

**1-1****Lesson Reading Guide*****A Plan for Problem Solving*****Get Ready for the Lesson**

Read the introduction at the top of page 24 in your textbook.

Write your answers below.

1. How many pennies are in a row that is one mile long? (*Hint: There are 5,280 feet in one mile.*)
2. Explain how to find the value of the pennies in dollars. Then find the value.
3. Explain how you could use the answer to Exercise 1 to estimate the number of quarters in a row one mile long.

**Read the Lesson**

4. Think of how you use the word *explore*. When was the last time you did some exploring of your own? Write a definition of the word *explore* that matches what you did during your exploration. Or maybe you would like to consider someone from history who was an explorer. Write a definition of the word *explore* that matches what that person did.
5. If you were doing an exploratory, when do you think this would happen? *Before or after* the thing you were exploring?
6. In the four-step plan for problem solving, think about the term *check*. Does *check* come before or after the solution? (*Hint: What are you checking?*)

**Remember What You Learned**

7. Think about the four steps in the problem-solving plan: Explore, Plan, Solve, Check. Write a sentence about something you like to help you remember the four words. For example, "I like to explore caves."

**1-2****Lesson Reading Guide*****Prime Factors*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 28 in your textbook.  
Write your answers below.

1. For what numbers can more than one rectangle be formed?
2. For what numbers can only one rectangle be formed?
3. For the numbers in which only one rectangle is formed, what do you notice about the dimensions of the rectangle?

**Read the Lesson**

4. The word *factorization* is made up of *factor* + a verb ending + a noun ending. Write a definition for each of the following mathematical terms:
  - a. factor
  - b. to factorize, or to factor
  - c. factorization
5. Is 9 a prime number or a composite number? Explain.

**Remember What You Learned**

6. Pick a number that has two or three digits. Explain to someone else how to use a factor tree to find the prime factors of the number. In your explanation, show how the rules of divisibility help you to do the factoring.

**1-3****Lesson Reading Guide*****Powers and Exponents*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 32 in your textbook.  
Write your answers below.

1. What prime factors did you record?
2. How does the number of folds relate to the number of factors in the prime factorization of the number of holes?
3. Write the prime factorization of the number of holes made if you folded it eight times.

**Read the Lesson**

4. Describe the expression  $2^5$ . In your description, use the terms *power*, *base*, and *exponent*.
5. In the power  $3^5$ , what does the exponent 5 indicate?
6. Complete the following table.

Expression	Words
$4^3$	
$7^2$	
$9^6$	
$8 \times 8 \times 8 \times 8$	
$3 \times 3 \times 3 \times 3 \times 3$	

**Remember What You Learned**

7. Explain how to find the value of  $5^4$ .

**1-4****Lesson Reading Guide*****Order of Operations*****Get Ready for the Lesson**

Read the introduction at the top of page 37 in your textbook.

Write your answers below.

1. How many Calories would you burn by walking for 5 minutes? by running for 15 minutes?
2. Find the number of Calories a person would burn by walking for 5 minutes and then running for 15 minutes?
3. What two operations did you use in Exercises 1 and 2? Explain how you found the answer to Exercise 2 using these operations.

**Read the Lesson**

4. The steps for finding the value of a numerical expression are listed below. Number the steps in the correct order.  
\_\_\_\_ Find the value of all powers.  
\_\_\_\_ Add and subtract in order from left to right.  
\_\_\_\_ Simplify the expressions inside grouping symbols.  
\_\_\_\_ Multiply and divide in order from left to right.
5. Using the order of operations, explain how you would find the value of  $(7 + 5) \div 2^2 + 8$ .
6. How would the value of  $(7 + 5) \div 2^2 + 8$  differ if you added the 8 before you divided by 4?

**Remember What You Learned**

7. Using only operation symbols and grouping symbols, write the order of operations.

**1-5****Lesson Reading Guide*****Algebra: Variables and Expressions*****Get Ready for the Lesson**

Read the introduction at the top of page 42 in your textbook.  
Write your answers below.

1. What does *some number* represent?
2. Find the value of the expression *the sum of two and some number* if *some number* is 14.
3. Assume you have two boxes of crayons each with the same number of crayons inside. Write an expression that represents the total number of pieces of crayons in both boxes.

**Read the Lesson**

4. Look up the word *variable* in a dictionary. What definition of the word matches its use in this lesson? If classmates use different dictionaries, compare the meanings among the dictionaries.
5. The introduction uses the expression *some number*, which can also be read as "some unknown value." In the expression *some unknown value*, would the expression *value of the variable* mean the same thing?

**Remember What You Learned**

6. Explain the difference between a numerical expression and an algebraic expression.

**1-6****Lesson Reading Guide*****Algebra: Functions*****Get Ready for the Lesson**

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

1. Write an expression to represent the number of mosquitoes a brown bat can eat in 2 hours; in 5 hours; in  $t$  hours.

**Read the Lesson**

2. If you look up the word *function* in a dictionary, you might find a definition like the following: a quantity whose value depends on that of another quantity or quantities. In the function  $600t$ , what does the value of  $600t$  depend on?
3. Find the function rule for the table below. \_\_\_\_\_

Input ( $x$ )	Output ( $y$ )
0	3
2	5
4	7

**Remember What You Learned**

4. Work with a partner. Each of you should create a table like the one in Exercise 5 above. Decide on a function rule to use for the output quantities, but do not write the rule. Exchange tables with your partner. Identify the function rule that expresses the relationship between the input quantity and the output quantity.

**1-8****Lesson Reading Guide*****Algebra: Equations*****Get Ready for the Lesson**

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

1. Suppose the variable  $x$  represents the number of cubes in the bag. What equation represents this situation?
2. Replace the bag with centimeter cubes until the scale balances. How many centimeter cubes did you need to balance the scale?

Let  $x$  represent the bag. Model each sentence on a scale. Find the number of centimeter cubes needed to balance the scale.

3.  $x + 1 = 4$

4.  $x + 3 = 5$

5.  $x + 7 = 8$

6.  $x + 2 = 2$

**Read the Lesson**

7. In the Mini Lab, how did you make the scale balance?
8. In this lesson, what makes a mathematical sentence true?
9. How are the words *solve* and *solution* related?
10. Look up the word *equate* in a dictionary. How does it relate to the word *equation*?

**Remember What You Learned**

11. Suppose you are buying a soda for \$0.60 and you are going to pay with a dollar bill. Write an equation that represents this situation. What does your variable represent?

**1-9****Lesson Reading Guide****Algebra: Area Formulas****Get Ready for the Lesson**

Complete the activity at the top of page 63 in your textbook.  
Write your answers below.

1. Complete the table below.

Object	Squares Along the Length	Squares Along the Width	Squares Needed to Cover the Surface
flag			
game board			

2. What relationship exists between the length and the width, and the number of squares needed to cover the surface?

**Read the Lesson**

3. Look up the word *area* in a dictionary. Write the meaning of the word as used in this lesson.
4. In order to find the area of a surface, what two measurements do you need to know?
5. On page 64, the textbook says that the area of a figure is the number of square units needed to cover a surface. If the length and width are measured in inches, in what units will the area be expressed?
6. What unit of measure is indicated by  $m^2$ ? How large is one unit?

**Remember What You Learned**

7. With a partner, measure a surface in your classroom. Explain how to find its area. Then find the area in the appropriate square units.



**2-2****Lesson Reading Guide*****Bar Graphs and Line Graphs*****Get Ready for the Lesson**

Complete the activity at the top of page 81 in your textbook.  
Write your answers below.

1. What type of roller coaster is most common?
2. What type(s) of roller coaster is least common?
3. What might be an advantage of organizing data in a table?
4. Are there any disadvantages of organizing data in a table?

**Read the Lesson**

Compare the frequency table at the top of page 81 with the bar graph in the middle of the same page.

5. How are they similar?
6. How are they different?
7. For purposes of comparison, which do you find easier to use to compare differences among frequencies—the frequency table or the bar graph? Explain.

Refer to the line graph at the bottom of page 82.

8. Use the same data to complete the table at the right.
9. Compare the table you just created with the line graph. Which do you think presents the data in a way that is easier to compare changes over periods of time? Explain.

U.S. Wooden Roller Coasters	
Year	Frequency

**Remember What You Learned**

10. Explain how the information in a line graph differs from the information in a bar graph.

**2-3****Lesson Reading Guide*****Interpret Line Graphs*****Get Ready for the Lesson**

Complete the activity at the top of page 88 in your textbook.  
Write your answers below.

1. Describe the trends in the winning amounts.
2. Predict how much the 2007 Daytona 500 winner will receive.

**Read the Lesson**

Refer to the sentence just below the activity at the top of page 88:  
“Line graphs are often used to predict future events because they show trends over time.”

3. The word *predict* comes from two Latin words that mean “to tell in advance.” Look up the word *predict* in a dictionary. What meaning is given for the word?
4. Look up the word *trend* in a dictionary. What meaning is given for the word as it is used in the definition of line graph?
5. Look at the line graph at the bottom of page 88. In terms of trend, what happened between 1997 and 1998? What is the difference between prediction and data or statistics?

**Remember What You Learned**

6. Find two line graphs, one where you feel you can predict the future with confidence and one where you cannot. Explain the difference.

**2-4****Lesson Reading Guide*****Stem-and-Leaf Plots*****Get Ready for the Lesson**

Complete the activity at the top of page 92 in your textbook.  
Write your answers below.

1. What were the least and greatest number of points scored?
2. Which number of points occurred most often?

**Read the Lesson**

3. In a stem-and-leaf plot, in what order are the data?
4. In a stem-and-leaf plot of two-digit numbers, how are the data represented?
5. Beside the stem-and-leaf plot on page 92, it says "Always write each leaf even if it repeats." Because of this rule, what do the leaves of a stem-and-leaf plot tell you that you do not know from a frequency table?
6. Look at the stem-and-leaf plot at the top of page 93. What number of butterflies per day occurs the most often in the stem-and-leaf plot? What does that number indicate?

**Remember What You Learned**

7. Write the steps for making a stem-and-leaf plot. Show someone what a stem-and-leaf plot is, how to read one, and how to make one.

**2-5****Lesson Reading Guide*****Line Plots*****Get Ready for the Lesson**

Read the introduction at the top of page 96 in your textbook. Write your answers below.

1. How many of the animals have a life expectancy of 15 years?
2. How many animals have a life expectancy from 5 to 10 years, including 10?
3. What is the longest life expectancy represented?
4. What is the shortest life expectancy represented?

**Read the Lesson**

5. How is a line plot similar to plotting points on a number line?
6. Describe one benefit of plotting data on a line plot.
7. Explain how you can use a line plot to find out how spread out a group of data are.

**Remember What You Learned**

8. Work with a partner. Find a set of data from a survey, newspaper, or the Internet that can be used in a line plot. Create a line plot of the data along with two questions about the data. Switch your line plot and questions with another group. Use the line plots to answer the questions about the data.

**2-6****Lesson Reading Guide*****Mean*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 102 in your textbook.  
Write your answers below.

1. On average, how many inches did it snow per day in five days? Explain your reasoning.
2. Suppose on the sixth day it snowed 9 inches. If you moved the cubes again, how many cubes would be in each stack?

**Read the Lesson**

3. Look up the word *mean* in a dictionary. Write the meaning that fits the way the word is used in this lesson.

Look at the paragraph below the activity at the top of page 102 in your textbook. A number that helps describe all of the data in a data set is an average. An average is also referred to as a measure of central tendency.

4. Is the mean a good measure of central tendency when there is no outlier? Give an example.
5. Is the mean a good measure of central tendency when there is an outlier? Give an example.

**Remember What You Learned**

6. Explain one problem with using the mean as a measure of central tendency.

**2-7****Lesson Reading Guide*****Median, Mode, and Range*****Get Ready for the Lesson**

Complete the activity at the top of page 108 in your textbook.  
Write your answers below.

1. List the data in order from least to greatest.
2. Which piece of data is in the middle of this list?
3. Compare this number to the mean of the data.

**Read the Lesson**

4. How are mean, median, and mode similar? How are they different?

**Look at Example 4 on page 110.**

5. Which averages are discussed in the example?
6. What is causing the mean to be so high?
7. What if there were two 54s? How would that affect the averages?
8. Does this example illustrate the statement, "Some averages may describe a data set better than other averages"?

**Remember What You Learned**

9. You may already know that a median strip refers to the concrete or landscaped divider that runs down the center of many roads. How does this idea of median relate to the meaning of median in this lesson?

**2-8****Lesson Reading Guide*****Selecting an Appropriate Display*****Get Ready for the Lesson**

Read the introduction at the top of page 114 in your textbook. Write your answers below.

1. Which display allows you to find a rabbit's maximum speed?
2. In which display is it easier to find the range of the data?

**Read the Lesson**

3. Write an example of data that is best displayed in a bar graph.
4. Write an example of data that is best displayed in a line graph.
5. Write an example of data that is best displayed in a line plot.
6. Write an example of data that is best displayed in a stem-and-leaf plot.

**Remember What You Learned**

7. Use a magazine, newspaper, or the Internet to find data that is represented in a bar graph, line graph, line plot, or stem-and-leaf plot. Examine the data to see if it is represented in the most appropriate display. Are there other displays in which the data could be represented?

**2-9****Lesson Reading Guide*****Integers and Graphing*****Get Ready for the Lesson**

Read the introduction at the top of page 121 in your textbook.

Write your answers below.

1. What number represents owing 5 dollars? What number represents having 8 dollars left?
2. Who has the most money left? Who owes the most?

**Read the Lesson**

3. Write an example of a situation that a positive number could represent.
4. Write an example of a situation that a negative number could represent.
5. In the number lines shown in this lesson, how is “continues without end” indicated?
6. How do values change as you move from left to right on a number line?

**Remember What You Learned**

7. Antonyms are two words that have opposite meanings, such as *cold* and *hot*. Integers can be described by the antonyms *negative* or *positive* or as being *above* zero or *below* zero. Make a table of antonyms that describe situations involving negative and positive integers.

Negative Integer	Positive Integer
loss	gain



**3-1****Lesson Reading Guide*****Representing Decimals*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 138 in your textbook.

Model each decimal using a place-value chart, money, a decimal model, and base-ten blocks.

1. 1.56

2. 0.85

3. 0.08

4. \$2.25

**Read the Lesson**

5. What does the decimal point do?
6. How does changing the decimal point in 5.78 to 57.8 affect the value of the decimal?

**Remember What You Learned**

7. Look up the words *dime* and *decimal* in a dictionary. How is *dime* related to *decimal*? Explain how our money system (dollars, dimes, pennies) and the place-value chart use base ten.

**3-2****Lesson Reading Guide*****Comparing and Ordering Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 142 in your textbook.  
Write your answers below.

1. Which player had the highest score? Explain.

**Read the Lesson**

For Exercises 2–4, refer to the paragraph above Example 2 on page 143.

2. What are *equivalent decimals*?
3. What does it mean to annex a zero in a decimal? What happens to the value of the decimal?
4. List three decimals that are equivalent to 0.7.
5. Look at Example 2 on page 143. Why is annexing zeros used in ordering decimals?
6. What does the expression  $7.6 < 7.8$  mean?
7. What symbol would you use to compare 7.6 and 7.3? Explain.

**Remember What You Learned**

8. Explain how using a number line to compare decimals is similar to using a number line to compare whole numbers.

**3-3****Lesson Reading Guide*****Rounding Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 146 in your textbook.  
Write your answers below.

1. Round each cost to the nearest dollar.
2. How did you decide how to round each number?
3. **Make a conjecture** about how to round each cost to the nearest dime.

**Read the Lesson**

For Exercises 4 and 5, see Examples 1 and 3 on pages 146 and 147.

4. In Example 1, what is the underlined digit? What place is it in? Why does the 1 remain the same when the decimal is rounded?
5. In Example 3, why is the digit in the cents place underlined? Why is it increased by 1 when the decimal is rounded?

**Remember What You Learned**

6. Explain how to round a number. Give an example.

**3-4****Lesson Reading Guide*****Estimating Sums and Differences*****Get Ready for the Lesson**

Read the introduction at the top of page 152 in your textbook.  
Write your answers below.

1. Round each number to the nearest million.
2. About how many more people travel through Chicago O'Hare than Denver?

**Read the Lesson**

3. Below is a difference estimated by rounding to the nearest tens. Describe in words each step shown.

$$\begin{array}{r} 54.3 \rightarrow 50 \\ - 28.7 \rightarrow -30 \\ \hline 20 \end{array}$$

4. Below is a difference estimated by using front-end estimation. Describe in words each step shown.

$$\begin{array}{r} 68.5 \\ - 34.9 \\ \hline 3 \end{array} \rightarrow \begin{array}{r} 68.5 \\ - 34.9 \\ \hline 34.0 \end{array}$$

5. Below is a sum estimated by using clustering. Describe in words each step shown.

$$\begin{array}{r} 83.20 \rightarrow 80 \\ 80.14 \rightarrow 80 \\ 79.55 \rightarrow 80 \\ + 80.09 \rightarrow + 80 \\ \hline 320 \end{array}$$

**Remember What You Learned**

6. Suppose you are shopping for groceries. Which method of estimation would you use to estimate the cost of the groceries and why would you pick this method? You may want to consider accuracy, ease or speed of calculation.

**3-5****Lesson Reading Guide*****Adding and Subtracting Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 158 in your textbook.

Write your answers below.

1. Estimate the sum of the top two countries.
2. Add the digits in the same place-value position for the top two countries.
3. Compare the estimate with the actual sum. Place the decimal point in the sum.
4. Make a conjecture about how to add decimals.

**Read the Lesson**

For Exercises 5–7 look at the paragraph just above Example 1 on page 158 in your textbook.

5. Before you add or subtract decimals, what do you need to do?
6. Then, starting on the right, what do you do next?
7. Why do you think the first sentence of that paragraph says “in the same place-value position”? Give an example.
8. In Examples 1–5 on pages 158–160 in your textbook, the first step is to estimate the sum or difference. How does the estimate help?

**Remember What You Learned**

9. Tell what steps you would use to evaluate the algebraic expression  $x + y$  if  $x = 3.4$  and  $y = 5.68$ .

**4-1****Lesson Reading Guide*****Greatest Common Factor*****Get Ready for the Lesson**

Read the introduction at the top of page 175 in your textbook.  
Write your answers below.

1. Who rode Rainbow Falls?
2. Who rode Gold Rush?
3. Who rode both Rainbow Falls and Gold Rush?

**Read the Lesson**

4. Look at the diagram at the top of page 175 in your textbook. What does a Venn diagram do?

**For Exercises 5–8, use the Venn diagram in Example 2 at the top of page 176.**

5. What elements are listed in the circle on the left?
6. What does the name tell you about each of the numbers inside the circle on the left?
7. What does the area where the two circles overlap represent?
8. What does GCF mean and what is the GCF of 42 and 56?

**Remember What You Learned**

9. Work with a partner to find the GCF for these two sets of numbers: 12 and 13, and 14 and 42. Have one partner find each GCF by listing factors. Have the other partner find each GCF by using prime factors. Then exchange papers and check each other's work.

**4-2****Lesson Reading Guide*****Simplifying Fractions*****Get Ready for the Lesson**

Read the introduction at the top of page 182 in your textbook.  
Write your answers below.

1. How many students were surveyed?
2. How many students prefer music magazines?

**Read the Lesson**

3. The word *equivalent* [ih-KWIIH-vuh-luhnt] means “equal in quantity, strength, value, and so forth.” What are *equivalent* fractions?
4. How can you find equivalent fractions?
5. Which of the following fractions are equivalent? How can you tell?  
 $\frac{5}{9}$ ,  $\frac{15}{27}$ ,  $\frac{20}{45}$
6. How can you tell if a fraction is in simplest form?
7. What are two ways you can use to write a fraction in simplest form?

**Remember What You Learned**

8. Look at the bar graph at the top of page 182 in your textbook. Write a fraction that shows how many of the total number of students name comics as their favorite type of magazine. Write an equivalent fraction that uses greater numbers. Write this fraction in simplest form. Be sure to show all your work.

**4-3****Lesson Reading Guide*****Mixed Numbers and Improper Fractions*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 187 in your textbook.  
Write your answers below.

1. How many shaded  $\frac{1}{3}$ s are there?
2. What fraction is equivalent to  $1\frac{1}{3}$ ?

**Make a model to show each number.**

3. the number of fourths in  $2\frac{3}{4}$
4. the number of halves in  $4\frac{1}{2}$

**Read the Lesson**

5. What is a mixed number? Write three examples.
6. You read  $4\frac{1}{6}$  as *four and one-sixth*. How do you read the following mixed numbers:  $3\frac{3}{5}$ ,  $2\frac{2}{3}$ ,  $8\frac{1}{2}$ ?
7. What is an improper fraction? Write three examples.

**Remember What You Learned**

8. Work with a partner. Have one person show the other how to write a mixed number as an improper fraction. Then have the other partner show how to write an improper fraction as a mixed number.



**4-5****Lesson Reading Guide*****Least Common Multiple*****Get Ready for the Lesson**

Read the introduction at the top of page 194 in your textbook.

Write your answers below.

1. Write the products of 8 and each of the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
2. Describe the pattern you see in the way the numbers increase.
3. Study the products of any number and the numbers from 1 to 10. Write a rule for the pattern you find.

**Read the Lesson**

Look at Example 1 on page 194. Complete each sentence.

4. The multiples 8, 16, and 24 are found on the lists of multiples for both 8 and 4. They are multiples that are *common* to both 8 and 4. Multiples that are common to both 8 and 4 are \_\_\_\_\_ of 8 and 4.
5. The smallest multiple that is on the list for both 8 and 4 is 8. It has the least value of all the multiples that 8 and 4 have in common. This smallest common multiple is the \_\_\_\_\_ or \_\_\_\_\_ of 8 and 4.

Look at Example 2 on page 195. Complete each sentence.

6. A prime factor is a factor that is a \_\_\_\_\_.
7. The example says to use each *common prime factor* once and then any remaining prime factors. The common prime factor in the example is 5 because \_\_\_\_\_.

**Remember What You Learned**

8. Work with a partner to find the least common multiple of 8 and 12. Have one person find the LCM by making a list and have the other by using prime factors. Then exchange papers and check each other's work.

**4-6****Lesson Reading Guide****Comparing and Ordering Fractions****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 198 in your textbook.  
Write your answers below.

Use a model to determine which fraction is greater.

1.  $\frac{1}{2}$  or  $\frac{3}{7}$

2.  $\frac{1}{6}$  or  $\frac{2}{9}$

3.  $\frac{3}{8}$  or  $\frac{4}{7}$

**Read the Lesson**

For Exercises 4–6, look at the key concept box on page 198.

4. How is LCM related to LCD?
5. How can you find the least common denominator?
6. For the second step, it says to write an equivalent fraction for each fraction using the LCD. What are equivalent fractions?
7. When comparing numbers, you can use the signs  $<$ ,  $>$ , and  $=$ . What does each sign mean?

**Remember What You Learned**

8. Explain how to order fractions having different denominators from least to greatest.

**4-7****Lesson Reading Guide*****Writing Decimals as Fractions*****Get Ready for the Lesson**

Read the introduction at the top of page 203 in your textbook.  
Write your answers below.

1. Write the word form of the decimal that represents the portion of those surveyed who prefer Italian ice.
2. Write this decimal as a fraction.
3. Repeat Exercises 1 and 2 with each of the other decimals.

**Read the Lesson**

For Exercises 4–6, look at Example 1 on page 203.

4. Why is the denominator of the fraction 10?
5. How does the example tell you to simplify the fraction?
6. What do the letters GCF stand for?
7. Look at Example 3 on page 204. What is the place value of the last decimal place? What does that mean when you go to write the corresponding fraction?

**Remember What You Learned**

8. Work with a partner. Each of you write several decimals with varying numbers of digits. Next, exchange papers and write the decimals as fractions. Then, exchange the papers again and check one another's work.

**4-8****Lesson Reading Guide*****Writing Fractions as Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 207 in your textbook.

Write your answers below.

1. Write the decimal for  $\frac{3}{10}$ .
2. Write the fraction equivalent to  $\frac{1}{2}$  with a denominator of 10.
3. Write the decimal for the fraction you found in Exercise 2.

**Read the Lesson**

4. Look at Exercise 2 at the top of page 207. What do you need to do to the fraction in order to write the decimal?
5. Look at Example 1 on page 207. Why do you multiply both the numerator and denominator by 2?
6. Look at Example 3 on page 208. Why do you annex zeros in method 1?
7. Explain what the word *annex* means.

**Remember What You Learned**

8. Write the following fractions as decimals. First, use the paper and pencil method. Then, use a calculator and compare your answers.

$$\frac{3}{12}, \frac{3}{20}, \frac{1}{5}, \frac{5}{8}$$

**4-9****Lesson Reading Guide*****Algebra: Ordered Pairs and Functions*****Get Ready for the Lesson**

Read the introduction at the top of page 211 in your textbook.  
Write your answers below.

1. How is the map labeled?
2. Location C5 is closest to the end of which street?

**Read the Lesson**

3. What is an ordered pair? Write three examples.
4. What definition does a dictionary give for the word *origin*?
5. How does this definition of origin relate to the meaning of the word in terms of a coordinate plane?

**Remember What You Learned**

6. Work with a partner. Have one of you plot a point on a coordinate plane, without showing your partner the point. Have your partner guess the location of the point. Without giving them the exact location, give them a hint of which direction they need to move to guess your point. Continue with a guess and a hint until your partner names the correct point. Then exchange roles and see who can name the point in the fewest number of guesses.

**5-1****Lesson Reading Guide*****Rounding Fractions and Mixed Numbers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 227 in your textbook.  
Write your answers below.

1. Compare the numerators and denominators of the fractions in each list.  
How do they compare?
  
2. Write a rule about how to round to the nearest half inch.

**Read the Lesson**

For Exercises 3–5, look at the Key Concept on page 227 in your textbook.

3. When do you round the number up to the next whole number?
4. When do you round the fraction to  $\frac{1}{2}$ ?
5. When do you round the number down to the whole number?
6. Look at Example 3 on page 229 in your textbook. Name another example of when it is better to round up even if the rules say to round down.

**Remember What You Learned**

7. Work with a partner. Write several different fractions and mixed numbers on a piece of paper. Make a table with three columns headed *Round up to the Next Whole Number*, *Round to  $\frac{1}{2}$* , and *Round Down to the Whole Number*. Then have your partner write your numbers in the correct columns. Now, have your partner write some numbers and you write the numbers in the correct columns.

**5-2****Lesson Reading Guide*****Estimating Sums and Differences*****Get Ready for the Lesson**

Read the introduction at the top of page 232 in your textbook. Write your answers below.

1. To the nearest whole number, how tall are the largest cowboy boots?
2. To the nearest whole number, how tall is the largest tricycle wheel?
3. About how much taller is the tricycle wheel than the cowboy boots?

**Read the Lesson**

4. Why is it important to use the word *about* when you are expressing an estimate?
5. In this lesson, what happens to fractions that keep the calculations from being exact?
6. Look at Example 5 on page 233 in your textbook. When is it necessary to round up when you are forming an estimate?

**Remember What You Learned**

7. Work with a partner. Write an addition problem and a subtraction problem using mixed numbers. Then write a problem where you need to estimate by rounding all fractions up or down. Exchange papers with your partner. Use rounding to estimate answers to your partner's problems.

**5-4****Lesson Reading Guide*****Adding and Subtracting Fractions with Like Denominators*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 238 in your textbook. Write your answers below.

Find each sum using grid paper.

1.  $\frac{4}{12} + \frac{3}{12}$

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

3.  $\frac{3}{10} + \frac{5}{10}$

4. What patterns do you notice with the numerators?
5. What patterns do you notice with the denominators?
6. Explain how you could find the sum of  $\frac{3}{8} + \frac{1}{8}$  without using grid paper.

**Read the Lesson**

Look at the paragraph below the Mini Lab on page 238 in your textbook.

7. Write a definition for *like fractions*.
8. What meaning does your textbook give for *denominator*?
9. The units being added are twelfths. Write a fraction that indicates one twelfth.

**Remember What You Learned**

10. In your own words, explain how to add like fractions. Then explain how to subtract like fractions.



**5-5****Lesson Reading Guide*****Adding and Subtracting Fractions with Unlike Denominators*****Get Ready for the Lesson**

Read the introduction at the top of page 246 in your textbook.  
Write your answers below.

1. Find the total value of the coins shown in cents.
2. Coins can also be renamed using *dollar* as the common unit. Write each of the following values as a fraction of a dollar with a denominator of 100 and in simplest form.
  - a. 2 quarters
  - b. 2 dimes
  - c. 70 cents
3. Use your answers to Exercises 1 and 2 to explain why  $\frac{1}{2}$  dollar +  $\frac{1}{5}$  dollar =  $\frac{7}{10}$  dollar.

**Read the Lesson**

4. Look at the Key Concept box on page 246 in your textbook. What does it mean to rename a fraction?
5. What do the letters *LCD* stand for?
6. What is the LCD of  $\frac{1}{6}$  and  $\frac{1}{4}$ ?

**Remember What You Learned**

7. Work with a partner. Pretend you are a teacher. You are teaching your partner how to add and subtract fractions with unlike denominators. Simplify  $\frac{1}{2} + \frac{3}{4}$ , showing and explaining the steps to your partner. Then have your partner simplify  $\frac{1}{2} - \frac{2}{5}$ , showing and explaining each step.

**5-6****Lesson Reading Guide*****Adding and Subtracting Mixed Numbers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 253 in your textbook.  
Write your answers below.

1. How many whole paper plates can you make?
2. What fraction is represented by the leftover pieces?

Use paper plate models to find each sum or difference.

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

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

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

**Read the Lesson**

6. What is a mixed number? Give an example.
7. In Example 2 on page 254 in your textbook, the letters *LCD* are used. What does *LCD* stand for?

**Remember What You Learned**

8. In your own words, summarize how to add or subtract mixed numbers.

**5-7****Lesson Reading Guide*****Subtracting Mixed Numbers with Renaming*****Get Ready for the Lesson**

Read the introduction at the top of page 258 in your textbook. Write your answers below.

1. What are the lengths of the longest and smallest doll hangers?
2. Explain how you would find the difference between the longest and smallest doll hangers.

**Read the Lesson**

3. Look at Example 1 in the middle of page 258 in your textbook. What is renamed? Why is it necessary to do this renaming?
4. In Example 2 at the bottom of page 258, both fractions have a common denominator. Why is it necessary to rename  $4\frac{1}{3}$ ? Explain what happened in the renaming.

**Remember What You Learned**

5. Explain why renaming is sometimes necessary when subtracting mixed numbers.

**6-1****Lesson Reading Guide*****Ratios and Rates*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 274 in your textbook.

Write your answers below.

1. Compare the number of blue paper clips to the number of green paper clips using the word *more* and then using the word *times*.
2. Compare the number of green paper clips to the number of blue paper clips using the word *less* and then using a fraction.

**Read the Lesson**

3. A ratio compares amounts of two different things by division. Tell what different things are compared in the examples in your textbook.

Example 1 \_\_\_\_\_

Example 2 \_\_\_\_\_

4. Write the ratio of *2 pens out of a total of 3 pens* 3 different ways.

\_\_\_\_\_

5. What is the denominator in a unit rate?

**Remember What You Learned**

6. Go to your local grocery store and make a list of unit rates that are used to price items in the store. Also, compare prices for different brands of a certain product. How can you find out which brand provides the best value? Does the store help you to make the comparison? If so, how?

**6-2**

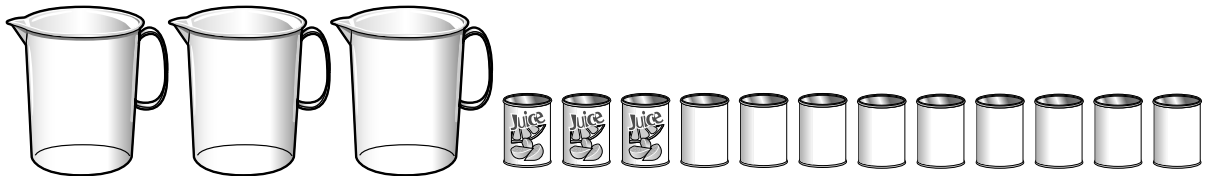
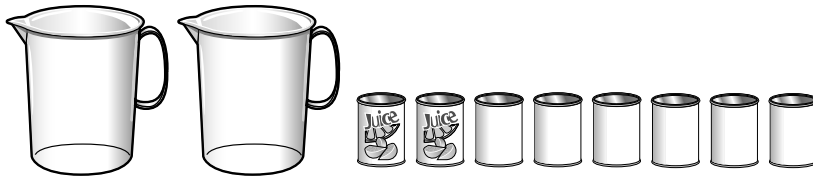
**Lesson Reading Guide**

**Ratio Tables**

**Get Ready for the Lesson**

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

- How many cans of juice and how many cans of water would you need to make 2 batches that have the same taste? 3 batches? Draw a picture to support your answers.



- Find the ratio in simplest form of juice to water needed for 1, 2, and 3 batches of juice. What do you notice?

**Read the Lesson**

- In a ratio table, what relationship exists between the columns?
- Explain how you can check your answers when using a ratio table to solve a problem.

**Remember What You Learned**

- Think of a real-world situation in which you would need to find equivalent ratios. Make a ratio table for this situation. Would you need to *scale back* or *scale forward* in this situation to find equivalent ratios? Explain.

**Lesson 6-2**

**6-3 Lesson Reading Guide*****Proportions*****Get Ready for the Lesson**

Read the introduction at the top of page 289 in your textbook.  
Write your answers below.

1. Express the relationship between the total cost and number of prints he made for each situation as a rate in fraction form.
2. Compare the relationship between the numerators of each rate you wrote in Exercise 1. Compare the relationship between the denominators of these rates.
3. Are the rates you wrote in Exercise 1 equivalent? Explain.

**Read the Lesson**

4. Look at the Key Concept box on page 289. How can you tell that the two examples given are proportions?
5. Explain one method you can use to determine if a relationship among quantities is proportional.

**Remember What You Learned**

6. Work with a partner. Each of you should write about two different relationships, one which is proportional, and one that is not. Exchange what you wrote with your partner. Then determine which relationship is proportional and which one is not proportional.

**6-4****Lesson Reading Guide*****Algebra: Solving Proportions*****Get Ready for the Lesson**

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

1. Are the number of roses proportional to the number of bouquets?
2. Write a proportion to express the relationship between the 18 roses for 3 bouquets and the number of roses  $n$  for 10 bouquets.
3. How many roses would it take to make 10 bouquets? Explain.

**Read the Lesson**

4. In Example 1, explain why you multiply by 5 to solve the proportion.
5. Look at the final sentence in Example 4 on page 295—“So, about 125 out of 500 students in the school can be expected to prefer gel toothpaste.” Why is it important to use *can be expected* in this answer?

**Remember What You Learned**

6. Work with a partner. Study Examples 1–3 on pages 294 and 295. Write a proportion that needs to be solved for an unknown value. Exchange proportions and solve for the unknown value. Explain how you arrived at your solution.

**6-6****Lesson Reading Guide*****Sequences and Expressions*****Get Ready for the Lesson**

Read the introduction at the top of page 303 in your textbook.

Write your answers below.

1. Find the rate of slices to the number of pizzas for each row in the table.
2. Is the number of pizzas proportional to the number of slices? Explain your reasoning.
3. Make an ordered list of the number of slices and describe the pattern between consecutive numbers in this list.
4. What relationship appears to exist between the pattern found in Exercise 3 and the rates found in Exercise 1?

**Read the Lesson**

5. If you have a list of numbers, how can you tell if they are an arithmetic sequence?
6. In extending a sequence, how can you use an algebraic expression to find the tenth term?

**Remember What You Learned**

7. Work with a partner. Make up a sequence of numbers that follow a certain pattern. Exchange lists with your partner. For the list you receive from your partner, describe the pattern, write a function describing the pattern, and then find the tenth term in the pattern.



**6-7****Lesson Reading Guide*****Proportions and Equations*****Get Ready for the Lesson**

Read the introduction at the top of page 309 in your textbook.

Write your answers below.

1. Write a sentence that describes the relationship between the number of hours she baby-sits and her earnings.
2. Is the relationship proportional? Explain.
3. What is the rule to find the amount Carli earns for baby sitting  $h$  hours?
4. If  $e$  represents the amount Carli earns, what equation can you use to represent this situation?

**Read the Lesson**

5. What is the difference between an input value and an output value of a function?
6. Explain the steps involved in using an equation to represent a function.

**Remember What You Learned**

7. Work with a partner. Create a function table that can be represented with an equation. Exchange function tables with your partner. For the table you receive from your partner, write an equation to represent the function.

**7-1****Lesson Reading Guide*****Percents and Fractions*****Get Ready for the Lesson**

Read the introduction at the top of page 325 in your textbook.

Write your answers below.

1. What ratio compares the number of students who prefer grape fruit bars to the total number of students?
2. Draw a decimal model to represent this ratio.
3. What fraction represents this ratio?

**Read the Lesson**

4. Write the two steps to use to write a percent as a fraction.
5. Look at the graphic at the top of page 325. What is the sum of the number of students? Look at the table in Example 3. What is the sum of the percents? Why is this important?
6. Look at Example 2 on page 326. Why is 125% written as a mixed number?

**Remember What You Learned**

7. Write a fraction as a percent using the steps shown in Examples 4 and 5 on pages 326 and 327. Choose any fraction you like different from those in the Examples.

Step	Equation(s)
Set up a proportion.	
Write the cross products.	
Multiply.	
Divide.	
Conclusion.	So, _____ is equivalent to _____.



**7-3****Lesson Reading Guide*****Percents and Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 337 in your textbook.  
Write your answers below.

1. What percent does the entire circle graph represent?
2. What fraction represents the section of the graph labeled math?
3. Write the fraction from Exercise 2 as a decimal.

**Read the Lesson**

Complete each of the following sentences.

4. To rewrite a fraction with a denominator of 100 as a decimal, move the decimal point of the numerator \_\_\_\_\_ places to the \_\_\_\_\_.
5. To rewrite a fraction with a denominator of \_\_\_\_\_ as a decimal, move the decimal point of the numerator 3 places to the left.
6. Look at Example 6 on page 338. Why do you multiply the numerator and denominator by 10?

**Remember What You Learned**

7. Look at Example 5 on page 338. Explain why you first write the decimal as a mixed number. Then explain what happens at the next step.

**7-4****Lesson Reading Guide*****Probability*****Get Ready for the Lesson**

Read the introduction at the top of page 341 in your textbook.

Write your answers below.

1. Write a ratio that compares the number of cards numbered 3 to the total number of cards.
2. What percent of the cards are numbered 3?
3. Does Morgan have a good chance of winning? Explain.
4. What would happen to her chances of winning if cards 1, 4, 7, 9, and 10 were added to the cards shown?
5. What happens to her chances if only cards 3 and 8 are facedown on the table?

**Read the Lesson**

For Exercises 6–8, see the Key Concept box at the bottom of page 341.

6. In the equation, how is  $P(\text{event})$  read? In terms of the game at the top of the page, what is the event?
7. In terms of the game, what are the favorable outcomes?
8. In terms of the game, what are the possible outcomes?
9. In Example 4 at the bottom of page 343, how do you read the equation  $P(\text{snow}) + P(\text{not snowing}) = 1$ ? What are “snowing” + “not snowing” called?

**Remember What You Learned**

10. A deck of cards contains 52 cards divided equally into four suits—spades, hearts, diamonds, clubs. What is the probability that a player will draw a spade from a facedown deck? Write an equation using the symbols from this lesson.

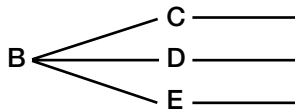
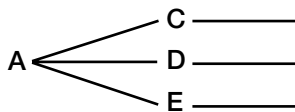
**7-5****Lesson Reading Guide*****Constructing Sample Spaces*****Get Ready for the Lesson**

Read the introduction at the top of page 349 in your textbook.  
Write your answers below.

- List the possible ways to choose a soft drink, a popcorn, and a candy.
- How do you know you have accounted for all possible combinations?

**Read the Lesson**

- Braces { } are used beside the number cube and spinner on page 349.  
What do these braces indicate? What is each set called?
- In the tree diagram in Example 2 on page 350, which part of the diagram shows the sample space?
- In the tree diagram below, find the sample space.

**Remember What You Learned**

- Work with a partner. Think up a situation for which you could make a tree diagram to show all possible outcomes. Make the diagram. Then choose one or more desired outcomes and show how to determine the  $P(\text{desired outcome})$ .

## 7-6 Lesson Reading Guide

### *Making Predictions*

#### Get Ready for the Lesson

Complete the Mini Lab at the top of page 354 in your textbook.  
Write your answers below.

1. When working in a group, how did your group predict the number of left-handed and right-handed students in your school?
2. Compare your group's prediction with the class prediction. Which do you think is more accurate? Explain.

#### Read the Lesson

3. Write the three characteristics of a good sample.
4. Using the characteristics listed above, do you think that a classroom is a good sample of an entire school? Explain.
5. If the question of the survey is, "What is your favorite television program?" would you change the sample in any way? If so, how would you change it?
6. In Examples 1 and 2 on page 355, how is the prediction used?

#### Remember What You Learned

7. Work with a partner. Find the results of a survey that is of interest to you. For example, to find surveys on favorite TV programs, go to a search engine on the Internet and enter "survey TV programs." Choose one survey. Do you think the survey is a good survey? If so, why? If not, why not and how would you change it?

**7-8****Lesson Reading Guide*****Estimating with Percents*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 361 in your textbook.  
Write your answers below.

Use grid paper to find the fractional portion of each number.

1.  $\frac{1}{2}$  of 10                      2.  $\frac{1}{5}$  of 10                      3.  $\frac{2}{5}$  of 20                      4.  $\frac{5}{6}$  of 36

5. **MAKE A CONJECTURE** How can you find a fractional part of a number without drawing a model on grid paper?

**Read the Lesson**

6. Write the fraction for each percent.

20% =	40% =	60% =	80% =
25% =	50% =	75% =	100% =
$33\frac{1}{3}\%$ =	$66\frac{2}{3}\%$ =		

7. Complete the sentence.  
When you estimate with percents, you round to numbers that are \_\_\_\_\_.

**Remember What You Learned**

8. Work with a partner. Using the fractions and percents in the table you completed for Exercise 4, take turns saying either a fraction or percent. If you say a fraction, your partner writes the corresponding percent. If you say a percent, your partner writes the corresponding fraction. Make sure your partner cannot see the table above. Continue with your practice until you can remember all the fractions and percents.



**8-1****Lesson Reading Guide*****Length in the Customary System*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 378 in your textbook.  
Write your answers below.

1. Compare your nonstandard measures with the nonstandard measures of other groups. Are they similar? Why or why not?
2. Compare your standard measures with the measures of other groups. Are they similar? Why or why not?
3. Explain the advantages and the disadvantages of using nonstandard measurement and standard measurement.

**Read the Lesson**

4. If someone told you that something was 3.5 units long, what else would you need to know in order to determine the length?
5. Explain in your own words what the word *customary* means.
6. If a mile is 1,760 yards, how many feet are in a mile? Explain.

**Remember What You Learned**

7. Work with a partner. Using a customary ruler or measuring tape, provide the lengths of each object. Once you have one actual measure for an object, you can use multiplication or division to find the other units of measure for that same object.
 

a. your arm's length in inches _____	b. your classroom's width in yards _____
c. your arm's length in feet _____	d. your classroom's length in yards _____
e. your foot's length in inches _____	f. your classroom's length in feet _____
g. your foot's length in feet _____	h. your classroom's length in inches _____

**8-2****Lesson Reading Guide*****Capacity and Weight in the Customary System*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 384 in your textbook.  
Write your answers below.

**Complete.**

1. 1 quart = \_\_\_\_\_ pints
2. 2 quarts = \_\_\_\_\_ pints
3. 1 gallon = \_\_\_\_\_ quarts
4. 1 gallon = \_\_\_\_\_ pints
5. What fractional part of 1 gallon would fit in 1 pint?
6. How many gallons are equal to 12 quarts? Explain.

**Read the Lesson**

7. Describe how you could determine the liquid capacity of a waterproof container.

**For Exercises 8 and 9, write a word in the blank to make the sentence true.**

8. To change a larger unit of capacity to a smaller unit of capacity, you \_\_\_\_\_.
9. To change a smaller unit of capacity to a larger unit of capacity, you \_\_\_\_\_.
10. What are the three most commonly used units of weight in the customary system?

**Remember What You Learned**

11. What measuring devices do you have in your home that you can use to determine the capacity or weight of an object? Using each device, complete a table like the following. Find measures for several objects.

	<b>Object</b>	<b>Measuring Device</b>	<b>Measure</b>
<b>Capacity or Weight</b>			
<b>Capacity or Weight</b>			
<b>Capacity or Weight</b>			
<b>Capacity or Weight</b>			

**8-3****Lesson Reading Guide*****Length in the Metric System*****Get Ready for the Lesson**

Read the introduction at the top of page 392 in your textbook.  
Write your answers below.

1. What unit of measure is used?
2. What is the depth of the deepest point?
3. Use the Internet or another source to find the meaning of *meter*. Then write a sentence explaining how a meter compares to a yard.

**Read the Lesson**

4. Look up the word *decimeter* in a dictionary. How long is a decimeter?
5. Complete the following table.

Unit	Abbreviation	Number of Meters	Number of Units in a Meter
	km		
meter			
		0.1	
			100
millimeter			

6. Using information in the table above, explain what it means to say that the metric system is a decimal system.

**Remember What You Learned**

7. Work with a partner. *Kilo-*, *deci-*, *centi-*, and *milli-* are combining forms. They are found combined with other words. In a dictionary, look up the meanings for *kilo-*, *deci-*, *centi-*, and *milli-*. Then explain the meanings of *kilometer*, *decimeter*, *centimeter*, and *millimeter*.

**8-4****Lesson Reading Guide*****Mass and Capacity in the Metric System*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 397 in your textbook.  
Write your answers below.

1. How does the number of paper clips needed to balance the roll of breath mints compare to the mass of the roll in grams?
2. Estimate the mass of one paper clip.
3. How many paper clips were needed to balance 2 pencils?
4. What is the mass of 1 pencil in grams?

**Read the Lesson**

5. In your own words, describe the difference between mass and capacity.
6. Complete the following table.

Unit	Abbreviation	Number of Grams	Number of Units in a Gram
	kg		
gram			
		0.001	

7. Tell which of the following are units of mass and which are units of capacity—gram, liter, milliliter, milligram, kilogram.

**Remember What You Learned**

8. Look at the labels on various products you have in your home. List three items that have a mass greater than 1 kilogram, three items that have a mass between 1 gram and 1 kilogram, and three items that have a mass less than 1 gram. Identify each item by name and list its actual metric mass as given on the label. Do the same for capacity, listing three items that are 1 liter or greater, and three that are less than 1 liter.

**8-6****Lesson Reading Guide*****Changing Metric Units*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 405 in your textbook.  
Write your answers below.

1. How many grams of baked beans are consumed per capita in the United States?
2. How many kilograms of baked beans are consumed per capita in the United States?
3. Describe the relationship between the quantities you found in Exercise 1?
4. Compare the number of grams and kilograms of baked beans consumed by the other countries in the table. Make a conjecture about how to convert from grams to kilograms.

**Read the Lesson**

Write the name for each of the following amounts.

5. one thousand grams \_\_\_\_\_
6. one thousandth of a gram \_\_\_\_\_
7. one hundred meters \_\_\_\_\_
8. one hundredth of a meter \_\_\_\_\_
9. ten liters \_\_\_\_\_
10. one tenth of a liter \_\_\_\_\_
11. Look at the illustration at the bottom of page 405. Explain each operation.
12. Circle the underlined word that makes the sentence true.  
To divide by 100, move the decimal point two places to the (left, right).

**Remember What You Learned**

13. Make a copy of the place-value chart on page 405. Using numerals, explain to someone else how to use the diagram to indicate various metric units of measure.

**8-7****Lesson Reading Guide*****Measures of Time*****Get Ready for the Lesson**

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

1. How long did Bethany take to wash the car? to run errands?
2. What is the sum of the minutes? of the hours?
3. How long did it take to wash the car and run errands?

**Read the Lesson**

4. In Example 1 on page 411, why is it necessary to rename?
5. In Example 2 on page 411, why is it necessary to rename?
6. Write each of the following in simplest form. Remember to rename as needed.  
1 hr 67 min 12 s                      3 hr 59 min 78 s                      4 hr 47 min 13 s  
\_\_\_\_\_
7. Look at Example 4 on page 411. What if the plane left Boston at 9 A.M. and the flight took the same length of time? What time would the plane land in Miami?

**Remember What You Learned**

8. Work with a partner. One partner finds the sum of 3 h 15 min 37 s and 1 h 50 min 45 s. The other partner finds the difference. Show all computation and explain each step to your partner.

**8-8****Lesson Reading Guide*****Measures of Temperature*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 415 in your textbook.  
Write your answers below.

1. Copy the table and record your findings.

Item	Temperature	
	(°F)	(°C)
classroom temperature		
outside temperature		
temperature of cup of ice water		
temperature of cold water from faucet		
temperature of hot water from faucet		

Use your findings to predict the temperature of each item.

2. a cold glass of milk                      3. a hot cup of coffee                      4. a frozen dessert

**Read the Lesson**

5. How are degrees Celsius and degrees Fahrenheit similar?  
  
6. How are degrees Celsius and degrees Fahrenheit different?

**Remember What You Learned**

7. Think about instances in your daily life where you hear about or discuss temperature. Give an example of three different situations. Is this temperature given in degrees Celsius or degrees Fahrenheit?

**9-1 Lesson Reading Guide*****Measuring Angles*****Get Ready for the Lesson**

Read the introduction at the top of page 430 in your textbook.

Write your answers below.

- Mai-Lin planted the most of which food? Of which did she plant the least? Explain your reasoning.
- The percents 30%, 25%, 20%, 15%, and 10% correspond to the sections in the graph. Explain how you would match each percent with its corresponding section.

**Read the Lesson**

- Complete the following table. Tell how each expression is read.

Expression	How the Expression is Read
$m\angle C$	
$0^\circ$	
$90^\circ < m\angle C < 180^\circ$	

- Complete the following table.

Type of Angle	Number of Degrees	Example
acute		
right		
obtuse		
straight		

**Remember What You Learned**

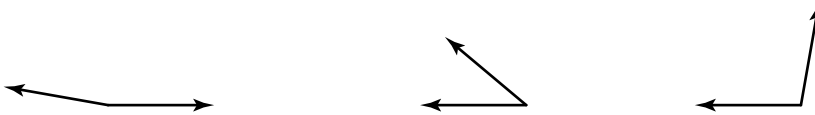
- Work with a partner. Have each person fold a piece of paper several times to form different sizes of angles. Mark each angle and give it a letter designation. Exchange papers with your partner. Measure each marked angle and identify its type.



**9-2****Lesson Reading Guide*****Estimating and Drawing Angles*****Get Ready for the Lesson**

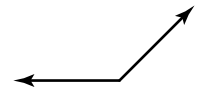
Complete the Mini Lab at the top of page 434 in your textbook.  
Write your answers below.

1. Use the wedges to estimate the measure of each angle shown.



2. How did the wedges help you to estimate each angle?

3. Explain how the  $90^\circ$  and  $45^\circ$  wedges can be used to estimate the angle at the right. What is a reasonable estimate for the angle?



4. How would you estimate the measure of any angle without using the wedges?

**Read the Lesson**

5. In this lesson, how do you estimate the measure of an angle?
6. What is one type of a *straightedge*?
7. Step 2 of Example 2 on page 435 says to find  $74^\circ$  on the correct scale and make a dot. Why does it specify the “correct scale”?

**Remember What You Learned**

8. Work with a partner. Study Example 2 in your textbook. Practice using the steps to draw angles on your own. Then demonstrate to your partner how to draw an angle. Explain what you are doing at each step.

**9-3****Lesson Reading Guide*****Angle Relationships*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 439 in your textbook.  
Write your answers below.

1. What do you notice about the measure of  $\angle 1$  and  $\angle 3$ ?  $\angle 2$  and  $\angle 4$ ?
2. **MAKE A CONJECTURE** Describe the relationship between opposite angles formed by intersecting lines.
3. Find the sum of the measures of  $\angle 3$  and  $\angle 4$  and of  $\angle 2$  and  $\angle 3$ .
4. What type of angle is formed by  $\angle 3$  and  $\angle 4$ ?  $\angle 2$  and  $\angle 3$ ?
5. **MAKE A CONJECTURE** Describe the relationship between the angles that form a straight angle.

**Read the Lesson**

6. In Example 1, what relationship exists between the angles labeled  $x^\circ$  and  $140^\circ$ ?
7. Given the measure of one of two supplementary angles, explain how you can use the definition of supplementary angles to find the missing angle measure.

**Remember What You Learned**

8. Work with a partner. Each of you should draw a pair of complementary angles and a pair of supplementary angles. In each set of drawings, label one of the angles with its measure and label the other angle ' $x^\circ$ '. Switch drawings with your partner and find the missing angle measure in each drawing.

**9-4****Lesson Reading Guide*****Triangles*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 446 in your textbook. Write your answers below.

- Repeat the activity with nine other triangles.
- Sort your triangles into three groups based on the third angle. Name the groups *acute*, *right*, and *obtuse*.

**Read the Lesson**

- Complete the following table.

Type of Triangle	Types of Angles	Example
acute		
right		
obtuse		

- Complete the following table.

Type of Triangle	Number of Congruent Sides	Example
scalene		
isosceles		
equilateral		

**Remember What You Learned**

- Work with a partner. Have each person cut out two different triangles. Exchange triangles with your partner. Measure each angle and each side length. Then classify each triangle by its angles and by its sides.

**9-5****Lesson Reading Guide*****Quadrilaterals*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 454 in your textbook.  
Write your answers below.

1. Name the shape of the figures formed when you drew the diagonal. How many figures were formed?
2. **MAKE A CONJECTURE** Use the relationship among the angle measures in a triangle to find the sum of the angle measures in a quadrilateral. Explain.
3. Find the measure of each angle of your quadrilateral. Compare the sum of these measures to the sum you found in Exercise 2.

**Read the Lesson**

4. For each quadrilateral, write one characteristic.
 

a. rectangle	d. rhombus
b. square	e. trapezoid
c. parallelogram	
5. What do tick marks through the sides of a figure indicate? What do the arcs in the angles of a figure indicate?

**Remember What You Learned**

6. Quadrilaterals can be classified by their sides and their angles. Complete the following table and study it until you can identify quadrilaterals easily.

Identify the Figure	Congruent Sides	Parallel Sides	Angles
	opposite	all	opposites are congruent
	all	all	opposites are congruent
	opposite	all	all are right angles
	all	all	all are right angles

**9-7****Lesson Reading Guide*****Similar and Congruent Figures*****Get Ready for the Lesson**

Read the introduction at the top of page 462 in your textbook.  
Write your answers below.

1. How many different-sized triangles are in the pattern?
2. Compare the size and shape of these triangles.

**Read the Lesson**

3. Tell whether each characteristic is true for congruent and similar figures.  
Write *congruent*, *similar*, or *both*.
  - a. have the same shape
  - b. may or may not have the same size
  - c. must have the same size
4. Look up the definition of *correspond* in the dictionary. Explain how it relates to the definition of *corresponding sides*.

**Remember What You Learned**

5. Complete the following table. Draw an original figure in the box on the left. Then, for the original figure, draw a figure that is similar, a figure that is congruent, and a figure that is neither similar or congruent.

Original Figure	Similar	Congruent	Neither

**10-1 Lesson Reading Guide*****Perimeter*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 482 in your textbook.  
Write your answers below.

1. Write the ratio  $\frac{\text{distance around}}{\text{side length}}$  in simplest form for squares A through D.  
What do you notice about these ratios?

2. **MAKE A CONJECTURE** Write an expression for the distance around a square that has a side length of  $x$  centimeters.

**Read the Lesson**

3. The formula for the perimeter of a square is  $P = 4s$ . What does that tell you about the sides of a square?
4. The perimeter of a rectangle is equal to  $2\ell + 2w$ . What does the formula tell you about the lengths and widths of a rectangle?
5. Can you use the formula for the perimeter of a rectangle to find the perimeter of a square? Why or why not?

**Remember What You Learned**

6. Think of a way to remember the formula for the perimeter of a rectangle,  $P = 2\ell + 2w$ . For example, use the letters of the variables as the first letters of words in a sentence.

**10-2****Lesson Reading Guide*****Circles and Circumference*****Get Ready for the Lesson**

Read the introduction at the top of page 488 in your textbook.

Write your answers below.

1. Describe the relationship between the diameter and radius of each hoop.
  
  
  
  
  
  
  
  
  
  
2. Describe the relationship between the circumference and diameter of each hoop.

**Read the Lesson**

3. What is the real value of  $\pi$ ? What does it mean that the real value never ends?
  
  
  
  
  
  
  
  
  
  
4. Why is the symbol  $\approx$  used in the solutions of the circumference problems in the examples?
  
  
  
  
  
  
  
  
  
  
5. What are the two formulas that you can use to find the circumference of a circle? When would you use each of them?

**Remember What You Learned**

6. Make a model of a circle and its parts using materials from your home. Label the center, radius, diameter, and circumference.

**10-3 Lesson Reading Guide*****Area of Parallelograms*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 494 in your textbook.  
Write your answers below.

1. How does a parallelogram relate to a rectangle?
2. What part of the parallelogram corresponds to the length of the rectangle?
3. What part corresponds to the rectangle's width?
4. **MAKE A CONJECTURE** What is the formula for the area of a parallelogram?

**Read the Lesson**

5. Look back at Lesson 1-9, Algebra: Area Formulas. Write the definition for the area of a figure.
6. Look at the models in the Mini Lab at the top of page 494 in your textbook. How can you tell from the models that the areas of the rectangle and the parallelogram are the same?
7. Look at Examples 2 and 3 on pages 495 and 496. Explain what the dotted lines in the figures represent.

**Remember What You Learned**

8. Work with a partner. Using models, demonstrate that the area of a parallelogram equals the product of any base of the parallelogram and its height.



**10-4****Lesson Reading Guide*****Area of Triangles*****Get Ready for the Lesson**

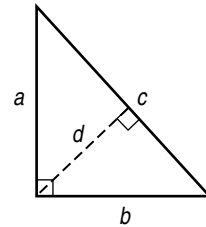
Read the introduction at the top of page 500 in your textbook.

Write your answers below.

1. Compare the two triangles.
2. What figure is formed by the two triangles?
3. **MAKE A CONJECTURE** Describe the relationship that exists between the area of one triangle and the area of the entire figure.

**Read the Lesson**

4. Look at the figure at the right. Explain how the height can be  $a$ ,  $b$ , or  $d$ .



5. Using models, demonstrate that congruent triangles have the same area.
6. Look at the illustrations of  $h$  on page 500. What is the symbol found where  $h$  and  $b$  meet? How does that affect the length of  $h$ ?

**Remember What You Learned**

7. Work with a partner. Using models, demonstrate that the area of a triangle is one-half the product of the base  $b$  and the height  $h$  of the triangle.

**10-6****Lesson Reading Guide*****Volume of Rectangular Prisms*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 508 in your textbook.  
Write your answers below.

1. Examine the rows of the table. What patterns do you notice?
2. **MAKE A CONJECTURE** Describe the relationship between the number of cubes needed and the dimensions of the prism.

**Read the Lesson**

Explain what each of the following formulas means.

3.  $V = \ell wh$

4.  $V = Bh$

Write the unit of measure for volume for each of the following.

5. inch

6. foot

7. centimeter

8. meter

9. Tell how a cubic meter is different from a cubic centimeter.

10. Look at the formula and explanation at the top of page 509. Explain what the phrase rows of cubes means.

**Remember What You Learned**

11. Take the measurements of a box and calculate its volume. Explain your answer.

**10-7****Lesson Reading Guide*****Surface Area of Rectangular Prisms*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 515 in your textbook.  
Write your answers below.

- Find the area of each face of the prism.
- What is the sum of the areas of the faces of the prism?

**Read the Lesson**

- Describe in words each step shown for finding the surface area of a rectangular prism.

$$S = 2lw + 2lh + 2wh$$

$$S = 2(17 \times 5) + 2(17 \times 6) + 2(5 \times 6)$$

$$S = 2(85) + 2(102) + 2(30)$$

$$S = 170 + 204 + 60$$

$$S = 434$$

- What is the unit of measure for surface area?
- What is the difference between a rectangular prism and a net of the prism?
- What is the difference between the surface area of a rectangular prism and the volume of the prism?

**Remember What You Learned**

- Using a net, demonstrate that the surface area of a rectangular prism is equal to  $2lw + 2lh + 2wh$ .

**11-1****Lesson Reading Guide*****Multiplying Decimals by Whole Numbers*****Get Ready for the Lesson**

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

1. Use the addition problem and the estimate to find  $2 \times \$7.99$ .
2. Write an addition problem, an estimate, and a multiplication problem to find the total cost of 3 CDs, 4 CDs, and 5 CDs.
3. **Make a conjecture** about how to find  $\$0.35 \times 3$ .

**Read the Lesson**

4. When multiplying a whole number and a decimal, it is very important that the decimal point in the product is in the right place. What are two methods for determining the placement of the decimal point in the product?
5. If you place the decimal point in the product of a whole number and a decimal by counting decimal places, how is this done?
6. What does it mean to annex zeros in the product? Why is it sometimes necessary to do this?

**Remember What You Learned**

7. Work with a partner. Explain the difference between standard form and scientific notation, and give examples of each.

**11-2 Lesson Reading Guide*****Multiplying Decimals*****Get Ready for the Lesson**

Read the introduction at the top of page 539 in your textbook.  
Write your answers below.

1. Suppose you fill a bag with 1.3 pounds of cashews. The product of  $1.3 \times 5$  can be used to estimate the total cost. Estimate the total cost.
2. Multiply 13 by 500.
3. How are the answers to Exercises 1 and 2 related?

**Repeat Exercises 1–3 for each amount of nuts.**

4. 1.7 pounds of almonds
5. 2.28 pounds of macadamias
6. **Make a conjecture** about how to place the decimal point in the product of two decimals.

**Read the Lesson**

7. When multiplying decimals, what is the relationship between the number of decimal places in each factor and the number of decimal places in the product?
8. Look at Exercises 1 and 2 above and the answers for these exercises.
  - a. How is 13 related to 1.3 pounds?
  - b. How is 207 related to \$2.07 per pound?
  - c. What is the actual cost of 1.3 pounds of cashews if each pound costs \$2.07 per pound?
  - d. How is 2691 related to the actual cost of 1.3 pounds of cashews?

**Remember What You Learned**

9. In situations where you are multiplying decimals by whole numbers it is easy to think of the calculation as adding the same value multiple times. What does it mean to multiply decimals? Describe some situations where you would need to multiply decimals.

**11-3 Lesson Reading Guide*****Dividing Decimals by Whole Numbers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 543 in your textbook.  
Write your answers below.

Use base-ten blocks to show each quotient.

1.  $3.4 \div 2$

2.  $4.2 \div 3$

3.  $5.6 \div 4$

Find each whole number quotient.

4.  $34 \div 2$

5.  $42 \div 3$

6.  $56 \div 4$

7. Compare and contrast the quotients in Exercises 1–3 with the quotients in Exercises 4–6.

8. **MAKE A CONJECTURE** Write a rule for dividing a decimal by a whole number.

**Read the Lesson**

9. In the equation  $4.8 \div 8 = 0.6$ , how can you check to see if the division sentence is true?

10. Where do you place the decimal point in the quotient when dividing by a whole number?

**Remember What You Learned**

11. Work with a partner. Pretend your partner missed the class that covered this lesson. Explain to your partner the method for knowing where to place the decimal point when you are dividing with decimals.

**11-4****Lesson Reading Guide*****Dividing by Decimals*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 549 in your textbook.  
Write your answers below.

Use a calculator to find each quotient.

1.  $0.048 \div 0.06$

$0.48 \div 0.6$

$4.8 \div 6$

$48 \div 60$

2.  $0.0182 \div 0.13$

$0.182 \div 1.3$

$1.82 \div 13$

$18.2 \div 130$

3. Which of the quotients in Exercises 1 and 2 would be easier to find *without* a calculator? Explain your reasoning.

Rewrite each problem so you can find the quotient without using a calculator. Then find the quotient.

4.  $0.42 \div 0.7$

5.  $1.26 \div 0.3$

6.  $1.55 \div 0.5$

**Read the Lesson**

7. When dividing decimals, what happens to the decimal point in the divisor and the dividend when you multiply both by the same power of 10?
8. Without doing any dividing, describe what you must do to start dividing 0.07 by 1.5.

**Remember What You Learned**

9. Write a short song or come up with a clever saying that will help you remember that whatever change you make to the decimal point of the divisor you must also make to the decimal point of the dividend.

**11-6 Lesson Reading Guide*****Estimating Products of Fractions*****Get Ready for the Lesson**

Complete the activity at the top of page 557 in your textbook.  
Write your answers below.

1. For the shots attempted, what is the nearest multiple of 3?
2. How many basketballs should be added to reflect the nearest multiple of 3?
3. Divide the basketballs into three groups each having the same number.  
How many basketballs are in each group?
4. About how many field goals did Gracia make?

**Read the Lesson**

For Exercises 5 and 6, look at Example 1 on page 557. The statement  $\frac{1}{4} \times 13 \rightarrow \frac{1}{4} \times 12$  is read *one-fourth of 13 is changed to one-fourth of 12*.

5. What does the  $\rightarrow$  mean?
6. Why is 13 changed to 12?
7. Three combinations of fractions, whole numbers, and mixed numbers are talked about in this lesson. Complete the table to summarize the information in the lesson.

Kind of Product	How to Estimate
fraction and whole number	
two fractions	
two mixed numbers	

**Remember What You Learned**

8. In this lesson, compatible numbers are defined as numbers that are easy to divide mentally. Look up the word *compatible* in a dictionary. How could you relate one of the meanings you find in the dictionary to numbers like 4 and 12 (rather than 4 and 13) and 4 and 24 (rather than 4 and 23)?



**11-7****Lesson Reading Guide*****Multiplying Fractions*****Get Ready for the Lesson**

Complete the activity at the top of page 563 in your textbook.  
Write your answers below.

1. What part of Earth's surface is covered by the Pacific Ocean?
2. What is the relationship between the numerators and denominators of the factors and the numerator and denominator of the product?

**Read the Lesson**

For Exercises 3 and 4, look at Example 3 and the sentence before it on page 564 in your textbook.

3. What must the numerator and denominator have in order to simplify before you multiply?
4. Why is it helpful to simplify before you multiply?

**Remember What You Learned**

5. Work with a partner. Look at each example on pages 563 and 564 in your textbook. Use a piece of paper to cover up the words that are beside the equations. Explain to your partner in your own words what is happening in each step. Then uncover the words and check.

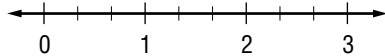
**11-8 Lesson Reading Guide*****Multiplying Mixed Numbers*****Get Ready for the Lesson**

Complete the activity at the top of page 568 in your textbook.  
Write your answers below.

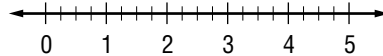
1. How many miles does Jasmine walk in a week?
2. Write a multiplication sentence that shows the total miles walked in a week.
3. Write the multiplication sentence using improper fractions.

Use a number line and improper fractions to find each product.

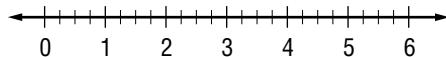
4.  $2 \times 1\frac{1}{3}$



5.  $2 \times 2\frac{1}{4}$



6.  $3 \times 1\frac{3}{4}$

**Read the Lesson**

7. What is an improper fraction?
8. What is a mixed number?
9. Why is it helpful to write a mixed number as an improper fraction?

**Remember What You Learned**

10. Example 2 on page 569 shows how to multiply mixed numbers. Describe a general process you would use to check if your answer is correct. Trade your description with a partner and follow your partner's process to check the answer for Example 3. Answer any questions your partner may have about your process.

**11-9****Lesson Reading Guide*****Dividing Fractions*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 574 in your textbook.  
Write your answers below.

1. How many  $\frac{1}{2}$ -sandwich servings are there?
2. The model shows  $3 \div \frac{1}{2}$ . What is  $3 \div \frac{1}{2}$ ?

**Draw a model to find each quotient.**

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

**Read the Lesson**

6. What is the definition of *reciprocals*?
7. Show that  $\frac{1}{3} \times 3 = 1$ .
8. How do you find the reciprocal of a whole number? How do you find the reciprocal of a fraction?

**Remember What You Learned**

9. Work with a partner. Study Example 3 at the top of page 575. Explain how you can use a model to show that  $\frac{1}{8}$  is  $\frac{1}{6}$  of  $\frac{3}{4}$ .

**11-10 Lesson Reading Guide*****Dividing Mixed Numbers*****Get Ready for the Lesson**

Complete the activity at the top of page 579 in your textbook.  
Write your answers below.

1. To the nearest yard, how long is each piece?
2. To the nearest yard, how long is the fabric on the bolt?
3. About how many pieces can you cut?
4. About how many pieces of fabric  $2\frac{1}{4}$  yards long could you cut from a bolt containing  $7\frac{3}{4}$  yards of fabric?

**Read the Lesson**

5. Describe how to write a mixed number as an improper fraction.
6. Describe what is happening at each step below. If you need help, use Examples 1 and 2 on pages 579 and 580 as a guide.

Find the value of  $a \div b$  if  $a = 5\frac{5}{8}$  and  $b = 2\frac{1}{4}$ .

$$\begin{aligned} a \div b &= 5\frac{5}{8} \div 2\frac{1}{4} \\ &= \frac{45}{8} \div \frac{9}{4} \\ &= \frac{45}{8} \times \frac{4}{9} \\ &= \frac{4\cancel{5}}{8} \times \frac{\cancel{4}}{9} \\ &= \frac{5}{2} \text{ or } 2\frac{1}{2} \end{aligned}$$

**Remember What You Learned**

7. As an experiment, try to find  $4\frac{1}{4} \div 2\frac{1}{2}$  in a different way from the way you learned in this lesson. First, divide the whole numbers. Next divide the fractions. Then, put together the whole number you found and the fraction you found to make a mixed number. Now find  $4\frac{1}{4} \div 2\frac{1}{2}$  in the way the lesson shows how to divide mixed numbers. What two important steps must you do in order when dividing mixed numbers?

**12-1****Lesson Reading Guide*****Ordering Integers*****Get Ready for the Lesson**

Read the introduction at the top of page 592 in your textbook. Write your answers below.

1. Write an integer to represent the amount of money that each person has in his or her account at the Snack Emporium.
2. Order the integers from least to greatest.
3. Who has the least money in his or her Snack Emporium account?

**Read the Lesson**

4. What symbol is used to show *greater than*? Write a mathematical statement using this symbol.
5. What symbol is used to show *less than*? Write a mathematical statement using this symbol.
6. How is a number line helpful when ordering integers from least to greatest?

**Remember What You Learned**

7. Describe a real-world situation in which you would have to order integers from least to greatest or greatest to least. Create integers for this situation. Then order them from least to greatest and greatest to least.

**12-2 Lesson Reading Guide*****Adding Integers*****Get Ready for the Lesson**

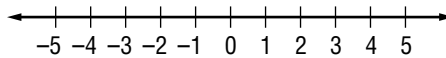
Complete the activity at the top of page 597 in your textbook.  
Write your answers below.

1. After Viviana's third turn, how many spaces from the start is her game piece?

**Read the Lesson**

For Exercises 2 and 3, look at the cards at the top of page 597 that Viviana selected for her first three turns.

2. Suppose you were using counters to find the result. Write directions that would show the result of her first three turns.
3. Suppose you were using a number line. Write directions that would show the result of her first three turns.
4. Using a number line, show that a zero pair results in 0.



5. Look at the Key Concept box at the bottom of page 598. It says that the sum of a positive integer and a negative integer is sometimes negative, sometimes positive, and sometimes 0. How can you tell which it will be?

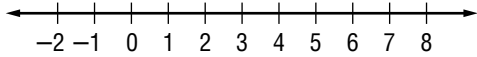
**Remember What You Learned**

6. Work with a partner. Use the three rules for adding integers you have learned in this lesson to make up addition problems and sums to show each rule. Then have your partner prove your addition sum is correct by solving the problem using a number line or counters.

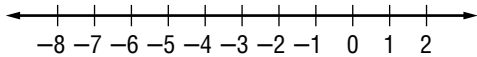
**12-3 Lesson Reading Guide*****Subtracting Integers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 602 in your textbook.  
Write your answers below.

1. Model  $8 + (-2)$  using a number line.



2. Compare this model to the model for  $8 - 2$ . How is  $8 - 2$  related to  $8 + (-2)$ ?
3. Use a number line to model  $-3 + (-4)$ .



4. Compare this model to the model for  $-3 - 4$ . How is  $-3 - 4$  related to  $-3 + (-4)$ ?

**Read the Lesson**

5. What does the Mini Lab show?
6. What do the two pairs of equations near the bottom of page 602 show?
7. Look at Example 3, Method 1, on page 604. Why is it necessary to add 3 zero pairs in order to do the computation?

**Remember What You Learned**

8. Work with a partner. Look at Check Your Progress toward the bottom of page 598. Change the three addition problems to subtraction problems. Solve the problems. Compare your answers with those of your partner.

**12-4****Lesson Reading Guide*****Multiplying Integers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 607 in your textbook.  
Write your answers below.

1. Use counters to find  $4 \times (-3)$  and  $5 \times (-2)$ .
2. **MAKE A CONJECTURE** What is the sign of the product of a positive and negative integer?

**Read the Lesson**

3. How does the Mini Lab show that  $3 \times 2 = +6$ ?
4. How does the Mini Lab show that  $3 \times (-2) = -6$ ?
5. In Examples 1 and 2 on page 608, how do you know that the products should be negative?
6. In Examples 3 and 4 on page 608, how do you know that the products should be positive?

**Remember What You Learned**

7. Look at Example 5 on page 608. Imagine that all you see is the statement of the problem. From the problem, what words indicate that the pattern will start at 0 and progress in the negative direction? How could the problem be reworded to indicate a progression in the positive direction?



**12-6 Lesson Reading Guide*****Dividing Integers*****Get Ready for the Lesson**

Complete the Mini Lab at the top of page 614 in your textbook.  
Write your answers below.

1. Explain how you would model  $-9 \div 3$ .
  
2. What would you do differently to model  $8 \div 2$ ?

**Read the Lesson**

3. What is the definition of *division*?
  
4. Write in words what  $10 \div 5$  means.
  
5. Write in words what  $-10 \div 2$  means.
  
6. How do the rules for determining signs of quotients compare with the rules for determining the signs of products?
  
7. Look at Example 6 on page 615. Which words tell you that the answer will be a negative number?

**Remember What You Learned**

8. Work with a partner. Make two models that show integers divided into equal groups. Give the models to your partner and have your partner write the division expression for each model.

**12-7****Lesson Reading Guide*****The Coordinate Plane*****Get Ready for the Lesson**

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

1. Describe the location of the barber shop in relation to the town hall.
2. What building is located 7 miles east and 5 miles north of the town hall?
3. Violeta is at the library. Describe how many blocks and in what direction she should travel to get to the supermarket.
4. Let north and east directions be represented by positive integers. Let west and south directions be represented by negative integers. Describe the location of the high school as an ordered pair using integers.
5. Describe the location of the bank as an ordered pair using integers.

**Read the Lesson**

6. Describe how to locate the point  $(-5, -3)$  on a coordinate grid.
7. In which quadrant is the point  $(-5, -3)$ ?

**Remember What You Learned**

8. Work with a partner. Draw a coordinate system that can be used to locate objects in your classroom. Have one person say the ordered pair of a location and the other say what object is located at that point.

**12-8****Lesson Reading Guide*****Solving Addition Equations*****Get Ready for the Lesson**

Read the introduction at the top of page 626 in your textbook.  
Write your answers below.

1. Write an expression to represent 3 more inches of rain.
2. Write an addition equation you could use to find the rainfall before the additional 3 inches.
3. You could solve the addition equation by counting back on the number line. What operation does counting back suggest?

**Read the Lesson**

For Exercises 4–7, look at Example 2 at the top of page 627.

4. What is the inverse operation and why is it used?
5. How is the Subtraction Property of Equality used in the solution?
6. What is the additive identity (Identity Property of Addition) and how is it used in the solution?
7. What does the checkmark at the end of the example indicate?

**Remember What You Learned**

8. In your own words, describe what *inverse* means. Discuss your idea with a partner. How does the concept of inverse operations compare to your understanding of inverse?

**12-9****Lesson Reading Guide*****Solving Subtraction Equations*****Get Ready for the Lesson**

Read the introduction at the top of page 632 in your textbook.  
Write your answers below.

1. Let  $h$  represent Jorge height. Write an expression for *5 inches shorter than Jorge*.
2. Write an equation for *5 inches shorter than Jorge is equal to 59 inches*.
3. Find Jorge's height by counting forward. What operation does counting forward suggest?

**Read the Lesson**

4. In modeling a subtraction equation, how and why are zero pairs used?

**For Exercises 5 and 6, look at Example 2 on page 633.**

5. What is the inverse operation and why is it used?
6. How is the Addition Property of Equality used in the solution?
7. In the equation  $y - 4 = -10$ , how could you get the variable alone on one side of the equation?

**Remember What You Learned**

8. Work with a partner. Pretend your partner missed this lesson on subtraction equations. Make up a subtraction equation and solve it for your partner on a piece of paper. Show each step and explain how an inverse operation, the Addition Property of Equality, and the Additive Identity are used.

**12-10 Lesson Reading Guide*****Solving Multiplication Equations*****Get Ready for the Lesson**

Read the introduction at the top of page 636 in your textbook.  
Write your answers below.

- Let  $x$  represent the amount Kara earns each hour. Write an expression for the amount Kara earns after 3 hours.
- Explain how the equation  $3x = 12$  represents the situation.

**Read the Lesson**

- In the equation  $3x = 12$ , what is the coefficient?
- In the equation  $3x = 12$ , what is the operation? How do you know?
- In Example 1 on page 636, why are both sides of the equation divided by 3?
- In Example 3 on page 637, why is the equation  $3 = 5t$ ?
- Describe what is happening in each step.

$$\begin{array}{r} -3x = 27 \\ \frac{-3x}{-3} = \frac{27}{-3} \\ 1x = -9 \\ x = -9 \end{array}$$

**Remember What You Learned**

- Work with a partner. Explain how you use division to solve a multiplication problem. Describe an example from real life where you would use division in this way.