

1-1**Lesson Reading Guide**

6MRI.1, 5NS2.1

A Plan for Problem Solving**Get Ready for the Lesson**

Read the introduction at the top of page 25 in your textbook. Write your answers below.

1. Do you have all of the information necessary to solve this problem?
2. Explain how you would solve this problem. Then solve it.
3. Does your answer make sense? Explain.
4. What can you do if your first attempt at solving the problem does not work?

Read the Lesson

5. In which step of the four-step plan do you decide which strategy you will use to solve the problem?
6. What does the four-step plan suggest you do if your answer is not correct?
7. Complete the sentence: Once you solve a problem, make sure your solution contains any appropriate _____.

Remember What You Learned

8. Think of a way to help you remember the names of each of the steps of the four-step plan in the correct order. For example, try writing a sentence using all of the words.

1-2**Lesson Reading Guide**

5NS1.3

Powers and Exponents**Get Ready for the Lesson**

Read the introduction at the top of page 30 in your textbook. Write your answers below.

1. How is doubling shown in the table?
2. If the pattern continues, how much space will be available by year 6?
3. What is the relationship between the number of 2s and the year?

Read the Lesson

4. What is the difference between a power and an exponent?
5. Identify the exponent in each expression.
 - a. 5^8
 - b. 8^5
 - c. 8^3
 - d. 8
6. Complete the sentence:
Numbers written with exponents are in _____ form, whereas numbers written without exponents are in _____ form.

Remember What You Learned

7. In the expression 6^7 , circle the exponent in red. Then circle the power in another color.

1-3**Lesson Reading Guide**

7NS2.4

Squares and Square Roots**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 34 in your textbook.

Write your answers below.

1. Using tiles, try to construct squares with areas 4, 9, and 16 square units.
2. Try to construct squares with areas 12, 18, and 20 square units.
3. Which of the areas for squares?
4. What is the relationship between the lengths of the sides and the areas of these squares?
5. Using your square tiles, create a square that has an area of 49 square units. What are the lengths of the sides of the square?

Read the Lesson

6. In this lesson, the word *square* is used in several different ways. Tell the meaning of the word as it is used in each phrase or sentence.
 - a. Find the *square* of 3.
 - b. 9 units *squared*
 - c. A boxing ring is a *square* with an area of 400 ft².

Remember What You Learned

7. Work with a partner. Use a calculator to find the squares of six numbers, some of them decimals. Then write only the squares in a list and exchange lists with your partner. Find the square roots of the squares in the list that you receive. Write your answers in the form $\sqrt{x} = y$.

1-4**Lesson Reading Guide**

6AF1.3, 6AF1.4

Order of Operations**Get Ready for the Lesson**

Read the introduction at the top of page 38 in your textbook. Write your answers below.

1. List the differences between their calculations.
2. Whose calculations are correct?
3. Make a conjecture about what should be the first step in simplifying $6 + 4 \cdot 3$.

Read the Lesson

4. Why did mathematicians agree on an order of operations?
5. What are three ways to indicate multiplication in a mathematical expression?

Remember What You Learned

6. In your own words, describe the order of operations that is used in finding the value of a mathematical expression.

1-6**Lesson Reading Guide****6AF1.2, 6AF1.4*****Algebra: Variables and Expressions*****Get Ready for the Lesson****Complete the Mini Lab at the top of page 44 in your textbook.****Write your answers below.**

1. Draw the next three figures in the pattern.
2. Find the perimeter of each figure and record your data in the table below. The first three are completed for you.

Number of Triangles	1	2	3	4	5	6
Perimeter	3	4	5			

3. Without drawing the figure, determine the perimeter of a figure made up of 10 triangles. Check by making a drawing.
4. Find a relationship between the number of triangles and the perimeter at each stage of the pattern.

Read the Lesson

5. Match the description with the appropriate term.

The number 3 in the expression $3y + 2$. _____ **a.** variable

The entire expression $2v - 1$. _____ **b.** algebraic expression

The z in the expression $z^2 - 21$. _____ **c.** coefficient

Remember What You Learned

6. The expression $\frac{1}{3}\pi r \cdot r \cdot h$ represents the volume of a cone where r is the radius of the circular base and h is the height of the figure. Identify the coefficients, variables and constants.

1-7**Lesson Reading Guide**

6AF1.1

Algebra: Equations**Get Ready for the Lesson**

Read the introduction at the top of page 49 in your textbook. Write your answers below.

1. How many losses did each team have? Complete the table.

Women's National Basketball Association, 2005		
Team	Wins	Losses
Sacramento	25	
Los Angeles	17	
Houston	19	
Seattle	20	
Minnesota	14	
Phoenix	16	

2. Write a rule to describe how you found the number of losses.
3. Let w represent the number of wins and ℓ represent the number of losses. Rewrite your rule using numbers, variables, and an equals sign.

Read the Lesson

4. Complete the sentence: An equation that contains a variable is neither true nor false until the variable is replaced with a _____.
5. Describe what it means to model a problem.
6. What must you do before you write an equation using a variable when modeling a problem?

Remember What You Learned

7. Calculating change after buying lunch is a situation that can be modeled with a simple equation. What other daily activities require you to solve an equation? Write down three sample equations.

1-8**Lesson Reading Guide**

6AF1.3

Algebra: Properties**Get Ready for the Lesson**

Read the introduction at the top of page 53 in your textbook. Write your answers below.

1. Find the total cost for a 5-member family, without tax and tip, if each one orders a fish-bake dinner and cheesecake.

2. Describe the method you used to find the total cost.

Read the Lesson

3. Describe what is meant by *equivalent expressions*.

4. The Identity Property says that adding _____ to a number results in the number and multiplying _____ by a number is the number.

Remember What You Learned

5. Why are the Distributive Property, Commutative Property, Associative Property, and Identity Property called properties?

Use a dictionary to find the meanings of *distribute* and *commute* that apply to mathematics. Then write an explanation of why the Distributive Property and Commutative Property are named that way.

1-9**Lesson Reading Guide**

6AF1.2

Algebra: Arithmetic Sequences**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 57 in your textbook.

Write your answers below.

- How many centimeter cubes are used to make each figure?
- What pattern do you see? Describe it in words.
- Suppose this pattern continues. Complete the table to find the number of cubes needed to make each figure.

Figure	1	2	3	4	5	6	7	8
Cubes Needed	4	8	12					

- How many cubes would you need to make the 10th figure? Explain your reasoning.

Read the Lesson

Complete each sentence.

- In an arithmetic sequence, each term is found by _____ the same number to the previous term.
- In a geometric sequence, each term is found by _____ the previous term by the same number.

What is the next term in each of the following sequences?

7. $1, \underbrace{\quad}_\times 5, \underbrace{\quad}_\times 5, 25, \dots$

8. $7, \underbrace{\quad}_+ 3, \underbrace{\quad}_+ 3, 13, \dots$

Remember What You Learned

- Write down the first four terms of two of your own sequences, an arithmetic sequence and a geometric sequence. Trade with a partner. Describe your partner's sequences. How did you identify the patterns?

1-10**Lesson Reading Guide**

6AF1.2, 6MR2.4

Algebra: Equations and Functions**Get Ready for the Lesson**

Read the introduction at the top of page 63 in your textbook. Write your answers below.

1. Complete the table to find the cost of 2, 3, and 4 hamburgers.

Hamburgers		
Number	Multiply by 2	Cost
1	2×1	2
2		
3		
4		

2. Describe the pattern in the table between the cost and the number of hamburgers.

Read the Lesson

3. Complete each function table. Then identify the domain and range.

a.

x	$2x - 1$	y
-1		
0		
1		

b.

x	$4x$	y
-1		
0		
1		

4. **MONEY** John earns \$15 per lawn that he mows.

- a. Write an equation in two variables showing the relationship between lawns mowed and the money John earns.
- b. How much money does John earn after mowing 3, 5, and 10 lawns?

Remember What You Learned

5. Draw a picture of a “machine” that shows how a function works. Your picture should illustrate input, a function rule, and output.

2-1**Lesson Reading Guide**

6NS1.1

Integers and Absolute Value**Get Ready for the Lesson**

Read the introduction at the top of page 80 in your textbook. Write your answers below.

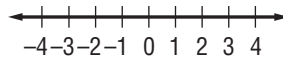
1. What does a value of -2 represent?
2. On which down did they lose the most yards?
3. How can you represent a gain of 9 yards?

Read the Lesson

4. Express each of the following in words.

Symbols	Words
$+7$	
-7	
$ 7 $	

5. Graph the set of integers $\{0, 3, -2, -1\}$ on the number line.

**Remember What You Learned**

6. Show a classmate how a number line can be used to show negative and positive integers. Explain the difference between some integers and the absolute values of those integers. Draw a number line to show what you mean.

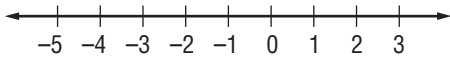
2-2**Lesson Reading Guide**

6NS1.1

Comparing and Ordering Integers**Get Ready for the Lesson**

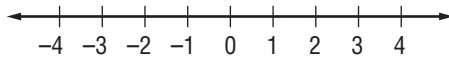
Read the introduction at the top of page 84 in your textbook. Write your answers below.

1. What is the wind chill if there is a wind at 20 miles per hour and the temperature is 5° ?
2. Which is colder, a temperature of 15° with a 20 mile-per-hour wind or a temperature of 10° with a 10 mile-per-hour wind?
3. Graph both wind chills found in Exercise 2 on a number line.

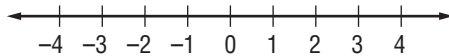
**Read the Lesson**

For Exercises 4 and 5, express each of the following in words. Then graph the numbers on a number line.

4. $-1 < 0$



5. $3 > -2$



6. When two numbers are graphed on a number line, what can you tell about the number to the left? the number to the right?

Remember What You Learned

7. Write a set of six numbers, some positive and some negative. Explain how you can use a number line to order the numbers from least to greatest.

2-3**Lesson Reading Guide**

5AF1., 6MR2.4

The Coordinate Plane**Get Ready for the Lesson**

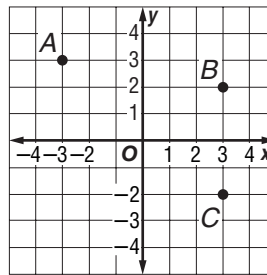
Read the introduction at the top of page 88 in your textbook. Write your answers below.

- Suppose Terrell starts at the corner of Russel and Main and walks 2 blocks east and 1 block north. Name the intersection of his location.
- Using the words *north*, *south*, *west*, and *east*, write directions to go from the corner of School and Highland to the corner of Main and Oak.

Read the Lesson

- The word *coordinate* comes from two Latin words that mean “to arrange together.” How are coordinates used together to locate a point in a coordinate plane?

- Look at the coordinate plane at the right. Name the ordered pair for each point graphed.
- In the coordinate plane in Exercise 4, tell which quadrant each of the points is in.

**Remember What You Learned**

- Write a way to remember the names of the four quadrants of the coordinate plane.

Adding Integers**Get Ready for the Lesson**

Read the introduction at the top of page 95 in your textbook. Write your answers below.

1. What is the charge at the top of a cloud where there are more protons than electrons?
2. What is the charge at the bottom of a cloud where there are more electrons than protons?

Read the Lesson

For Exercises 3 and 4, tell how you would solve each of the following on a number line. Then solve.

3. $-7 + (-9)$
4. $-7 + 9$
5. What property are you applying when you add a number and its opposite only to find that its result is zero?
6. How many units away from 0 is the number 17? How many units away from 0 is the number -17 ? What are 17 and -17 called?

Remember What You Learned

7. Work with a partner. Tell your partner how to use absolute values to add integers with different signs when the positive integer has the greater absolute value. Then have your partner explain to you how to use absolute values to add integers with different signs when the negative integer has the greater absolute value.

Subtracting Integers**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 103 in your textbook.
Write your answers below.

1. Write a related addition sentence for each subtraction sentence.

Use a number line to find each difference. Write an equivalent addition sentence for each.

2. $1 - 5$

3. $-2 - 1$

4. $-3 - 4$

5. $0 - 5$

Read the Lesson

Tell how you would solve each of the following on a number line.
Then solve.

6. $-8 - (-6)$

7. $6 - 8$

Remember What You Learned

8. Write the rule that tells how to subtract integers. Then give an example.

2-6**Lesson Reading Guide**

6NS2.3

Multiplying Integers**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 109 in your textbook.

Write your answers below.

1. Write a multiplication sentence that describes the model.

Find each product using algebra tiles or a drawing.

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

Read the Lesson

6. Give an example that shows how multiplication is the same as repeated addition. In your example, tell what the addend is.
7. How does the sentence $4(-2) = -2(4)$ illustrate the Commutative Property of Multiplication?
8. Complete each of the following sentences with the word *positive* or *negative*.
 - a. The product of two integers with different signs is _____.
 - b. The product of two integers with the same sign is _____.

Remember What You Learned

9. You know the rule for determining the sign of the product of two integers when the signs are alike or different. Consider the product of three integers. With a partner summarize the signs of the products of 3 integers when three, two, one or none of the integers are positive.

2-8**Lesson Reading Guide**

6NS2.3

Dividing Integers**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 114 in your textbook.

Write your answers below.

Find each quotient using counters or a drawing.

1. $-6 \div 2$

2. $-12 \div 3$

Read the Lesson

Write two division sentences related to each of the following multiplication sentences.

3. $-6(-3) = 18$

4. $-21(-2) = 42$

5. $-6(3) = -18$

6. $2(-21) = -42$

7. Complete each of the following sentences with the word *positive* or *negative*.

a. The quotient of two integers with different signs is _____.

b. The quotient of two integers with the same sign is _____.

8. In the division sentence $-72 \div 8 = -9$, identify the dividend, the divisor, and the quotient.

Remember What You Learned

9. Describe how the operations of multiplication and division are opposite of each other. Are these operations opposite in all cases? What is the one integer that cannot be a divisor?

3-1**Lesson Reading Guide**

6AF1.2

Writing Expressions and Equations**Get Ready for the Lesson**

Read the introduction at the top of page 128 in your textbook.

Write your answers below.

1. What operation would you use to find how many moons Saturn has? Explain.
2. Jupiter has about three times as many moons as Uranus. What operation would you use to find how many moons Jupiter has?

Read the Lesson

3. Write the symbol that each word or phrase represents.

Symbol	Words
	more than
	is
	quotient

4. Give two examples of a word or phrase that can suggest each operation.

Operation	Words
+	
-	
×	
÷	

5. Write a verbal sentence for each equation.

Equation	Verbal Sentence
$2x - 5 = -3$	
$10 = a + 6$	
$r \div 9 = 7$	

Remember What You Learned

6. Work with a partner. Write down four or five real life math situations as sentences. Trade papers with your partner. Translate your partner's sentences into symbols.

3-2**Lesson Reading Guide**

6AF1.1, 6MR2.4

Solving Addition and Subtraction Equations**Get Ready for the Lesson**

Read the introduction at the top of page 136 in your textbook.

Write your answers below.

1. What does x represent in the figure?
2. What addition equation is shown in the figure?
3. Explain how to solve the equation.
4. How many games did Max have in the beginning?

Read the Lesson

5. Match the method of solving with the appropriate equation.

$x + 5 = 9$ _____ a. add 2 to each side

$-2 + y = 1$ _____ b. add 5 to each side

$5 = m - 1$ _____ c. subtract 5 from each side

$r + 9 = -7$ _____ d. add 1 to each side

$k - 5 = -2$ _____ e. subtract 9 from each side

6. Explain in words how to solve each equation.

$a - 10 = 3$ _____

$4 + t = -12$ _____

$18 = n - 7$ _____

7. Solve each equation.

a. $w + 23 = -11$

b. $35 = z - 15$

c. $42 + c = -9$

Remember What You Learned

8. Take turns with a partner explaining the Addition and Subtraction Properties of Equality in your own words. Then each of you write two addition and two subtraction equations. Trade equations and solve. Check your work by explaining to each other the method you used to solve the equations.

3-3**Lesson Reading Guide**

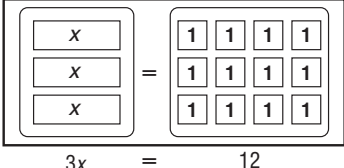
6AF1.1, 6AF2.3

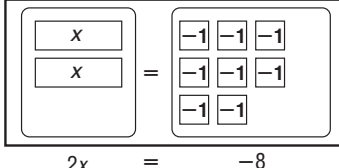
Solving Multiplication Equations**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 142 in your textbook.

Write your answers below.

Solve each equation using models or a drawing.

1.  $3x = 12$

2.  $2x = -8$

3. $4x = 20$

4. $8 = 2x$

5. $3x = -9$

6. What operation did you use to find each solution?

7. How can you use the coefficient of x to solve $8x = 40$?**Read the Lesson**

8. Complete each sentence.

a. To solve $4x = 36$, divide each side by _____.b. To solve $-27 = -3d$, divide each side by _____.c. To solve $15h = -75$, divide each side by _____.d. To solve $-8a = 96$, divide each side by _____.9. Write and solve two different equations that both require you to divide each side by -2 in order to solve.**Remember What You Learned**

10. In your own words, define the Division Property of Equality. Describe a real-life situation in which you may need to use the Division Property of Equality.

3-5**Lesson Reading Guide**

7AF4.1

Solving Two-Step Equations**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 151 in your textbook.

Write your answers below.

Solve each equation using models or a drawing.

1. $2x + 1 = 5$

2. $3x + 2 = 8$

3. $2 = 5x + 2$

Read the Lesson

4. Describe in words each step shown for solving the equation.

$12 + 7s = -9$

$12 + 7s = -9$ _____

$-12 \quad = -12$ _____

$7s = -21$ _____

$\frac{7s}{7} = \frac{-21}{7}$ _____

$s = -3$ _____

5. Number the steps in the correct order for solving the equation

$-4v + 11 = -5.$

_____ Simplify.

_____ Write the equation.

_____ Divide each side by -4 .

_____ Simplify.

_____ Subtract 11 from each side.

_____ Check the solution.

6. Check the solution given for each equation. If it is correct, write *correct*.

If it is incorrect, solve to show the correct solution.

a. $9a + 2 = -25; a = -4$ b. $-6f - 10 = 32; f = -7$ c. $-18 + 3n = 21; n = 9$

Remember What You Learned

7. In your own words, describe the steps necessary to solve a two-step equation. Will these steps work for all two-step equations?

3-6**Lesson Reading Guide**

6AF3.1, 6AF3.2

Measurement: Perimeter and Area**Get Ready for the Lesson**

Read the introduction at the top of page 156 in your textbook.

Write your answers below.

1. If you walked around the outer edge of the entire park, how far would you walk? Describe how you found the distance.
2. Explain how you can use both multiplication and addition to find the distance.

Read the Lesson

3. Explain in your own words what the formula $2l + 2w$ means?
4. How is the perimeter of a figure different from the area of the figure?
5. Explain how to find the perimeter and area of a rectangle whose length is 8 feet and whose width is 2 feet.

Remember What You Learned

6. The word *perimeter* comes from two Greek words that mean “a measure (*metron*) around (*peri*).” Tell how you can find the perimeter of a rectangle.

3-7

Lesson Reading Guide
Functions and Graphs

6AF2.3, 6MR2.4

Get Ready for the Lesson

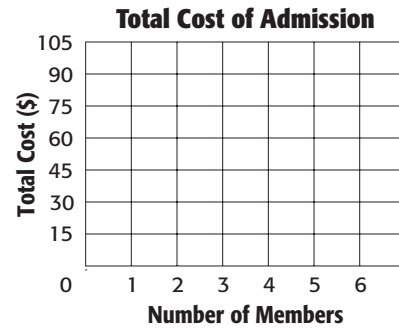
Read the introduction at the top of page 163 in your textbook.

Write your answers below.

1. Complete the function table for the total cost of admission.

Total Cost of Admission		
Number of Members	$15m$	Total Cost (\$)
1	$15(1)$	15
2	$15(2)$	30
3	$15(3)$	
4		
5		
6		

2. Graph the ordered pairs (number of members, total cost).



3. Describe how the points appear on the graph.

Read the Lesson

4. Complete each function table.

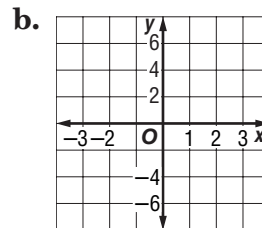
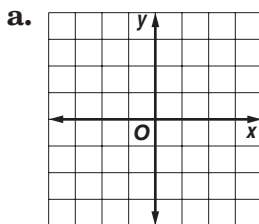
a.

x	$2x - 1$	y
-1		
0		
1		

b.

x	$4x$	y
-1		
0		
1		

5. Graph the functions in Exercise 4 above.



Remember What You Learned

6. Draw a picture of a “machine” that shows how a function works. Your picture should illustrate input, a function rule, and output.

4-1**Lesson Reading Guide**

6NS2.4

Prime Factorization**Get Ready for the Lesson**

Read the introduction at the top of page 181 in your textbook.

Write your answers below.

1. Using your grid paper, draw as many different rectangles as possible containing 3, 4, 5, 6, 7, 8, 9, and 10 squares.
2. Which number of squares can be drawn in only one rectangle? In more than one rectangle?

Read the Lesson

3. What is the difference between a prime and a composite number?
4. How do you know when a factor tree is complete?
5. Find the prime factorization of 28 using either method shown in Example 3.
6. How can an algebraic expression be factored?

Remember What You Learned

7. Describe in your own words how to use a factor tree to find the prime factorization of a number. Include an example as an explanation.

4-2**Lesson Reading Guide****6NS2.4*****Greatest Common Factor*****Get Ready for the Lesson**

Read the introduction at the top of page 186 in your textbook.

Write your answers below.

1. Who visited the Fashion Chat Room? the Music Chat Room?
2. Who visited both chat rooms?

Read the Lesson

3. What does a Venn diagram show?
4. How does a Venn diagram show relationships between elements?
5. You can find the GCF by using common factors or using common prime factors. What is the difference?
6. Find the prime factors of 20 and 24. What are the prime factors that are common to both numbers? What is the GCF?
7. How is the GCF of two numbers found if you know the prime factors common to the numbers?

Remember What You Learned

8. In your own words, describe what the GCF of two numbers is and explain one way to find it.

4-4**Lesson Reading Guide**

6NS2.4

Simplifying Fractions**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 192 in your textbook.

Write your answers below.

Show your shading.

1. Write a fraction to describe each figure: $\frac{\text{number of shaded parts}}{\text{total number of parts}}$.
2. Based on the figures, what can you conclude about the fractions?

Read the Lesson

3. How do you find the simplest form of a fraction?
4. When you find the simplest form of a fraction, how can you check to make sure your answer is correct?
5. Use canceling to simplify the fraction $\frac{2 \times 3 \times 7 \times 11}{3 \times 11 \times 17}$.

Remember What You Learned

6. Use a collection of rectangles like the one in the Mini Lab to show how to write $\frac{15}{25}$ in simplest form.

Fractions and Decimals**Get Ready for the Lesson**

Read the introduction at the top of page 196 in your textbook.

Write your answers below.

1. What fraction of the buildings are between 600 and 900 feet tall?
2. Express this fraction using words and then as a decimal.
3. What fraction of the buildings are between 710 and 730 feet tall? Express this fraction using words and then as a decimal.

Read the Lesson

4. What is meant by the term *place value*?
5. In place value, what serves as the divider between ones and tenths?
6. What is the difference between a terminating decimal and a repeating decimal? Give an example of each.

Remember What You Learned

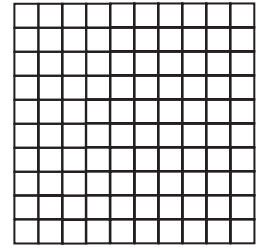
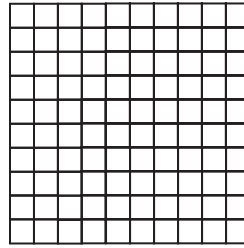
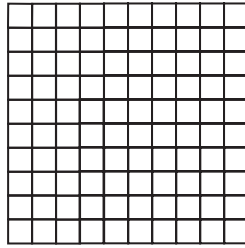
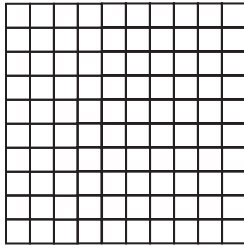
7. Work with a partner. Use a local newspaper, a favorite magazine, or the Internet. Find real-world situations that use fractions or decimals. Convert the fractions to decimals and the decimals to fractions. Exchange papers with your partner and correct each other's work.

Fractions and Percents**Get Ready for the Lesson**

Read the introduction at the top of page 202 in your textbook.

Write your answers below.

1. For each method, shade a 10×10 grid that represents the number of students that chose the method.



2. What fraction of the students chose the Internet?

Read the Lesson

3. There is more than one way to write a ratio. Write the ratio that compares 4 to 25 in three different ways.
4. Write the ratio in Exercise 3 as a percent.
5. How does having ratios written as percents make it easier to compare amounts?

Remember What You Learned

6. Work with a partner. Explain to your partner how to convert a ratio that does *not* compare a number to 100 as a percent. Then have your partner explain to you how to change from a percent to a fraction in simplest form. Both of you should use examples as well as general explanations.

Fractions and Percents**Get Ready for the Lesson**

Read the introduction at the top of page 206 in your textbook.

Write your answers below.

1. Write the percent of students who read for fun as a fraction.
2. Write the fraction as a decimal.
3. Compare the decimal in Question 2 with its percent form. Identify any similarities or differences.

Read the Lesson

4. Describe each step in changing a percent to a decimal.
5. Describe each step in changing a percent to a decimal by first writing the percent as a fraction.
6. Describe how to write a percent as a decimal without writing the percent as a fraction.

Remember What You Learned

7. Work with a partner. Think of a way that will help you remember which way to move the decimal when you go from a percent to a decimal and which way to move it when you go from a decimal to a percent.

Least Common Multiple**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 211 in your textbook.

Write your answers below.

1. Add a second floor to each building. Record the total number of cubes used in a table like the one shown below.

Number of Floors	1	2	3	4	5
Number of Cubes in Building 1	9				
Number of Cubes in Building 2	12				

2. Add floors until each building has five floors.
3. Describe two buildings that have the same number of cubes.
4. If you keep adding floors, will the two buildings have the same number of cubes again? Explain.

Read the Lesson

5. What is a least common multiple of two or more numbers?
6. Describe, in your own words, the first method used to find the LCM in Example 1 at the bottom of page 259.

Remember What You Learned

7. Explain how to find the LCM of two or more numbers when you know the prime factorization of each number. Give an example.

4-9

Lesson Reading Guide

6NS1.1, 6NS2.4

Comparing and Ordering Rational Numbers

Get Ready for the Lesson

Complete the Mini Lab at the top of page 215 in your textbook.

Write your answers below.

1. $-\frac{7}{8}, -\frac{3}{8}$



2. $-\frac{5}{8}, -1\frac{1}{8}$



3. $-\frac{13}{8}, -\frac{3}{8}$



4. $-1\frac{7}{8}, -1\frac{5}{8}$



5. $-\frac{1}{2}, -\frac{3}{4}$



6. $1\frac{1}{4}, -1\frac{1}{4}$



7. **MAKE A CONJECTURE** Which number is less: $-\frac{4}{7}$ or $-\frac{6}{7}$?
Use a number line to explain your reasoning.



Read the Lesson

8. What are two ways in which you can compare fractions?

9. Complete the table of common fraction-decimal-percent equivalents.

Fraction	Decimal	Percent
$\frac{1}{5}$		20%
	0.6	
$\frac{7}{10}$		
		25%

10. How are the following sets of numbers related: whole numbers, rational numbers, integers?

Remember What You Learned

11. In this lesson you learned about the LCD. What do each of the following abbreviations stand for: LCD, LCM, and GCF? How are the LCD and LCM related?

5-2**Lesson Reading Guide**

6NS2.1, 6NS2.4

Adding and Subtracting Fractions**Get Ready for the Lesson****Complete the Mini Lab at the top of page 236 in your textbook.****Write your answers below.**

1. Find $\frac{3}{8}$ inch on a ruler. From that point, add $\frac{4}{8}$ inch. What is the result?
2. Use a ruler to add $\frac{1}{4}$ inch and $\frac{2}{4}$ inch.
3. Find each sum. Check using a ruler.
 - a. $\frac{5}{8} + \frac{7}{8}$
 - b. $\frac{3}{16} + \frac{1}{16}$
 - c. $\frac{1}{2} + \frac{3}{4}$

Read the Lesson

4. Describe the steps you take to add or subtract like fractions.
5. How are like fractions different from unlike fractions?
6. What does LCD stand for, and what does it mean? What is the LCD used for?

Remember What You Learned

7. Describe how the procedure for adding or subtracting unlike fractions is different from the procedure for adding or subtracting like fractions.

5-3**Lesson Reading Guide**

6NS2.1, 6NS2.4

Adding and Subtracting Mixed Numbers**Get Ready for the Lesson**

Read the introduction at the top of page 242 in your textbook.

Write your answers below.

1. Jupiter is $5\frac{2}{5}$ AU from the Sun and Saturn's distance is $9\frac{1}{2}$ AU. Write an expression to find how much closer to the Sun Jupiter is than Saturn.
2. Find the difference of the fractional parts of the mixed numbers.
3. Find the difference of the whole numbers.
4. **MAKE A CONJECTURE** Explain how to find $9\frac{1}{2} - 5\frac{2}{5}$. Then use your conjecture to find the difference.

Read the Lesson

5. In the examples of adding and subtracting mixed numbers, the first step indicated is to estimate the result using whole numbers.
 - a. Why do you think it's a good idea to use an estimate?
 - b. How do you find the whole numbers used in the estimates?
6. What must you do if the fraction part of a mixed number is greater than the fraction part of the mixed number you are subtracting from? Give an example different from the one used in the example in your textbook.

Remember What You Learned

7. Work with a partner. Take turns thinking of a mixed number and having our partner tell you how to rename the mixed number in the way described in this lesson. Repeat until each of you can rename mixed numbers easily.

5-5**Lesson Reading Guide**

6NS2.1, 6NS2.2

Multiplying Fractions and Mixed Numbers**Get Ready for the Lesson**

Read the introduction at the top of page 252 in your textbook.

Write your answers below.

1. What part of the rectangle represents $\frac{1}{3}$?
2. What part of the rectangle represents $\frac{2}{5}$ of $\frac{1}{3}$?
3. Explain why the fraction of U.S. land that is publicly owned forests can be found by multiplying $\frac{2}{5}$ by $\frac{1}{3}$.

Read the Lesson

4. What is the rule for multiplying fractions? Give an example.
5. What does GCF stand for? How is it helpful in the multiplication of fractions? Give an example.

Remember What You Learned

6. In this lesson, you learned two methods to multiply mixed numbers. Work with a partner and describe how to use one of the methods to find $\frac{3}{5} \times 3\frac{2}{3}$. Have your partner describe how to use the other method to find the result.

5-6**Lesson Reading Guide**

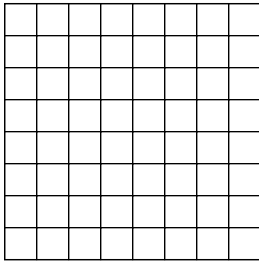
6AF1.1

Algebra: Solving Equations**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 258 in your textbook.

Write your answers below.

- The model shows $\frac{1}{2} \cdot 2$. What is the product?
- Use grid paper to model $\frac{1}{3} \cdot 3$. What is the product?



- Complete the table below.

$\frac{1}{2} \times 2 =$ _____	$\frac{2}{3} \times \frac{3}{2} =$ _____	$\frac{5}{6} \times$ _____ $= 1$	$\frac{11}{12} \times \frac{12}{11} =$ _____
$\frac{1}{3} \times 3 =$ _____	$\frac{3}{5} \times \frac{5}{3} =$ _____	$\frac{9}{20} \times$ _____ $= 1$	_____ $\times \frac{17}{8} = 1$

- What is true about the numerators and denominators in the fractions in Exercise 3?

Read the Lesson

- Write the Multiplication Property of Equality.
- When the coefficient of x in an equation is a fraction, explain how the reciprocal, or multiplicative inverse, of the coefficient is used to solve the equation.

Remember What You Learned

- The word *inverse* comes from a Latin verb that means “to turn upside down.” How does this definition relate to the content of this lesson?

5-7**Lesson Reading Guide**

6NS2.1, 6NS2.2

Dividing Fractions and Mixed Numbers**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 265 in your textbook.

Write your answers below.

1. How many $\frac{1}{4}$'s are in 2 plates?
2. What is $2 \div \frac{1}{4}$?
3. How would you model $3 \div \frac{1}{2}$?
4. What is true about $3 \div \frac{1}{2}$ and 3×2 ?

Read the Lesson

5. How does dividing a number by a fraction involve multiplication?
6. Rewrite each of the following division expressions as multiplication expressions.

a. $\frac{7}{8} \div \frac{2}{3}$

b. $14 \div 3\frac{2}{5}$

c. $\frac{5}{6} \div 2\frac{1}{4}$

d. $2\frac{1}{3} \div 1\frac{1}{6}$

Remember What You Learned

7. To divide a mixed number by another mixed number can take up to 5 steps. List the steps in order.

6-1**Lesson Reading Guide**

6NS1.2

Ratios**Get Ready for the Lesson**

Read the introduction at the top of page 282 in your textbook.
Write your answers below.

1. Write the student-teacher ratio of Prairie Lake Middle School as a fraction. Then write this fraction with a denominator of 1.
2. Can you determine which school has the lowest student-teacher ratio by examining just the number of teachers at each school? Just the number of students at each school? Explain.

Read the Lesson

For Exercises 3 and 4, review the introduction to this lesson.

3. What two things are being compared?
4. What is the comparison of the size of the larger school to the size of the smaller school called?
5. When you simplify a ratio written as an improper fraction, should you rewrite the fraction as a mixed number?

Remember What You Learned

6. Comparing measurements requires you to know how to convert measurements easily. Complete the following table to help you remember some common conversions.

Unit	Equivalent Unit
1 foot	_____ inches
1 yard	_____ feet
1 year	_____ weeks
1 pound	_____ ounces
1 gallon	_____ quarts
1 quart	_____ pints

6-2**Lesson Reading Guide**

6NS1.2, 6AF2.2, 6AF2.3

Rates**Get Ready for the Lesson**

Do the Mini Lab at the top of page 287 in your textbook. Write your answers below.

1. Count the number of words that each of you read.
2. Write the ratio *number of words to number of minutes* as a fraction.
3. Simplify the fractions by dividing the numerator and the denominator by 2.

Read the Lesson

4. A rate is a special kind of ratio. What makes it special?
5. Describe what makes a rate different from a unit rate. Give an example of a rate and its equivalent unit rate.
6. Write the ratios in words for each unit rate abbreviation.

Abbreviation	Ratio
m/s	
ft/s	
mi/h (mph)	
mi/gal (mpg)	

Remember What You Learned

7. Go to a food store or find several different newspaper food advertisements. Compare prices for several different sizes of the same product, or compare prices for similar sizes of different brands of the same product. Which size or which brand costs the least per unit? Report your results to the class.

6-3**Lesson Reading Guide**

6AF2.1

Measurement: Changing Customary Units**Get Ready for the Lesson**

Read the introduction at the top of page 294 in your textbook.
Write your answers below.

1. Complete the ratio table. The first two ratios are done for you.

Tons	1	4	5	8
Pounds	2,000	8,000		

2. Then graph the ordered pairs (tons, pounds) from the table. Label the horizontal axis *Weight in Tons* and the vertical axis *Weight in Pounds*. Connect the points. What do you notice about the graph of these data?

Read the Lesson

3. To the right of each customary unit write its abbreviation.

inch	mile	ton	pint
foot	ounce	fluid ounce	quart
yard	pound	cup	gallon

Complete each sentence.

4. To convert from larger units to smaller units, _____ .
5. To convert from smaller units to larger units, _____ .

Remember What You Learned

6. Complete the table.

Customary Units of Length	Customary Units of Weight	Customary Units of Capacity
1 foot = _____ inches	1 pound = _____ ounces	1 cup = _____ fluid ounces
1 yard = _____ feet	1 ton = _____ pounds	1 pint = _____ cups
1 mile = _____ feet	1 gallon = _____ quarts	1 quart = _____ pints

6-4**Lesson Reading Guide**

6AF2.1

Measurement: The Metric System**Get Ready for the Lesson****Complete the Mini Lab at the top of page 300 in your textbook.****Write your answers below.**

1. Select three other objects. Find and record the width of all five objects to the nearest millimeter and tenth of a centimeter.
2. Compare the measurements of the objects, and write a rule that describes how to convert from millimeters to centimeters.
3. Measure the length of your classroom in meters. Make a conjecture about how to convert this measure to centimeters. Explain.

Read the Lesson**Complete each sentence.**

4. To convert from centimeters to kilometers, first divide by _____ to convert to meters, then divide by _____ to convert to kilometers.
5. To convert from kiloliters to milliliters, first multiply by _____ to convert to liters, then multiply by _____ to convert to milliliters.
6. To convert from _____ to centigrams, multiply by 100.

Remember What You Learned

7. Name an everyday object that you can associate with each base metric unit of measure to help you remember what each unit represents.

kilogram:

meter:

liter:

6-5**Lesson Reading Guide**

6NS1.3

Algebra: Solving Proportions**Get Ready for the Lesson**

Read the introduction at the top of page 306 in your textbook.
Write your answers below.

1. Write the rate $\frac{\text{vitamin C}}{\text{serving size}}$ for each serving size of cereal.
2. Find the number of milligrams per cup for each serving size.

Read the Lesson

3. What symbol tells you that two ratios are equivalent?
4. What is true about the cross products of a proportion?
5. How are cross products useful in identifying a proportion?
6. How are cross products useful in solving a proportion?

Remember What You Learned

7. Explain what it means to solve a proportion. Use an example to show what you mean.

Scale Drawings**Get Ready for the Lesson**

Do the Mini Lab at the top of page 316 in your textbook.

Write your answers below.

1. Let 1 unit on the grid paper represent 1 foot. So, 6 units = 6 feet. Convert all of your measurements to units.
2. On grid paper, make a drawing of your classroom like the one shown at the top of page 316.

Read the Lesson

3. Look at the map in the middle of page 316. What is the scale? What does the scale mean?
4. In Example 1, could you find the actual distance if you did not know the scale? Explain your answer.
5. Give another example of a scale drawing or scale model that is different from the examples of scale drawings and scale models given in this lesson in your textbook.

Remember What You Learned

6. How is a scale drawing similar to a scale model? How is it different?

6-8**Lesson Reading Guide**

5NS1.2

Fractions, Decimals, and Percents**Get Ready for the Lesson**

Read the introduction at the top of page 324 in your textbook.

Write your answers below.

1. What percent of the teens said that the personal computer was the most important invention?
2. How is this percent written as a ratio?
3. Simplify the ratio.

Read the Lesson

4. Look at Example 1. Why is $\frac{16.8}{100}$ multiplied by $\frac{10}{10}$?
5. Example 2 says to multiply by the reciprocal of 100. What is a reciprocal?
6. How do you write 100 as a fraction?
7. If the denominator is not a factor of 100, you can write fractions as percents by using a proportion. In Examples 3 and 4, why is the ratio $\frac{n}{100}$ used as part of the proportions?

Remember What You Learned

8. Complete the following table of equivalent fractions. Look for patterns in each column. How do the percents increase? How do the fractions increase? Work with a partner. Figure out ways to remember the equivalents.

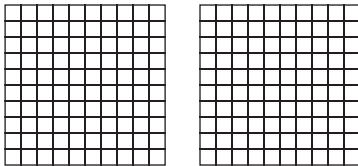
Common Fraction/Decimal/Percent Equivalents					
Fraction	Decimal	Percent	Fraction	Decimal	Percent
$\frac{1}{3}$			$\frac{3}{8}$		$37\frac{1}{2}\%$
		$66\frac{2}{3}\%$	$\frac{5}{8}$	0.625	
$\frac{1}{8}$				0.875	$87\frac{1}{2}\%$

Percents Greater Than 100% and Percents Less Than 1%**Get Ready for the Lesson**

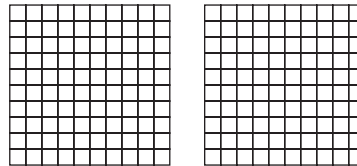
Do the Mini Lab at the top of page 329 in your textbook. Write your answers below.

1. What percent does Model 1 represent?
2. What percent does Model 2 represent?
3. Shade grids to represent each percent.

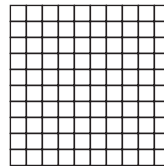
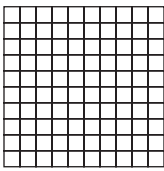
a. 150%



b. 215%



c. $\frac{1}{4}\%$

**Read the Lesson**

4. If you are converting from a percent to a fraction or mixed number and the percent is greater than 100%, is the result a fraction or a mixed number? Explain.
5. In converting between decimals and percents, when do you use multiplication? When do you use division?

Remember What You Learned

6. Have you ever heard a coach encourage his or her team to “Give it a 110%!”? Describe what it means when a percent is greater than 100%. Describe what it means when a percent is less than 1%.

7-1**Lesson Reading Guide**

6NS1.4

Percent of a Number**Get Ready for the Lesson**

Read the introduction at the top of page 344 in your textbook.
Write your answers below.

1. Sketch the model and label using decimals instead of percents.

2. Sketch the model using fractions instead of percents.

3. Use these models to write two multiplication sentences that are equivalent to 60% of $2,000 = 1,200$.

Read the Lesson

4. What are two methods for finding the percent of a number?

5. When writing a percent as a fraction to solve a percent problem, what is helpful to do to the percent before solving the problem?

6. What is unusual about the answer to a percent problem where the percent taken is larger than 100?

Remember What You Learned

7. Suppose one of your friends said to you, "I want to pay for lunch and I know I'm supposed to leave a 15% tip, but I don't know how to figure out how much to leave." Write in your words what you would say to your friend to explain how to figure out the tip.

7-2**Lesson Reading Guide****6NS1.3, 6NS1.4*****The Percent Proportion*****Get Ready for the Lesson**

Read the introduction at the top of page 350 in your textbook. Write your answers below.

1. Write the ratio of engine weight to total weight as a fraction.
2. Use a calculator to write the fraction as a decimal to the nearest hundredth.
3. About what percent of the space shuttle's weight is the engine?

Read the Lesson

4. What is a percent proportion?
5. Describe how the percent proportion is set up.
6. Select the information that can be found by solving each percent problem.

_____ What number is 30% of 15?	a. Find the whole.
_____ 18 is 65% of what number?	b. Find the percent.
_____ What percent of 40 is 17?	c. Find the part.

Remember What You Learned

7. Write an example of each type of percent problem in the table below. (Be sure the examples are different from the ones given in the lesson and on this page.) Write the example in words and set up the correct proportion for each example.

Type	Example	Proportion
Find the Percent		
Find the Part		
Find the Whole		

7-3**Lesson Reading Guide**

6NS1.4

Percent and Estimation**Get Ready for the Lesson**

Read the introduction at the top of page 355 in your textbook. Write your answers below.

1. What fraction of people surveyed chose Labor Day as their favorite grilling day? How many of the 80 people surveyed is this?
2. Explain how you could use a fraction to estimate the number of people who chose the Fourth of July as their favorite grilling day. Then estimate.
3. Use a fraction to estimate the number of people surveyed who chose Memorial Day as their favorite grilling day.

Read the Lesson

4. In Example 1, what does the \approx sign mean in the sentence 53% of $159 \approx \frac{1}{2} \cdot 160$? Why is it necessary to use this sign?
5. Describe Method 2 of Example 2 on page 356 in your textbook.
6. In Example 5, what is an easy way to find 0.5% of a number?

Remember What You Learned

7. Write fraction equivalents in simplest form for the following percents. Then work with a partner. Take turns asking each other fraction equivalents for any of the percents in the table, or think of others to quiz each other.

20%	40%	60%	80%
25%	50%	75%	100%

7-4**Lesson Reading Guide**

6NS1.4, 6AF1.1

Algebra: The Percent Equation**Get Ready for the Lesson**

Read the introduction at the top of page 361 in your textbook. Write your answers below.

1. Use the percent proportion to find the amount earned by cotton.
2. Express the percent of cotton as a decimal. Then multiply the decimal by 8.9 million. Compare the answers to Exercises 1 and 2.

Read the Lesson

3. The word *percent* is used in both the percent proportion and the percent equation. There is one major difference in the way percent is represented in each. What is the difference?
4. Write the following problems as percent proportions and as percent equations.

Problem	Percent Proportion	Percent Equation
9 is 60% of what number?		
Find 50% of 6.		
40% of what number is 48?		
18 is what percent of 72?		

Remember What You Learned

5. Work with a partner. One person should ask a question like the questions given as examples in the concept summary box. The other person should name the type of percent problem and name the equation that should be used to solve the problem. Do not solve the equation. Then trade roles. Continue until each of you can name the problem type and the related equation easily.

7-6**Lesson Reading Guide**

6NS1.2

Percent of Change**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 369 in your textbook. Write your answers below.

Model each percent of change.

1. 25% increase
2. 75% increase
3. 30% increase
4. Describe a model that represents a 100% increase, a 200% increase, and a 300% increase.
5. Describe how this process would change to show percent of decrease.

Read the Lesson

6. In a percent of change, what are the two numbers that are being compared?
7. How can you tell if a percent of change is a percent of increase or a percent of decrease?
8. Tell how to find the amount of increase and the amount of decrease.

Remember What You Learned

9. Find an example of something in your life that has increased or decreased, such as your height in the past year. Calculate the percent of change and share your results with your class.

7-7**Lesson Reading Guide**

6NS1.4

Sales Tax and Discount**Get Ready for the Lesson**

Read the introduction at the top of page 375 in your textbook. Write your answers below.

1. Calculate the sales tax by finding 6% of \$1,299.
2. What will be the total cost including the sales tax?
3. Use a calculator to multiply 1.06 and 1,299. How does the result compare to your answer in Exercise 2?

Read the Lesson

4. In Example 1, the \approx is used when the sales tax is found. Why is the value of 0.0425 times 90 rounded?
5. In Method 2 of Example 1, why is the sales tax added to 100%?
6. In Examples 2 and 3, the percent equation is used to find discount price and to find the percent of discount. When using the percent equation, how do you represent the percent?

Remember What You Learned

7. Use the Internet to find the state sales tax in your state, including tax on food, prescription drugs, and nonprescription drugs, if applicable. Then suppose you have a cold and you go to a local pharmacy. You purchase a box of crackers for \$2.99 and a bottle of over-the-counter pain reliever for \$8.49. Your doctor ordered a prescription for you for your cold and you pay \$10 for this prescription. Using the sales tax for your state, what is your total cost at the pharmacy, including taxes?

Simple Interest**Get Ready for the Lesson**

Read the introduction at the top of page 379 in your textbook. Write your answers below.

1. Calculate 2.25% of \$1,000 to find the amount of money that Jin can earn in one year for a CD at State Credit Union.
2. Find the amount of money that she can earn in one year at the other three banks.

Read the Lesson

3. In Example 4, why is t replaced with $\frac{1}{12}$?
4. Complete the following table that gives the conversion of months to years.

Number of months	2	3	4	6	8	9	10
Ratio of number of months to 12 months							
Simplified ratio							

Remember What You Learned

5. Write the formula for simple interest and explain what each of the letters in the formula stands for.
6. Look up the word *interest* in a dictionary. Write the meaning that matches the way the word is used in this lesson.
7. When do you earn interest? When do you have to pay interest?

8-1**Lesson Reading Guide**

6SDAPI.1, 6SDAPI.2

Line Plots**Get Ready for the Lesson**

Read the introduction at the top of page 396 in your textbook. Write your answers below.

1. Do any of the values seem much greater or much less than the other data values?
2. Do some of the buildings have the same number of stories? Is this easy to see? Explain.

Read the Lesson

3. If the least number of a data set is 75 and the greatest number in the set is 200, what is the range?
4. Give an example of a set of data for which you could create a line plot.
5. If you see a gap in a line plot, what do you know about that interval?

Remember What You Learned

6. Discuss what pieces of information a line plot can provide for a set of data.

8-2**Lesson Reading Guide****6SDAPI.1, 6SDAPI.2,
6SDAPI.4*****Measures of Central Tendency and Range*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 402 in your textbook. Write your answers below.

1. What was the average score for the five quizzes.
2. If the quiz score of 14 points is added to the data, how many pennies would be in each cup?

Read the Lesson

3. Look at the data set 2, 5, 5, 6, 8, 11, 12. What is the mean? the median? the mode?
4. Match the measure of central tendency with the description of when it would be most useful.

median _____

a. The data set has many identical numbers.

mean _____

b. There are no big gaps in the middle of the data.

mode _____

c. The data set has no outliers.

5. If you wanted to find the average height of all of the students in a classroom, which would be the most accurate to use—mean, median, or mode? Why?

Remember What You Learned

6. In baseball, a player has a batting average. What does this average measure? What kind of data would you need to calculate a batting average?

8-3**Lesson Reading Guide**

6SDAPI.3, 6SDAPI.1

Stem-and-Leaf Plots**Get Ready for the Lesson**

Read the introduction at the top of page 410 in your textbook. Write your answers below.

1. Which chick weight is the lightest?

2. How many of the weights are less than 10 grams?

Read the Lesson

3. What can you determine easily from a stem-and-leaf plot?

4. How do you determine the stems of a stem-and-leaf plot? How do you determine the leaves?

5. If you look at a stem-and-leaf plot, how can you tell what the stems and leaves represent?

Remember What You Learned

6. Describe how the arrangement of stems and leaves in a stem-and-leaf plot relates to a plant or tree.

8-4**Lesson Reading Guide**

6SDAP2.3

Bar Graphs and Histograms**Get Ready for the Lesson**

Read the introduction at the top of page 415 in your textbook. Write your answers below.

1. What are the fastest and slowest speeds in the table?

2. How can you create a visual representation to summarize the data?

3. Do any of these representations show both the animal name and its speed?

Read the Lesson

4. Look at Example 1. What are the things that a bar graph should have?

5. Why are all of the bars in a histogram the same width without space between them?

Remember What You Learned

6. How is a histogram similar to a bar graph? How is it different?

8-6**Lesson Reading Guide**

6MR2.3, 6SDAP2.5

Using Graphs to Predict**Get Ready for the Lesson**

Complete the Mini-Lab at the top of page 426 in your textbook. Write your answers below.

1. By how much did the water's height change after each addition of marbles?
2. Predict the height of the water when 30 marbles are in the drinking glass. Explain how you made your prediction.
3. Test your prediction by placing 10 more marbles in the glass.
4. Draw a graph of the data that you recorded in the table.

Read the Lesson

5. In Example 1, what do the dotted lines help in finding?
6. What are the benefits of a scatter plot?
7. How would you know if two sets of data are related when looking at their scatter plot?

Remember What You Learned

8. Discuss line graph and scatter plots in terms of their benefits for making predictions.

8-7**Lesson Reading Guide**

6SDAP2.2, 6SDAP2.5

Using Data to Predict**Get Ready for the Lesson**

Read the introduction at the top of page 434 in your textbook. Write your answers below.

1. Can you tell how many were surveyed? Explain.
2. Describe how you could use the graph to predict how many students in your school have no television in their bedroom.

Read the Lesson

3. Look up the word *random* in a dictionary. Write the meaning of the word as it is used in this lesson.
4. In order to make predictions about a group of people, what do you need to know, according to this lesson?
5. What are two methods for calculating a prediction about a population?

Helping You Remember

6. Take a survey of your class, such as how many people are wearing blue today. Be sure to gather results from your whole class. Based on your results, make a prediction about all of the students in your grade level at your school. Find out the total number of students in your grade from your teacher or school office.

8-8**Lesson Reading Guide**6SDAP2.1, 6SDAP2.2,
6SDAP2.5***Using Sampling to Predict*****Get Ready for the Lesson**

Read the introduction at the top of page 438 in your textbook. Write your answers below.

- Suppose she decides to survey the listeners of a rock radio station. Do you think the results would represent the entire population?
- Suppose she decides to survey a group of people standing in line for a symphony. Do you think the results would represent the entire population?
- Suppose she decides to mail a survey to every 100th household in the area. Do you think the results would represent the entire population? Explain.

Read the Lesson

4. Match the type of sample with its example. Put the correct letter on the line.

simple random sample	_____	a. Every 10th person is given a survey.
stratified random sample	_____	b. Only those who volunteer take a survey.
systematic random sample	_____	c. Names are picked randomly out of a hat.
convenience sample	_____	d. A store manager surveys his first 20 customers.
voluntary response sample	_____	e. 5 residents are randomly surveyed from each floor of a 25 story apartment building.

Remember What You Learned

5. If you are conducting a survey, explain why it is important to have an unbiased sample.

Misleading Statistics**Get Ready for the Lesson**

Read the introduction at the top of page 444 in your textbook.

Write your answers below.

1. About how many more passengers per lane can a 40-foot bus transport in an hour than a car can transport?
2. Is the bus on the graph twice as large as the car? Explain.
3. Do you think the graph appeared in a brochure for a train/bus transit company or for a car company? What makes you think so?

Read the Lesson

4. Give an example of a data set you could represent with a graph and how you could represent it in a misleading way.
5. Study Example 1. If you represented a pet supply company, which graph would you use to show that business is booming?

Remember What You Learned

6. Missing labels on graphs and uneven intervals on a scale are two ways a set of statistics can be misleading. Listen for a statistic used on the radio or in a newspaper. Is it a reasonable statement? What other information might you like to have before you consider a statistic to be reasonable?

9-1**Lesson Reading Guide**

6SDAP3.3

Simple Events**Get Ready for the Lesson**

Read the introduction at the top of page 460 in your textbook. Write your answers below.

1. What fraction of the taffy is vanilla? Write in simplest form.
2. Suppose you take one piece of taffy from the box without looking. Are your chances of picking vanilla the same as picking root beer? Explain.

Read the Lesson

Use the information from the introduction to answer Exercises 3–5.

3. How do you read $P(\text{cherry})$?
4. $P(\text{cherry}) = \frac{6}{48}$; where does the 6 come from? Where does the 48 come from?
5. Probability can be written as a fraction, a decimal, or a percent. Write $P(\text{cherry})$ as a decimal.
6. If there is a 25% chance that something will happen, what is the chance that it will *not* happen? What are these two events called?

Remember What You Learned

7. Write the equation $P(A) + P(\text{not } A) = 1$ in words. What does it mean with respect to event A ?

9-2**Lesson Reading Guide**

6SDAP3.1

Sample Spaces**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 465 in your textbook. Write your answers below.

1. Before you play, make a conjecture. Do you think that each player has an equal chance of winning? Explain.
2. Now, play the game. Who won? What was the final score?

Read the Lesson

3. How does a tree diagram resemble a tree?
4. How can you use a table to find the number of possible outcomes of an event?
5. How do you know the game played in Example 3 is fair?

Remember What You Learned

6. Draw a tree diagram that shows a fair game that is different from the examples in your textbook. Can you think of a way to draw a tree diagram that shows a game that is *not* fair? Make sure you include a description if the game is not clear from your diagram.

9-3**Lesson Reading Guide**

6SDAP3.1

The Fundamental Counting Principle**Get Ready for the Lesson**

Read the introduction at the top of page 471 in your textbook. Write your answers below.

1. According to the table, how many sizes of juniors' jeans are there?
2. How many lengths are there?
3. Find the product of the two numbers you found in Exercises 1 and 2.
4. Draw a tree diagram to help you find the number of different size and length combinations. How does the number of outcomes compare to the product you found above?

Read the Lesson

5. What operation is used in the Fundamental Counting Principle?
6. How is the information in a tree diagram or table different from the information provided by counting?

Remember What You Learned

7. Write the Fundamental Counting Principle in your own words.

9-4**Lesson Reading Guide**

6SDAP3.1

Permutations**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 475 in your textbook. Write your answers below.

1. When you first started to make your list, how many choices did you have for your first class?
2. Once your first class was selected, how many choices did you have for the second class? Then, the third class?

Read the Lesson

3. How do you write *five factorial* using symbols?
4. What are the factors of five factorial?
5. What is the value of five factorial?
6. In Example 2 on page 520, why are there only 7 choices for second place?

Remember What You Learned

7. Look up the word *permute* in a dictionary. How does the meaning of this word relate to the concepts in this lesson, especially the concepts of permutations and factorials?

9-5**Lesson Reading Guide**

6SDAP3.1

Combinations**Get Ready for the Lesson**

Read the introduction at the top of page 480 in your textbook. Write your answers below.

1. Use the first letter of each name to list all of the permutations of co-captains. How many are there?
2. Cross out any arrangement that contains the same letters as another one in the list. How many are there now?
3. Explain the difference between the two lists above.

Read the Lesson

4. How can you find the number of combinations of objects in a set?
5. Why might it be easier to calculate the number of combinations of a set of objects using a permutation rather than making a list?

For Exercises 6 and 7, refer to Example 2 on page 525 in your textbook.

6. In the diagram, how many points are there? How many line segments connect to any one point?
7. How does your answer to Exercise 6 above correspond to Example 2 in your book?

Remember What You Learned

8. Work with a partner. Take turns thinking of situations in which a selection from a group must be made, where order is or is not important. Tell each other which situations are permutations and which are combinations. Solve each problem and show your work.

Theoretical and Experimental Probability**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 486 in your textbook. Write your answers below.

1. Compare the number of times you *expected* to roll a sum of 7 with the number of times you *actually* rolled a sum of 7. Then compare your result to the results of other groups.
2. Write the probability of rolling a sum of 7 out of 36 rolls using the number of times you *expected* to roll a 7 from Step 1. Then write the probability of rolling a sum of 7 out of 36 rolls using the number of times you *actually* rolled a sum of 7 from Step 2.

Read the Lesson

3. Look up the word *experimental* in a dictionary. Write the meaning for the word as used in the lesson.
4. How does theoretical probability differ from experimental probability?
5. Complete the sentence: Experimental probability can be based on _____ and can be used to make predictions about future events.

Remember What You Learned

6. Work with a partner. Design an experiment that you can use to express the experimental probability of an event. Compare your findings with those of others in your class.

9-8**Lesson Reading Guide**

6SDAP3.4, 6SDAP3.5

Compound Events**Get Ready for the Lesson**

Read the introduction at the top of page 492 in your textbook. Write your answers below.

1. What is the probability of Omar being in the second heat? in Lane 3?
2. Multiply your answers in Exercises 1. What does this number represent?

Read the Lesson

Use the introduction to the lesson to answer Exercises 4–6.

3. What does a compound event consist of?
4. Define independent events.
5. Write the probability of independent events in symbols.
6. How can you find the probability of two independent events?

Remember What You Learned

7. List several independent compound events. Explain why you consider the events to be independent.

10-1**Lesson Reading Guide**

6MG2.1

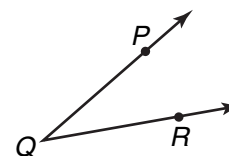
Angle Relationships**Get Ready for the Lesson**

Read the introduction at the top of page 510 in your textbook. Write your answers below.

1. Name other times in which the hands of a clock form angles less than 90° , equal to 90° , and greater than 90° .
2. How many degrees is the angle that is formed by clock hands at 6:00?

Read the Lesson

3. Give three possible names for the angle shown to the right.



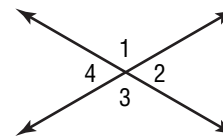
4. Draw the correct angle under each heading.

Obtuse angleAcute angleRight angleStraight angle

5. Fill in the blanks with the correct angle number.

\angle _____ and \angle _____ are vertical angles.

\angle _____ and \angle _____ are adjacent angles.

**Remember What You Learned**

6. Work with a partner. Have your partner draw two angles. Identify the types of angles your partner has drawn.

10-2

Lesson Reading Guide

6MG2.1, 6MG2.2

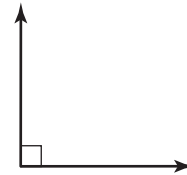
Complementary and Supplementary Angles

Get Ready for the Lesson

Complete the Mini Lab at the top of page 514 in your textbook.
Write your answers below.

1. Classify the angle as *acute*, *right*, *obtuse*, or *straight*.

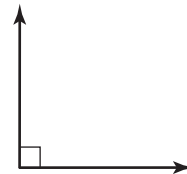
2. Copy the angle onto a piece of paper. Then draw a ray that cuts the angle into two congruent angles. Label these two congruent angles $\angle 1$ and $\angle 2$.



3. What is $m\angle 1$ and $m\angle 2$?

4. What is the sum of $m\angle 1$ and $m\angle 2$?

5. Copy the original angle onto a piece of paper. Then draw a ray that separates the angle into two non-congruent angles. Label these two angles $\angle 3$ and $\angle 4$.



6. What is true about the sum of $m\angle 3$ and $m\angle 4$?

7. Complete Exercises 1–6 for the angle shown at the right.



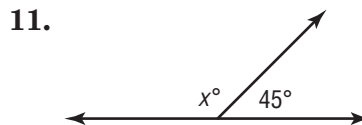
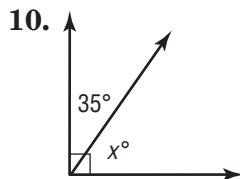
Read the Lesson

Fill in the blanks to answer Questions 8 and 9.

8. Two angles are complementary if the sum of their measure is _____.

9. Two angles are supplementary if the sum of their measure is _____.

Remember What You Learned



10-3**Lesson Reading Guide**

5SDAP1.2

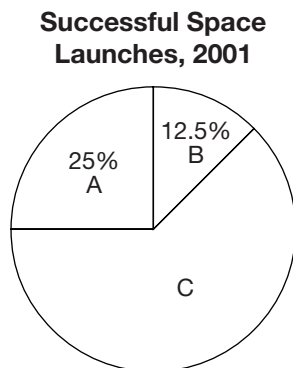
Statistics: Display Data in a Circle Graph**Get Ready for the Lesson**

Read the introduction at the top of page 518 in your textbook.
Write your answers below.

1. Explain how you know that each person surveyed chose only one shade of blue.
2. If 500 people took part in the survey, how many preferred aquamarine?

Read the Lesson

3. In the following circle graph, what is the percent represented by section C? How do you know?



4. As stated in Example 2 on page 519, when you construct a circle graph, you can check your work by measuring the last section of a circle graph to verify that the angles have the correct measures. Why will this work as a check?

Remember What You Learned

5. If you are given the results of a survey and the results are given in percents, how do you draw a circle graph to represent the results of the survey? Describe each step.

10-4**Lesson Reading Guide****6MG2.2, 6MG2.3*****Triangles*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 524 in your textbook. Write your answers below.

1. What kind of angle is formed where the three vertices meet?
2. Repeat the activity with another triangle. Make a conjecture about the sum of the measures of the angles of any triangle.

Read the Lesson

3. How can you indicate that two sides of a triangle are congruent?
4. Write the following equation in words: $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$.
5. If you know the measures of two angles of a triangle, how can you find the measure of the third angle?

Remember What You Learned

6. Complete the table to help you remember the ways to classify triangles.

Type of Triangle	Classified by Angles or Sides	Description
acute	angles	
obtuse		
	sides	no congruent sides
		1 right angle
equilateral		
isosceles		

10-6**Lesson Reading Guide****6MG2.3*****Quadrilaterals*****Get Ready for the Lesson**

Read the introduction at the top of page 533 in your textbook.
Write your answers below.

1. Describe the angles inside the four-sided figure.
2. Which sides of the figure appear to be parallel?
3. Which sides appear to be congruent?

Read the Lesson

4. In the diagram of quadrilaterals on page 533, what do the arrowheads on the parallelogram and trapezoid indicate?
5. Why are all the figures on the page called quadrilaterals?
6. How is a trapezoid different from a rhombus, a square, and a rectangle?
7. In the diagrams of the parallelogram, rhombus, square, and rectangle, how do you know that certain sides are congruent?

Remember What You Learned

8. Work with a partner. Take turns drawing quadrilaterals. Have the other person give all possible names for the quadrilateral. Then decide on the best name for the quadrilateral. For example, if one person draws a square, the other person should say that it is a quadrilateral, a parallelogram, a rectangle, and a rhombus, but the best name for the figure is a square.

10-7**Lesson Reading Guide**

6NS1.3

Similar Figures**Get Ready for the Lesson**

Complete the Mini Lab in your textbook. Write your answers below.

- \overline{AB} on the smaller rectangle matches \overline{EF} on the larger rectangle.
Name all pairs of matching sides in each pair of figures.
- Write each ratio in simplest form.
 - $\frac{AB}{EF}, \frac{BC}{FG}, \frac{DC}{HG}, \frac{AD}{EH}$
 - $\frac{RS}{XY}, \frac{ST}{YZ}, \frac{RT}{XZ}$
- What do you notice about the ratios of matching sides.
- Name all pairs of matching angles in the figures above. What do you notice about the measure of these angles?
- MAKE A CONJECTURE** about figures that have the same shape but not necessarily the same size.

Read the Lesson

- Write the statement $\triangle ABC \sim \triangle DEF$ in words.
- Write the statement $\angle A \cong \angle D$ in words.
- Suppose you know that two figures are similar, and that the following corresponding sides are proportional: side JK corresponds to side DE , and side KL corresponds to side EF . How would you write a proportion to find the length of side KL if the lengths of all other sides are known?

Remember What You Learned

- Think of a real-life example that you could measure using indirect measurement if you were given a miniature replica of your example. Explain how you could find an unknown measurement using known measurements of your example and the measurements of the replica.

10-8**Lesson Reading Guide**

6MR2.2 , 6AF3.2

Polygons and Tessellations**Get Ready for the Lesson**

Read the introduction at the top of page 546 in your textbook. Write your answers below.

1. Find the difference between the shapes of the states in Group 1 and the shapes of the states in Group 2.

2. Why do most states have boundaries that are not straight line segments?

Read the Lesson

3. How many straight lines can a polygon have?

4. What is a simple figure?

5. When you draw a figure, how can you tell whether or not it is closed?

6. How do you find the sum of the angle measures in a regular polygon?

7. In this lesson, the terms *vertex* and *vertices* are used. How are the terms related?

Remember What You Learned

8. Using dot paper, draw a tessellation different from the ones shown in this lesson. You can use all the same shape or you can use combinations of shapes that form patterns. Share your work with your class.

10-9**Lesson Reading Guide**

7MG3.2

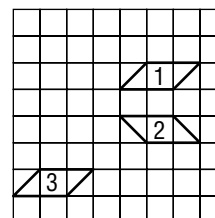
Translations**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 553 in your textbook. Write your answers below.

- Trace the horizontal and vertical path between corresponding vertices. What do you notice?
- Subtract 5 from each x -coordinate of the vertices of the original figure. Then subtract 2 from each y -coordinate of the vertices of the original figure. What do you notice?

Read the Lesson

- When translating a figure, what do you know about every point of the original figure?
- Can a figure be turned in a translation? Explain.
- What notation is used to indicate the vertices of a translated figure?
- Which figure is a translation of Figure 1—Figure 2 or Figure 3? Explain why one figure is a translation and why the other figure is not a translation.

**Remember What You Learned**

- Describe the translation given by the ordered pair $(-7, 3)$. Think of a way to remember which direction to translate when the x -coordinate of the ordered pair describing the translation is negative.

Reflections**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 558 in your textbook. Write your answers below.

1. Describe how you drew the reflection of your classmate's name.
2. Explain why the line where the geomirror and paper meet is called the *line of symmetry*.

Read the Lesson

3. Is the image of a reflection smaller, larger, or the same size as the original figure?
4. In Example 4 on page 559, how can you tell that one image is a reflection of the other across the x -axis?
5. Study the coordinates given in Examples 4 and 5 on page 559. How can you tell how many units a vertex is away from the x -axis without graphing it? How can you tell how many units a vertex is away from the y -axis?

Remember What You Learned

6. Work with a partner. Draw and cut out figures of regular polygons. Demonstrate which regular polygons have lines of symmetry and which do not. Mark the lines of symmetry with dashed lines on the models.

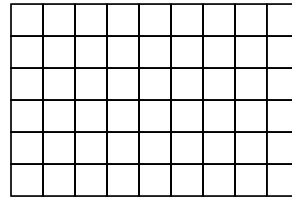
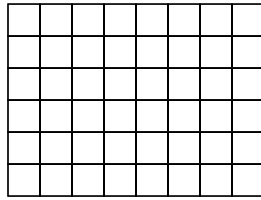
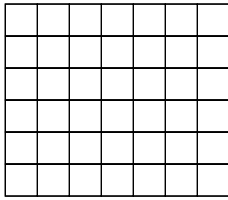
11-1**Lesson Reading Guide**

6AF3.1, 6AF3.2

Area of Parallelograms**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 572 in your textbook. Write your answers below.

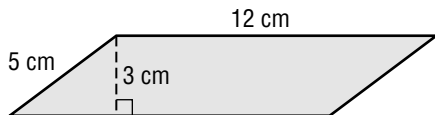
1. What is the value of x and y for each parallelogram?
2. Count the grid squares to find the area of each parallelogram.
3. On grid paper, draw three different parallelograms in which $x = 5$ units and $y = 4$ units. Find the area of each.



4. **MAKE A CONJECTURE** about how to find the area of a parallelogram if you know the values of x and y .

Read the Lesson

5. Explain how to find the height of a parallelogram.
6. Suppose you are asked to find the area of the parallelogram below. Is the given solution correct? Explain.



$$A = bh$$

$$A = 12 \cdot 5$$

$$A = 60$$

The area of the parallelogram is 60 square centimeters.

Remember What You Learned

7. Because rectangles, rhombuses, and squares are all parallelograms, the formula for finding the area of a parallelogram is also used to find the areas of each of these figures. Think of a way to remember that the area of a parallelogram is the product of its base and height. For example, draw several parallelograms, rectangles, rhombuses, and squares and label the base and height for each. Write the formula for the area below each model.

11-2**Lesson Reading Guide**

6AF3.1, 6AF3.2

Area of Triangles and Trapezoids**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 578 in your textbook. Write your answers below.

1. What is the area of the parallelogram?
2. Cut along the diagonal. What is true about the triangles formed?
3. What is the area of each triangle?
4. If the area of a parallelogram is bh , then write an expression for the area A of each of the two congruent triangles that form the parallelogram.

Read the Lesson

5. In a triangle, which side is the base?
6. How do you find the height of a triangle?
7. For what kind of triangle might the height be found outside of the triangle?
8. How is the height of a trapezoid similar to the height of a triangle or parallelogram?

Remember What You Learned

9. The Mini Lab in this lesson gave you a good way to remember the formula for the area of a triangle by showing you that it is half the area of a parallelogram, so $A = \frac{1}{2}bh$. Think of a way to help you remember the formula for the area of a trapezoid. Do you recognize anything in the formula $A = \frac{1}{2}h(b_1 + b_2)$?

11-3**Lesson Reading Guide**

6MGI.1, 6MGI.2

Circles and Circumference**Get Ready for the Lesson**

Read the introduction at the top of page 584 in your textbook. Write your answers below.

1. Which point appears to be the center of the Ferris wheel?
2. Is the distance from G to F greater than, less than, or equal to the distance from G to J ?
3. What can you say about the distance from G to H and the distance from F to J ?

Read the Lesson

4. The Greek letter π represents a nonterminating and nonrepeating number. What does this mean?
5. When is the symbol \approx used when finding the circumference of a circle? Why is this symbol used?
6. What two numbers are used in this lesson as approximations for π ?

Remember What You Learned

7. The word *diameter* comes from two Greek words that mean “a measure (*metron*) through (*dia*).” What is the diameter of a circle?
8. One of the definitions given for *radius* is *semidiameter*. Think of the relationship between radius and diameter. What do you think *semidiameter* means?

11-4**Lesson Reading Guide**

6MG1.1, 6MG1.2

Area of Circles**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 589 in your textbook. Write your answers below.

1. What is the measurement of the base and the height?
2. Substitute these values into the formula for the area of a parallelogram.
3. Replace C with the expression for the circumference of a circle, $2\pi r$. Simplify the equation and describe what it represents.

Read the Lesson

4. The formula for the area of a circle uses the number π . How does this affect the value of the area of a circle found using the formula?
5. If you are given the length of the diameter of a circle, how can you find its area?

Remember What You Learned

6. Think about the formulas you have learned that involve circles: $C = 2\pi r$ or $C = \pi d$ and $A = \pi r^2$. To help you remember the difference between the formulas for circumference and the formula for area, think about the differences in the units used for each measurement. What kinds of units are used for each? How can this help you remember the formula for the area of a circle?

11-6**Lesson Reading Guide**

6AF3.1, 6AF3.2

Area of Complex Figures**Get Ready for the Lesson**

Read the introduction at the top of page 596 in your textbook. Write your answers below.

1. Describe the shape of the kitchen.
2. How could you determine the area of the kitchen?
3. How could you determine the total square footage of a house with rooms shaped like these?

Read the Lesson

4. Look up the term *footage* in a dictionary. Write the meaning that matches the way the term is used in this lesson.
5. What do you think the term *square footage* means?
6. Which word of the compound *square footage* indicates area? Explain.
7. Look up the term *two-dimensional* in a dictionary.
8. Name two dimensions of each of the following figures.
 - a. rectangle
 - b. parallelogram
 - c. triangle
9. Refer to the figure in Example 1. How do you know that the base and height of the triangle are each 4 inches long?

Remember What You Learned

10. Look in a dictionary for the meanings of the word *complex* when used as an adjective. Write the meaning of the word as it is used in this lesson. Why can the figures in Examples 1 and 2 be considered complex figures?

Three Dimensional Figures**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 603 in your textbook. Write your answers below.

1. Study the shape of each object. Then compare and contrast the properties of each object.

Read the Lesson

Fill in the blanks.

2. The top and bottom faces of a prism are _____ and are _____.
3. The shape of the base tells the name of the _____.
4. The base of a cone is a _____.
5. A _____ has no faces, bases, edges, or vertices.
6. The bases of a cylinder are _____.
7. All of the points on a _____ are the same distance from the _____.

Remember What You Learned

8. Compare and contrast a triangular prism, a triangular pyramid, and a cone.

11-8**Lesson Reading Guide**

5MG2.3, 6MR2.4

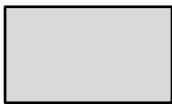
Drawing Three-Dimensional Figures**Get Ready for the Lesson**

Read the introduction at the top of page 608 in your textbook.
Write your answers below.

1. Which view of the Washington monument is shown in the comic?
2. Find a photograph of the Washington Monument and draw a side view.

Read the Lesson

3. A two-dimensional figure has two dimensions. What are they?
4. A three-dimensional figure has three dimensions. What are they?
5. Label the dimensions of each figure.



6. Underline the word that makes the sentence true.
A (rectangle, cube) is a three-dimensional figure.

Remember What You Learned

7. Make models of a two-dimensional figure and a three-dimensional figure.
Use any material you like—for example, paper, cardboard, toothpicks, gumdrops.

11-9**Lesson Reading Guide**

6MG1.3

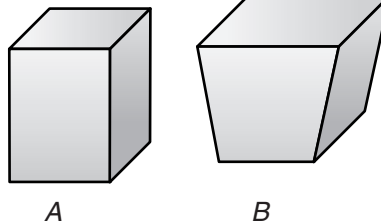
Volume of Prisms**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 613 in your textbook. Write your answers below.

1. What is the area of the base, or bottom, of the box? What is the height of the box?
2. How many centimeter cubes fit in the box?
3. What do you notice about the product of the base area and the height of the box?

Read the Lesson

4. Which of the figures at the right is a rectangular prism? Why is the other figure not a rectangular prism?

**Remember What You Learned**

5. Tell how to find the volume of a rectangular prism in words.

*Volume of Cylinders***Get Ready for the Lesson**

Complete the Mini Lab at the top of page 619 in your textbook. Write your answers below.

1. Estimate the number of centimeter cubes that would fit at the bottom of the can. Include parts of cubes.
2. How many layers would it take to fill the cylinder?
3. **MAKE A CONJECTURE** about how you can find the volume of the soup can.

Reading the Lesson

4. Write *C* if the phrase is true of a cylinder, *P* if the phrase is true of a prism, or *CP* if the phrase is true of both.

_____ has bases that are parallel and congruent

_____ has sides and bases that are polygons

_____ has bases that are circular

_____ is a solid

_____ has volume

_____ is three-dimensional

5. What shape is the base of a cylinder?
6. What is the formula for the area of the base of a cylinder?

Remember What You Learned

7. Work with a partner. Bring an object that is a cylinder to school. Take the measurements and determine the volume of your cylindrical object. Exchange objects with your partner, but do not share the calculations. Determine the volume of your partner's object. Then compare your results with those of your partner.

12-1**Lesson Reading Guide**

7NS2.4

Estimating Square Roots**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 636 in your textbook. Write your answers below. Use algebra tiles to estimate the square root of each number to the nearest whole number.

1. 40
 2. 28
 3. 85
 4. 62
5. Describe another method that you could use to estimate the square root of a number.

Read the Lesson

6. Why is $\sqrt{4}$ a rational number and $\sqrt{2}$ an irrational number?

7. How do you read the statement $\sqrt{64} < \sqrt{75} < \sqrt{81}$?

8. Why are $\sqrt{64}$ and $\sqrt{81}$ used in Example 1?

Remember What You Learned

9. The key to estimating square roots without a calculator is to be familiar with common perfect squares. Complete the following table of common perfect squares then test yourself to see how many you can remember without using a calculator.

Number	5	6	7	8	9	10	11	12	13	14	15	16	20	25
Square	25													

12-2**Lesson Reading Guide**

7MG3.3

The Pythagorean Theorem**Get Ready for the Lesson**

Read the introduction at the top of page 640 in your textbook. Write your answers below.

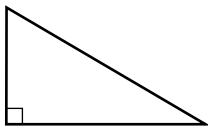
1. Find the area of each square.
2. How are the squares of the sides related to the areas of the squares?
3. Find the sum of the areas of the two smaller squares. How does the sum compare to the area of the larger square?
4. Use grid paper to cut out three squares with sides 5, 12, and 13 units. Form a right triangle with these squares. Compare the sum of the areas of the two smaller squares with the area of the larger square.

Read the Lesson

5. What does the symbol $\pm\sqrt{\quad}$ indicate?
6. How can you find the hypotenuse of a right triangle within a rectangle when given only the dimensions of the rectangle?
7. In Examples 3 and 4 on page 680, how do you know which length is c ?

Remember What You Learned

8. Summarize what you learned in this lesson by labeling the sides of the right triangle with the letters a , b , and c and then completing the table.



You can find	If you know the lengths
a	
b	
c	

12-4**Lesson Reading Guide**

7MG2.1

Surface Area of Rectangular Prisms**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 649 in your textbook. Write your answers below.

- Record the dimensions, volume, and surface area in a table.

Dimensions	Volume	Surface Area

- Build two more prisms using all of the cubes. For each, record the dimensions, volume, and surface area.

- Describe the prisms with the greatest and least surface areas.

Read the Lesson

- How many pairs of congruent faces are there in a rectangular prism? Name them.
- Tell how to find the surface area of a rectangular prism in words.

Remember What You Learned

- Work with a partner. Bring a box that is a rectangular prism to class (any size, such as a crayon box) that you can cut apart to form a net. Label the surfaces front, back, top, bottom, side, side. Measure the faces and find the surface area. Use adhesive tape to form the net into a three-dimensional figure. Then exchange nets with your partner. Calculate the volume of the prism. Compare the answers found from using a net and a solid.

12-5**Lesson Reading Guide**

7MG2.1

Surface Area of Cylinders**Get Ready for the Lesson**

Complete the Mini Lab at the top of page 656 in your textbook. Write your answers below.

1. Make a net of the cylinder.
2. Name the shapes in the net.
3. How is the length of the rectangle related to the circles?
4. Explain how to find the surface area of the cylinder.

Read the Lesson

Write the formula to use to find each of the following.

5. the area of a circle _____
6. the circumference of a circle _____
7. the area of a rectangle _____
8. How would you find the surface area of a cylinder with no top? Give your answer in words and symbols.

Remember What You Learned

9. Complete the table.

Words	The surface area of a cylinder	equals	the area of two bases	plus	the area of the curved surface.
Symbols					