

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

Read the introduction to Lesson 1-1 in your textbook. Write your answers below.

- Find a pattern in the costs.
- How can you determine the cost to mail a 6-ounce letter?
- Suppose you were asked to find the cost of mailing a letter that weighs 8 ounces. What steps would you take to solve the problem?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. conjecture		
2. inductive reasoning		

- What is the next term: 3, 6, 12, 24 . . .? Explain.
- Complete this sentence. In the \_\_\_\_\_ step of the four-step problem-solving plan, you check the reasonableness of your answer.

**Remember What You Learned**

- Explain why each step of the four-step plan is important.

**1-2**

# Lesson Reading Guide

## Numbers and Expressions

### Get Ready for the Lesson

Read the introduction to Lesson 1-2 in your textbook. Write your answers below.

- Study the expressions and their respective values. For each expression, tell the order in which the calculator performed the operations.
- For each expression, does the calculator perform the operations in order from left to right?
- Based on your answer to parts **a** and **b**, find the value of each expression below. Check your answer with a scientific calculator.  
 $12 - 3 \times 2$       $16 \div 4 - 2$       $18 + 6 - 8 \div 2 \times 3$
- Make a conjecture** as to the order in which a scientific calculator performs operations.

### Reading the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. numerical expression		
2. evaluate		
3. order of operations		

- In the boxes below, write three different expressions using two operations that each have a value of 6.

= 6    
      = 6    
      = 6

### Remember What You Learned

- A mnemonic device helps you remember something. Create your own mnemonic device to remember the order of operations. For example, list the operations in order, use the first letter of each operation and create a phrase with words starting with the same letters.

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Lesson 1-2

# 1-3 Lesson Reading Guide

## *Variables and Expressions*

### Get Ready for the Lesson

Read the introduction to Lesson 1-3 in your textbook. Write your answers below.

- How much would the baby-sitter earn for working 10 hours?
- What is the relationship between the number of hours and earnings?
- If  $h$  represents *any number of hours*, what expression could you write to represent the amount of money earned?

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. variable		
2. algebraic expression		
3. defining a variable		

- Name three things that make an algebraic expression.
- Why do you think replacing a variable with a number is called the Substitution Property of Equality?

### Remember What You Learned

- Variable* is a word used in everyday English.
  - Find the definition of *variable* in the dictionary. Write the definition.
  - Explain how the English definition can help you remember how *variable* is used in mathematics.

**1-4 Lesson Reading Guide*****Properties*****Getting Ready for the Lesson**

Read the introduction to Lesson 1-4 in your textbook. Write your answers below.

- a. Suppose you read the Preamble to the U.S. Constitution first and then the Gettysburg Address. Write an expression for the total number of words read.
- b. Suppose you read the Gettysburg Address first and then the Preamble to the U.S. Constitution. Write an expression for the total number of words read.
- c. Find the value of each expression. What do you observe?
- d. Does it matter in which order you add any two numbers? Why or why not?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. properties		
2. counterexample		
3. simplify		
4. deductive reasoning		

**Remember What You Learned**

5. Tell what a counterexample is in your own words. Tell how it is used in mathematics and why it is important.

**1-5 Lesson Reading Guide*****Variables and Equations*****Get Ready for the Lesson**

Read the introduction to Lesson 1-5 in your textbook. Write your answers below.

- a. If Rebecca is  $x$  years old, what expression represents Emilio's age?
- b. What two expressions are equal?
- c. If Emilio is 19, how old is Rebecca?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. equation		
2. open sentence		
3. solution		
4. solving the equation		

5. Complete this sentence. When the \_\_\_\_\_ in an open sentence is replaced with a number, you can determine whether the sentence is true or false.
6. Consider  $x - 4 = 6$ . Find a value for  $x$  that makes the sentence true and another value that makes it false.

**Remember What You Learned**

7. Explain how an open sentence is different from an algebraic expression.

# 1-6 Lesson Reading Guide

## Ordered Pairs and Relations

### Get Ready for the Lesson

Read the introduction to Lesson 1-6 in your textbook. Write your answers below.

- Where should Elisa place an X now? Explain your reasoning.
- Suppose  $(1, 2)$  represents 1 over and 2 up. How could you represent 3 over and 2 up?
- How are  $(5, 1)$  and  $(1, 5)$  different?
- Where is a good place to put the next O?
- Work with a partner to finish the game.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. coordinate system		
2. $y$ -axis		
3. coordinate plane		
4. origin		
5. $x$ -axis		
6. ordered pair		
7. $x$ -coordinate		
8. $y$ -coordinate		
9. graph		
10. relation		
11. domain		
12. range		

# 1-7 Lesson Reading Guide

## Scatter Plots

### Get Ready for the Lesson

Read the introduction to Lesson 1-7 in your textbook. Write your answers below.

- a. What appears to be the trend in sales of movies on videocassette?
- b. Estimate the number of movies on videocassette sold for 2007.

### Read the Lesson

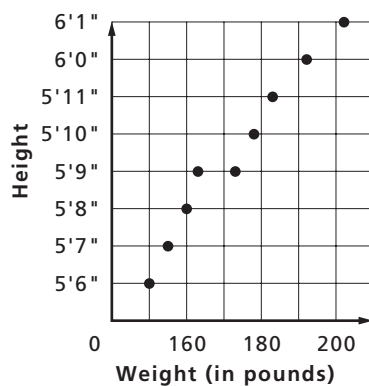
Write a definition and give an example of the new vocabulary term.

	Vocabulary	Definition	Example
1.	scatter plot		

### Remember What You Learned

2. Scatter plots are used to show relationships.
  - a. For a positive relationship, as  $x$  increases,  $y$  \_\_\_\_\_.
  - b. For a negative relationship, as  $x$  increases,  $y$  \_\_\_\_\_.
3. The scatter plot compares the weights and heights of the players on a high school football team.

**Heights of Football Players**



- a. What type of relationship exists, if any?
- b. Based on the scatter plot, predict the weight of a 5' 5" player who decided to join the team.

**2-1 Lesson Reading Guide*****Integers and Absolute Value*****Get Ready for the Lesson**

Read the introduction to Lesson 2-1 in your textbook. Write your answers below.

- What does a value of  $-3$  represent?
- Which city was farthest from its normal rainfall?
- How could you represent 5 inches above normal rainfall?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. negative number		
2. integers		
3. coordinate		
4. inequality		
5. absolute value		

**Remember What You Learned**

- Absolute* is a word that is used frequently in the English language.
  - Find the definition of *absolute* in a dictionary. Write the definition that most closely relates to mathematics.
  - Explain how the English definition can help you remember the meaning of *absolute value* in mathematics.



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

Read the introduction to Lesson 2-2 in your textbook. Write your answers below.

- a. What integer represents the total yardage on the two plays?
- b. Write an addition sentence that describes this situation.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. opposites		
2. additive inverse		

3. Draw a number line model that shows how to find the sum  $-4 + (-2)$ . Explain your model.

4. The sum of any number and its \_\_\_\_\_ is zero.

**Remember What You Learned**

5. Suppose that one of your classmates was absent the day you learned how to add integers.
  - a. Explain to your classmate how to add two integers with the same sign.
  - b. Explain to your classmate how to add two integers with different signs.

**2-3 Lesson Reading Guide*****Subtracting Integers*****Get Ready for the Lesson**

Read the introduction to Lesson 2-3 in your textbook. Write your answers below.

- a. What is  $6 - 8$ ?
  
- b. What direction do you move to indicate subtracting a positive integer?
  
- c. What addition sentence is also modeled by the number line on page XX?

**Read the Lesson**

1. To subtract an integer, add its \_\_\_\_\_ .
2. Draw a number line model that shows how to find the difference  $-4 - 2$ . Explain your model.
  
3. Can  $9 - (-3)$  be rewritten as  $9 + 3$ ? Explain.

**Remember What You Learned**

4. You have learned how to use addition to subtract both positive and negative integers. Write one example of each difference described below. Then show how to use addition to find the difference.
  - a. subtracting a positive integer from a positive integer
  
  - b. subtracting a positive integer from a negative integer
  
  - c. subtracting a negative integer from a positive integer
  
  - d. subtracting a negative integer from a negative integer

**2-4 Lesson Reading Guide*****Multiplying Integers*****Get Ready for the Lesson**

Read the introduction to Lesson 2-4 in your textbook. Write your answers below.

- a. Suppose the altitude is 4 kilometers. Write an expression to find the temperature change.
- b. Use the pattern in the table on page 100 to find  $4(-7)$ .

**Read the Lesson**

1. The product of two integers with \_\_\_\_\_ sign(s) is negative.
2. The product of two integers with \_\_\_\_\_ sign(s) is positive.
3. Draw a number line model that shows how to find the product  $4(-2)$ . Explain your model.
4. Show how to use a pattern to find  $(-5)(-1)$ .
5. You can use the \_\_\_\_\_ when you multiply more than two integers.

**Remember What You Learned**

6. In your own words, describe how to tell the sign of the product of two integers.

**2-5 Lesson Reading Guide*****Dividing Integers*****Get Ready for the Lesson**

Read the introduction to Lesson 2-5 in your textbook. Write your answers below.

- How many groups are there?
- What is the quotient of  $-12 \div (-4)$ ?
- What multiplication sentence is also shown on the number line?
- Draw a number line and find the quotient  $-10 \div (-2)$ .

**Read the Lesson**

Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. average (mean)		

- The quotient of two integers with \_\_\_\_\_ sign(s) is negative.
- The quotient of two integers with \_\_\_\_\_ sign(s) is positive.
- Draw a number line model that shows how to find the quotient  $-9 \div (-3)$ . Explain your model.

**Remember What You Learned**

- You have learned how to divide positive and negative integers. Write one example of each quotient described below. Then find the quotient.
  - dividing a positive integer by a negative integer
  - dividing a negative integer by a negative integer
  - dividing a negative integer by a positive integer

**2-6 Lesson Reading Guide*****The Coordinate System*****Get Ready for the Lesson**

Read the introduction to Lesson 2-6 in your textbook. Write your answers below.

- Latitude is measured north and south of the equator. What is the latitude of Dallas?
- Longitude is measured east and west of the prime meridian. What is the longitude of Dallas?
- What does the location  $32^{\circ}\text{N}$ ,  $96^{\circ}\text{W}$  mean?

**Read the Lesson**

Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. quadrants		

- A point graphed on the coordinate system has a(n) \_\_\_\_\_ and a(n) \_\_\_\_\_.
- In which quadrant does the point  $A(4, -2)$  lie?

**Remember What You Learned**

- Draw a coordinate grid with points to represent your classroom and where your classmates sit. Explain how to name the locations of your classmates.

**3-1 Lesson Reading Guide*****The Distributive Property*****Get Ready for the Lesson**

Read the introduction to Lesson 3-1 in your textbook. Write your answers below.

a. Draw a 2-by-5 and a 2-by-4 rectangle. Find the total area in two ways.

b. Draw a 4-by-4 and a 4-by-1 rectangle. Find the total area in two ways.

c. Draw any two rectangles that have the same width. Find the total area in two ways.

d. What did you notice about the total area in each case?

**Read the Lesson**

Write a definition and give an example of the new vocabulary term.

Vocabulary	Definition	Example
1. term expressions		

2. In rewriting  $3(x + 2)$ , which term is “distributed” to the other terms in the expression?

**Remember What You Learned**

3. *Distribute* is a word that is used frequently in the English language.

a. Find the definition of *distribute* in a dictionary. Write the definition.

b. Explain how the English definition can help you remember how the word *distributive* relates to mathematics.

**3-2 Lesson Reading Guide*****Simplifying Algebraic Expressions*****Get Ready for the Lesson**

Read the introduction to Lesson 3-2 in your textbook. Write your answers below.

a.  $3x + 2 + 4x + 3$

b.  $2x + 5 + x$

c.  $4x + 5 + 3$

d.  $x + 2x + 4x$

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. term		
2. coefficient		
3. like terms		
4. constant		
5. simplest form		
6. simplifying an expression		

7. Is  $2(r + 1)$  in simplest form? Explain.

**Remember What You Learned**

8. *Constant* is a word used in everyday English as well as in mathematics.

a. Find the definition of *constant* in a dictionary. Write the definition.

b. Explain how the English definition can help you remember how *constant* is used in mathematics.

**3-3 Lesson Reading Guide*****Solving Equations by Adding or Subtracting*****Get Ready for the Lesson**

Read the introduction to Lesson 3-3 in your textbook. Write your answers below.

- a. Without looking in the bag, how can you determine the number of blocks in the bag?
- b. Explain why your method works.

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. inverse operations		
2. equivalent equations		

3. Are  $x - 2 = 8$  and  $x = 6$  equivalent equations? Explain.

**Remember What You Learned**

4. How is adding 2 blocks to each side of a balanced scale like the Addition Property of Equality?



**3-4 Lesson Reading Guide*****Solving Equations by Multiplying or Dividing*****Get Ready for the Lesson**

Read the introduction to Lesson 3-4 in your textbook. Write your answers below.

- Suppose lunch in Mexico costs 77 pesos. Write an equation to find the cost in U.S. dollars.
- How can you find the cost in U.S. dollars?

**Read the Lesson**

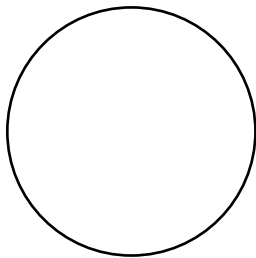
- How do you undo multiplication in an expression?
- What does the expression  $\frac{x}{2}$  mean?
- Explain how to find the value of  $x$  in the equation  $\frac{x}{4} = 3$ . How do you check your answer?

**Remember What You Learned**

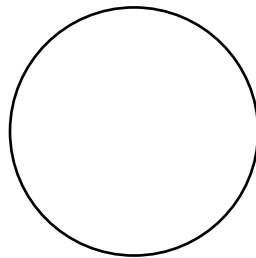
You have learned about four properties of equalities: Addition Property of Equality, Subtraction Property of Equality, Multiplication Property of Equality, and Division Property of Equality. In each circle, write three equations that can be solved by using the given property. Include at least one negative integer in each circle.

These equations can be solved by using the given property.

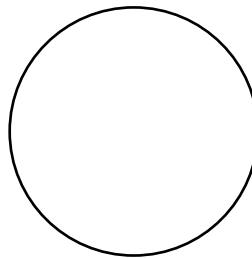
Addition  
Property



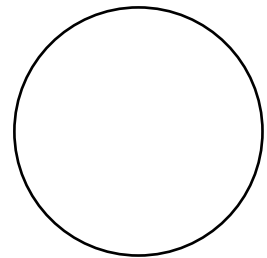
Subtraction  
Property



Multiplication  
Property



Division  
Property



**3-5**

**Lesson Reading Guide**

**Solving Two-Step Equations**

**Get Ready for the Lesson**

Read the introduction to Lesson 3-5 in your textbook. Write your answers below.

- What property is shown by removing a tile from each side?
- What property is shown by separating the tile into two groups?
- What is the solution of  $2x + 1 = 9$ ?

**Read the Lesson**

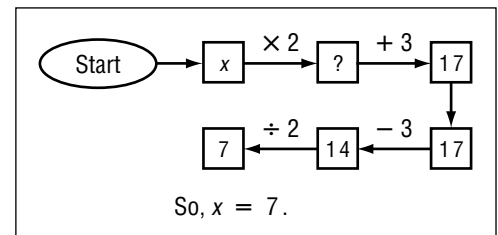
Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. two-step equation		

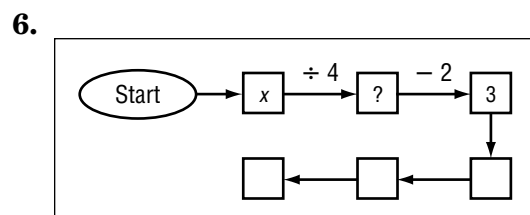
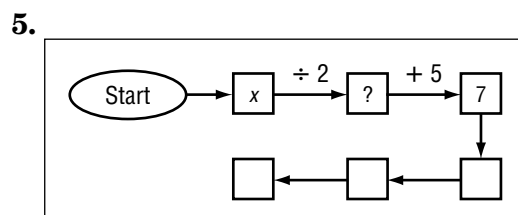
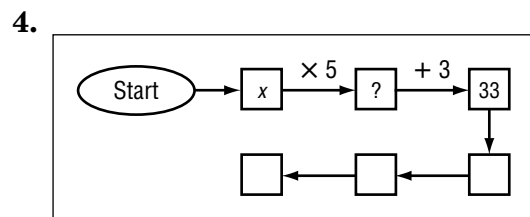
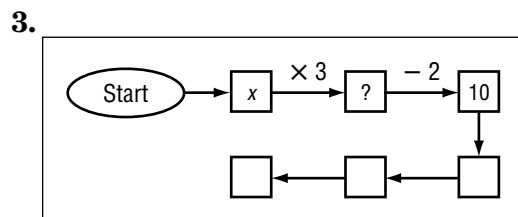
- To solve two-step equations, use \_\_\_\_\_ to undo each operation in reverse order.

**Remember What You Learned**

Suppose you start with a number  $x$ , multiply it by 2, add three, and the result is 17. The top row of boxes at the right represents the equation  $2x + 3 = 17$ . To solve the equation, you undo the operations in reverse order. This is shown in the bottom row of boxes.



Complete the bottom row of boxes in each figure. Then find the value of  $x$ .



# 3-6 Lesson Reading Guide

## Writing Two-Step Equations

### Get Ready for the Lesson

Read the introduction to Lesson 3-6 in your textbook. Write your answers below.

- Let  $m$  represent the number of miles walked. Write an expression that represents the amount Logan can raise when he walks  $m$  miles.
- Suppose Logan raised \$308. Write and solve an equation to find the number of miles Logan walked.
- Why is your equation considered to be a two-step equation?

### Read the Lesson

Refer to Example 3. Read the Explore and Plan steps. Then complete the following.

- Suppose you have already saved \$75 and plan to save \$5 a week.
  - Complete the table below.
- Suppose you have already saved \$25 and plan to save \$10 each week.
  - Complete the table below.

Week	Amount Saved (\$)
0	$5(0) + \underline{\quad} = \underline{\quad}$
1	$5(1) + \underline{\quad} = \underline{\quad}$
2	$5(2) + \underline{\quad} = \underline{\quad}$
3	$5(3) + \underline{\quad} = \underline{\quad}$
$n$	$5(n) + \underline{\quad} = \underline{\quad}$

- Write an equation that represents how many weeks it will take you to save \$100.

Week	Amount Saved (\$)
0	
1	
2	
3	
$n$	

- Write an equation that represents how many weeks it will take you to save \$175.

# 3-7 Lesson Reading Guide

## *Sequences and Equations*

### Get Ready for the Lesson

Read the introduction to Lesson 3-7 in your textbook. Write your answers below.

- What is the braking distance for a car going 70 mph?
- What is the difference in reaction distances for every 10-mph increase in speed?
- Describe the braking distance as speed increases.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. sequence		
2. arithmetic sequence		
3. term		
4. common difference		

5. What is the common difference in the sequence 8, 17, 26, 35, . . . ?

### Remember What You Learned

- Sequence* is a word that is used in everyday English.
  - Find the definition of *sequence* in a dictionary. Write the definition.
  - Explain how the English definition can help you remember how *sequence* is used in mathematics.

# 3-8 Lesson Reading Guide

## Using Formulas

### Get Ready for the Lesson

Read the introduction to Lesson 3-8 in your textbook. Write your answers below.

- Write an expression for the distance traveled by a duck in  $t$  hours.
- What disadvantage is there in showing the data in a table?
- Describe an easier way to summarize the relationship between the speed, time, and distance.

### Read the Lesson

Write a definition and give an example of each new vocabulary word.

Vocabulary	Definition	Example
1. formula		
2. perimeter		
3. area		

### Remember What You Learned

- The word *perimeter* is composed of the prefix *peri-* and the suffix *-meter*.
  - Find the definitions of *peri-* and *-meter* in a dictionary. Write their definitions.
  - Find two other words in a dictionary that begin with the prefix *peri-*. Write their definitions.
  - Explain how your definitions can help you remember how perimeter is used in mathematics.

**4-1 Lesson Reading Guide*****Powers and Exponents*****Get Ready for the Lesson**

Read the introduction to Lesson 4-1 in your textbook. Write your answers below.

- Write 16 as a product of factors of 2. How many factors are there?
- How many factors of 2 form the product 128?
- One megabyte is 1024 kilobytes. How many factors of 2 form the product 1024?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. base		
2. exponent		
3. power		
4. standard form		
5. expanded form		

**6. Write each expression using exponents.**

a.  $4 \cdot 4 \cdot 4 \cdot 4$

b.  $x \cdot x \cdot x \cdot y \cdot y$

c.  $(-2)(-2)(-2)$

d.  $5 \cdot r \cdot r \cdot m \cdot m \cdot m$

7. The number  $(3 \times 10^3) + (5 \times 10^2) + (0 \times 10^1) + (2 \times 10^0)$  is written in \_\_\_\_\_ form, while 3502 is written in \_\_\_\_\_ form.

**Remember What You Learned**

8. Explain how the terms *base*, *power*, and *exponent* are related. Provide an example.

## 4-2 Lesson Reading Guide

### *Prime Factorization*

#### Get Ready for the Lesson

Read the introduction to Lesson 4-2 in your textbook. Write your answers below.

- Use grid paper to draw as many different rectangular arrangements of 2, 3, 4, 5, 6, 7, 8, and 9 squares as possible.
- Which numbers of squares can be arranged in more than one way?
- Which numbers of squares can only be arranged one way?
- What do all rectangles that you listed in part **c** have in common? Explain.

#### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. composite number		
2. factor		
3. factor tree		
4. prime factorization		
5. prime number		

#### Remember What You Learned

- Composite* is a word used in everyday English.
  - Find the definition of *composite* in the dictionary. Write the definition.
  - Explain how the English definition can help you remember how composite is used in mathematics.

**4-3 Lesson Reading Guide*****Greatest Common Factor (GCF)*****Get Ready for the Lesson**

Read the introduction to Lesson 4-3 in your textbook. Write your answers below.

- a. Which numbers are in both circles?
- b. Find the product of the numbers that are in both circles.
- c. Is the product also a factor of 12 and 20?
- d. Make a Venn diagram showing the prime factors of 16 and 28. Then use it to find the common factors of the numbers.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. Venn diagram		
2. greatest common factor		

**Remember What You Learned**

3. Summarize in your own words how to find the greatest common factor of two numbers using each method.
  - a. prime factorization
  - b. lists of factors
  - c. a Venn diagram



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

Read the introduction to Lesson 4-4 in your textbook. Write your answers below.

- a. Are the three fractions equivalent? Explain your reasoning.
  
- b. Which figure is divided into the least number of parts?
  
- c. Which fraction would you say is written in simplest form? Why?

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. simplest form		
2. algebraic fraction		

3. Use a Venn diagram to explain how to simplify  $\frac{18}{45}$ .

**Remember What You Learned**

4. Explain the similarities and differences between simplifying a numerical fraction and simplifying an algebraic fraction.

**4-5 Lesson Reading Guide*****Multiplying and Dividing Monomials*****Get Ready for the Lesson**

Read the introduction to Lesson 4-5 in your textbook. Write your answers below.

- a. Examine the exponents of the factors and the exponents of the products in the last column. What do you observe?
  
- b. **Make a conjecture** about a rule for determining the exponent of the product when you multiply powers with the same base. Test your rule by multiplying  $2^3 \cdot 2^4$  using a calculator.

**Read the Lesson**

1. When multiplying powers with like bases, \_\_\_\_\_ the exponents.
2. When dividing powers with like bases, \_\_\_\_\_ the exponents.
3. Write a division expression whose quotient is  $7^2$ .
4. Write a multiplication expression whose product is  $v^5$ .
5. Find each product.

a.  $4 \cdot 4^3$

b.  $y^7 \cdot y^5$

c.  $(-2x^2)(5x^2)$

d.  $-3r^2 \cdot r$

6. Find each quotient.

a.  $\frac{7^4}{7^2}$

b.  $\frac{v^9}{v^3}$

c.  $\frac{6^7}{6^6}$

d.  $\frac{a^2b^2}{b^2}$

**Remember What You Learned**

7. Explain how dividing powers is related to simplifying fractions. Provide an example as part of your explanation.

# 4-6 Lesson Reading Guide

## Negative Exponents

### Get Ready for the Lesson

Read the introduction to Lesson 4-6 in your textbook. Write your answers below.

- a. Describe the pattern of powers in the first column. Continue the pattern by writing the next two powers in the table.
- b. Describe the pattern of values in the second column. Then complete the second column.
- c. Verify that the powers you wrote in part **a** are equal to the values that you found in part **b**.
- d. Determine how  $3^{-1}$  should be defined.
  1. Explain the value of  $5^{-3}$  using a pattern.

### Read the Lesson

Power	Value
$5^1$	5
$5^0$	1
$5^{-1}$	$\frac{1}{5}$
$5^{-2}$	$\frac{1}{25}$
$5^{-3}$	

2. Using what you know about the Quotient of

Powers rule, fill in the missing number.

$$5^{-3} = \frac{?}{5^5}$$

### Remember What You Learned

3. Are  $-x^2$  and  $x^{-2}$  equivalent? Explain.

**4-7 Lesson Reading Guide*****Scientific Notation*****Get Ready for the Lesson**

Read the introduction to Lesson 4-7 in your textbook. Write your answers below.

- a. Write the track length in millimeters.
- b. Write the track width in millimeters. (1 micron = 0.001 millimeter)

**Read the Lesson**

Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. scientific notation		
2. standard form		

3. To multiply by a power of 10, move the decimal point to the \_\_\_\_\_ if the exponent is positive.
4. Which is larger,  $-2.1 \times 10^4$  or  $-2.1 \times 10^{-4}$ ? Explain.

**Remember What You Learned**

5. Explain how to express each number in scientific notation.
  - a. a number greater than 1
  - b. a number less than one
  - c. the number 1

**5-1 Lesson Reading Guide*****Writing Fractions as Decimals*****Get Ready for the Lesson**

Read the introduction to Lesson 5-1 in your textbook. Write your answers below.

- A half dollar contained half the silver of a silver dollar. What was it worth?
- Write the decimal value of each coin in the table.
- Order the fractions in the table from least to greatest.  
(*Hint:* Use the values of the coins.)

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. terminating decimal		
2. mixed number		
3. repeating decimal		
4. bar notation		
5. period		

**Remember What You Learned**

- Describe in your own words how to determine whether a fraction is written as a terminating or a repeating decimal.

## 5-2 Lesson Reading Guide

### *Rational Numbers*

#### Get Ready for the Lesson

Read the introduction to Lesson 5-2 in your textbook. Write your answers below.

- Is 7 a whole number? an integer?
- How do you know that 7 is also a rational number?
- Is every whole number a rational number? Is every rational number a whole number? Give an explanation or a counterexample to support your answers.

#### Read the Lesson

Write a definition and give an example of the new vocabulary term.

	Vocabulary	Definition	Example
1.	rational number		

- \_\_\_\_\_ decimals can be written as fractions with a denominator of 10, 100, 1000, and so on.
- A number such as  $\pi$  is called \_\_\_\_\_ because it cannot be written as a fraction.
- Is  $-3$  a rational number? Explain.

#### Remember What You Learned

- Irrational* is a word that is used in everyday English.
  - Find the definition of *irrational* in the dictionary. Write the definition.
  - Explain how the English definition can help you remember how irrational and rational are used in mathematics.

**5-3 Lesson Reading Guide*****Multiplying Rational Numbers*****Get Ready for the Lesson**

Read the introduction to Lesson 5-3 in your textbook. Write your answers below.

- a. The overlapping area represents the product of  $\frac{2}{3}$  and  $\frac{3}{4}$ . What is the product?

Use an area model to find each product.

b.  $\frac{1}{2} \cdot \frac{1}{3}$

c.  $\frac{3}{5} \cdot \frac{1}{4}$

d.  $\frac{3}{4} \cdot \frac{1}{3}$

- e. What is the relationship between the numerators and denominators of the factors and the numerator and denominator of the product?

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. algebraic fraction		
2. dimensional analysis		

3. Draw a model that shows  $\frac{2}{5} \cdot \frac{3}{4}$ .

**Remember What You Learned**

4. Compare the process of multiplying numerical fractions and algebraic fractions.

**5-4 Lesson Reading Guide*****Dividing Rational Numbers*****Get Ready for the Lesson**

Read the introduction to Lesson 5-4 in your textbook. Write your answers below. Use a model to find each quotient. Then write a related multiplication problem.

a.  $2 \div \frac{1}{3}$

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

c.  $3 \div \frac{1}{4}$

d. Make a conjecture about how dividing by a fraction is related to multiplying.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. multiplicative inverses		
2. reciprocals		

**Remember What You Learned**

3. Explain in your own words how to relate dividing rational numbers to multiplication. Give an example.



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

Read the introduction to Lesson 5-5 in your textbook. Write your answers below. Use a ruler to find each measure.

a.  $\frac{1}{8}$  in. +  $\frac{3}{8}$  in.

b.  $\frac{3}{8}$  in. +  $\frac{4}{8}$  in.

c.  $\frac{4}{8}$  in. +  $\frac{4}{8}$  in.

d.  $\frac{6}{8}$  in. -  $\frac{3}{8}$  in.

**Read the Lesson**

1. Like fractions have like \_\_\_\_\_.
2. Find two fractions whose sum is  $\frac{7}{8}$ .
3. Find two fractions whose difference is  $\frac{2}{7}$ .
4. To add or subtract like fractions, you \_\_\_\_\_ the numerators and keep the \_\_\_\_\_ the same.
5. Explain how to use a ruler to add  $\frac{3}{8} + \frac{7}{8}$ .

**Remember What You Learned**

6. Sketch a model to show each sum or difference.

a.  $\frac{3}{10} + \frac{6}{10}$

b.  $\frac{6}{7} - \frac{3}{7}$

# 5-6 Lesson Reading Guide

## Least Common Multiple

### Get Ready for the Lesson

Read the introduction to Lesson 5-6 in your textbook. Write your answers below.

- List the next three years in which the voter can vote for a president.
- List the next three years in which the voter can vote for a senator.
- What will be the next year in which the voter has a chance to vote for both a president and a senator?

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. multiple		
2. common multiples		
3. least common multiple (LCM)		
4. least common denominator (LCD)		

- Find two numbers whose LCM is 24.
- Find two fractions whose LCD is  $2a$ .
- Explain what happens if a common multiple is used to find a common denominator, but the multiple is not the LCM.

### Remember What You Learned

- Use a Venn diagram to show multiples of 3 and multiples of 4. Explain how to use the diagram to find common multiples and the LCM.

**5-7 Lesson Reading Guide*****Adding and Subtracting Unlike Fractions*****Get Ready for the Lesson**

Read the introduction to Lesson 5-7 in your textbook. Write your answers below.

- a. What is the LCM of the denominators?
- b. If you partition the model into six parts, what fraction of the model is shaded?
- c. How many parts are  $\frac{1}{2}$ ?  $\frac{1}{3}$ ?
- d. Describe a model that you could use to add  $\frac{1}{3}$  and  $\frac{1}{4}$ . Then use it to find the sum.

**Read the Lesson**

1. Fractions with different denominators are called \_\_\_\_\_.
2. To add unlike fractions, you must first find a(n) \_\_\_\_\_.
3. Name a common denominator of  $\frac{3}{5}$  and  $\frac{9}{12}$ .
4. To subtract unlike fractions, you must first find a(n) \_\_\_\_\_.
5. Monique rewrote  $\frac{6}{4} - \frac{1}{3}$  as  $\frac{36}{24} - \frac{8}{24}$ . Is she correct? Explain.

**Remember What You Learned**

6. Describe two methods that can be used to add  $1\frac{1}{2} + 3\frac{2}{3}$ . Then find the sum.

**5-8**

**Lesson Reading Guide**

***Solving Equations With Rational Numbers***

**Get Ready for the Lesson**

Read the introduction to Lesson 5-8 in your textbook. Write your answers below.

- a. A guitar string vibrates 440 times per second to produce the A above middle C. Write an equation to find the number of vibrations per second to produce middle C. If you multiply each side by 3, what is the result?
  
- b. How would you solve the second equation you wrote in part a?
  
- c. How can you combine the steps in parts a and b into one step?
  
- d. How many vibrations per second are needed to produce middle C?

**Read the Lesson**

- 1. Dividing by a fraction is the same as multiplying by the \_\_\_\_\_.
- 2. Write the first step in solving each equation.

a.  $y - 1.1 = 6.8$

b.  $6 + x = -9$

c.  $\frac{c}{6} = \frac{1}{2}$

d.  $-\frac{2}{3}p = -\frac{2}{3}$

**Remember What You Learned**

- 3. You learned to solve equations. Addition equations are solved using subtraction; subtraction equations are solved using addition; multiplication equations are solved using division; division equations are solved using multiplication. In the table below, write three equations that can be solved using the given operations. Be sure to use a variety of rational numbers.

Addition	Subtraction	Multiplication	Division
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

**5-9**

**Lesson Reading Guide**

*Measures of Central Tendency*

**Get Ready for the Lesson**

Read the introduction to Lesson 5-9 in your textbook. Write your answers below.

- a. Which number appears most often?
- b. If you list the data in order from least to greatest, which number is in the middle?
- c. What is the sum of all the numbers divided by 28? If necessary, round to the nearest tenth.
- d. If you had to give one number that best represents the winning times, which would you choose? Explain.

**Read the Lesson**

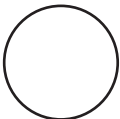
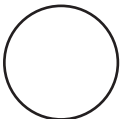
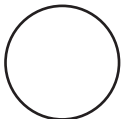
Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. measures of central tendency		
2. mean		
3. median		
4. mode		

- 5. How do you find the median if the data have an even number of items?
- 6. Describe a situation in which no mode exists.
- 7. An extreme value will affect which measure of central tendency the most?

**Remember What You Learned**

- 8. You have learned about mean, median, and mode. In each circle, write three numbers that satisfy the given information.

mean = 5	median = 5	mode = 5
		

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**Lesson 5-9**

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

Read the introduction to Lesson 6-1 in your textbook. Write your answers below.

- a. The coach can't remember how many hits Letisha has, but he knows she has the same batting average as Maureen. How many hits does Letisha have? (*Hint:* Write the fraction  $\frac{\text{hits}}{\text{at bats}}$ .)
- b. The coach plans to play Marisol in the next game. If she gets 3 at-bats, how many hits does she need to have so that she has the same batting average as Maureen and Letisha?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. ratio		
2. rate		
3. unit rate		

4. What is the difference between a ratio that compares measurements and a rate?

**Remember What You Learned**

5. The word *rate* is part of the term *unit rate*. Explain how a rate can be written as a unit rate.

**6-2 Lesson Reading Guide*****Proportional and Nonproportional Relationships*****Get Ready for the Lesson**

Read the introduction to Lesson 6-2 in your textbook. Write your answers below.

- a. For each minute, write a rate in simplest form that compares the number of laps completed by Tom to the time.
  
- b. Repeat for Jane's times.
  
- c. What pattern(s) do you notice?

**Read the Lesson**

Complete the following table.

Vocabulary	Definition
1. proportional	
2. nonproportional	
3. constant of proportionality	

4. Equations of the form  $y = kx$  can be used to describe \_\_\_\_\_ relationships. In this equation,  $k$  is a \_\_\_\_\_ ratio.
5. A constant of proportionality is also called a \_\_\_\_\_.

**Remember What You Learned**

7. **PERSONAL EXAMPLES** All relationships can be classified as either proportional or nonproportional. Think of 6 examples of numerical relationships that you use on a daily basis. Classify each relationship as proportional or nonproportional.

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

Read the introduction to Lesson 6-3 in your textbook. Write your answers below.

- a. For each of the first four ingredients, write a ratio that compares the number of ounces of each ingredient to the number of ounces of water.
  
- b. Double the recipe. (*Hint:* Multiply each number of ounces by 2.) Then write a ratio for the ounces of each of the first four ingredients to the ounces of water as a fraction in simplest form.
  
- c. Are the ratios in parts **a** and **b** the same? Why or why not?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. proportion		
2. cross products		

3. Do  $\frac{3}{5}$  and  $\frac{12}{20}$  form a proportion? Explain.
4. Write a ratio that forms a proportion with  $\frac{3}{4}$ .

**Remember What You Learned**

5. *Proportion* is a common word in the English language.
  - a. Write its definition.
  - b. How does this definition relate to the one given on page 270 of your textbook?
  - c. Explain how cross products are used to solve a proportion.



**6-4 Lesson Reading Guide*****Scale Drawings and Models*****Get Ready for the Lesson**

Read the introduction to Lesson 6-4 in your textbook. Write your answers below.

- a. Suppose the landscape plans are drawn on graph paper and the side of each square on the paper represents 2 feet. What is the actual width of a rose garden if its width on the drawing is 4 squares long?
- b. All maps have a scale. How can the scale help you estimate the distance between cities?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. scale drawing		
2. scale model		
3. scale		
4. scale factor		

**Remember What You Learned**

5. How is a scale different from a scale factor?

# 6-5 Lesson Reading Guide

## Fractions, Decimals, and Percents

### Get Ready for the Lesson

Read the introduction to Lesson 6-5 in your textbook. Write your answers below.

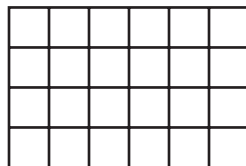
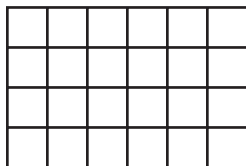
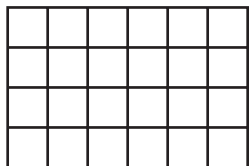
- Write a ratio that compares the shaded region of each figure to its total region as a fraction in simplest form.
- Rewrite each fraction using a denominator of 100.
- Which figure has the greatest part of its area shaded?
- Was it easier to compare the fractions in part **a** or part **b**? Explain.

### Read the Lesson

Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. percent		

- Shade 50% of each grid below, using three different ways. Be creative.



### Remember What You Learned

- Percents can be expressed as fractions or decimals and vice versa. Fill in each box below with an example of the process described.

% → **fraction**

% → **decimal**

**fraction** → %

**decimal** → %

# 6-6 Lesson Reading Guide

## Using the Percent Proportion

### Get Ready for the Lesson

Read the introduction to Lesson 6-6 in your textbook. Write your answers below.

- Write a ratio that compares the amount of copper to the total amount of metal in the outer layer.
- Write the ratio as a fraction and as a percent.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. percent proportion		
2. part		
3. base		

- In a percent proportion, the percent is always written as a fraction whose denominator is \_\_\_\_\_ .
- What can percent proportions be used to do?

### Helping You Remember

- Fill in the blanks to identify the base, the part, and the percent in the following percent proportion.

$$\frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}} \frac{13}{20} = \frac{65}{100} \underline{\hspace{1cm}}$$

What letter do both numerators begin with?

**6-7 Lesson Reading Guide*****Finding Percents Mentally*****Get Ready for the Lesson**

Read the introduction to Lesson 6-7 in your textbook. Write your answers below.

- What is the sale price of each item?
- What percent represents half off?
- Suppose the items were on sale for 25% off. Explain how you would determine the sale price.

**Read the Lesson**

- Give an example of a real-life situation in which you can estimate with percents.
- When can you find the percent of a number mentally?

**Remember What You Learned**

- Name the three methods that can be used to estimate with percents. Give an example of each.

Method	Example

# 6-8 Lesson Reading Guide

## Using Percent Equations

### Get Ready for the Lesson

Read the introduction to Lesson 6-8 in your textbook. Write your answers below.

- Use the percent proportion to find the amount of tax on a \$35 purchase for each state.
- Express each tax rate as a decimal.
- Multiply the decimal form of the tax rate by \$35 to find the amount of tax on the \$35 purchase for each state.
- How are the amounts of tax in parts **a** and **c** related?

### Read the Lesson

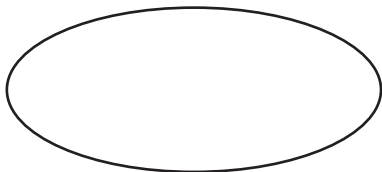
Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. percent equation		
2. discount		
3. simple interest		

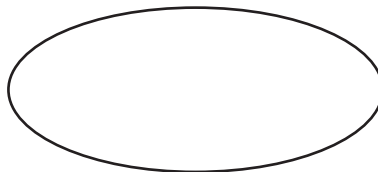
### Remember What You Learned

- The label above each oval represents what is missing from a percent equation. In each oval, write and solve a percent equation to find that missing information.

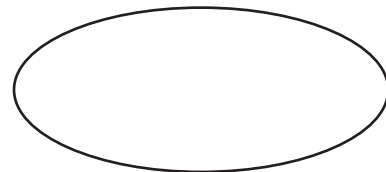
Missing Base



Missing Part



Missing Percent



**6-9 Lesson Reading Guide*****Percent of Change*****Get Ready for the Lesson**

Read the introduction to Lesson 6-9 in your textbook. Write your answers below.

Draw each pair of rectangles. Then compare the rectangles. Express the increase in area as a fraction and as a percent.

- a. X: 2 units by 3 units  
Y: 2 units by 4 units
- b. G: 2 units by 5 units  
H: 2 units by 6 units
- c. J: 2 units by 4 units  
K: 2 units by 5 units
- d. P: 2 units by 6 units  
Q: 2 units by 7 units
- e. For each pair of rectangles, the change in area is 2 square units. Explain why the percent of change is different.

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. percent of change		
2. percent of increase		
3. percent of decrease		

**Remember What You Learned**

4. For a percent of increase, is the percent of change always positive or negative? Why?
5. For a percent of decrease, is the percent of change always positive or negative? Why?

**6-10 Lesson Reading Guide*****Using Sampling to Predict*****Get Ready for the Lesson**

Read the introduction to Lesson 6-10 in your textbook. Write your answers below.

- a. About how many students would vote for the Huskies if the entire student body of 1600 voted? About how many would vote for the Knights?
- b. Suppose the students surveyed were in the Spanish club. Do you think the results of the survey would fairly represent the student body? Explain.
- c. How could you survey a part of the student population that would fairly represent all students? Give two examples.

**Read the Lesson**

Complete the following table.

Vocabulary	Definition
1. sample	
2. population	

3. In a \_\_\_\_\_ random sample each item or person in a population is as likely to be chosen as any other.
4. The items or people are selected according to a specific time or time interval in a \_\_\_\_\_ random sample.
5. A \_\_\_\_\_ sample involves only those who want to participate in the sampling.
6. A \_\_\_\_\_ sample includes members of the population that are easily accessed.
7. A sample in which the population is divided into similar, non-overlapping groups is a \_\_\_\_\_ random sample.

**Remember What You Learned**

8. Now that you understand the different types of sample, how would you classify the two examples that you gave in part c of the Get Ready for the Lesson section?

# 7-1

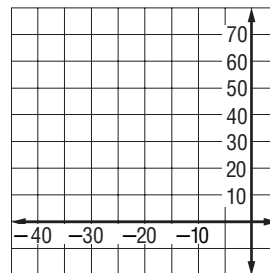
## Lesson Reading Guide

### Functions

#### Get Ready for the Lesson

Read the introduction to Lesson 7-1 in your textbook. Write your answers below.

- On grid paper, graph the depths and times as ordered pairs (depth, time).
- Describe the relationship between the two sets of numbers.
- If a scuba diver is at a depth  $-45$  feet, which is the best estimate for the amount of time she should take to ascend? Explain.



Lesson 7-1

#### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. function		
2. vertical line test		

- For a relation to be a function, each element in the \_\_\_\_\_ must have only one corresponding element in the \_\_\_\_\_.
- Explain what is meant by the phrase “distance is a function of time.”

#### Remember What You Learned

- You have learned various ways to determine whether a relation is a function. Choose which method is the easiest for you to use, then write a few sentences explaining how that method relates to the other methods.



# 7-2

## Lesson Reading Guide

### Representing Linear Functions

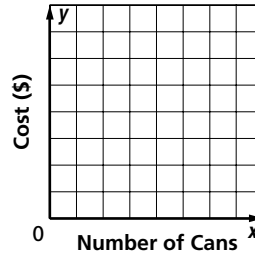
#### Get Ready for the Lesson

Read the introduction to Lesson 7-2 in your textbook. Write your answers below.

- a. Complete the table to find the cost of 2, 3, and 4 cans of peaches.

Number of Cans ( $x$ )	$1.50x$	Cost ( $y$ )
1	$1.50(1)$	1.50
2		
3		
4		

- b. On grid paper, graph the ordered pairs (number, cost). Then draw a line through the points.



- c. Write an equation representing the relationship between number of cans  $x$  and cost  $y$ .

#### Read the Lesson

Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. linear equation		

2. Determine whether each equation below is linear or nonlinear and explain why.

a.  $y = x + 1$

b.  $y = x^2 + 1$

c.  $xy = 4$

3. Solutions of a linear equation are \_\_\_\_\_ that make the equation true.

#### Remember What You Learned

4. Work with one of your classmates translating linear equations into English. First, each of you should write a linear equation. Then trade equations and take turns reading the equations in everyday words. Second, each of you should describe a line in terms of its  $x$  and  $y$  values. Trade sentences and translate them into linear equations.

**7-3 Lesson Reading Guide*****Rate of Change*****Get Ready for the Lesson**

Read the introduction to Lesson 7-3 in your textbook. Write your answers below.

- Between which two consecutive points did the vertical position of the airplane increase the most? decrease the most? How do you know?
- What is happening to the airplane between points *A* and *B*?
- Find the ratio of the vertical change to the horizontal change for each section of the graph. Which section is the steepest?

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. rate of change		

**Complete each sentence.**

- Positive rates of change correspond to an \_\_\_\_\_ in the *y*-value between two data points.
- Negative rates of change correspond to a \_\_\_\_\_ in the *y*-value between two data points.

**Remember What You Learned**

- The word *ratio* comes from the Latin word meaning rate and can also mean proportion or relation. Explain how a rate of change is a ratio.

**7-4 Lesson Reading Guide*****Constant Rate of Change and Direct Variation*****Getting Ready for the Lesson**

Read the introduction to Lesson 7-4 in your textbook. Write your answers below.

- Choose any two points on the graph and find the rate of change.
- Repeat Part a with a different pair of points. What is the rate of change?
- Make a conjecture about the rate of change between any two points on the line.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. linear relationship		
2. constant rate of change		
3. direct variation		
4. constant of variation		

- The rate of change between any two data points in a linear relationship is \_\_\_\_\_.
- If the ratio of each y-value compared to the corresponding x-value is the same in a linear relationship, then the linear relationship is \_\_\_\_\_.

**Remember What You Learned**

- All directly proportional relationships are linear, but not all linear relationships are proportional. Give an example of a linear relationship that has a constant rate of change but is not proportional.

# 7-5

## Lesson Reading Guide

### Slope

#### Get Ready for the Lesson

Read the introduction to Lesson 7-5 in your textbook. Write your answers below.

- Use the roller coaster to write the ratio  $\frac{\text{height}}{\text{length}}$  in simplest form.
- Find the ratio of a hill that has the same length but is 14 feet higher than the hill on page 384. Is this hill steeper or less steep than the original?

#### Read the Lesson

Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. slope		

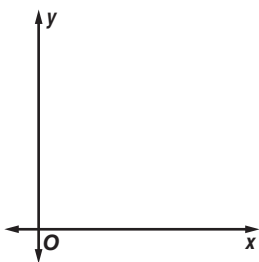
Complete each sentence.

- Slope is \_\_\_\_\_ for any two points on the line.
- A line that slopes downward from left to right has a \_\_\_\_\_ slope.
- A line that slopes upward from left to right has a \_\_\_\_\_ slope.
- A horizontal line has a \_\_\_\_\_ slope.
- The slope of a vertical line is \_\_\_\_\_.

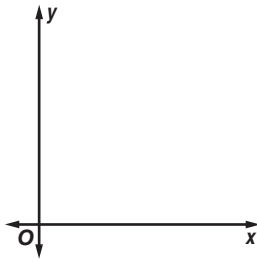
#### Remember What You Learned

7. For each graph, draw a line with the given slope.

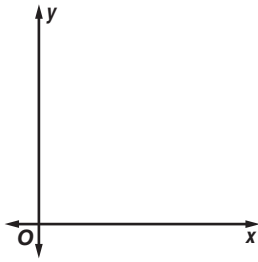
a. Positive



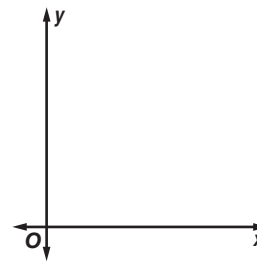
b. Negative



c. Zero



d. Undefined



# 7-6

## Lesson Reading Guide

### Slope-Intercept Form

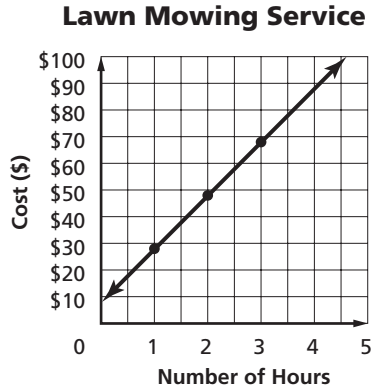
#### Get Ready for the Lesson

Read the introduction to Lesson 7-6 in your textbook. Write your answers below.

- a. Copy and complete the table to find the total cost of mowing the lawn.

Number Hours, $x$	Total Cost, $y$
1	
2	
3	

- b. Use the table to graph the equation. In which quadrant does the graph lie? Explain.



- c. Find the  $y$ -intercept and the slope of the line. How are they related to the equation?

#### Read the Lesson

Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. slope-intercept form		

- Sometimes you must solve an equation for \_\_\_\_\_ before you can write the equation in slope-intercept form.
- Explain why  $y = mx + b$  is called the slope-intercept form.

#### Remember What You Learned

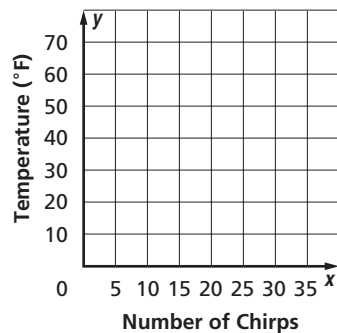
- Mathematicians debate the origin of the slope-intercept form of a line, particularly the use of  $m$  to represent slope. Make up a mnemonic phrase to help you remember the slope-intercept form.

**7-7 Lesson Reading Guide****Writing Linear Functions****Get Ready for the Lesson**

Read the introduction to Lesson 7-7 in your textbook. Write your answers below.

- a. Graph the ordered pairs (chirps, temperature).  
Draw a line through the points.

- b. Find the slope and the  $y$ -intercept of the line.  
What do these values represent?



- c. Write an equation in the form  $y = mx + b$  for the line then translate the equation into a sentence.

**Read the Lesson**

Explain how to write the slope-intercept form of a line from each of the following.

- graph of a line
- two points on a line
- a table of values

**Remember What You Learned**

4. Assume you can identify two points either from a graph or from a table. What information can you always find?

# 7-8

## Lesson Reading Guide

### Prediction Equations

#### Get Ready for the Lesson

Read the introduction to Lesson 7-8 in your textbook. Write your answers below.

- a. Use the line drawn through the points to predict the life expectancy of a person born in 2020.
- b. What are some limitations in using a line to predict life expectancy?

#### Read the Lesson

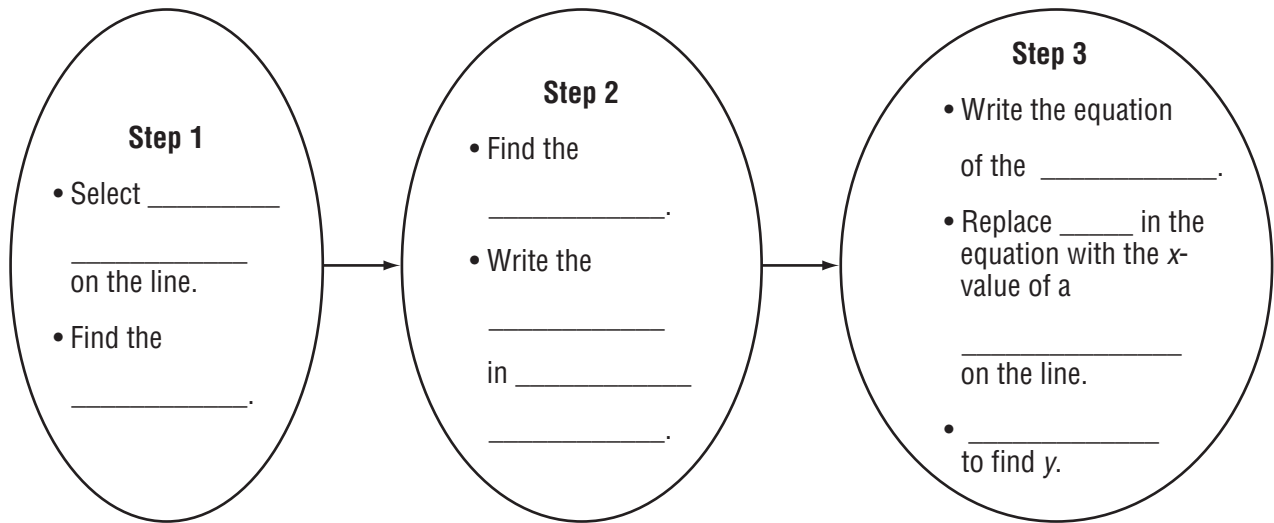
Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. best-fit line		

- 2. A best-fit line can be used when the data points approximate a \_\_\_\_\_ relationship.
- 3. Explain what a prediction equation is.

#### Remember What You Learned

- 4. Complete the following concept map showing the steps needed to find a prediction equation and make a prediction.



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**8-1 Lesson Reading Guide*****Solving Equations with Variables on Each Side*****Get Ready for the Lesson**

Read the introduction to Lesson 8-1 in your textbook. Write your answers below.

- a. The two sides balance. Without looking in a bag, how can you determine the number of blocks in each bag?
- b. Explain why your method works.
- c. Suppose  $x$  represents the number of blocks in the bag. Write an equation that is modeled by the balance.
- d. Explain how you could solve the equation.

**Read the Lesson**

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

1.  $2x + 4 = 4x - 8$

2.  $2x - 2x + 4 = 4x - 2x - 8$

3.  $4 = 2x - 8$

4.  $4 + 8 = 2x - 8 + 8$

5.  $12 = 2x$

6.  $\frac{12}{2} = \frac{2x}{2}$

7.  $6 = x$

**Remember What You Learned**

8. Write out an equation like that shown above ( $2x + 4 = 4x - 8$ ), along with all the steps needed to solve the equation. Exchange equations with a partner. Then each of you should explain verbally why each step in solving the equation was carried out, for example, “ $2x$  was subtracted from each side to eliminate the variable on the left side.”



**8-2 Lesson Reading Guide****Solving Equations with Grouping Symbols****Get Ready for the Lesson**

Read the introduction to Lesson 8-2 in your textbook. Write your answers below.

- What does  $t$  represent?
- Why is Maria's time shown as  $t - 1$ ?
- Write an equation that represents the time when Maria catches up to Josh.  
(*Hint:* They will have traveled the same distance.)

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. null or empty set		
2. identity		

- If an equation results in a sentence that is never true, the solution set is \_\_\_\_\_.
- When an equation results in an identity, the solution set is \_\_\_\_\_.
- To solve an equation containing grouping symbols, you must first use the \_\_\_\_\_.
- For a rectangle, two times the length plus two times the width equals the \_\_\_\_\_.

**Remember What You Learned**

- Explain in a paragraph why solving a geometry problem, like that in Example 2 in your text, requires the use of the Distributive Property. You may wish to sketch a figure and assign values to the sides to aid your explanation.

**8-3**

**Lesson Reading Guide**

*Inequalities*

**Get Ready for the Lesson**

Read the introduction to Lesson 8-3 in your textbook. Write your answers below.

- a. Name three ages of children who can eat free at the restaurant. Does a child who is 6 years old eat free?
- b. Name three heights of children who can ride the ride at the amusement park. Can a child who is 40 inches tall ride?
- c. Name three speeds that are legal. Is a driver who is traveling at 35 mph driving at a legal speed?

**Read the Lesson**

Write a definition and give an example of the new vocabulary word.

	Vocabulary	Definition	Example
1.	inequality		

For each of the following phrases, write in the blank the corresponding inequality symbol. Use  $<$ ,  $>$ ,  $\leq$ , or  $\geq$ .

- 2. is greater than
- 3. is less than or equal to
- 4. is at least
- 5. is no less than
- 6. exceeds
- 7. is less than
- 8. is more than
- 9. is at most

**Remember What You Learned**

- 10. The word *inequality* is composed of the prefix *in-* and the base word *equality*.
  - a. Find the definitions of *in-* and *equality* in a dictionary. Write their definitions.
  - b. Explain how the definitions can help you remember how *inequality* is used in mathematics.

**8-4 Lesson Reading Guide*****Solving Inequalities by Adding or Subtracting*****Get Ready for the Lesson**

Read the introduction to Lesson 8-4 in your textbook. Write your answers below.

- a. How many blocks would be in the bag if the left side balanced the right side? (Assume that the paper bag weighs nothing.) Explain.
  
  
  
  
  
  
  
  
  
  
- b. What numbers of blocks can be in the bag to make the left side weigh *less than* the right side?
  
  
  
  
  
  
  
  
  
  
- c. Write an inequality to represent your answer to part b.

**Read the Lesson**

1. Describe the Addition Property of Inequality and give an example of a problem that requires its use.
  
  
  
  
  
  
  
  
  
  
2. Describe the Subtraction Property of Inequality and give an example of a problem that requires its use.
  
  
  
  
  
  
  
  
  
  
3. Is 6 a solution for the inequality  $17 + x > 23$ ? Explain.

**Remember What You Learned**

4. In each box below, write three inequalities that can be solved by using the given property. Include at least one negative integer in each box.

**Addition Property  
of Inequality**

**Subtraction Property  
of Inequality**

**8-5 Lesson Reading Guide*****Solving Inequalities by Multiplying or Dividing*****Get Ready for the Lesson**

Read the introduction to Lesson 8-5 in your textbook. Write your answers below.

- a. Divide each side of the inequality  $300 > 50$  by 2. Is the inequality still true? Explain by using an inequality.
  
- b. Would the weight of 5 astronauts be greater on Pluto or on Earth? Explain by using an inequality.

**Read the Lesson**

1. Describe the Multiplication Property of Inequality for both positive and negative numbers and give an example of a problem for each type of number.
  
2. Describe the Division Property of Inequality for both positive and negative numbers and give an example of a problem for each type of number.

**Remember What You Learned**

3. In the boxes below, write examples of inequalities in which the sign does and does not reverse. Write at least three examples in each box.

**Inequalities in Which  
the Sign Does Not Reverse**

**Inequalities in Which  
the Sign Reverses**

# 8-6 Lesson Reading Guide

## Solving Multi-Step Inequalities

### Get Ready for the Lesson

Read the introduction to Lesson 8-6 in your textbook. Write your answers below.

- Write an inequality that represents the relationship between daily average distance and possible race length.
- Suppose your average daily run is 6k. Write an inequality that represents the maximum distance that you would have the endurance to run.

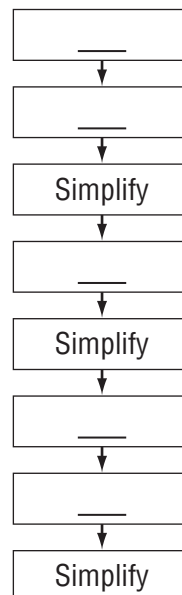
### Read the Lesson

Fill in the blank with the term or phrase that best completes each statement.

- Solving multi-step inequalities is much like solving multi-step \_\_\_\_\_.
- To solve a multi-step inequality, you should work \_\_\_\_\_ to undo the operations.
- The first step in solving an inequality that contains parentheses is to \_\_\_\_\_.
- Remember to \_\_\_\_\_ the inequality symbol when multiplying or dividing both sides of the inequality by a negative number.
- To check the solution  $x > 14$ , you should try a number \_\_\_\_\_ than 14 in the original inequality.

### Remember What You Learned

- Fill in the flow chart for solving an inequality such as  $-4(d + 2) \geq -8d - 32$  using the steps listed below. Write the letter of the correct step in the appropriate box on the flow chart.
  - Multiply or divide both sides by the coefficient of the variable
  - Use the Distributive Property
  - Add or subtract a term with the variable from both sides
  - Reverse the inequality sign if necessary
  - Add or subtract a constant term from both sides



**9-1**

**Lesson Reading Guide**  
*Squares and Square Roots*

**Get Ready for the Lesson**

Read the introduction to Lesson 9-1 in your textbook. Write your answers below.

- a. Describe the difference between the first four and the last four values of  $x$ .
- b. Explain how you found an exact answer for the first four values of  $x$ .
- c. How did you find an estimate for the last four values of  $x$ ?

**Lesson 9-1**

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. perfect square		
2. square root		
3. radical sign		

**Remember What You Learned**

- 4. For each number in the table, tell whether it has a real square root and explain why or why not. Then indicate if the number is a perfect square and explain.

	Real Square Root ?	Perfect Square ?
26		
-81		
256		
1444		
-5		

**9-2**

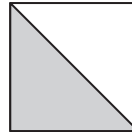
# Lesson Reading Guide

## The Real Number System

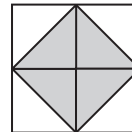
### Get Ready for the Lesson

Read the introduction to Lesson 9-2 in your textbook. Write your answers below.

- a. The small square at the right has an area of 1 square unit. Find the area of the shaded triangle.



- b. Suppose four squares are arranged as shown. What shape is formed by the shaded triangles?



- c. Find the total area of the four shaded triangles.  
 d. What number represents the length of the side of the shaded square?

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

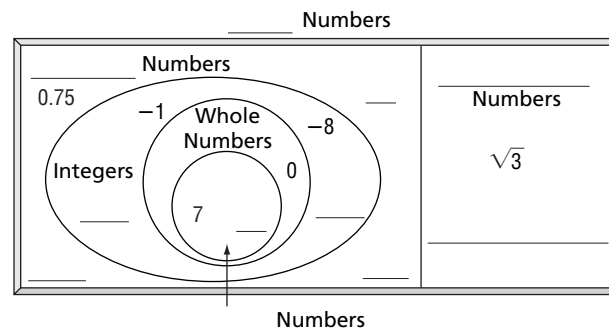
Vocabulary	Definition	Example
1. irrational numbers		
2. real numbers		

Choose the correct term to complete each sentence.

- Numbers with decimals that are not repeating or terminating (are, are not) irrational numbers.
- All square roots (are, are not) irrational numbers.
- Irrational numbers (are, are not) real numbers.

### Remember What You Learned

6. Fill in the missing terms on the following diagram. Then fill in the remaining blanks with examples of each type of number. Use numbers different than those in your textbook.



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Lesson 9-2

# 9-3 Lesson Reading Guide

## Triangles

### Get Ready for the Lesson

Read the introduction to Lesson 9-3 in your textbook. Write your answers below.

**Step 1:** Use a straightedge to draw a triangle on a piece of paper. Then cut out the triangle and label the vertices  $X$ ,  $Y$ , and  $Z$ .

**Step 2:** Fold the triangle as shown so that point  $Z$  lies on side  $XY$  as shown. Label  $\angle Z$  as  $\angle 2$ .

**Step 3:** Fold again so point  $X$  meets the vertex of  $\angle 2$ . Label  $\angle X$  as  $\angle 1$ .

**Step 4:** Fold so point  $Y$  meets the vertex of  $\angle 2$ . Label  $\angle Y$  as  $\angle 3$ .

**MAKE A CONJECTURE** What is the sum of the measures of  $\angle 1$ ,  $\angle 2$ , and  $\angle 3$ ? Explain your reasoning.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. acute angle		
2. right angle		
3. obtuse angle		
4. acute triangle		
5. obtuse triangle		
6. right triangle		
7. scalene triangle		
8. isosceles triangle		
9. equilateral triangle		

### Remember What You Learned

10. Describe an obtuse, scalene triangle.

11. Describe an equilateral triangle.



# 9-4 Lesson Reading Guide

## The Pythagorean Theorem

### Get Ready for the Lesson

Read the introduction to Lesson 9-4 in your textbook. Write your answers below.

- Find the area of each square.
- What relationship exists among the areas of the squares?
- Draw three squares with sides 5, 12, and 13 units so that they form a right triangle. What relationship exists among the areas of these squares?

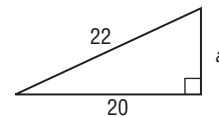
### Read the Lesson

Write a definition and give an example of the new vocabulary word or phrase.

Vocabulary	Definition	Example
1. legs		
2. hypotenuse		
3. Pythagorean Theorem		
4. solving a right triangle		
5. converse		

### Remember What You Learned

6. Write out in words the steps for solving the right triangle shown.



$$c^2 = a^2 + b^2$$

$$22^2 = a^2 + 20^2$$

$$484 = a^2 + 400$$

$$484 - 400 = a^2 + 400 - 400$$

$$84 = a^2$$

$$\pm\sqrt{84} = \sqrt{a^2}$$

$$a \approx 9.2$$

# 9-5 Lesson Reading Guide

## The Distance Formula

### Get Ready for the Lesson

Read the introduction to Lesson 9-5 in your textbook. Write your answers below.

- Name the coordinates of  $P$ .
- Find the distance between  $M$  and  $P$ .
- Find the distance between  $N$  and  $P$ .
- Classify  $\triangle MNP$ .
- What theorem can be used to find the distance between  $M$  and  $N$ ?
- Find the distance between  $M$  and  $N$ .

### Read the Lesson

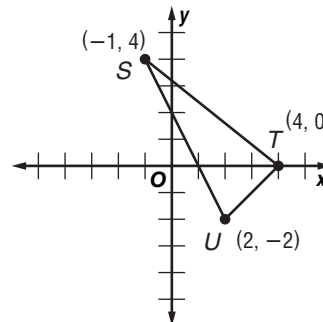
Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. Distance Formula		

- The distance formula is based on the \_\_\_\_\_.
- To determine the length of a line segment on a coordinate plane, you must know the coordinates of the \_\_\_\_\_ of the line segment.

### Remember What You Learned

- Describe in a paragraph how you would find the perimeter of  $\triangle STU$  shown at the right. Write out any formulas that must be used.



# 9-6 Lesson Reading Guide

## *Similar Polygons and Indirect Measurement*

### Get Ready for the Lesson

Read the introduction to Lesson 9-6 in your textbook. Write your answers below.

- Compare the measures of the angles of each non-shaded triangle to the original triangle.
- How do the lengths of the legs of the triangles compare?

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. polygon		
2. similar polygons		
3. indirect measurement		

- The symbol  $\sim$  means \_\_\_\_\_.
- Indirect measurement uses the properties of \_\_\_\_\_ to find measurements that are difficult to measure directly.

### Remember What You Learned

- Similar* is a word that is used in everyday English.
  - Find the definition of *similar* in a dictionary. Write the definition.
  - Explain how the definition can help you remember how *similar* is used in mathematics.

**10-1 Lesson Reading Guide*****Line and Angle Relationships*****Get Ready for the Lesson**

Read the introduction to Lesson 10-1 in your textbook. Write your answers below.

- What do you notice about the lines coming into the satellite dish?
- Trace the red lines onto a piece of paper. Find the measure of each angle.
- What do you notice about the measures of the angles? Which angles have the same measure?

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. parallel lines		
2. interior angles		
3. exterior angles		
4. corresponding angles		
5. vertical angles		
6. adjacent angles		
7. complementary angles		
8. supplementary angles		

**Remember What You Learned**

- Draw two parallel, horizontal lines. Draw a third line (transversal) so it intersects the first pair. Label the eight angles. Identify two interior angles. (Interior angles are between the parallel lines.) Identify three angles that have the same measure. (Opposite and corresponding angles have the same measure.) If two angles are supplementary, and one of the angles measures  $50^\circ$ , what must the other angle measure? (Supplementary angles always equal  $180^\circ$ .)

# 10-2 Lesson Reading Guide

## Congruent Triangles

### Get Ready for the Lesson

Read the introduction to Lesson 10-2 in your textbook. Write your answers below.

- Trace the triangles shown in your textbook onto a sheet of paper. Then label the triangles.
- Measure and then compare the lengths of the sides of the triangles.
- Measure the angles of each triangle. How do the angles compare?
- Make a conjecture about the triangles.

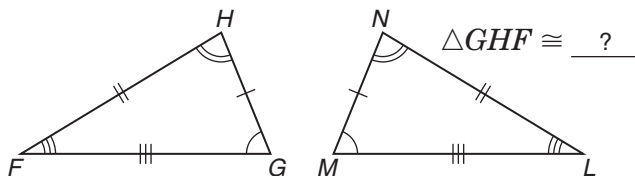
### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. congruent		
2. corresponding parts		

### Remember What You Learned

- Below are two congruent triangles. Name the corresponding parts and complete the congruence statement.



# 10-3 Lesson Reading Guide

## Transformations on the Coordinate Plane

### Get Ready for the Lesson

Read the introduction to Lesson 10-3 in your textbook. Write your answers below.

- Describe the motion involved in making a  $180^\circ$  turn on a skateboard.
- What type of motion does a scooter display when moving forward?

### Read the Lesson

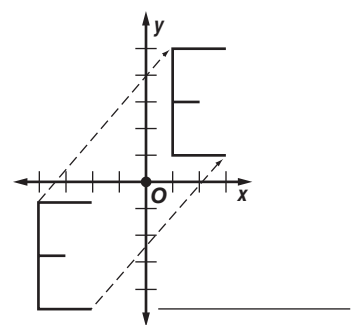
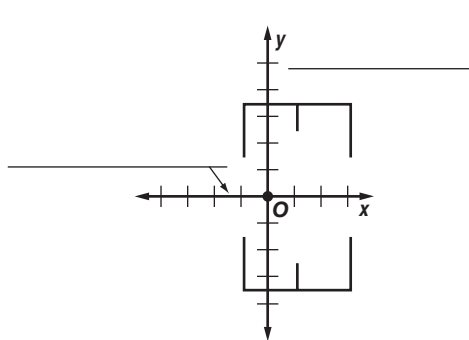
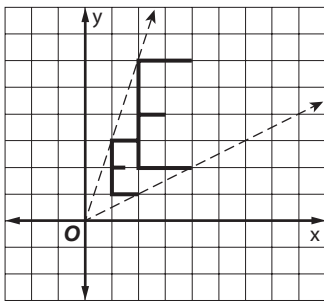
Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. transformation		
2. translation		
3. reflection		
4. line of symmetry		
5. dilation		

### Remember What You Learned

- Complete the diagrams below by filling in each blank with one of the vocabulary words or phrases.

A movement of a geometric figure is called a \_\_\_\_\_.



# 10-4 Lesson Reading Guide

## Quadrilaterals

### Get Ready for the Lesson

Read the introduction to Lesson 10-4 in your textbook. Write your answers below.

- Describe the bricks used to create the smallest circles.
- Describe how the shape of the bricks changes as the circles get larger.

### Read the Lesson

Write a definition and give an example of the new vocabulary word.

	Vocabulary	Definition	Example
1.	quadrilateral		

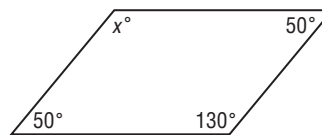
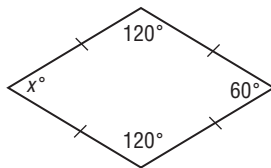
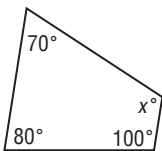
After each description, write the correct word from the list.

trapezoid      rhombus      parallelogram      square      rectangle

- a parallelogram with four right angles \_\_\_\_\_
- a quadrilateral with both pairs of opposite sides parallel and congruent \_\_\_\_\_
- a parallelogram with four congruent sides and four right angles \_\_\_\_\_
- a quadrilateral with one pair of opposite sides parallel \_\_\_\_\_
- a parallelogram with four congruent sides \_\_\_\_\_

### Remember What You Learned

- The sum of the measures of the angles of a quadrilateral is  $360^\circ$ . Identify the quadrilaterals below and find the missing angle measure.



# 10-5 Lesson Reading Guide

## Polygons

### Get Ready for the Lesson

Read the introduction to Lesson 10-5 in your textbook. Write your answers below.

- Which figure is used to create each tessellation?
- Refer to the diagram in your textbook. What is the sum of the measures of the angles that surround the vertex?
- Does the sum in part **b** hold true for the square tessellation? Explain.
- Make a conjecture about the sum of the measures of the angles that surround a vertex in the hexagon tessellation.

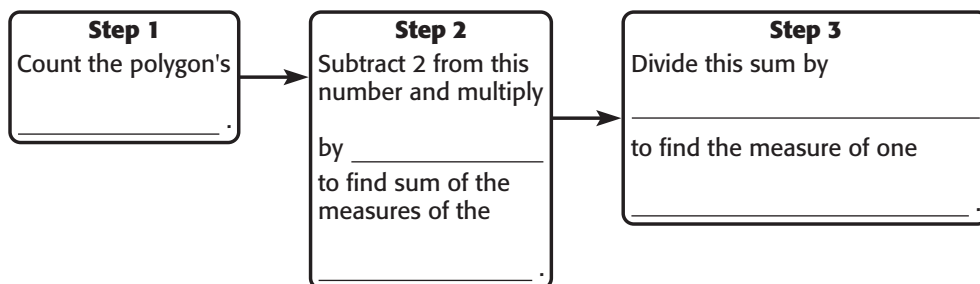
### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. diagonal		
2. interior angles		
3. regular polygon		

### Remember What You Learned

- Complete the following concept map of how to find the sum of the measures of the interior angles of a regular polygon (all sides and angles are congruent) and how to find the measure of one interior angle.





# 10-6 Lesson Reading Guide

## Area: Parallelograms, Triangles, and Trapezoids

### Get Ready for the Lesson

Read the introduction to Lesson 10-6 in your textbook. Write your answers below.

- Compare the area of the rectangle to the area of the parallelogram.
- What parts of a rectangle and parallelogram determine their area?

### Read the Lesson

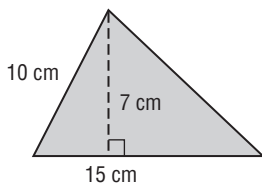
Write a definition and give an example of each new vocabulary word.

Vocabulary	Definition	Example
1. base		
2. altitude		

### Remember What You Learned

3. Below are three figures and three formulas for finding area. Match the formula with the correct figure and find its area.

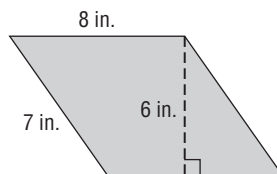
$$A = \frac{1}{2}h(a + b)$$



Formula:

Area:

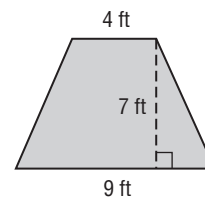
$$A = bh$$



Formula:

Area:

$$A = \frac{1}{2}bh$$



Formula:

Area:

**10-7**

**Lesson Reading Guide**

*Circumference and Area: Circles*

**Get Ready for the Lesson**

Read the introduction to Lesson 10-7 in your textbook. Write your answers below.

- a. Collect three different-sized circular objects. Then copy the table shown.
- b. Using a tape measure, measure each distance below to the nearest millimeter. Record your results.
  - the distance across the circular object through its center ( $d$ )
  - the distance around each circular object ( $C$ )
- c. For each object, find the ratio  $\frac{C}{d}$ . Record the results in the table.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word.

Vocabulary	Definition	Example
1. circle		
2. diameter		
3. center		
4. circumference		
5. radius		
6. $\pi$ (pi)		

**Remember What You Learned**

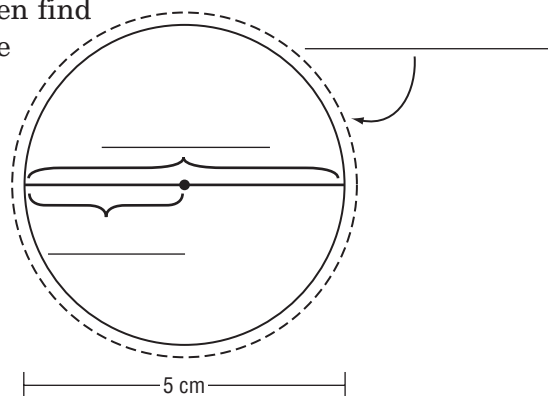
- 7. Study the circle at the right, label each part, then find the circle's circumference and area (round to the nearest tenth).

formula for circumference:

formula for area:

circumference:

area:



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Lesson 10-7

# 10-8

## Lesson Reading Guide

### Area: Composite Figures

#### Get Ready for the Lesson

Read the introduction to Lesson 10-8 in your textbook. Write your answers below.

In the diagram, the area of California is separated into polygons.

- Identify the polygons.
- Explain how polygons can be used to estimate the total land area.
- What is the area of each region?
- What is the total area?

#### Read the Lesson

Complete the following statements by filling in the blanks with the following words or symbols.

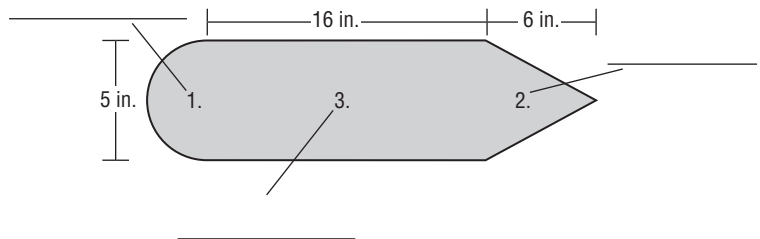
triangle	$A = \frac{1}{2}h(a + b)$	separating	formula	$A = bh$
trapezoid	$A = \pi r^2$	area	composite figure	

- The area of a(n) \_\_\_\_\_ can be determined by \_\_\_\_\_ the figure into simple polygons.
- Each separate polygon has a specific \_\_\_\_\_ to determine its area. For a circle, it's \_\_\_\_\_, while  $A = \frac{1}{2}bh$  works for a \_\_\_\_\_.
- To find the area of a parallelogram, the formula \_\_\_\_\_ should be applied.
- A(n) \_\_\_\_\_, on the other hand, requires the formula \_\_\_\_\_.
- To find the \_\_\_\_\_ of the whole figure, the areas of the polygons are added together.

#### Remember What You Learned

- Study the figure below, identify the separate polygons, find the area of each polygon, and find the area of the entire figure. Round to the nearest tenth.

area of polygon 1: \_\_\_\_\_  
 area of polygon 2: \_\_\_\_\_  
 area of polygon 3: \_\_\_\_\_  
 total area of figure: \_\_\_\_\_



**11-1**

**Lesson Reading Guide**  
*Three-Dimensional Figures*

**Get Ready for the Lesson**

Read the introduction to Lesson 11-1 in your textbook. Write your answers below.

- a. If you observed the Great Pyramid or the JP Morgan Chase Tower from directly above, what geometric figure would you see?
- b. If you stood directly in front of each structure, what geometric figure would you see?
- c. Explain how you can see different polygons when looking at the same 3-dimensional figure.

**Read the Lesson**

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. plane		
2. solid		
3. polyhedron		
4. edge		
5. vertex		
6. face		
7. prism		
8. base		
9. pyramid		
10. skew lines		

**Remember What You Learned**

- 11. The word *polyhedron* is composed of the prefix *poly-* and the root word *-hedron*. Find the definitions of *poly-* and *-hedron* in a dictionary. Write their definitions.

Lesson 11-1

# 11-2 Lesson Reading Guide

## Volume: Prisms and Cylinders

### Get Ready for the Lesson

Read the introduction to Lesson 11-2 in your textbook. Write your answers below.

- Build three more rectangular prisms using 24 cubes. Enter the dimensions and base areas in a table.
- Volume* equals the number of cubes that fill a prism. How is the

Prism	Length (units)	Width (units)	Height (units)	Area of Base (units <sup>2</sup> )
1	6	1	4	6
2				
3				
4				

volume of each prism related to the product of the length, width, and height?

- Make a conjecture about how the area of the base  $B$  and the height  $h$  are related to the volume  $V$  of a prism.

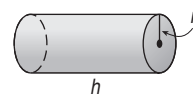
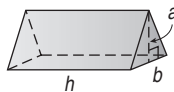
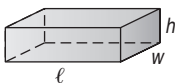
### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. volume		
2. cylinder		

### Remember What You Learned

- For each figure below, write out the longer version (showing how to determine the base area) of the formula for volume.



# 11-3 Lesson Reading Guide

## Volume: Pyramids, Cones, and Spheres

### Get Ready for the Lesson

Read the introduction to Lesson 11-3 in your textbook. Write your answers below.

- Compare the base areas and compare the heights of the prism and the pyramid.
- How many times greater is the volume of the prism than the volume of one pyramid?
- What fraction of the prism volume does one pyramid fill?

### Read the Lesson

Write a definition and give an example of the new vocabulary word.

Vocabulary	Definition	Example
1. cone		
2. sphere		

- What is the relationship between the volume of a pyramid and the volume of a prism if both figures have the same base areas and heights?
- What is the relationship between the volume of a cone and the volume of a cylinder if both figures have the same base areas and heights?

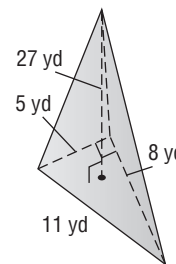
### Remember What You Learned

- Write out in words an explanation for each step in finding the volume of the pyramid at the right.

$$V = \frac{1}{3}Bh$$

$$V = \frac{1}{3}\left(\frac{1}{2} \cdot 5 \cdot 8\right)27$$

$$V = 180$$



**11-4 Lesson Reading Guide*****Surface Area: Prisms and Cylinders*****Get Ready for the Lesson**

Read the introduction to Lesson 11-4 in your textbook. Write your answers below.

- a. For each box, find the area of each face and find the sum.
  
- b. Find the volume of each box. Are these values the same as the values you found in part a? Explain.

**Read the Lesson**

Write a definition and give an example of the new vocabulary phrase.

Vocabulary	Definition	Example
1. lateral face		
2. lateral area		
3. surface area		

4. How is finding the surface area of a prism or cylinder different from finding the figure's volume?
  
5. How is finding the surface area of a prism or cylinder different from finding the figure's lateral area?

**Remember What You Learned**

6. How does drawing a net help you find the surface area of a prism or cylinder? Draw a prism or cylinder and its net to justify your answer.

**11-5 Lesson Reading Guide*****Surface Area: Pyramids and Cones*****Get Ready for the Lesson**

Read the introduction to Lesson 11-5 in your textbook. Write your answers below.

- A triangle on one of the sides has a base of about 220 feet and height of about 205 feet. What is the area?
- How could you find the total amount of steel, concrete, and glass used in the pyramid?

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. slant height		

- How does the slant height of a pyramid differ from the height of the pyramid? Include a drawing to help explain your answer.

**Remember What You Learned**

- Prepare a script for a short presentation on how to find the surface areas of pyramids and cones. Be sure to include any necessary vocabulary terms in your explanation. You may wish to include diagrams with your presentation.



**11-6**

**Lesson Reading Guide**

**Similar Solids**

**Get Ready for the Lesson**

Read the introduction to Lesson 11-6 in your textbook. Write your answers below.

- a. The model boxcar is shaped like a rectangular prism. If it is 8.5 inches long and 1 inch wide, what are the length and width of the original train boxcar to the nearest hundredth of a foot?
- b. A model tank car is 7 inches long and is shaped like a cylinder. What is the length of the original tank car?
- c. **Make a conjecture** about the radius of the original tank car compared to the model.

**Read the Lesson**

Write a definition and give an example of the new vocabulary word.

	Vocabulary	Definition	Example
1.	similar solids		

- 2. If two cylinders are similar, then their \_\_\_\_\_ and \_\_\_\_\_ are proportional.
- 3. If two cubes are similar, then their \_\_\_\_\_ are proportional.

**Remember What You Learned**

- 4. For each pair of solids listed in the table below, describe what measurements you would need to determine if the pair is similar.

Pair of Solids	Measurements Needed
Rectangular Prisms	
Cylinders	
Square Pyramids	
Triangular Prisms	
Cones	

# 12-1 Lesson Reading Guide

## Stem-and-Leaf Plots

### Get Ready for the Lesson

Read the introduction to Lesson 12-1 in your textbook. Write your answers below.

- a. Is there an equal number of electors in each group? Explain.
  
- b. Name an advantage of displaying the data in groups.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. stem-and-leaf plot		
2. stems		
3. leaves		
4. back-to-back stem-and-leaf plot		

### Remember What You Learned

5. How will you remember which numbers of a stem-and-leaf plot represent the greater place value? Use the data to draw a back-to-back stem-and-leaf plot like actual leaves on stems. Read the data from the tree trunk and move outward.

Ages of Persons						
Apartment Building A			Apartment Building B			
33	16	19	39	21	20	1
26	23	11	10	21	36	37
34	24	37	32	22	11	2
17	29		10	1	32	38
			12	36	39	

# 12-2 Lesson Reading Guide

## Measures of Variation

### Get Ready for the Lesson

Read the introduction to Lesson 12-2 in your textbook. Write your answers below.

- What is the fastest speed?
- What is the slowest speed?
- Find the difference between these two speeds.
- Write a sentence comparing the fastest winning average speed and the slowest winning average speed.

### Read the Lesson

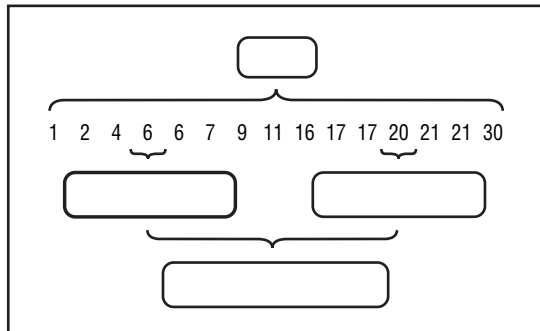
Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. measures of variation		
2. range		
3. quartiles		
4. lower quartile		
5. upper quartile		
6. interquartile range		
7. outlier		

### Remember What You Learned

- Complete the following diagram by filling in the boxes with the appropriate vocabulary words.

Diagram Title:



# 12-3 Lesson Reading Guide

## Box-and-Whisker Plots

### Get Ready for the Lesson

Read the introduction to Lesson 12-3 in your textbook. Write your answers below.

- a. Find the low, high, and the median temperature, and the upper and lower quartile for each city.

	Low	LQ	Median	UQ	High
Tampa, FL					
Caribou, ME					

- b. Draw a number line extending from 0 to 85. Label every 5 units.
- c. About one-half inch above the number line, plot the data found in part a for Tampa. About three-fourths inch above the number line, plot the data for Caribou.
- d. Write a few sentences comparing the average monthly temperatures.

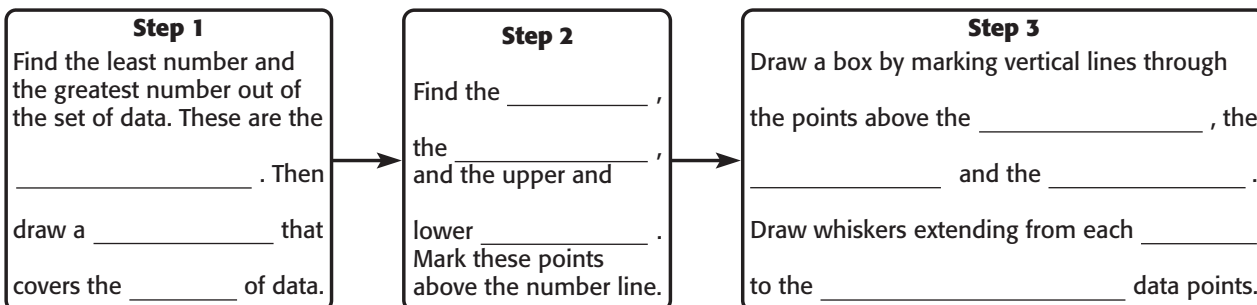
### Read the Lesson

Write a definition and give an example for the new vocabulary phrase.

Vocabulary	Definition	Example
1. box-and-whisker plot		

### Remember What You Learned

2. Complete the following concept map of how to make a box-and-whisker plot.



# 12-4 Lesson Reading Guide

## Histograms

### Get Ready for the Lesson

Read the introduction to Lesson 12-4 in your textbook. Write your answers below.

- What does each tally mark represent?
- What does the last column represent?
- What do you notice about the intervals that represent the counties?

### Read the Lesson

Write a definition and give an example of the new vocabulary word.

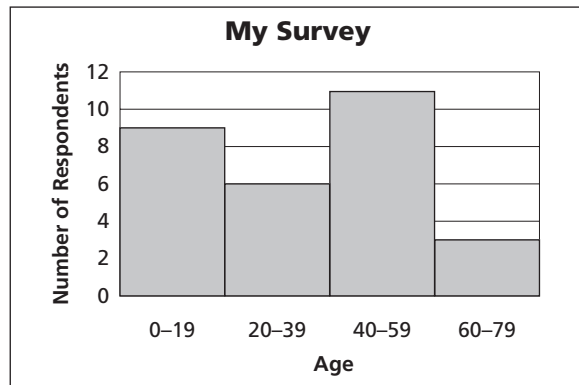
Vocabulary	Definition	Example
1. histogram		

Complete the following statements about frequency tables and histograms.

- If the first frequency interval goes from 1 to 50, the next frequency interval goes from \_\_\_\_\_.
- Because the intervals in a histogram are \_\_\_\_\_, all of the bars have the \_\_\_\_\_.
- In a histogram, there is \_\_\_\_\_ bars.
- Intervals that have a frequency of 0 have \_\_\_\_\_.
- The height of a bar in a histogram corresponds to the \_\_\_\_\_ of the data for that \_\_\_\_\_.

### Remember What You Learned

- Label the following in the histogram at right: interval, frequency, bar, and histogram. Then make a frequency table showing the same information as the histogram.



**12-5 Lesson Reading Guide*****Choosing an Appropriate Display*****Get Ready for the Lesson**

Read the introduction to Lesson 12-5 in your textbook. Write your answers below.

- What type of graph can be used to display the data?
- Find another way to display the data that shows the number of items divided into specific categories. Draw the graph and describe how you named your categories.
- Find a third way to display the data that shows how they are spread out. Draw the graph.

**Read the Lesson**

Complete the following statements by filling in the blanks with the following words.

circle graph  
frequency table

bar graph  
histogram

box-and-whisker plot  
line graph

- The best time to use a \_\_\_\_\_ is when you would like to display the frequency of data using bars.
- If you would like to compare the number of values in certain intervals, it is best to use a \_\_\_\_\_. If you would like to display this data, it is best to use a \_\_\_\_\_.
- If you would like to divide a set into four parts using the median and quartiles, a \_\_\_\_\_ would be the best way to display the data.
- To show changes over a period of time, you should display the data in a \_\_\_\_\_.
- To compare parts of data to the whole, you should display the data in a \_\_\_\_\_.

**Remember What You Learned**

- Think of an example of a set of data you have seen in an earlier lesson. Explain what the benefits or drawbacks might be for using each of the possible data displays.

**12-6 Lesson Reading Guide****Misleading Graphs****Get Ready for the Lesson**

Read the introduction to Lesson 12-6 in your textbook. Write your answers below.

- Do both graphs show the same information?
- Which graph suggests a dramatic increase in sales from May to June?
- Which graph suggests steady sales?
- How are the graphs similar? How are they different?

**Reading the Lesson**

Complete the following statements by filling in the blanks with the following words.

different	gradually	horizontal	interval(s)
label(s)	rapidly	title(s)	vertical

- If two graphs showing the same information have different vertical scales, that means that on the \_\_\_\_\_ axis, the \_\_\_\_\_ are different.
- If two graphs showing the same information have different horizontal scales, that means that on the \_\_\_\_\_ axis, the intervals are \_\_\_\_\_.
- A graph can be misleading if it has no \_\_\_\_\_ or if it has no \_\_\_\_\_ on the scales.
- If a graph shows steady change, the plotted values should increase or decrease \_\_\_\_\_.
- If a graph shows dramatic change, the plotted values should increase or decrease \_\_\_\_\_.

**Remember What You Learned**

- Use a dictionary and a book of synonyms to rewrite the following sentence by replacing the underlined words with ones you are more familiar with.

Statistics or statistical graphs can be misleading when the same data are represented in different ways, so that each graph gives a different visual impression.

# 12-7 Lesson Reading Guide

## Simple Probability

### Get Ready for the Lesson

Read the introduction to Lesson 12-7 in your textbook. Write your answers below.

- Write the ratio that compares the number of tiles labeled E to the total number of tiles.
- What percent of the tiles are labeled E?
- What fraction of tiles is this?
- Suppose a player chooses a tile. Is there a better chance of choosing a D or an N? Explain.

### Read the Lesson

Write a definition and give an example of each new vocabulary word or phrase.

Vocabulary	Definition	Example
1. outcomes		
2. simple event		
3. probability		
4. sample space		
5. theoretical probability		
6. experimental probability		

### Remember What You Learned

- Look up *theoretical* and *experimental* in the dictionary. How can their definitions help you remember the difference between theoretical probability and experimental probability?



# 12-8

## Lesson Reading Guide

### Counting Outcomes

#### Get Ready for the Lesson

Read the introduction to Lesson 12-8 in your textbook. Write your answers below.

- Write the names of each deck choice on 5 sticky notes of one color. Write the names of each type of wheel on 3 notes of another color.
- Choose one deck note and one wheel note. One possible skateboard is Alien, Eagle.
- Make a list of all the possible skateboards.
- How many different skateboard designs are possible?

#### Read the Lesson

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. tree diagram		
2. Fundamental Counting Principle		

#### Remember What You Learned

- Complete the two diagrams below by filling in each blank with one of the following words. Some words may be used more than once.

**choices**

**favorable**

**outcomes**

**possible**

<b>Fundamental Counting Principle</b>	$m$ _____ for event 1 $\times$ $n$ _____ for event 2 = _____ number of _____ _____
---------------------------------------	---

<b>Probability</b>	Probability = $\frac{\text{number of } \underline{\hspace{2cm}}}{\text{number of } \underline{\hspace{2cm}}}$
--------------------	---

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Lesson 12-8

# 12-9 Lesson Reading Guide

## Permutations and Combinations

### Get Ready for the Lesson

Read the introduction to Lesson 12-9 in your textbook. Write your answers below.

- Make a list of all possible pairs for class offices. (*Note: Lenora-Michael is different than Michael-Lenora.*)
- How does the Fundamental Counting Principle relate to the number of pairs you found?
- Make another list for student council seats. (*Note: For this list, Lenora-Michael is the same as Michael-Lenora.*)
- How does the answer in part **a** compare to the answer in part **c**?

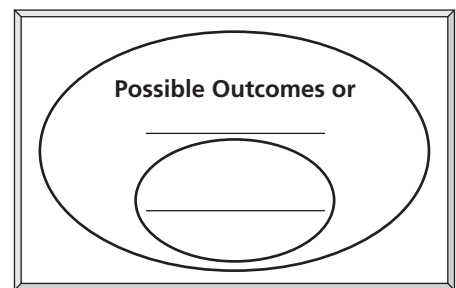
### Read the Lesson

Write a definition and give an example of each new vocabulary word.

Vocabulary	Definition	Example
1. permutation		
2. factorial		
3. combination		

### Remember What You Learned

- Complete the diagram at right by writing the words *combinations* and *permutations* in the correct blanks. Then write a sentence based on the diagram stating how to remember the difference between permutations and combinations.



# 12-10 Lesson Reading Guide

## Probability of Composite Events

### Get Ready for the Lesson

Read the introduction to Lesson 12-10 in your textbook. Write your answers below.

- What was your experimental probability for the red then white outcome?
- Would you expect the probability to be different if you did not place the first counter back in the bag? Explain your reasoning.

### Read the Lesson

Write a definition and give an example of each new vocabulary phrase.

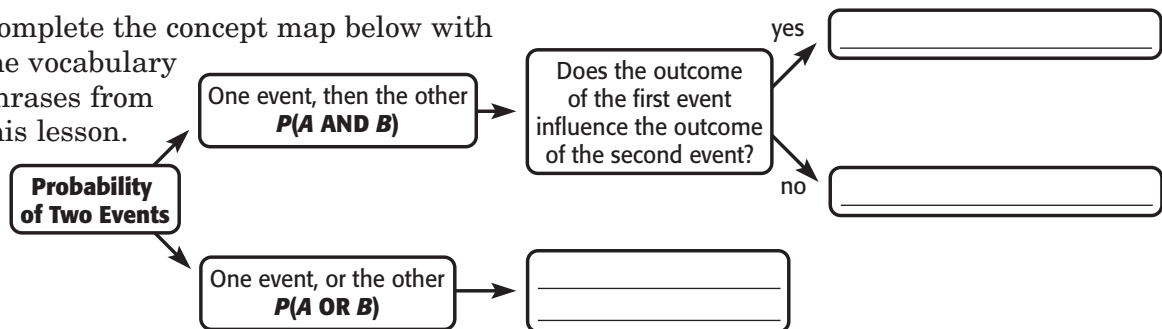
Vocabulary	Definition	Example
1. composite events		
2. independent events		
3. dependent events		
4. mutually exclusive events		

You are finding the probability of choosing the following arrangements of counters from a bag containing red, orange, and blue counters. Label each situation with independent events, dependent events, or mutually exclusive events.

- a red counter, which is replaced, followed by a blue counter \_\_\_\_\_
- an orange counter or a primary color \_\_\_\_\_
- an orange counter, which is kept out of the bag, followed by a red counter \_\_\_\_\_

### Remember What You Learned

- Complete the concept map below with the vocabulary phrases from this lesson.



**13-1 Lesson Reading Guide*****Polynomials*****Get Ready for the Lesson**

Read the introduction to Lesson 13-1 in your textbook. Write your answers below.

- How many terms are in the expression for the heat index?
- What separates the terms of the expression?

**Read the Lesson**

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. polynomial		
2. binomial		
3. trinomial		
4. degree		

**Remember What You Learned**

- Notice that the words *binomial*, *trinomial*, and *polynomial* contain the same root—*nomial*, but have different prefixes.
  - Find the definition of the prefix *bi-* in a dictionary. Write the definition. Explain how it can help you remember the meaning of *binomial*.
  - Find the definition of the prefix *tri-* in a dictionary. Write the definition. Explain how it can help you remember the meaning of *trinomial*.
  - Find the definition of the prefix *poly-* in a dictionary. Write the definition. Explain how it can help you remember the meaning of *polynomial*.

**13-2 Lesson Reading Guide*****Adding Polynomials*****Get Ready for the Lesson**

Read the introduction to Lesson 13-2 in your textbook. Write your answers below.

- Write the polynomial for the tiles that remain.
- Find the sum of  $x^2 + 4x + 2$  and  $7x^2 - 2x + 3$  by using algebra tiles.
- Compare and contrast finding the sums of polynomials with finding the sum of integers.

**Read the Lesson**

- Draw a model that shows  $(x^2 - 4x + 2) + (2x^2 + 2x - 3)$ . Write the polynomial that shows the sum.
- Show how to find the sum  $(5x - 2) + (4x + 4)$  both vertically and horizontally.

**Vertically****Horizontally****Remember What You Learned**

- You have learned that you can combine like terms. On the left below, write three pairs of monomials that have like terms. On the right below, write three pairs of monomials that have unlike terms. Explain your answers.

**Like Terms****Unlike Terms**

1.

1.

2.

2.

3.

3.

**13-3 Lesson Reading Guide*****Subtracting Polynomials*****Get Ready for the Lesson**

Read the introduction to Lesson 13-3 in your textbook. Write your answers below.

- What is the difference in degrees and the difference in minutes between the two stations?
- Explain how you can find the difference in latitude between any two locations, given the degrees and minutes.
- The longitude of Station 1 is  $162^{\circ}16'36''$  and the longitude of Station 5 is  $68^{\circ}8'2''$ . Find the difference in longitude between the two stations.

**Read the Lesson**

- Show how to find the difference  $(3x^2 + x + 2) - (2x^2 - 7)$  by aligning like terms and by adding the additive inverse.

Like TermsAdditive Inverse

- Which method do you prefer? Why?

**Remember What You Learned**

- You have learned to subtract polynomials by adding the additive inverse. Look up *inverse* in the dictionary. What is its definition? How does this help you remember how to find the additive inverse?
  - Write the additive inverses of the polynomials in the table below.

Polynomial	Additive Inverse
$x^2 + 2x - 3$	
$6x - 8$	
$5x^2 + 8y^2 - 2xy$	

**13-4 Lesson Reading Guide*****Multiplying a Polynomial by a Monomial*****Get Ready for the Lesson**

Read the introduction to Lesson 13-4 in your textbook. Write your answers below.

- a. Write an expression that represents the area of the rectangular region outlined on the photo.
- b. Recall that  $2(4 + 1) = 2(4) + 2(1)$  by the Distributive Property. Use this property to simplify the expression you wrote in part a.
- c. The Grande Arche is approximately  $w$  feet deep. Explain how you can write a polynomial to represent the volume of the hollowed-out region of the building. Then write the polynomial.

**Read the Lesson**

1. Draw a model that shows the product  $x(x + 2)$ . Write the polynomial that shows the product.

2. Explain the Distributive Property and give an example of how it is used to multiply a polynomial by a monomial.

**Remember What You Learned**

3. *Distribute* is a common word in the English language.
  - a. Find the definition of *distribute* in a dictionary. Write the definition that most closely relates to this lesson.
  - b. Explain how this definition can help you remember how to use the Distributive Property to multiply a polynomial by a monomial.

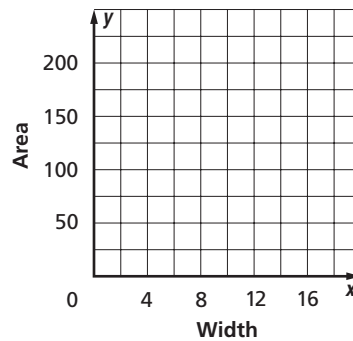
# 13-5 Lesson Reading Guide

## Linear and Nonlinear Functions

### Get Ready for the Lesson

Read the introduction to Lesson 13-5 in your textbook. Write your answers below.

- Write an expression to represent the area of the deck.
- Find the area of the deck for widths of 6, 8, 10, 12, and 14 feet.
- Graph the points whose ordered pairs are (width, area). Do the points fall along a straight line? Explain.



### Read the Lesson

Write a definition and give an example of each new vocabulary phrase.

Vocabulary	Definition	Example
1. nonlinear function		
2. quadratic function		
3. cubic function		

### Remember What You Learned

- You have learned about linear and nonlinear functions. Nonlinear functions include quadratic functions and cubic functions. Below, write three equations that represent each type of function given. For the nonlinear functions, include at least one quadratic function and one cubic function.

#### Linear

- 
- 
- 

#### Nonlinear

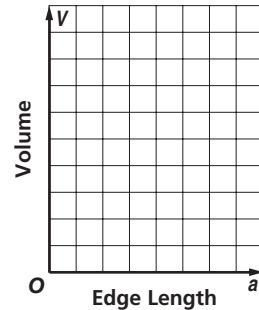
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**13-6 Lesson Reading Guide*****Graphing Quadratic and Cubic Functions*****Get Ready for the Lesson**

Read the introduction to Lesson 13-6 in your textbook. Write your answers below.

- The volume of cube  $V$  equals the cube of the length of an edge  $a$ . Write a formula to represent the volume of a cube as a function of edge length.
- Graph the volume as a function of edge length. (*Hint:* Use values of  $a$  like 0, 0.5, 1, 1.5, 2, and so on.)
- Would it be reasonable to use negative numbers for  $x$  values in this situation?

**Read the Lesson**

- Write a quadratic function. Explain what makes it a quadratic function and what its graph would look like.
- Write a cubic function. Explain what makes it a cubic function and what its graph would look like.

**Remember What You Learned**

- You have learned to graph quadratic and cubic functions. Make a list of the steps you use to graph the two functions.

