren's dollhouse furniture is made to scale of real furniture with a ratio of $\frac{2}{5}$ inch to 1 foot. If a dollhouse table is 3.4 inches wide and 4.2 inches long, what are the dimensions of the "real" table from which it was modeled?

3. Test Practice Which statement is true?

A All squares are similar.

B All rectangles are similar.

C All right triangles are similar.

D All acute triangles are similar.

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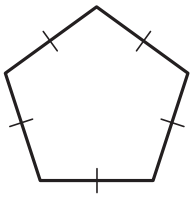
ANSWERS

1. 10.6 cm 2. 8.5 f by 10.5 ft 3. A

Determine whether each figure is a polygon. If it is, classify the polygon and state whether it is regular. If it is *not* a polygon, explain why.

1.



2.

Find the measure of an angle in each regular polygon. Round to the nearest tenth of a degree, if necessary.

3. hexagon

4. 16-gon

5. What is the perimeter of a 13-gon with each side 3.2 inches long?

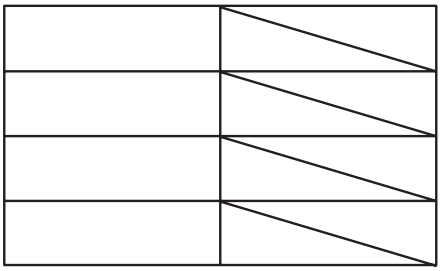
6. Test Practice Identify the polygons that are used to create the tessellation.

A square and triangle

B rectangle and trapezoid

C trapezoid and square

D rectangle and triangle



ANSWERS

1. yes; pentagon; regular
2. yes; quadrilateral; not regular
3. 120°
4. 157.5°
5. 41.6 in.
6. D

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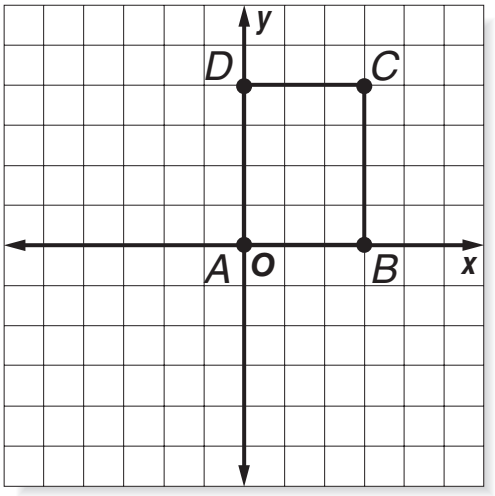
Rectangle *ABCD* has vertices *A*(0, 0), *B*(3, 0), *C*(3, 4), and *D*(0, 4). Find the vertices of *A′B′C′D′* after each translation.



1. 2 units up

2. 3 units down

3. 4 units right, 3 units up

4. 1 unit left, 4 units down

5. 3 units right, 2 units down

6. Test Practice Triangle *XYZ* has vertices *X*(1, 3), *Y*(2, 5), and *Z*(2, 0). If *X′Y′Z′* has vertices *X′*(3, 4), *Y′*(4, 6), and *Z′*(4, 1), describe the translation.

A 2 units left, 1 unit up

B 1 unit left, 2 units up

C 2 units right, 1 unit up

D 1 unit right, 2 units up

ANSWERS

1. *A′*(0, 2), *B′*(3, 2), *C′*(3, 6), *D′*(0, 6)
2. *A′*(0, −3), *B′*(3, −3), *C′*(3, 1), *D′*(0, 1)
3. *A′*(4, 3), *B′*(7, 3), *C′*(7, 7), *D′*(4, 7)
4. *A′*(−1, −4), *B′*(2, −4), *C′*(2, 0), *D′*(−1, 0)
5. *A′*(3, −2), *B′*(6, −2), *C′*(6, 2), *D′*(3, 2)
6. C

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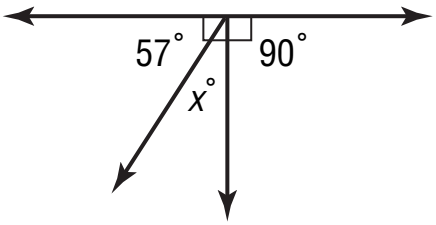
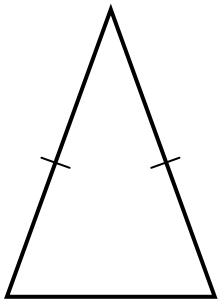
5-Minute Check (over Chapter 10)

Use with Lesson 11-1

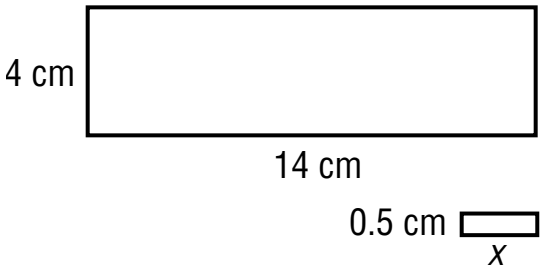
1. Find the value of x in the figure.



2. Classify the triangle by its angles and by its sides.



3. Find the value of x in the pair of similar figures.



4. Test Practice Triangle NLR has vertices $N(2, 2)$, $L(1, 4)$, and $R(1, 2)$. If Triangle $N'L'R'$ has vertices $N'(-2, 2)$, $L'(-1, 4)$, and $R'(-1, 2)$, what type of reflection was performed on triangle NLR?

A $\triangle NLR$ was reflected over the x-axis.

B $\triangle NLR$ was reflected over the y-axis.

C $\triangle NLR$ was reflected over both axes.

D $\triangle NLR$ was not reflected.

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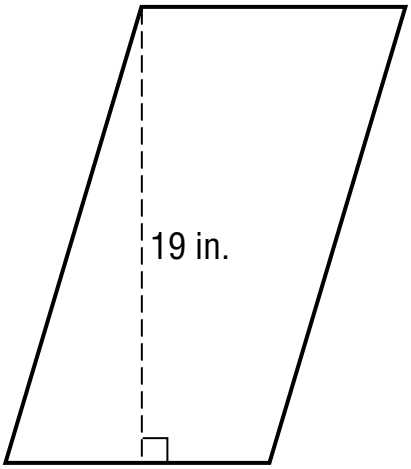
ANSWERS

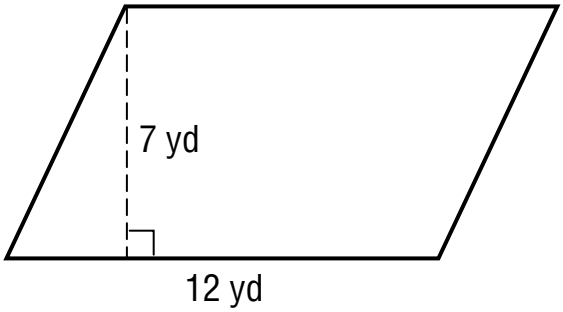
1. 33
2. acute; isosceles
3. $x = 1.75$
4. B

Find the area of each parallelogram. Round to the nearest tenth if necessary.

1.



2.



3. Determine whether the following statement is *true* or *false*. The height of a parallelogram is the distance from the base to the opposite side.

4. **Test Practice** What is the height of a parallelogram if the base is 24 centimeters and the area is 744 square centimeters?

A 28 cm

B 30.5 cm

C 31 cm

D 32 cm

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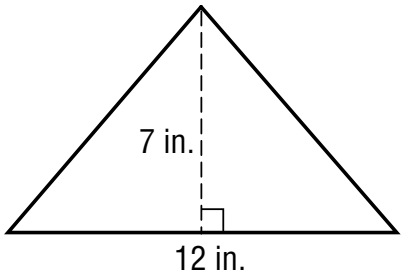
ANSWERS

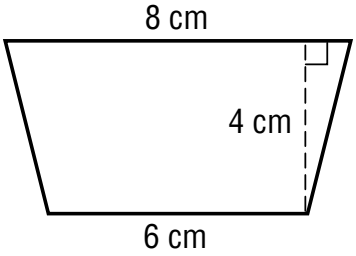
1. 209 in^2
2. 84 yd^2
3. true
4. C

Find the area of each figure. Round to the nearest tenth if necessary.

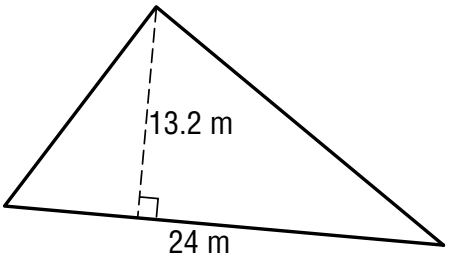
1.



2.



3.



4. triangle:
base = 15.75 yd
height = 10.25 yd

5. Bell has a triangular garden with a base of 20 feet and a height of 15 feet. Find the area of Bell's garden.

6. **Test Practice** A trapezoid has bases of 14.7 meters and 12.2 meters, and a height of 9 meters. What is the area of the trapezoid to the nearest tenth?

A 132.3 m^2

B 121.1 m^2

C 144.6 m^2

D 155.8 m^2

ANSWERS

1. 42 in^2
2. 28 cm^2
3. 158.4 m^2
4. 80.7 yd^2
5. 150 ft^2
6. B

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Solve.

For 1–2 find the circumference of each circle. Use 3.14 for π. Round to the nearest tenth if necessary.

1. radius $= 5$ ft

2. diameter $= 11.2$ in.

For Exercises 3–4 find the diameter or radius of each circle. Use 3.14 for π. Round to the nearest tenth if necessary.

3. $C = 30$ ft, diameter $=$ _____ ft

4. $C = 96$ cm, diameter $=$ _____ cm

5. **Test Practice** A coffee can has a circumference of 216 mm. Which equation could be used to find the diameter of the can in inches?

A $216 = \pi d$

B $C = \pi \times 108$

C $108 = \pi \times d$

D $C = \pi \times 14.7$

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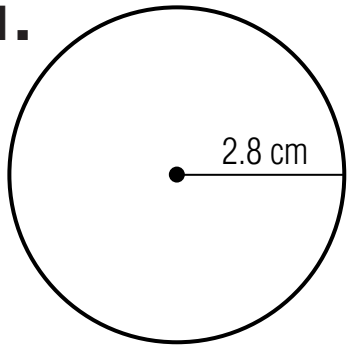
ANSWERS

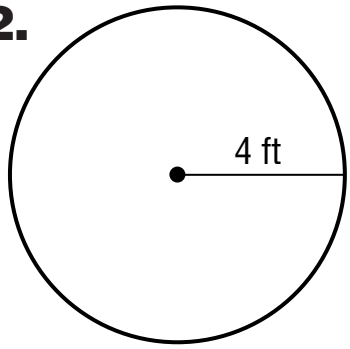
1. 31.4 ft
2. 35.2 in
3. 9.6
4. 30.6
5. A

Find the area of each circle. Round to the nearest tenth.

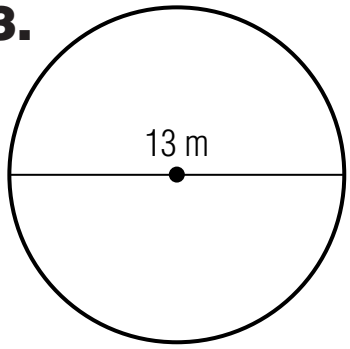
1.



2.

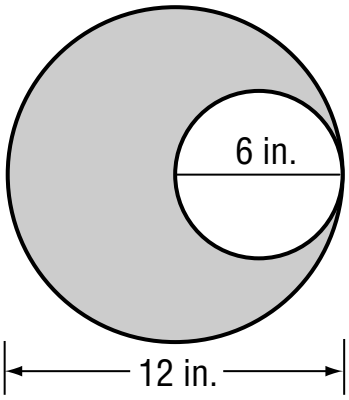


3.



4. diameter $= 17\frac{3}{4}$ yd

5. Find the area of the shaded region in the figure at the right. Round to the nearest tenth.



6. Test Practice What is the radius of a circle that has an area of 154 square millimeters?

A 49 mm **C** 8 mm

B 25 mm **D** 7 mm

ANSWERS

1. 24.6 cm^2
2. 50.3 ft^2
3. 132.7 m^2
4. 247.4 yd^2
5. 84.8 in^2
6. D

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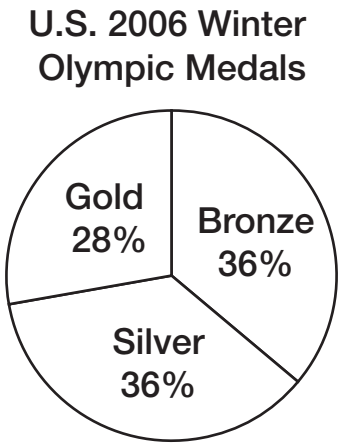
Solve problems by solving a simpler problem.

1. Mr. Cole decided to build a deck around his swimming pool. His pool is 25 feet by 10 feet and he wants the deck to be 2.5 feet wide. What will the area of the deck be?

2. Over the weekend, Darrell spent $68. Of that, about 71% was spent on a game. About how much money was *not* spent on a game?

3. Becky can make 6 bracelets in 3 days. How many bracelets can she and two friends make in 8 days working at the same rate?

4. **Test Practice** The graph shows the results of the 2006 Winter Olympics. The U.S. received a total of 25 medals. How many were gold?



A 7 **C** 9

B 8 **D** 10

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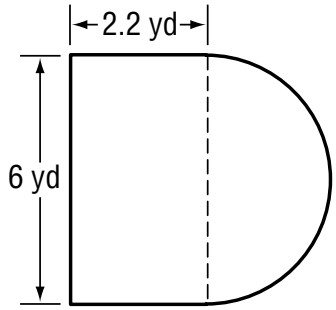
ANSWERS

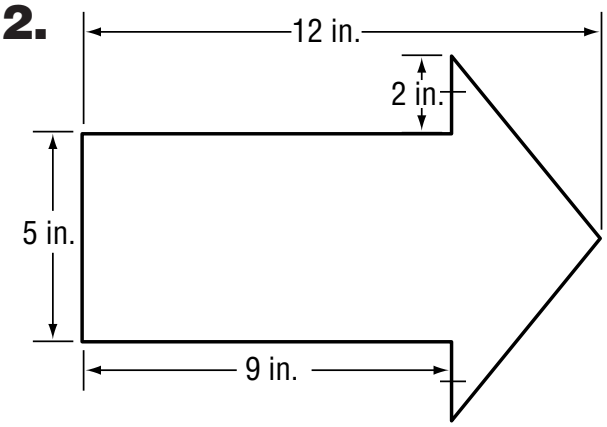
1. 200 ft^2 2. $19.72 3. 48 bracelets 4. C

Find the area of each figure. Round to the nearest tenth if necessary.

1.

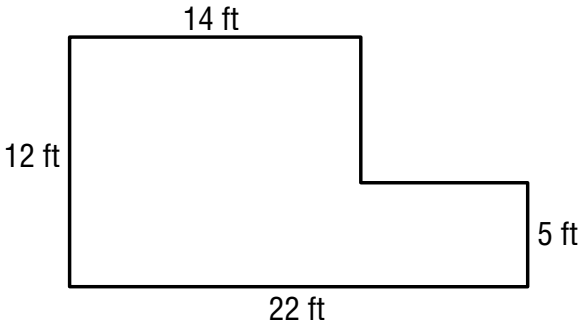


2.



3. India wants to carpet her bedroom and closet. If her bedroom is 10.5 feet by 11 feet and her closet is 4.5 feet by 3 feet, how much area does she need to carpet?

4. **Test Practice** Find the area of the figure at the right.



A 374 square feet

B 278 square feet

C 264 square feet

D 208 square feet

ANSWERS

1. 27.3 yd^2
2. 58.5 in^2
3. 129 ft^2
4. D

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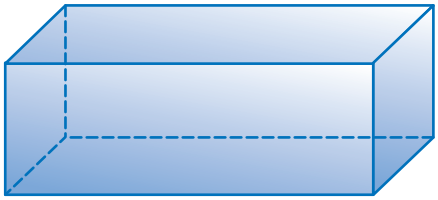
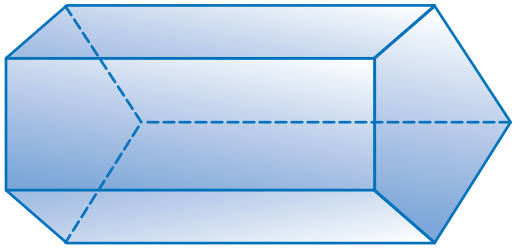
For each figure, identify the shape of the base(s). Then classify the figure.

1.

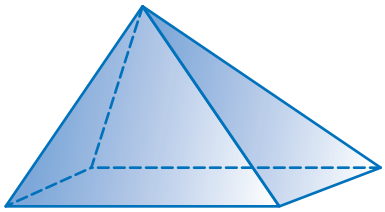


2.

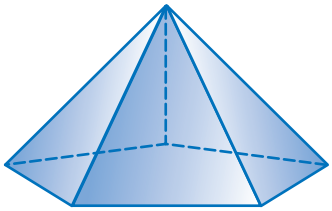


3.

4.



5. **Test Practice** Which figure is shown?



A pentagonal prism

B triangular prism

C pentagonal prism

D pentagonal pyramid

ANSWERS

1. rectangular prism
2. pentagonal prism
3. cylinder
4. rectangular pyramid
5. D

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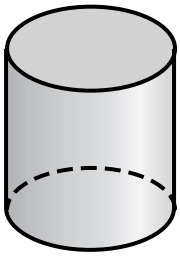
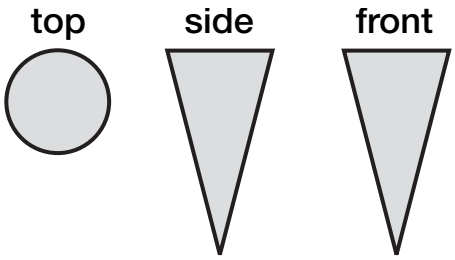
Draw a top, a side, and a front view of the solid.

1.

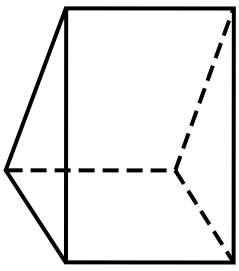


Draw the solid using the top, side, and front views shown. Use isometric dot paper.

2.



3. **Test Practice** What is the side view of the figure at the right?



A rectangle

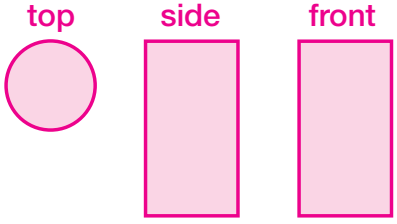
B square

C triangle

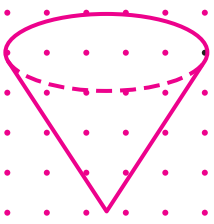
D parallelogram

ANSWERS·

1.



2.



3. C

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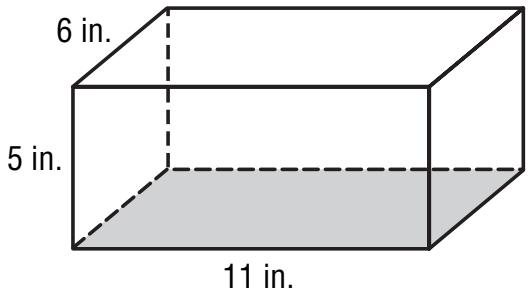
5-Minute Check (over Lesson 11-9)

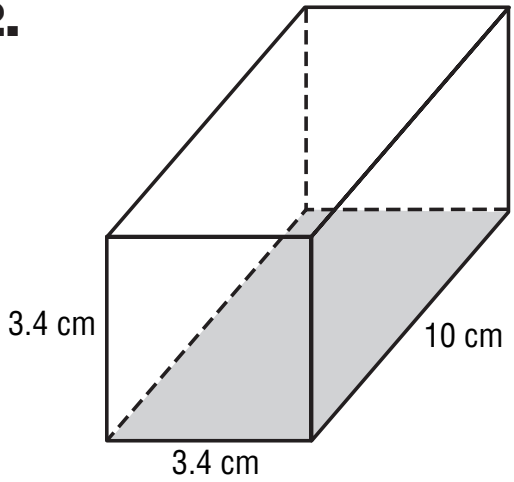
Use with Lesson **11-10**

Find the volume of each rectangular prism. Round to the nearest tenth if necessary.

1.



2.



Solve.

3. A cube has 6-inch edges. Find its volume.

4. Kieran's greenhouse is 25 feet long, 13 feet wide, and 14 feet high. She needs to know how many humidifiers to buy for the greenhouse. If each humidifier serves 1,000 ft^3, how many humidifiers should she buy?

5. **Test Practice** What is the volume of a closet that is 6 feet wide, 4 feet deep, and 10 feet tall?

A 24 ft^3 **B** 60 ft^3 **C** 154 ft^3 **D** 240 ft^3

ANSWERS

1. 330 in^3
2. 115.6 cm^3
3. 216 in^3
4. 5
5. D

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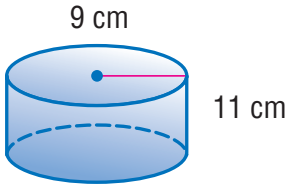
5-Minute Check (over Chapter 11)

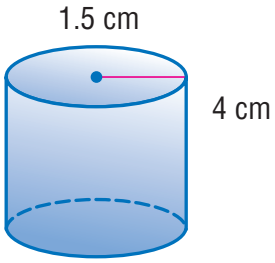
Use with Lesson 12-1

Find the volume of each cylinder. Round to the nearest tenth.

1.



2.

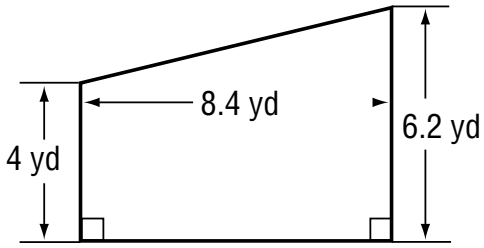


Find the area of each figure. Round to the nearest tenth if necessary.

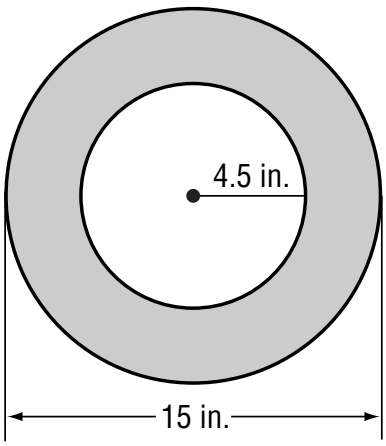
3. a parallelogram with a base of 20 cm and a height of 15.5 cm

4. a circle with a diameter of 18 inches

5.



6. **Test Practice** Suppose a dart is equally likely to hit any point inside the larger circle shown at the right. Find the probability that a dart will hit the shaded area.



A 36%
B 40%
C 60%
D 64%

ANSWERS

1. 27,799.2 cm^3
2. 28.3 cm^3
3. 310 cm^2
4. 254.5 in^2
5. 42.8 yd^2
6. D

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Estimate each square root to the nearest whole number.

1. $\sqrt{137}$
2. $\sqrt{209}$
3. $\sqrt{59}$

Use a calculator to find each square root to the nearest tenth.

4. $\sqrt{17}$
5. $\sqrt{87}$
6. **Test Practice** Identify the number with the greatest value.

   A $(-2)^2$ **C** $\sqrt{18}$

   B $\frac{15}{4}$ **D** 3.14

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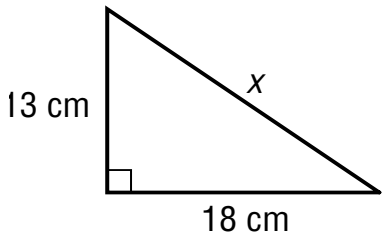
ANSWERS

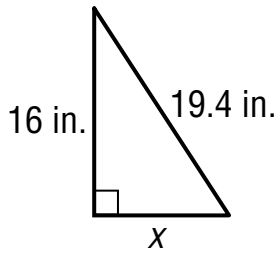
1. 12
2. 14
3. 8
4. 4.1
5. 9.3
6. C

Find the missing measure of each right triangle. Round to the nearest tenth if necessary.

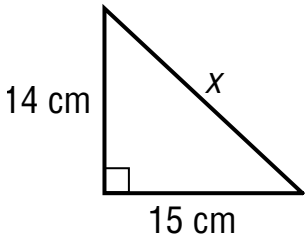
1.



2.



3.

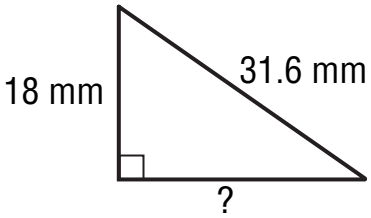


Determine whether a triangle with the given side lengths is a right triangle. Write *yes* or *no*.

4. 7 m, 10 m, 13.6 m

5. 8 ft, 15 ft, 17 ft

6. **Test Practice** Find the missing measure of the right triangle.



A 22 mm

B 24.4 mm

C 26 mm

D 30 mm

ANSWERS

1. 22.2 cm
2. 11 in.
3. 20.5 cm
4. no
5. yes
6. C

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Solve problems by making a model.

1. A computer monitor screen is 13 inches wide by $9\frac{1}{2}$ inches tall. If the plastic housing around the screen is $1\frac{1}{2}$ inches wide, what is the area of the plastic housing around the screen?
2. A sports collector shop arranges four of its most expensive baseball cards in the top display case four in a row. In how many different ways can four baseball cards be arranged in a row?
3. Helen wrote checks for $26.75, $134, and $52. If she now has $82.50 in her checking account, how much did she have to begin with?
4. **Test Practice** Mr. Green has a square flowerbed that is 8 ft long on each side. He puts a stone border around it that is 1 ft wide. What is the perimeter of the stone border?

   A 81 ft **C** 40 ft

   B 64 ft **D** 34 ft

ANSWERS

1. $76\frac{1}{2}$ in^2
2. 24
3. $295.25
4. C

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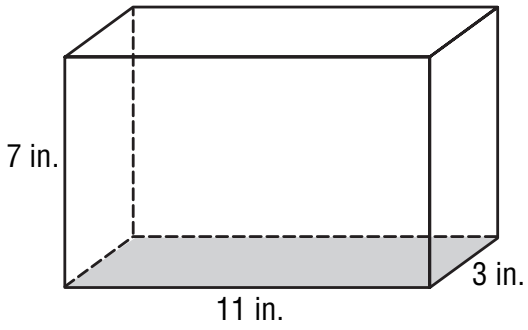
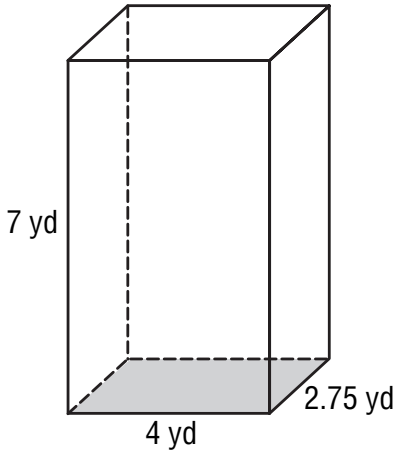
Find the surface area of each rectangular prism. Round to the nearest tenth if necessary.

1.



2.



Solve.

3. Find the surface area of a rectangular prism that has a length of 8 centimeters, a width of 6 centimeters, and a height of 8 centimeters.

4. **Test Practice** If the surface area of one face of a cube is 49 cm^2, what is the total surface area?

A 147 cm^2

C 294 cm^2

B 196 cm^2

D 343 cm^2

ANSWERS

1. 262 in^2
2. 116.5 yd^2
3. 320 cm^2
4. C

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