Glencoe McGraw-Hill

IMPACT Mathematics

Investigation Notebook and Reflection Journal

An all-in-one notebook, organizer, and journal covering every lesson and investigation in the Student Edition

This Notebook Helps You:

- Preview the chapter
- Build your mathematics vocabulary knowledge
- Organize and take notes using graphic organizers
- Improve your writing skills
- Reflect on mathematical concepts
- Prepare for chapter tests

Name: _____

Period: _____

COURSE 1

How to Use This Book:

Your *Investigation Notebook and Reflection Journal* will help you succeed in *IMPACT Mathematics* by providing:
- organizational tools to record your notes.
- opportunities to reflect on key mathematical concepts.

For each **Chapter Opener**, you will find questions relating to the chapter's Real-Life Math connection, key chapter vocabulary, and Family Letter home activities.

To help you master **Investigation** concepts, this study guide provides opportunities to:
- review key vocabulary terms.
- summarize main ideas.
- reflect on Explore and Think & Discuss topics.
- use a variety of graphic organizers, including Venn diagrams and tables.

Each lesson ends with a **What Did You Learn?** section to help you summarize key lesson ideas.

The McGraw-Hill Companies

Glencoe

Send all inquiries to:
Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240-4027

ISBN: 978-0-07-889752-8
MHID: 0-07-889752-1

Printed in the United States of America.

1 2 3 4 5 6 7 8 9 10 066 17 16 15 14 13 12 11 10 09 08

COURSE 1

Table of Contents

CHAPTER 1

Polygons, Angles, and Circles

Contents in Brief

Real-Life Math

This chapter begins by identifying some of the many places we see polygons, angles, and circles in sports. It explains how quadrilaterals, spheres, and cylinders are used in various sports, and how angles of revolution are used in skateboarding.

Think About It

Choose a sport or game and describe how geometry is used in that sport or game.

What other examples in sports or in a game can you think of that involve angles? Explain.

Suppose you wanted to build a skateboard ramp. Why would its shape matter?

Connections to the Past (Grade 5)

Throughout this chapter, you will identify polygons based on the number of angles and sides they have. List all the shapes you can think of, and the number of sides each has.

Vocabulary

Determine whether each statement refers to polygons (P) or circles (C).

Statement	P or C
▶ A two-dimensional closed geometric figure with at least one angle measuring 180° is *concave*.	
▶ These figures are named according to the number of sides and *vertices* each has.	
▶ *Circumference* can be calculated using the formula $C = 2\pi r$.	
▶ A *diameter* is a chord that passes directly through this figure's center.	
▶ When these figures have sides that are all the same length and angles that are all the same size, they are called *regular*.	

Family Letter

Which shapes did you find on your walk? What shapes did you find that you were not expecting to see? Draw some of the shapes you saw below.

Shapes I saw:

What figures did you see in the building or house? Why do you think the building is shaped the way it is?

LESSON 1.1

Patterns in Geometry

In Lesson 1.1, I expect to learn:

_____

_____

Explore

What was difficult about counting all the squares? How did you keep track of the squares you had counted? Do you think counting is the best way to find the number of squares? Why or why not?

_____

_____

_____

_____

_____

Investigation 1

1. Vocabulary Flat, two-dimensional geometric figures made of line segments are called _____.

Think & Discuss

I found this on page ____.

2. Rewrite the following statements to make each a true statement.

a. A circle is a polygon.

_____

b. The sides of a polygon do not have to meet.

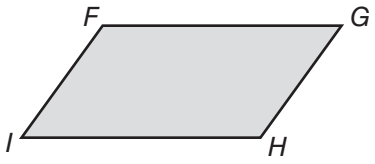
_____

3. Draw examples of several polygons. Name each according to the number of sides it has.

_____

I found this on page _____.

4. Vocabulary Each corner of a polygon, where two sides meet, is called a _____.



5. Name the polygon above. _____

6. Explain why the figure could not be named quadrilateral *IGHF*.

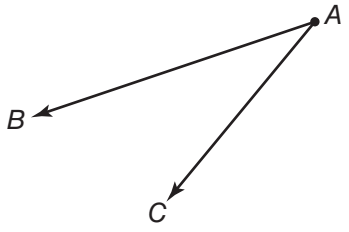
_____

_____

Investigation 2

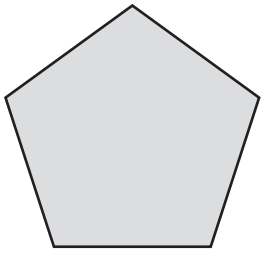
I found this on page _____.

7. Vocabulary This _____ is made up of rays *AB* and *AC*.



I found this on page _____.

Think & Discuss



8. Explain how you can use copies of the polygon to determine the measures of its angles.

_____

_____

_____

Develop & Understand: A

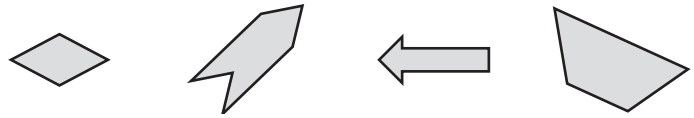
9. Draw examples of 90°, 180°, and 360° angles.

10. How would you use your example for Exercise 9 to estimate the measure of a given angle?

Investigation 3

I found this on page _____.

11. Write C for *concave* or R for *regular* to identify each of these polygons.



_____ _____ _____ _____

Inquiry

Investigation 4

I found this on page _____.

12. Explain how can you determine whether a given set of segments can be used to build a triangle.

13. Give an example of segment lengths that cannot be used to make a triangle.

What Did You Learn?

I need to remember the following about:

	Polygons	Angles
definition		
naming		
categories		

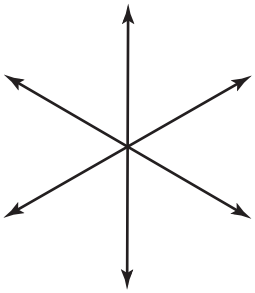
LESSON 1.2

Angles

In Lesson 1.2, I expect to learn:

Think & Discuss

Explain how you could estimate the measure of the angles in the diagram below, if you know that the angles are all the same size.

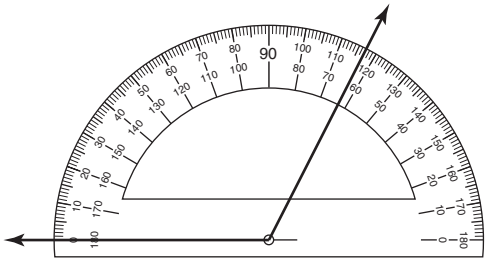


Investigation 1

I found this on page _____.

1. Vocabulary To measure an angle, you should place the bottom center of the _____ at the vertex of the angle. Next, you should line up the _____ with one ray of the angle. Then you can read the angle measurement.

Think & Discuss



2. Does the angle above measure about 63° or about 117°? How do you know?

I found this on page _____.

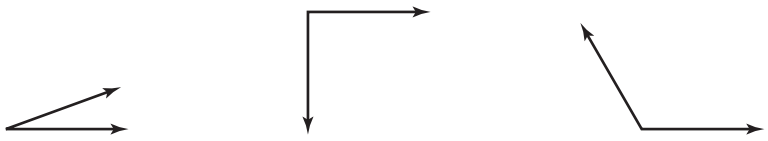
3. Vocabulary Write the letter of the vocabulary word that describes the statement.

a. _____ measures more than 90°	A. perpendicular lines
b. _____ measures exactly 90°	B. acute angle
c. _____ form a 90° angle	C. right angle
d. _____ measures less than 90°	D. obtuse angle

Develop & Understand: A

I found this on page _____.

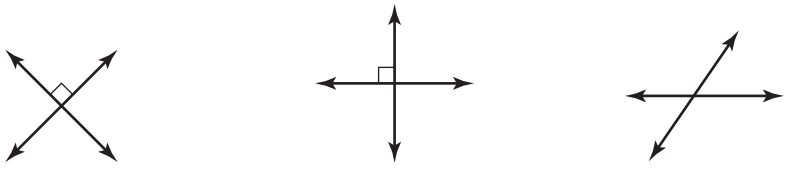
4. Identify each of the following angles as *right*, *acute*, or *obtuse*.



Develop & Understand: B

I found this on page _____.

5. Identify each of the following as *perpendicular* or *not perpendicular*.

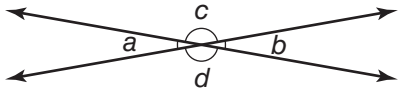


Investigation 2

Develop & Understand: A

I found this on page _____.

6. Vocabulary Write *True* or *False* for each statement. If a statement is false, explain why.



a. The lines above are *perpendicular lines.*

b. The lines on page 8 are *intersecting lines*.

c. Angles *a* and *b* are *vertical angles*.

d. Angles *b* and *c* are *vertical angles*.

I found this on page _____.

Think & Discuss

7. Predict the sum of the interior angle measures for each figure. Explain how you made your prediction.

Figure A

Figure B

What Did You Learn?

I need to remember the following about:

angles: _____

lines: _____

finding the measure of an angle without using a protractor: _____

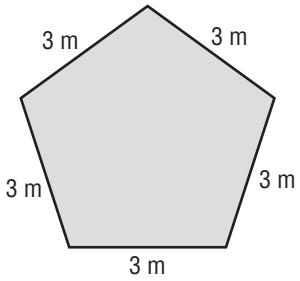
LESSON 1.3

Measure Around

In Lesson 1.3, I expect to learn:

_____

Vocabulary The pentagon below has a _____ of 15 m.



Think & Discuss

You are asked to choose the most practical method for measuring the perimeter of the classroom floor. Explain why you would rather use that method than the others you listed.

_____

_____

Investigation 1

I found this on page _____.

1. How do you find the perimeter of a polygon?

_____

2. How is finding the perimeter of a rectangle different from finding the perimeter of other polygons?

_____

_____

_____

I found this on page _____.

3. Vocabulary Complete each statement.

a. Geometric rules using symbols are called _____.

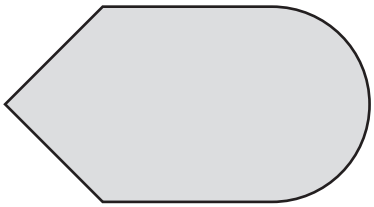
b. Which of the following is a formula for perimeter?

$P = 2 \cdot (L + W)$ $\quad 32 + 14 = 46$ $\quad A + B + C = D$

Develop & Understand: B

4. Describe two methods for finding the perimeter of this figure.

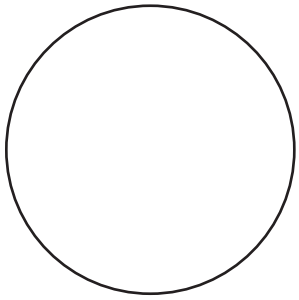
I found this on page _____.



Investigation 2

5. Vocabulary For the following circle, draw the *radius* and two *chords*, including the *diameter*. Label your drawing with the correct words.

I found this on page _____.



6. Use your diagram to complete the following sentences.

a. A _____ reaches across a circle and passes through the center of the circle. A diameter is also a _____.

b. The segment from the center to a point on the circle is the _____.

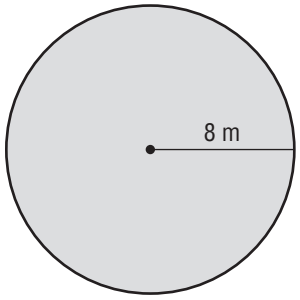
c. You can use a formula to find the _____, or the perimeter of the circle.

Think & Discuss

7. Explain why all diameters of a circle are the same length.

I found this on page _____.

Develop & Understand: B



8. Find each of the following for the circle.

a. Radius	
b. Diameter	
c. Circumference formula	
d. Circumference of circle	

What Did You Learn?

I need to remember the following about:

Polygons

Examples:

Perimeter:

Formulas:

Circles

Circumference:

Formulas:

***r* = radius**
***d* = diameter**

CHAPTER 2

Fractions and Decimals

Contents in Brief

Real-Life Math

A company's value is based on the amount of money it makes in sales and services. The prices of stocks in companies are used to show the value of the company. Investors want the price of their stocks to increase.

Think About It

What would a stock *gain of $1.25* mean?

Why do you think decimals are used to indicate stock values?

Why do you think stockbrokers tell clients to *buy low, sell high*?

Connections to the Past

Throughout this chapter, you will be using and comparing fractions and decimals. Circle all of the fractions below that are equal to $\frac{1}{2}$.

$\frac{6}{12}$ $\frac{15}{30}$ $\frac{4}{7}$ $\frac{5}{10}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{9}{12}$ $\frac{7}{14}$

Vocabulary

▶ Draw a line connecting each example to the appropriate vocabulary word.

$3\frac{1}{3}$	Simplified, or in lowest terms
$\frac{14}{9}$	Mixed number
0.3333...	Repeating decimal
$\frac{1}{2}, \frac{4}{8}$	Improper fraction
$\frac{1}{5}$	Terminating decimal
0.45	Equivalent fractions

Family Letter

What way did you use fractions and decimals in your day-to-day life?

_____

_____

Write a fraction and a decimal. Describe a situation in which you could use each.

_____

_____

Draw diagrams to illustrate the fraction and decimal that you described above.

How did you use fractions of miles to describe distances while running errands?

_____

_____

LESSON 2.1

Patterns in Fractions

In Lesson 2.1, I expect to learn:

Explore

How do $\frac{6}{8}$, $\frac{3}{4}$, and $\frac{12}{16}$ compare? Explain your answer.

Investigation 1

I found this on page _____.

Develop & Understand: B

1. Vocabulary Write I for *improper fraction* or M for *mixed number*.

$3\frac{3}{4}$		$2\frac{1}{8}$	
$\frac{12}{7}$		$1\frac{1}{7}$	
$\frac{4}{3}$		$\frac{14}{5}$	
$5\frac{1}{8}$		$\frac{43}{7}$	

2. Explain how to write the fraction $\frac{15}{4}$ as a mixed number.

3. Explain how to write $6\frac{1}{2}$ as an improper fraction.

Investigation 2

Develop & Understand: A

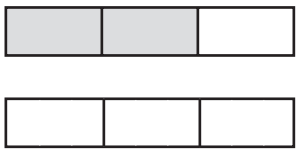
I found this on page _____.

4. Vocabulary Shade the two rectangles to show *equivalent fractions*. What fractions did you show? How do you know they are equivalent?

Think & Discuss

I found this on page _____.

5. Divide and shade the second fraction bar to prove that multiplying the numerator and denominator of a fraction by the same number produces an equivalent fraction.



6. Vocabulary $\frac{4}{5}$ is in _____ because the only common factor of 4 and 5 is 1.

Develop & Understand: B

I found this on page _____.

7. The fractions $\frac{6}{10}$, $\frac{18}{30}$, and $\frac{21}{35}$ belong to the same fraction family. What is the name of this fraction family? How did you determine which fraction family was shown?

Investigation 3

I found this on page _____.

Think & Discuss

8. Explain how to compare the fractions $\frac{5}{6}$ and $\frac{1}{4}$ using:

A Common Denominator	A Common Numerator

Develop & Understand: B

I found this on page _____.

9. Use one of the methods you described above to compare $\frac{3}{4}$ and $\frac{2}{3}$. Show your work.

_____

_____

Investigation 4

I found this on page _____.

Think & Discuss

10. Which measuring cup did you choose for Keisha to use? Why?

_____

_____

What Did You Learn?

I need to remember the following about:

comparing fractions: _____

_____

_____

estimating fractions: _____

_____

equivalent fractions: _____

_____

LESSON 2.2

Patterns in Decimals

In Lesson 2.2, I expect to learn:

_____

_____

Explore

I found this on page _____.

How close did you get to shading exactly \$1.00 on your *Spare Change* card? Would you have chosen different cards if you could do it over? Why or why not?

_____

_____

Investigation 1

Develop & Understand: A

1. Write \$0.80 and \$0.08 as fractions. _____

Which is greater? _____

Develop & Understand: B

I found this on page _____.

2. Complete the table.

Calculation		Result
a. 62.73	= 62.73 • 1	
b. 62.73 • 10	= 62.73 • 10	
c. 62.73 • 10 • 10	= 62.73 • 100	

3. Use the table to predict the product of 62.73 • 10,000.

_____

4. Explain how you made your prediction. What rule can you use for multiplying by powers of 10?

_____

_____

_____

_____

Develop & Understand: C

I found this on page _____.

5. Complete the table.

Calculation	Result
a. 62.73	
b. $62.73 \div 10$ $= \frac{1}{10}$ of 62.73	
c. $62.73 \div 10 \div 10$ $= \frac{1}{100}$ of 62.73	

6. Predict the result of $62.73 \div 1{,}000$. _____

7. Explain how you could predict the result of $54.32 \div 100$.

_____

_____

Investigation 2

I found this on page _____.

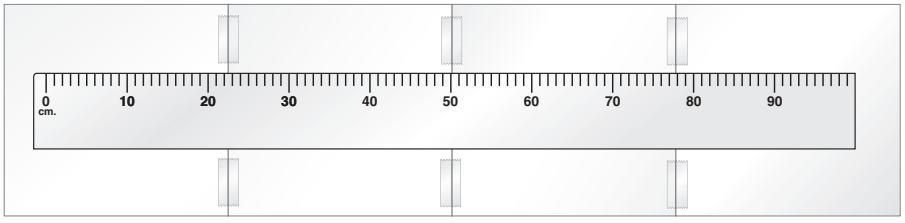
8. Match the numbers on the left with the correct conversion of each measurement on the right.

A. 6 cm	1.4 cm	_____
B. 14 mm	230 cm	_____
C. 23 km	60 mm	_____
D. 14 m	0.6 cm	_____
E. 6 mm	23,000 m	_____
F. 2.3 m	1,400 cm	_____

Develop & Understand: A

I found this on page _____.

9. Suppose you place the meterstick shown below next to your desk. Which is a reasonable height for your desk: 0.1m, 0.5m, 0.75m, or 1m? Explain.



_____

_____

10. What would be the length in meters of a desk that is 210 centimeters long? Give your answer as a fraction and as a decimal.

_____

Inquiry

Investigation 3

11. Describe one thing you learned about decimals while playing *Guess My Number*.

_____

_____

I found this on page _____.

12. Suppose you are playing *Guess My Number*. What number would you choose to make it harder for your partner to guess your number? Why would that number be more difficult to guess?

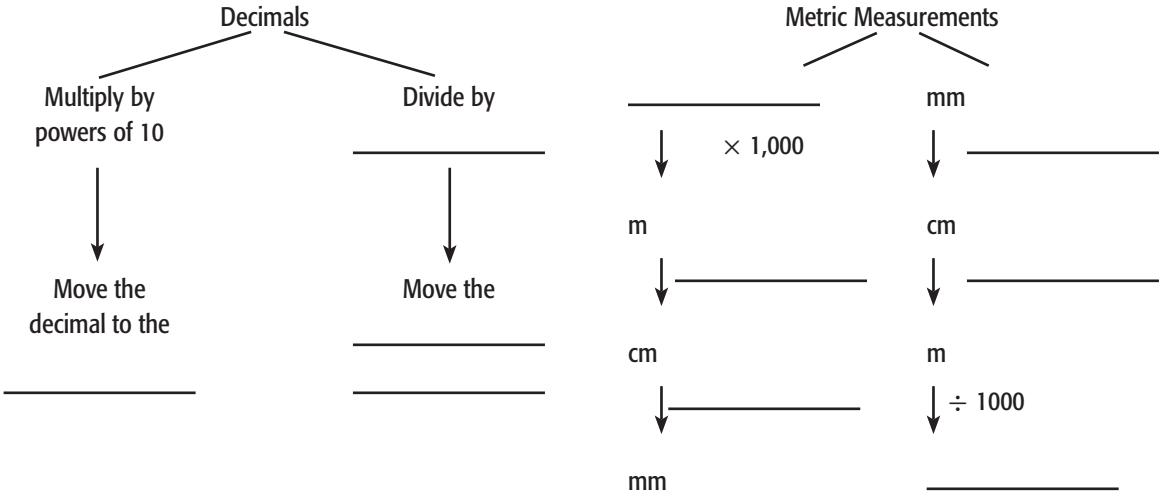
_____

_____

What Did You Learn?

I need to remember the following about:

decimals and metric measurements:



LESSON 2.3

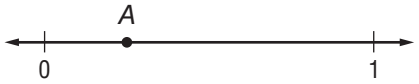
Fraction and Decimal Equivalents

In Lesson 2.3, I expect to learn:

I found this on page _____.

Think & Discuss

Would you use 0.25 or 0.6 to approximate the location of point *A*? Why?



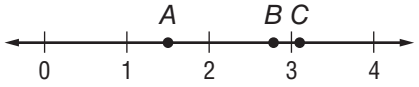
Which fraction do you think would best describe the location of point *A*, $\frac{1}{4}$ or $\frac{5}{8}$? _____

Investigation 1

I found this on page _____.

Develop & Understand: B

1. Use a mixed number and a decimal to describe the approximate location of each point.



A	B	C

Investigation 2

I found this on page _____.

Develop & Understand: A

2. Vocabulary Give the meaning for *terminating decimal* in your own words.

3. List three examples of terminating decimals. Explain how you know they are terminating.

4. Suppose a calculator shows 0.333333333. Do you think it is showing a terminating decimal? Why or why not?

5. Write the following decimals as fractions in simplest form.

0.47 1.32 0.8

_____ _____ _____

Develop & Understand: B

I found this on page _____.

6. Name a decimal between 1.32 and 1.325. How did you decide?

Investigation 3

Example

7. Explain how you could find a decimal equivalent to $\frac{9}{20}$.

I found this on page _____.

I found this on page _____.

8. Vocabulary Write *R* for *repeating decimal*, or *T* for *terminating decimal*.

2.44 …	
3.56	
1.25	
0.88 …	
$5.\overline{6}$	
$3.1\overline{7}$	
4.8	
9.23	

Think & Discuss

I found this on page _____.

9. Explain how you determine whether a decimal is a repeating decimal.

Investigation 4

Develop & Understand: A

I found this on page _____.

10. Describe one pattern that you found in the chart of fraction and decimal equivalents. Why do you think this pattern occurs?

What Did You Learn?

I need to remember the following about:

Changing Decimals to Fractions	Changing Fractions to Decimals
EXAMPLE:	**EXAMPLE:**

CHAPTER 3

Patterns, Numbers, and Rules

Contents in Brief

Real-Life Math

A diagram is used to show the family tree of a male honeybee. The number of bees in subsequent generations forms a pattern of numbers. This pattern is represented by the Fibonacci sequence.

Think About It

List the first six terms of the Fibonacci sequence.

_____

How did you predict the next two or three numbers in the Fibonacci sequence?

_____

_____

_____

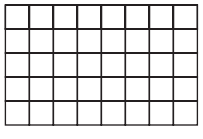
Suppose you wanted to predict the next six numbers in the honeybee sequence. What are two ways you could make your prediction?

_____

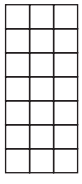
_____

Connections to the Past

Multiplication is a key mathematical operation and is a focus of this chapter. Write a multiplication equation for each array.



_____



_____

Vocabulary

Complete each statement with one of the following words.

exponent input order of operations
output property sequence
stages term variable

- Each item in an ordered list is called a(n) _____.
- The list is called a(n) _____. If the items are not numbers, then the list is a sequence of _____.
- When you apply a rule to a(n) _____, you get a(n) _____.
- In "three to the fourth power," or 3^4, the _____ is 4.
- The _____ is a convention for reading and evaluating expressions.
- A _____ is a statement that is true for any number or variables.

Family Letter

Give a situation that would be described using billions.

_____

_____

Explain how you determined the rule when you played *What's My Rule.*

_____

_____

_____

Give a pattern using numbers.

_____

Describe the pattern above using words.

_____

What are two other ways to show a pattern?

_____

LESSON 3.1

Number Sense

In Lesson 3.1, I expect to learn:

I found this on page _____.

Think & Discuss

How would you determine which is greater, 4 million or 4 trillion?

Investigation 1

Develop & Understand: A

1. About how many years would it take to make one billion dollars if you made $1,000,000 dollars per year?

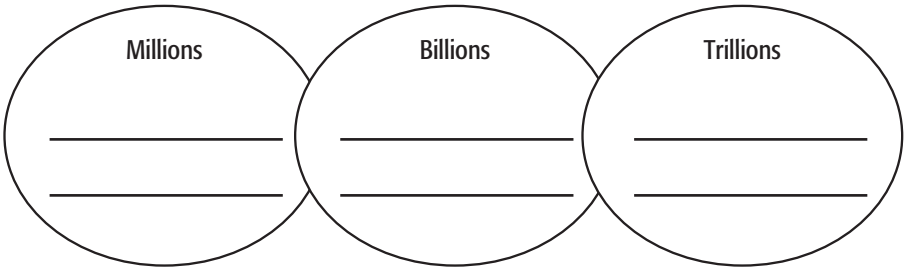
I found this on page _____.

Develop & Understand: A and B

2. Write the following numbers in the correct ovals.

4,000,000 3,000,000,000 2,343,567

1,000,000,000,000 5,478,322,125 1,222,398,523,684



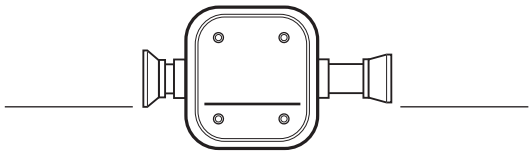
3. Determine whether each of the following statements refers to *millions*, *billions*, or *trillions*.

one thousand billions	
a one followed by six zeros	
a one followed by nine zeros	
one thousand millions	
a one followed by twelve zeros	

Investigation 2

4. Vocabulary Label the parts of the machine below. Write a sentence explaining how to use the machine to find an output.

I found this on page _____.



_____

_____

5. Vocabulary Circle the *exponents* in each of the following numbers. Underline the *factors*.

4^5 5^3 2^8 7^3

I found this on page _____.

Think & Discuss

6. Explain how you would rewrite 4 • 4 • 4 • 4 • 4 in a shorter form.

_____

_____

Develop & Understand: B

I found this on page _____.

7. Match each repeated multiplication to its exponential form.

5^4	6 • 6 • 6
3^6	8 • 8 • 8 • 8 • 8 • 8 • 8
7^8	5 • 5 • 5 • 5
6^3	3 • 3 • 3 • 3 • 3 • 3
8^7	7 • 7 • 7 • 7 • 7 • 7 • 7 • 7

8. Match the word form to its exponential form.

three squared	8^8
nine to the fifth power	3^2
six to the fourth power	6^4
eight to the eighth power	9^5

Develop & Understand: C

I found this on page _____.

9. Explain the difference between a factor and an exponent.

10. Suppose you are using an input-output machine with a rule of $\square^3$. How will you find the output for an input of 4? What will you do differently for an input of 6?

What Did You Learn?

I need to remember the following about:

	Words	Examples
Millions		
Billions		
Trillions		
Exponents		
Input/Output		

LESSON 3.2

Patterns

In Lesson 3.2, I expect to learn:

_____

Investigation 1

I found this on page _____.

1. Vocabulary In the following _____, ☐ is the missing _____.

☐, ☐, ♣, ♦, __, ☐, ♣, ♦

I found this on page _____.

Think & Discuss

2. What are the next three terms of the following sequence?

◊, ◊, ○, ◊, ◊, ○, ◊, ◊, ○, _____, _____, _____

3. Describe the pattern that you see.

_____

_____

Develop & Understand: B

I found this on page _____.

4. Describe how you find the next three terms of a numerical sequence.

_____

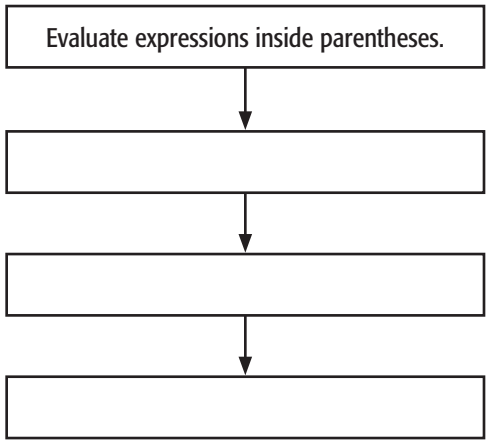
_____

_____

Investigation 2

I found this on page _____.

5. Complete the flowchart to show the order for evaluating expressions, which is also called the _____.



Develop & Understand: A

6. Use the order of operations to explain whether each pair of expressions are equal to each other.

$4 + 6 \cdot (8 - 3)$ and $(4 + 6) \cdot (8 - 3)$	$3 \cdot 5 - (4 + 1)$ and $(3 \cdot 5) - (4 + 1)$

Investigation 3 Think & Discuss

I found this on page _____.

7. Consider the following expressions.

$$6 \cdot 3^2 \qquad (6 \cdot 3)^2$$

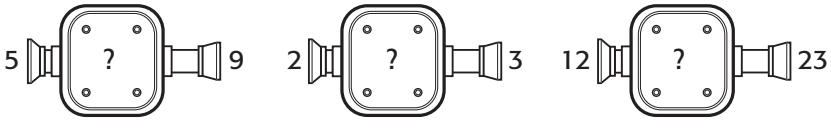
Are the two expressions equal? Why or why not?

8. Explain how you would simplify the expression $7 + (8 - 5)^3$ using the order of operations.

Investigation 4 Think & Discuss

I found this on page _____.

9. The values 5, 2, and 12 were input into the same machine. The outputs are shown below. What rule did the machine use?



10. Explain how you determined the rule for Exercise 9.

I found this on page _____.

Develop & Understand: B

11. The table below shows the outputs a particular machine produced for the given inputs. Find a rule the machine could have used.

Input	3	5	10	50	100
Output	9	15	30	150	300

output = _____

12. Show a table for the outputs a particular machine produced for the given inputs.

Input	3	6	9	12	15
Output					

output = ____ × input − ____

What Did You Learn?

I need to remember the following about:

sequences: _____

the next term in the sequence 8, 2, 2, 2, 8, 2, 2, 8, 2, . . . would be: _____

the pattern for the Fibonacci sequence is: _____

stages: _____

EXAMPLE: Stage 1 _____ Stage 2 _____ Stage 3 _____

LESSON 3.3

Variables and Rules

In Lesson 3.3, I expect to learn:

_____

_____

Think & Discuss

How did you determine the best way to find the total number of blocks? Why is "plus 2" included in the book's expression?

_____

_____

_____

Investigation 1

I found this on page _____.

Develop & Understand: A

1. If $n = 8$, what is the value of $4n - 1$? Explain how you found your answer.

_____

2. Suppose $n = 3$. Would the value of the expression change? Why? What would the new value be?

_____

_____

_____

3. Vocabulary Write *yes* or *no* to indicate whether each of the following is a characteristic of *algebraic expressions*.

Includes numbers	
Included symbols	
Always has the same value	

Investigation 2

I found this on pages _____.

Develop & Understand: B

4. Use the steps in Parts a–c to help you write a rule for the number of triangles in the sequence.

Stage 1 Stage 2 Stage 3 Stage 4

a. The number of triangles in a stage will be represented by _____.

b. The stage number will be represented by _____.

c. The pattern can be described as _____.

_____.

d. A rule that represents the number of triangles in any stage is _____.

Think & Discuss

Investigation 3

I found this on page _____.

5. How can you show that two rules will give the same result for every stage?

_____

_____

_____

Develop & Understand: A

I found this on page _____.

6. Two rules were written for the following dot sequence, $d = n + 6$ and $d = 3 \cdot n$, where n represents the stage number, and d represents the number of dots in the stage.

Stage 1 Stage 2 Stage 3 Stage 4

Determine whether each rule correctly describes the sequence. For each rule, explain why or why not.

_____

_____

_____

Inquiry

Investigation 4

I found this on page _____.

7. Explain how the number of trips it takes to cross a bridge with weight restrictions is related to the number of children and adults.

Investigation 5

I found this on page _____.

Think & Discuss

8. How would you determine if the following rules are equivalent?

$a = 2b + 8$ $\qquad$ $z = 8 + 2y$

I found this on page _____.

Develop & Understand: B

9. Determine which rule could be correct for the table. Explain how you know.

m	2	3	5	10
n	6	11	27	102

$n = 3 \cdot m$ $\qquad$ $n = m^2 + 2$

Investigation 6

I found this on page _____.

Think & Discuss

10. Why would it be easy to confuse the rule for finding the number of legs on a group of spiders, $L = 8 \cdot S$, with $S = 8 \cdot L$?

I found this on page _____.

Develop & Understand: A

11. Suppose you want to buy twice as many goldfish as beta fish for your aquarium. What are the two variables in this situation?

_____

12. In packages of colored erasers, there are three red erasers for every one green eraser. Complete the table.

Red erasers	3			
Green erasers	1			

Let _____ represent the number of red erasers and _____ represent the number of green erasers. Write a rule to show the relationship between red and green erasers.

_____

Develop & Understand: B

13. Joel is collecting pencils. He has twice as many as Germaine. Germaine has five less than Andrea. Write expressions to show Joel's number of pencils, and Germaine's number of pencils if Andrea's number of pencils is a.

_____

14. Explain how you wrote the expressions.

_____

_____

_____

_____

What Did You Learn?

I need to remember the following about:

algebraic expressions: _____

_____

rules: _____

_____

_____

LESSON 3.4

Apply Properties

In Lesson 3.4, I expect to learn:

_____

_____

I found this on page _____.

Vocabulary General statements that are based upon number patterns are called _____.

Explore

What patterns did you discover about the page numbers in the newspaper?

_____

Investigation 1

Think & Discuss

1. Name at least two everyday situations that must be done in a certain order.

_____

_____

2. Name two mathematical operations for which order makes a difference.

_____

Develop & Understand: A

I found this on page _____.

3. State a commutative operation for the table on page 175 in your own words. Give an example.

_____

_____

_____

I found this on page _____.

4. Give an addition and multiplication example of each term. Then write the meaning of each term in your own words.

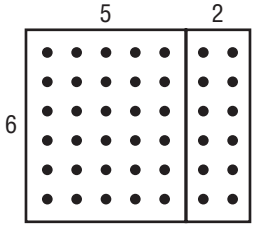
Term	Addition and Multiplication Examples	Meaning
a. commutative property		
b. identity element		
c. inverse elements		
d. associative property		

Investigation 2

Develop & Understand: A

I found this on pages _____.

5. Vocabulary The dot diagram below illustrates the _____ property.



6. Write two expressions representing number of dots in the diagram.

_____

7. Explain why the expressions are equivalent.

_____

_____

_____

8. Which number is being distributed in the expression $5(3 + 2)$?

_____

9. Draw a dot diagram that illustrates $5(3 + 2)$.

Investigation 3

I found this on page _____.

Develop & Understand: A

10. Give an example of how adding in the clock-12 system is different from the usual way of adding.

_____

Develop & Understand: B

11. Vocabulary Write an example for each term in the clock-12 system. Write a corresponding example in the real number system.

	Clock-12 system	Real number system
additive identity	$7 + 12 = 7$	_____
additive inverses	$8 + \_\_\_ = 12 = 0$	$8 + \_\_\_ = 0$

12. Jane starts taking a test at 12 P.M. It takes her two hours. What time will it be when Jane is finished?

_____

What Did You Learn?

I need to remember the following about:

Commutative Property	Associative Property	Distributive Property
Example:	Example:	Example:

CHAPTER 4

Fraction and Decimal Operations

Contents in Brief

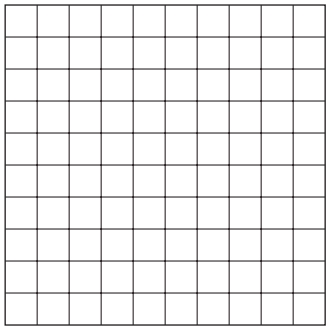
Real-Life Math

Fractions and decimals are involved in all aspects of building houses. Architects create blueprints, and contractors use those blueprints to build the actual houses.

Think About It

What steps did you take to determine the blueprint dimensions for a 12 feet × 16 feet floor with a blueprint scale of $\frac{1}{4}$?

For the grid below, each square represents 2 feet. Sketch a room with dimensions of 8 feet by 12 feet.



Connections to the Past (Chapter 2)

Complete the following statements.

$\frac{1}{2}$ of 18 = _____ $\frac{1}{4}$ of 12 = _____

$\frac{2}{3}$ of 27 = _____ $\frac{3}{5}$ of 20 = _____

Find three fractions equivalent to each of the following.

$\frac{2}{3}$ _____

$\frac{4}{5}$ _____

Vocabulary

Connect each meaning or example to its mathematical term.

A a value found by adding all the values of a data set and dividing by the total number of values	**reciprocal** _____
B the difference between the minimum and the maximum values in a data set	**range** _____
C the middle value when all the values in a data set are ordered from least to greatest	**mean** _____
D a value much greater or less than the rest of the values in a set	**median** _____
E the multiplicative inverse of a number; for example, $\frac{1}{2}$ and 2	**mode** _____
F the value that occurs most often in a data set	**outlier** _____

Family Letter

Describe one item that you measured and the measurement that you took. Was the actual measurement more or less than you thought it would be?

_____

_____

What unit costs did you find? Which is the better value?

_____

_____

If you doubled a recipe that calls for $\frac{1}{2}$ cup of milk, how much milk would you need? What if you halved the recipe? How would you determine the right amounts?

_____

_____

_____

LESSON 4.1

Add and Subtract Fractions

In Lesson 4.1, I expect to learn:

Think & Discuss

Connect pairs of numbers whose sums equal 1.

$\frac{3}{8}$	$\frac{1}{2}$
$\frac{2}{4}$	$\frac{4}{10}$
$\frac{7}{9}$	$\frac{5}{8}$
$\frac{3}{5}$	$\frac{2}{9}$

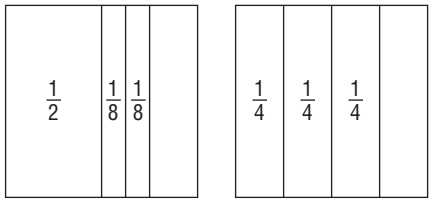
Investigation 1

I found this on page _____.

Example

1. Write a related subtraction equation for this addition equation:

$$\frac{1}{2} + \frac{2}{8} = \frac{3}{4}.$$



Investigation 2

I found this on page _____.

Develop & Understand: A and B

2. Rewrite each expression using a common denominator. Then find the sum or difference. Give your answer in lowest terms. If an answer is greater than 1, write it as a mixed number.

$$\frac{1}{5} + \frac{7}{8} \qquad \frac{2}{3} - \frac{1}{8}$$

3. Write a sentence explaining how you found the sum or difference.

Investigation 3

I found this on page _____.

Develop & Understand: A

4. Jing is writing an essay for school. The essay has to be $2\frac{1}{2}$ pages long, and Jing has written $1\frac{2}{3}$ pages. How many more pages does she have left to write? Explain how you found your answer.

5. Rosita has a piece of board that is $4\frac{1}{8}$ feet long. She needs to cut off a piece that is $3\frac{5}{6}$ feet long for a project. How much board will be left? Explain how you found your answer.

6. Circle all of the expressions that equal $\frac{1}{2}$.

$4\frac{1}{9} - 3\frac{2}{3}$ $\quad$ $1\frac{7}{9} - 1\frac{5}{18}$ $\quad$ $\frac{5}{6} - \frac{7}{12}$

$2\frac{1}{10} - 1\frac{3}{5}$ $\quad$ $\frac{5}{8} - \frac{1}{4}$ $\quad$ $7\frac{3}{4} - 6\frac{2}{8}$

Inquiry

Investigation 4

I found this on page _____.

7. Use a flowchart to describe the steps that you would use to find $1\frac{1}{4} - \frac{3}{8}$ with a calculator.

What Did You Learn?

I need to remember the following about:

adding and subtracting fractions: _____

mixed numbers: _____

LESSON 4.2

Multiply and Divide Fractions

In Lesson 4.2, I expect to learn:

_____

Investigation 1

I found this on page _____.

Think & Discuss

1. Describe the two methods for multiplying a whole number and a fraction. Then give an example of each that shows your method.

a. Method 1: _____

_____

_____

b. Method 2: _____

_____

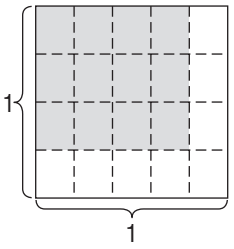
_____

Investigation 2

I found this on page _____.

Develop & Understand: A

2. Write a multiplication equation to represent the product of the shaded area. Find the product. Explain your process.



_____

_____

_____

Develop & Understand: B

3. Without using a model, find the following products.

a. $\frac{5}{6} \cdot \frac{7}{8} =$ _____ **b.** $\frac{2}{3} \cdot \frac{6}{7} =$ _____

4. Explain why it would be easier to multiply the numerators and denominators than to draw a model for these products.

_____

_____

Investigation 3 *Think & Discuss*

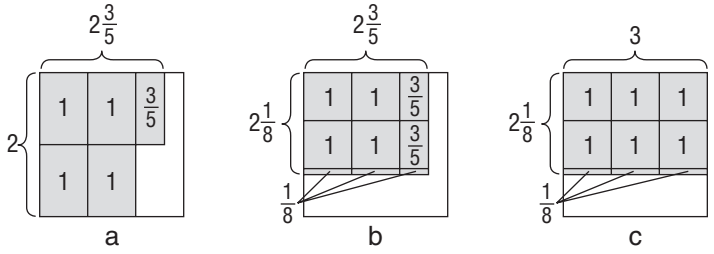
I found this on page _____.

5. Find the product $2\frac{1}{8} \cdot 2\frac{3}{5}$. Show how you found your product.

a. Estimate: _____

b. Product: _____

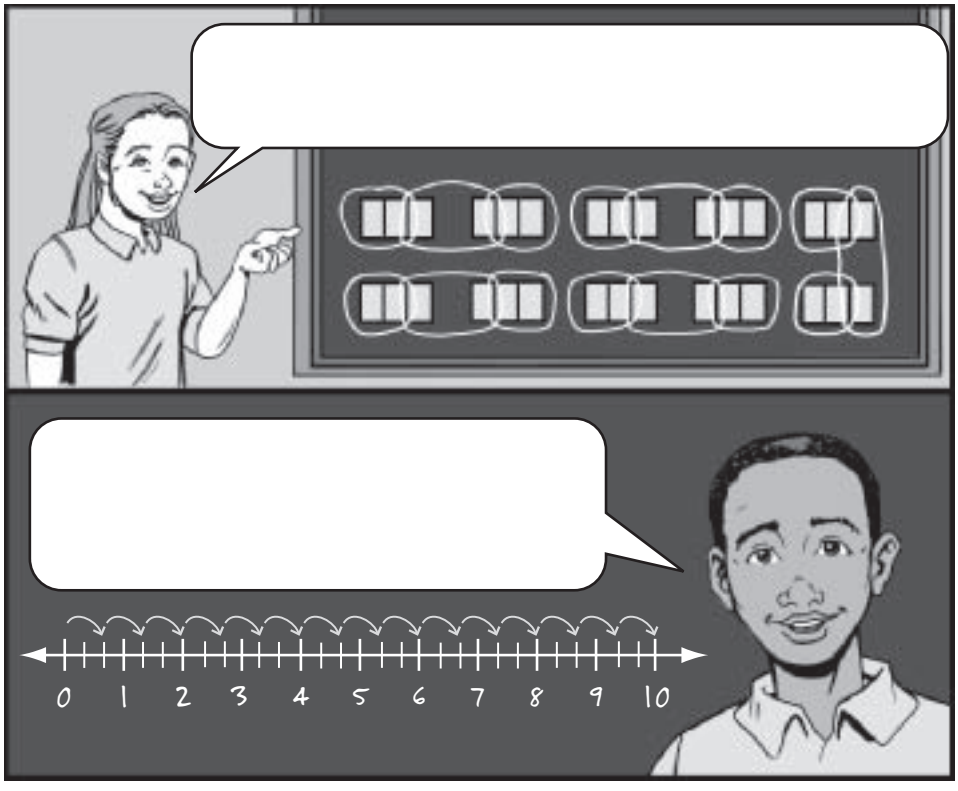
6. Which diagram illustrates the product? _____



Investigation 4 *Explore*

I found this on page _____.

7. Explain how Caroline and Marcus found the quotient $10 \div \frac{2}{3}$.



Develop & Understand: B

I found this on page _____.

8. Fill in the blanks in each pair of related equations.

$15 \div \frac{1}{6} =$ _____ $\frac{1}{6} \cdot$ _____ $= 15$	$9 \div \frac{3}{5} =$ _____ $\frac{3}{5} \cdot$ _____ $= 9$

9. How did using related multiplication equations help you find the quotients?

_____

_____

Investigation 5

Example

I found this on page _____.

10. Vocabulary To divide a fraction by a fraction, multiply the first fraction by the _____ of the second fraction.

11. Rewrite each division expression using multiplication.

$\frac{2}{3} \div \frac{4}{5}$ _____ $\frac{13}{4} \div \frac{3}{8}$ _____ $16 \div \frac{1}{3}$ _____

What Did You Learn?

I need to remember:

	Reminder:	Example
multiplying fractions		
dividing fractions		
mixed numbers		
reciprocals		
changing mixed numbers to fractions		

LESSON 4.3

Multiply and Divide Decimals

In Lesson 4.3, I expect to learn:

_____

_____

Investigation 1

Develop & Understand: A

I found this on page _____.

1. Find each product.

a. $10 \cdot 45 =$ _____ **b.** $10 \cdot 0.45 =$ _____

c. $14 \cdot 26 =$ _____ **d.** $14 \cdot 0.26 =$ _____

2. Explain how you decided to place the decimals in Parts b and d?

_____

_____

Investigation 2

Develop & Understand: A

I found this on page _____.

3. Write the decimal as a fraction and multiply. Then, give the product as a decimal.

$$0.8 \cdot 1.4 = \square \cdot \square = \square = \square$$

4. How can writing decimals as fractions make it easier to multiply them?

_____

_____

_____

5. Write the letter of the product next to each multiplication expression.

_____ 0.3 • 2.13	**A.** 0.00639
_____ 3 • 2.13	**B.** 0.0639
_____ 0.03 • 2.13	**C.** 0.639
_____ 0.003 • 2.13	**D.** 6.39

Investigation 3

I found this on page _____.

Develop & Understand: B

6. Suppose you are buying gasoline at $3.62 per gallon. Find the cost to fill up your lawn mower and your car.

Lawn mower: 2.3 gallons Cost to fill up: _____

Your car: 18.5 gallons Cost to fill up: _____

7. Explain how you knew where to place the decimal in each answer.

_____

_____

_____

_____

Investigation 4

I found this on page _____.

Develop & Understand: A

8. Complete the table.

51.36 • 0.01 = _____	51.36 ÷ 0.01 = _____
51.36 • 0.1 = _____	51.36 ÷ 0.1 = _____
51.36 • 10 = _____	51.36 ÷ 10 = _____
51.36 • 100 = _____	51.36 ÷ 100 = _____

9. Choose two expressions from the table that have equal values. Explain why they are equal.

_____

_____

Investigation 5

I found this on page _____.

Think & Discuss

10. For each situation, determine whether you should multiply or divide. Then, write an expression you could use to find each answer and find the solution.

a. A package of 30 ink pens costs $4.32. How much would one ink pen cost?

_____

b. Luke is buying a new bar stool to match his old ones. He knows the old ones are 26 inches tall, but the new ones are measured in centimeters. There are 2.54 centimeters in one inch. What height bar stool does Luke need?

c. Althea wants to measure her car's gas mileage. She fills up the tank with 21.2 gallons of gasoline, and drives 424 miles. How many miles per gallon does Althea's car get?

I found this on page _____.

Develop & Understand: B

11. Explain how you would find the cost of gas to drive 536.5 miles if your car gets 15.4 miles per gallon and gas costs $3.58 per gallon. Then find the cost.

What Did You Learn?

	I need to remember the following about:	Example
multiplying decimals		
dividing decimals		

LESSON 4.4

What is Typical?

In Lesson 4.4, I expect to learn:

_____

Investigation 1

I found this on page _____.

Develop & Understand: A

1. In gym class, twelve students ran one mile. Create a _____ to show the students' times listed.

7	10	8	7	7	6
9	6	8	8	8	9

2. Based on the students' results, find the following measures.

Minimum value: _____

Maximum value: _____ → Range: _____

_____ (value that occurs most often): _____

_____ (middle value when the values are ordered from greatest to least): _____

3. Explain how a line plot helps you understand a set of data.

_____

_____

Investigation 2

I found this on page _____.

4. Vocabulary Write *Yes* or *No* to tell whether each statement about **mean** is correct.

The *mean* is the value that occurs most often in a set of data.	
Another word commonly used for *mean* is *average.*	
To find the *mean,* you add all the values in a set and divide by the total number of values.	
The *mean* is the middle value in a set of values.	

Develop & Understand: B

5. Ten students sold gift wrap for a club fundraiser. They sold the following numbers of gift wrap packages.

24 13 17 15 8 21 9 12 15 19

Find the mean for the numbers of gift wrap packages sold. _____

6. Describe a situation where knowing the mean for a set of information would be useful.

_____

_____

_____

Investigation 3

I found this on page _____.

Develop & Understand: B

7. Tell whether mean or median would be the best statistic to use for the data below. Explain why you made your choice.

a. the average score on a test _____

_____

_____

b. the average salary of a large company _____

_____

_____

8. Vocabulary Fill in the table with the definition for outlier and then write the meaning in your own words.

Text Definition	My Own Definition

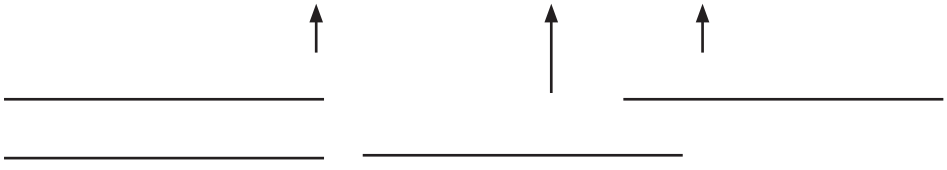
9. Circle the outlier in each group of data.

Data Set 1	13	14	75	19	16	17	23	16	19
Data Set 2	101	112	118	182	99	107	103	115	111

What Did You Learn?

Use the words median, mode, mean and outlier to fill in each blank.

2 6 8 8 8 10 15 24 92



I need to remember the following about:

choosing mean or median for a data set: For the data set below, I should choose _____ to represent the data set because the data has an _____ of _____.

Data Set	46	51	55	53	8	48	50	52	44

CHAPTER 5

Rate, Ratio, and Proportion

Contents in Brief

Real-Life Math

A common example of the use of gear ratios is found on bicycles. Bicycle wheels turn with a chain on gears, and bicycles with multiple gears can be adjusted so that the gear ratio fits the owner's preference.

Think About It

If a $\frac{2}{1}$ gear ratio means that the back wheel rotates twice every time the pedals rotate once, what would a gear ratio of $\frac{4}{1}$ mean?

Which would be easier on the bike rider, a gear ratio of $\frac{2}{1}$ or a ratio of $\frac{4}{1}$?

Connections to the Past (Chapter 2)

What is the name of each fraction family? Explain how you got your answer.

a. $\frac{8}{26}, \frac{12}{39}, \frac{16}{52}$ _____

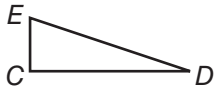
b. $\frac{12}{20}, \frac{21}{35}, \frac{30}{50}$ _____

c. $\frac{6}{2}, \frac{30}{10}, \frac{60}{20}$ _____

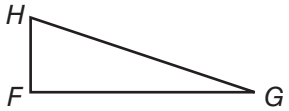
d. $\frac{10}{14}, \frac{15}{21}, \frac{50}{70}$ _____

Vocabulary

Use the following words to complete the statements about these triangles.



Triangle *A*



Triangle *B*

congruent	equivalent ratio	corresponding sides	similar
counterexample	corresponding angles	ratio	unit rate

- Triangle *A* and Triangle *B* are _____ but not _____.
- Angles *E* and *H* are _____.
- Angles *D* and *F* are a _____ to the statement that all pairs of angles must be corresponding angles.
- $\overline{FG}$ and $\overline{CD}$ are _____ of the two triangles.
- The _____ of the sides for the two triangles is 1 to 2 or $\frac{1}{2}$. An example of a _____ is $\frac{1}{2}$ because it compares one quantity to one unit of another quantity. $\frac{2}{4}$ is an _____ to $\frac{1}{2}$.

Family Letter

Name one instance that would involve using ratios in real life. Explain how you would use the ratios.

_____

_____

_____

How can you use ratios while cooking or cleaning?

_____

_____

LESSON 5.1

Ratios and Rates

In Lesson 5.1, I expect to learn:

_____

_____

Investigation 1

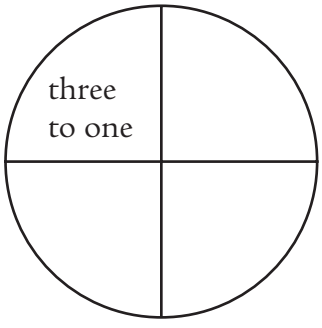
I found this on page _____.

1. Vocabulary Write *True* or *False* for each statement about ratios and correct any statements that are false.

a. A ratio compares two numbers.	
b. There are several ways to express ratios.	
c. All ratios must be written as fractions.	
d. Ratios are only useful in measuring money.	

Develop & Understand: A

2. Complete the circle by writing the given ratio in a different way in each section.



3. A *ptarmigan* is a type of bird. Use the word *ptarmigan* to find the following ratios.

Vowels	Consonants
a and *i*	*g, m, n, p, r* and *t*

Ptarmigan

a. Vowels to consonants _____

b. Vowels to the total number of letters _____

c. Consonants to the total number of letters _____

4. What do you notice about the results of *b* and *c*?

_____

_____

_____

Investigation 2

Develop & Understand: A

I found this on page _____.

5. A small batch of green paint requires two cans of yellow dye and three cans of blue dye. Explain how you might make a larger batch of green paint.

_____

_____

_____

Investigation 3

Develop & Understand: A

I found this on page _____.

6. Yellow paint is used to make a batch of orange paint. The ratio table below compares the number of containers of yellow paint to the total number of containers. Complete the ratio table.

Yellow	1		5		10
Total	4	8		32	

7. Explain how you know that the color will be the same for any batch of paint.

_____

_____

_____

Investigation 4

I found this on page _____.

8. Vocabulary Write a meaning for *unit rate* in your own words.

_____

_____

9. Circle each *unit rate* below.

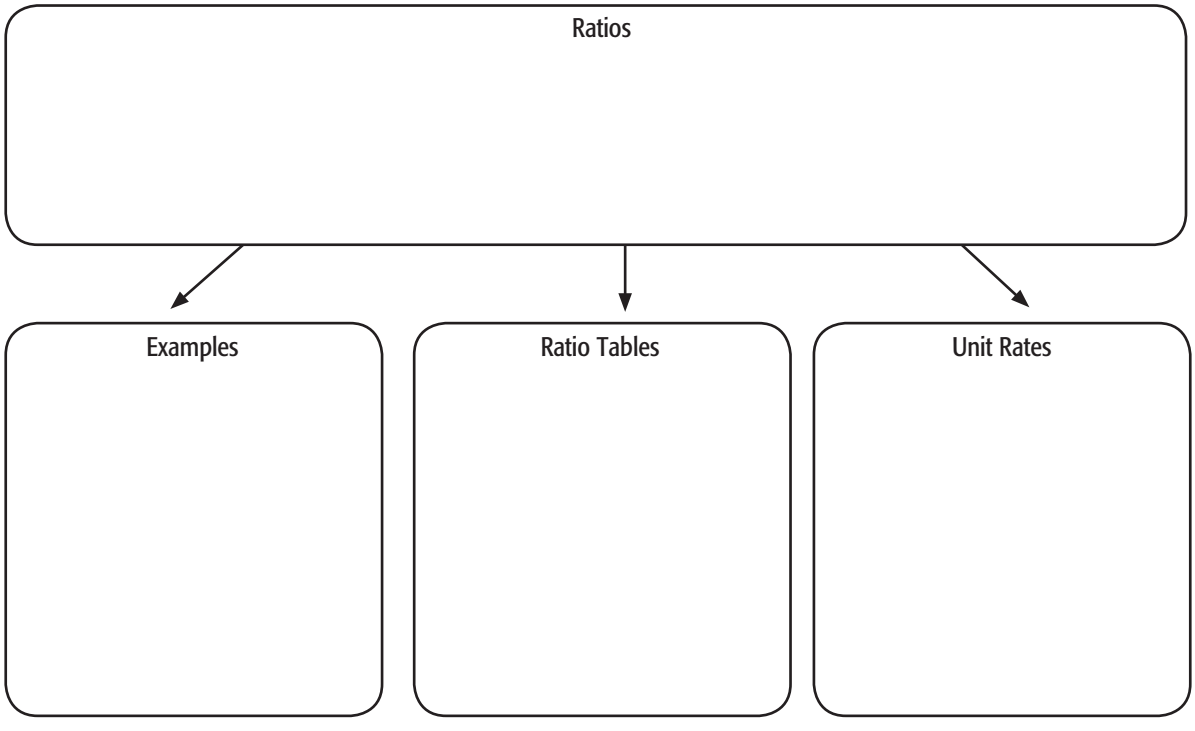
12 eggs for $2.00	15 pencils for $1.50
50 students in two classes	1 laptop computer for $550
1 muffin for 39 cents	2 pints in 1 quart

10. Write a unit rate to show how much it would cost to buy 1 CD if 3 CDs cost $45.

_____

What Did You Learn?

I need to remember the following about:



LESSON 5.2

Proportions

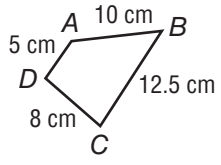
In Lesson 5.2, I expect to learn:

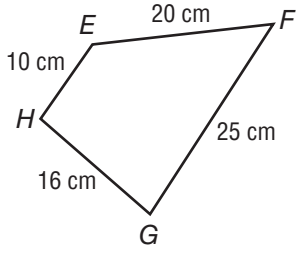
Think & Discuss

How can you determine whether the points on a graph show a proportional relationship?

Investigation 1

I found this on page _____.





Develop & Understand: A

1. Are the side lengths of the quadrilateral *ABCD* proportional to those of quadrilateral *EFGH*? Explain how you know.

2. Find the ratio of the sides of the first quadrilateral to the second.

3. Write *yes* or *no* to tell whether each set of ratios is proportional. Explain how you tested to see if each set of ratios was proportional.

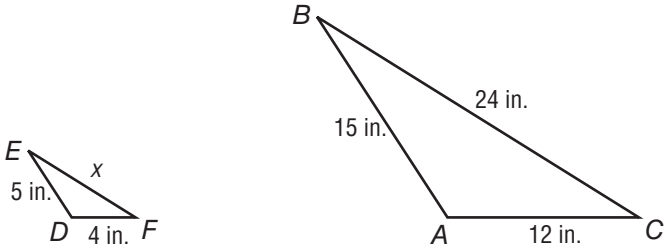
$\frac{3}{12}, \frac{25}{100}$ _____ $\frac{5}{7}, \frac{21}{35}$ _____

$\frac{15}{45}, \frac{27}{81}$ _____ $\frac{5}{3}, \frac{40}{24}$ _____

Investigation 2

I found this on page _____.

4. Choose two possible methods to determine the measure of side *EF*.



a. Explain your first method.

_____

b. Explain your second method.

_____

_____

_____

Inquiry

Investigation 3

I found this on page _____.

5. Suppose you want to tile a room that measures 10 feet by 14 feet. Describe how you would determine the number of 12-inch by 12-inch tiles it would take to cover the floor.

_____

_____

_____

6. If you changed your mind and wanted to tile the room with tiles that measure 24 inches by 24 inches, how would you change your work to determine the right number of tiles?

_____

_____

_____

What Did You Learn?

I need to remember the following about:

proportional: _____

_____

determining whether the points on a graph are proportional: _____

_____

_____

LESSON 5.3

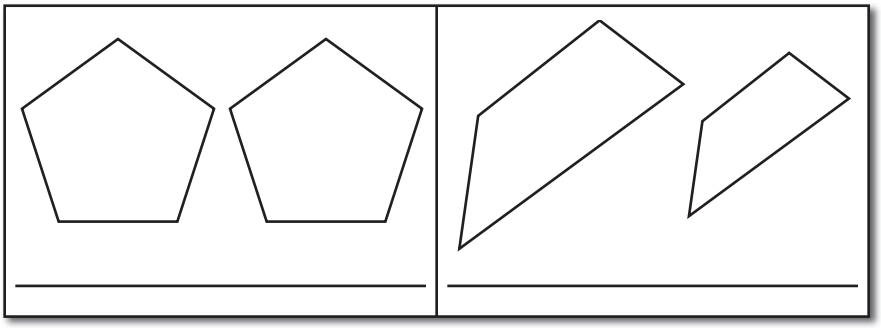
Similarity and Congruence

In Lesson 5.3, I expect to learn:

_____

_____

Vocabulary Write *congruent* or *similar* for each pair of figures.



How is *similar* different from *congruent*? Explain. _____

_____

_____

_____

Investigation 1

I found this on pages _____.

Develop & Understand: A

1. Explain how you would test each of the following for congruence:

a. line segments: _____

_____

b. two squares: _____

_____

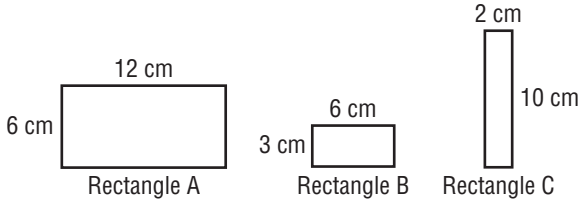
_____

c. two angles: _____

_____

Investigation 2 — Develop & Understand: B

I found this on page _____.



2. Which rectangles are similar? Explain how you know.

_____

_____

_____

Investigation 3

3. Vocabulary Circle all the ratios that represent the same relationship as $\frac{1}{3}$.

I found this on page _____.

12:24 1:3 $\frac{4}{12}$ 5:18 $\frac{21}{63}$ 7 to 20

4. What are ratios that represent the same relationship called?

_____

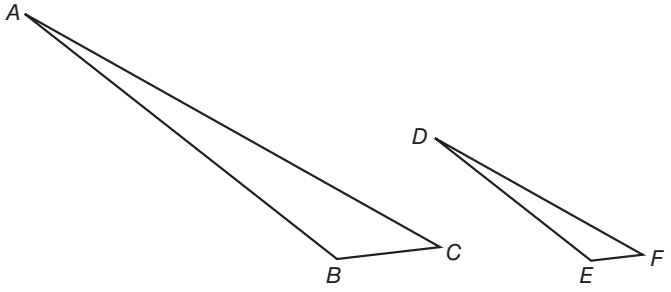
I found this on page _____.

Develop & Understand: B

5. Angles and sides that are located in corresponding places in two figures are

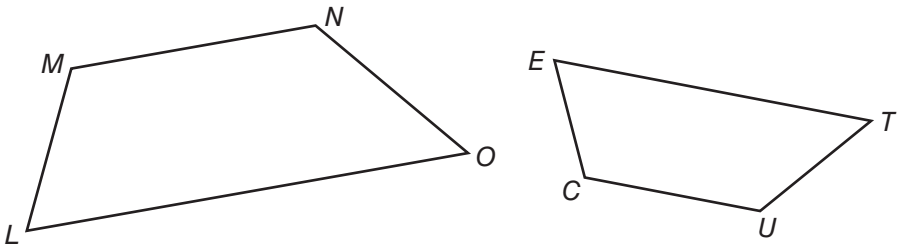
_____

6. Vocabulary Connect the corresponding sides and angles of triangles *ABC* and *DEF*.



Triangle *ABC*	Triangle *DEF*
$\angle A$	Side *FD*
Side *BC*	Side *DE*
$\angle B$	$\angle D$
Side *AB*	$\angle F$
$\angle C$	Side *EF*
Side *CA*	$\angle E$

7. Fill in the measures in the table below.



Description	(Figure *LMNO*) Side	Length (cm)	(Figure *ECUT*) Side	Length (cm)	Ratios
longest side	$\overline{LO}$		$\overline{ET}$		
second-longest side	$\overline{MN}$		$\overline{CU}$		
third-longest side	$\overline{NO}$		$\overline{UT}$		
shortest side	$\overline{LM}$		$\overline{EC}$		

Investigation 4

Develop & Understand: A

8. Explain how you would test to determine whether two figures are similar.

I found this on page _____.

_____

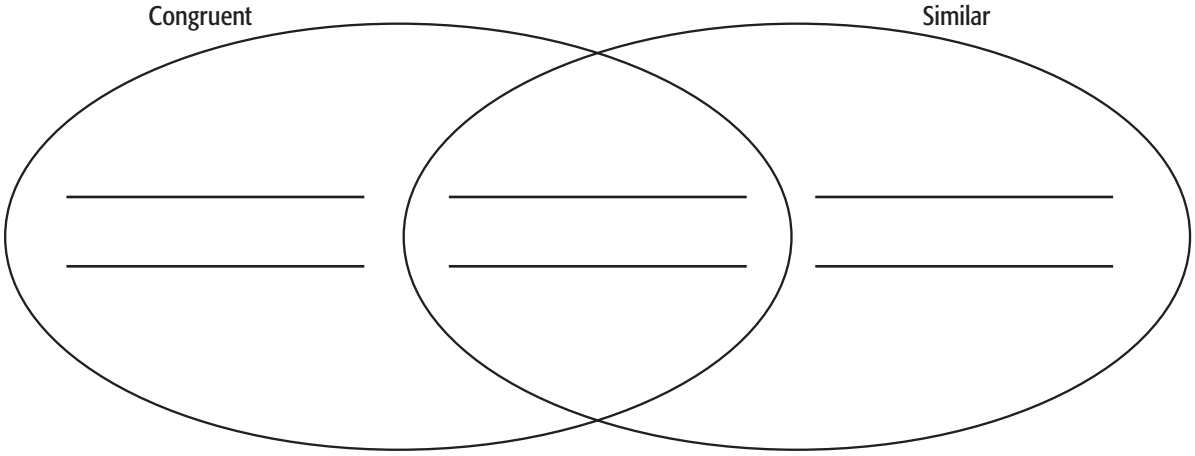
_____

_____

_____

What Did You Learn?

I need to remember the following about:



CHAPTER 6

Percents

Contents in Brief

Real-Life Math

Surveys are used to find people's preferences and opinions, and many companies use the results to plan their marketing for products. Percents are often used to report survey results. *Sampling* helps provide a guide to the thoughts of many people by surveying a smaller group that represents the whole.

Think About It

Suppose your school has 75 girls and 200 boys between the ages of ten and twelve. Should your sample include more girls' opinions or boys' opinions? Why?

_____

_____

Suppose 200 students chose sandwiches as their favorite school lunch out of a total 1,000 students. How would you write the results?

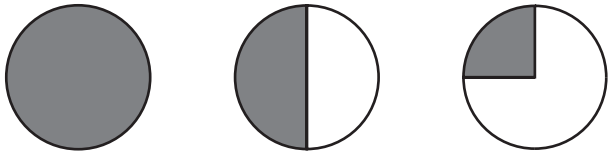
_____

_____

Connections to the Past (Chapter 2)

Write each of the following decimals as percents. Then use each percent to identify the shaded portions of the following circles.

1. 0.25 = _____ **2.** 0.50 = _____ **3.** 1.0 = _____



_____ _____ _____

4. Label the points on the number line below with benchmark fractions.

Vocabulary

▶ Write a definition and provide an example for each term.

Term	Mathematical Meaning	Example
percent		
rational number		

▶ Write P for the numbers below that are percents, and N for those that are not percents. Explain how you could tell.

Number	P or N	How you knew:
25%		
34 peaches		
$\frac{75}{100}$ on a test		
36 out of 100		

Family Letter

Which home activity did you do? Write one percent that you found, and explain what that percent represented.

Tell how you calculated a tip or a discounted price. Was the result what you expected it to be? Why or why not?

LESSON 6.1

Use Percents

In Lesson 6.1, I expect to learn:

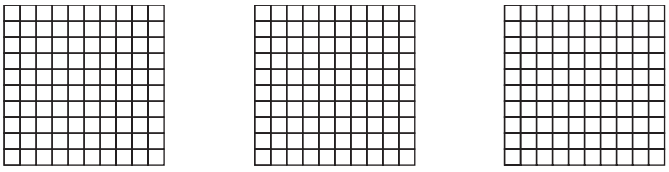
Investigation 1

I found this on page _____.

Develop & Understand: A

1. Vocabulary Shade the following 100-grids to show the percent represented by each decimal.

a. 0.72 **b.** 0.43 **c.** 0.02



2. Explain how you determined how much to shade on each grid.

I found this on page _____.

Think & Discuss

3. For parts a-e, connect each of the fractions and decimals with the correct percent.

a. $\frac{15}{20}$	70%
b. 0.7	50%
c. $\frac{26}{40}$	65%
d. 0.43	75%
e. $\frac{95}{190}$	43%

4. Explain how you knew which fractions and decimals to connect.

I found this on page _____.

Develop & Understand: B

5. Suppose there are 50 seventh graders and 24 seventh graders perform in band or choir. How would you express the ratio of seventh graders who perform in band or choir as a fraction, a decimal, and a percent? Explain how you found your answers.

Investigation 2

I found this on page _____.

Ms. Johnson's Class	
Favorite Yogurt	Number of Votes
Chocolate	13
Vanilla	11
Strawberry	6

Mr. Anderson's Class	
Favorite Yogurt	Number of Votes
Chocolate	9
Vanilla	6
Strawberry	4

Develop & Understand: B

6. Consider the results of the survey shown above. Is it correct to say that strawberry is more popular in Ms. Johnson's class because it received more votes than it did in Mr. Anderson's class? Why or why not?

7. Explain how you could correctly compare the popularity of the yogurt flavors in each class.

Investigation 3

I found this on page _____.

Develop & Understand: A

8. Suppose a lunch survey showed that 58% of students wanted to have sandwiches and $\frac{13}{25}$ of students wanted milk. The survey was based on a school enrollment of 134% of last year's enrollment. Complete the table for each of these numbers.

Fraction or Mixed Number	Decimal	Percent
$1\frac{17}{50}$		
		58%
$\frac{13}{25}$		

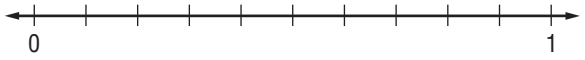
9. Explain how you converted the numbers in the table on page 65 from one form to another.

Investigation 4

Develop & Understand: A

I found this on page _____.

10. Draw a number line. Place the numbers 0.42, 0.621, 34%, and $\frac{9}{20}$ on the number line.



Develop & Understand: B

I found this on page _____.

11. Explain how you knew where to place each point on your number line.

12. Choose a fraction from Exercise 9. Write your fraction, $\frac{2}{3}$, and $\frac{5}{6}$ in order from least to greatest.

What Did You Learn?

I need to remember the following about:

percent: _____

converting a mixed number like $2\frac{3}{4}$ to a percent and to a decimal:

LESSON 6.2

A Percent of a Quantity

In Lesson 6.2, I expect to learn:

_____

Think & Discuss

Explain how you could use fractions to find 50% of a number.

_____

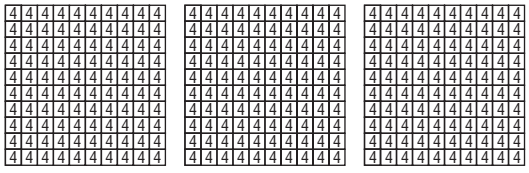
_____

Investigation 1

I found this on page _____.

Develop & Understand: A

1. Each of these grids represents 400, so each small square is worth 4.



42% 60% 13%

Shade each grid to show the percent listed below it. Find the value of each percent.

42% of 400 = _____

60% of 400 = _____

13% of 400 = _____

2. How did shading the grids help you find each value? Explain.

_____

_____

_____

Investigation 2

Example

I found this on page _____.

3. Help Conor explain how to estimate the price of jogging shoes on sale for 30% off the original price of $80. Then have him calculate the actual sale price using Rosita's method.

_____

_____

_____

_____

I found this on page _____.

Develop & Understand: B

4. Bud's Electronics is offering a 20% discount on most store items. Connect each of the following products to its sale price.

Desktop Computer – $875	$635.20
Digital Camera – $668	$534.40
Widescreen TV – $794	$700.00

5. Suppose Bud's Electronics gave a 30% discount instead of a 20% discount. Find each new sale price.

Desktop Computer: _____

Digital Camera: _____

Widescreen TV: _____

What Did You Learn?

I need to remember the following about:

finding percents using models: _____

_____

_____

_____

finding percents using multiplication: _____

_____

LESSON 6.3

Percents and Wholes

In Lesson 6.3, I expect to learn:

_____

Explore

Circle the numbers below that are equivalent to 40%.

$\frac{1}{4}$	0.44	$\frac{4}{10}$
$\frac{2}{5}$	0.4	$\frac{6}{15}$
0.5	$\frac{100}{250}$	$\frac{14}{40}$

How did you determine which numbers were equivalent to 40%? Explain.

_____

_____

Investigation 1

I found this on page _____.

1. Suppose 62 out of 372 students said they liked science best of all the subjects in school. What percent is this? Explain how you found the answer.

_____

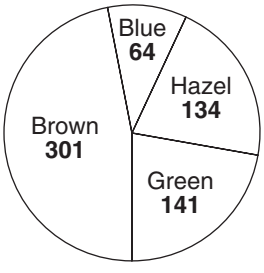
_____

I found this on page _____.

Develop & Understand: B

2. The circle graph shows eye color for the students in a middle school. There are 640 students in all. Use the numbers given to determine the percentage of students with each eye color. Give answers to the nearest whole percent.

Student Eye Color



Students with brown eyes: _____

Students with blue eyes: _____

Students with green eyes: _____

Students with hazel eyes: _____

3. How did you find the percents in Exercise 2 on page 69?

Investigation 2

Develop & Understand: A and *B*

I found this on page _____.

4. Write the letter of the correct answer.

a. 75 **b.** 120 **c.** 32 **d.** 90
e. 100 **f.** 45 **g.** 20 **h.** 60

40% of _____ is 8.	11% of _____ is about 5.
25% of _____ is 8.	$33\frac{1}{3}$% of _____ is 30.
140% of _____ is 105.	225% of _____ is 135.
10% of _____ is 12.	$\frac{1}{2}$% of _____ is 0.5.

Develop & Understand: C

I found this on page _____.

5. Explain how you found the sale prices at Tammy's Food Emporium.

Inquiry

Investigation 3

I found this on page _____.

6. Explain how your score at *Percent Ball* would vary based on how well you played.

What Did You Learn?

I need to remember the following about:

finding percents: _____

finding wholes when given percents: _____

making a decision about the best deal: _____

CHAPTER 7

Area, Volume, and Capacity

Contents in Brief

Real-Life Math

This chapter begins with a table showing the dimensions, perimeter, and area of playing fields for various sports. The listed playing fields are all rectangular.

Think About It

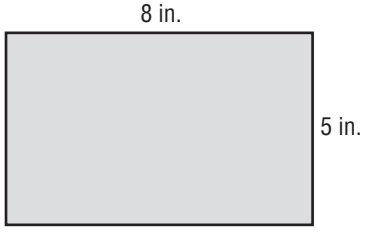
Think about the size of your classroom. Would you expect your classroom to be as big as a volleyball court? What sport do you think could be played in a space the size of your classroom?

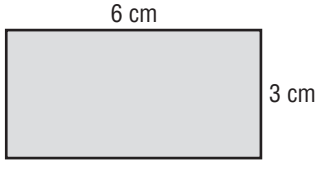
The area of each playing field is given. Based on the dimensions of your classroom, what is your estimate of the area of your classroom floor?

If your classroom is rectangular, how would you find the exact area?

Connections to the Past

Find the area of each of the following rectangles.





Vocabulary

▶ Draw a picture to illustrate the following vocabulary words.

arc, circle sector and central angle | parallelogram | trapezoid

▶ Write the letter of the correct definition next to each term.

_____ area	**A.** the result of multiplying a number by itself
_____ capacity	**B.** the space inside a three-dimensional object
_____ perfect square	**C.** the amount of space covering an object's surface
_____ surface area	**D.** the amount of liquid a container can hold
_____ volume	**E.** the number of square units that fit inside a shape

Family Letter

Name an example of area in real life. How is area used in your example?

Which pizza did you decide was a better deal? How did you find the answer?

LESSON 7.1

Squares

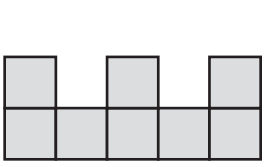
In Lesson 7.1, I expect to learn:

Investigation 1

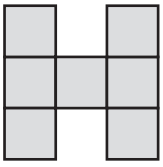
Develop & Understand: A

I found this on page _____.

1. Explain how to find the area of the following shapes. Assume that each square has an area of one square inch.



Shape *A*



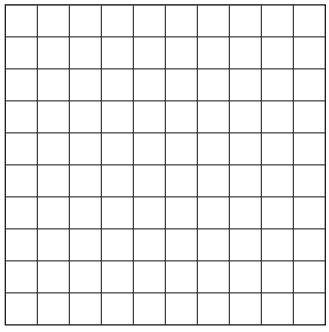
Shape *B*

I found this on page _____.

2. _____ is the formula for finding the area of a rectangle. Explain what *A, L,* and *W* represent.

Think & Discuss

3. Use the grid below to draw a rectangle with dimensions 4 units by $8\frac{1}{2}$ units and find the area. Then explain how you found the area.

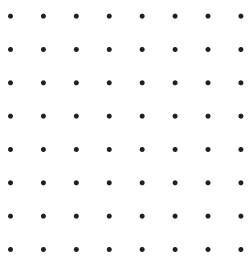


Investigation 2 *Think & Discuss*

4. Evaluate 4^2. _____

Use the dots below to draw a square with an area equal to that many units.

I found this on page _____.



I found this on page _____.

Develop & Understand: A

5. Vocabulary Circle all the *perfect squares* in the group of numbers. Explain how you knew which numbers were perfect squares.

14	9	4
36	22	41
64	72	81
95	100	31

_____

_____

6. What is the area of a square with side length $\frac{3}{4}$ inch? _____
Is your answer a perfect square? Explain.

_____

What Did You Learn?

I need to remember the following about:

area: _____

perfect square: _____

LESSON 7.2

Calculate Areas

In Lesson 7.2, I expect to learn:

Investigation 1

I found this on page _____.

Develop & Understand: A

1. Can you use the formula $A = L \cdot W$ to find the area of parallelograms *A*, *B*, and *C*? Why or why not?

I found this on page _____.

Develop & Understand: B

2. Vocabulary Use the shape below to answer the following questions.

h is the _____

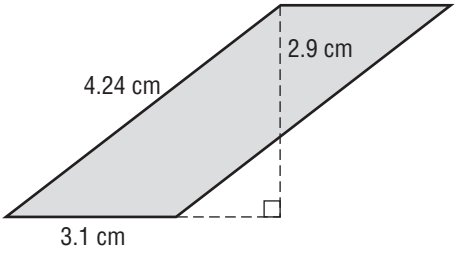
b is the _____

What formula can you use to find the area of the parallelogram?

I found this on page _____.

Develop & Understand: C

3. Find the area of the parallelogram below. Explain how you found it.



Investigation 2

Develop & Understand: A

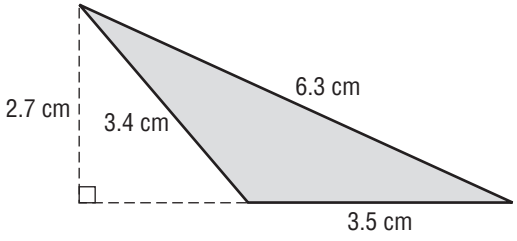
I found this on pages _____.

4. Explain how finding the area of a triangle is related to finding the area of a parallelogram.

5. What is the formula for finding the area of a triangle? Explain how it it is used.

6. Vocabulary Explain how to identify the base of a triangle and height of a triangle.

7. Find the area of the triangle below. Explain how you found your answer.



Develop & Understand: C

I found this on page _____.

8. ΔDEF is created by shearing ΔDEC. What do you know about the area of ΔDEF?

Investigation 3

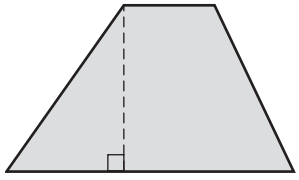
I found this on page _____.

9. Vocabulary Write *true* or *false* for each statement. Explain each answer.

a. A trapezoid has two pairs of parallel sides.

b. The parallel sides of a trapezoid are called the bases.

10. Measure the bases and height of the trapezoid below.



base 1: _____ base 2: _____ height: _____

11. Give the formula for the area of a trapezoid and then use it to find the area in Exercise 10. Explain how you found the area.

Investigation 4

I found this on page _____.

12. Write the formula for finding the area of a circle. _____

Develop & Understand: B

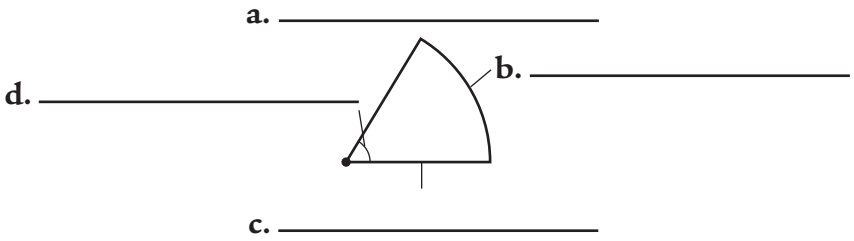
13. Which circle would have a greater area, one with a radius of 5.3 inches or one with a diameter of 11 inches? Explain how you know.

Investigation 5

14. Vocabulary Fill in the blanks with the terms listed below.

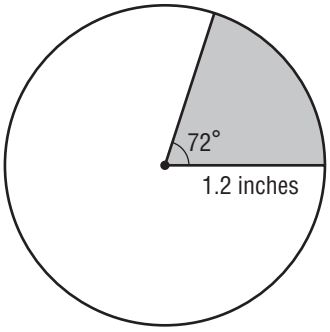
arc *central angle* *circle sector* *radius*

I found this on page _____.



15. The formula for finding the area of a circle sector is $A = \frac{m}{360} \cdot \pi r^2$. Explain the meaning of $\frac{m}{360}$ in the formula.

16. Explain how to find the area of the following circle sector.



What Did You Learn?

I need to remember the following about:

Shape	Area Formula	Important Information
parallelogram		
triangle		
trapezoid		
circle		
circle sector		

LESSON 7.3

Surface Area and Volume

In Lesson 7.3, I expect to learn:

I found this on page _____.

Vocabulary Write *surface area* or *volume* for each description.

The area of the outside covering of an object.	
The amount of space inside a three-dimensional object.	
Measured in cubic units.	
Measured in square units.	

Investigation 1

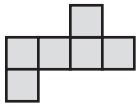
I found this on page _____.

1. Vocabulary Draw a *prism* and a *rectangular prism.* Then, explain how to identify each figure.

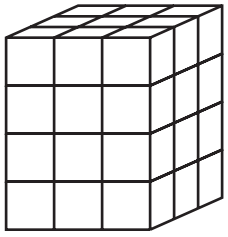
Prism	Rectangular Prism
Can be identified by: _____ _____	Can be identified by: _____ _____ _____

Develop & Understand: A

2. If you were given a prism with this top view and you know that it is 4 blocks high, what would be the volume of the prism? Explain how you got your answer.



3. What is the volume of the block structure below? Explain how you got your answer.



I found this on page _____.

Develop & Understand: C

4. The top view of a prism is shown below. How would you find the volume of the prism if you know its height? Explain.

Investigation 2

5. Vocabulary The identical top and bottom faces of a prism are called the _____.

I found this on page _____.

Think & Discuss

6. Explain why both $V = h(A)$ and $V = h(l \times w)$ are correct formulas for finding the volume of a rectangular prism.

Develop & Understand: A

7. Consider a rectangular prism with height of 4 cm, length of 12 cm, and width of 9 cm. Draw a sketch of the prism, and then find its volume. Could the length, width, and height of the prism be interchanged to get the same volume? Explain.

Volume:

_____

Inquiry

Investigation 3

I found this on pages

_____.

_____

8. Explain the difference between a *polyhedron* and a *regular polyhedron*.

_____

_____

9. Circle each *regular polyhedron*.

What Did You Learn?

I need to remember the following about:

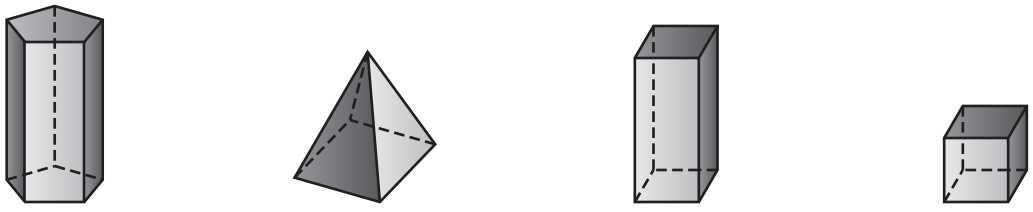
surface area: _____

volume: _____

_____

prism: _____

the names of common polyhedra:



_____ _____ _____ _____

LESSON 7.4

Capacity

In Lesson 7.4, I expect to learn:

_____

_____

I found this on page _____.

Explore

Vocabulary Explain how *capacity* is different from *volume*.

_____

_____

_____

Investigation 1

Develop & Understand: A

I found this on pages _____.

1. 15 liters = _____ milliliters

2. 4,460 milliliters = _____ liters

3. 1.2 liters = _____ milliliters

4. How do you convert from liters to milliliters?

_____

5. How do you convert from milliliters to liters?

_____

6. Suppose you have a baking pan that is 15 centimeters long, 12 centimeters wide, and 4 centimeters deep. Sketch the pan, and label its dimensions. Then, find its volume.

Volume:

_____

7. How did you find the volume?

_____

8. The capacity of the pan in millimeters is _____.

9. How is the volume of the pan on page 82 related to the capacity?

Investigation 2

Develop & Understand: B

I found this on page _____.

10. Complete the following conversions for customary units.

a. 32 cups = _____ gallons **b.** 8 pints = _____ cups

c. _____ pints = 5 quarts **d.** 3 gallons = _____ quarts

11. Explain how you would convert 12 pints to quarts.

Develop & Understand: C

I found this on page _____.

12. The capacity of a pitcher is 1 gallon. If a lemonade recipe calls for 8 cups of water per batch, how many batches of lemonade will it take to fill the pitcher? How do you know?

13. Connect the equivalent amounts.

14 pints	$\frac{1}{16}$ gallon
3 quarts	20 pints
$2\frac{1}{2}$ gallons	$1\frac{3}{4}$ gallons
1 cup	$\frac{3}{4}$ gallon

What Did You Learn?

I need to remember the following about:

capacity and volume: _____

metric units: _____

customary units: _____

CHAPTER 8

Coordinate Plane

Contents in Brief

Real-Life Math

This chapter begins with a graph of the snow that fell in New York City in 2005–2006. Graphs make it easier to read and understand information and to make predictions about future trends.

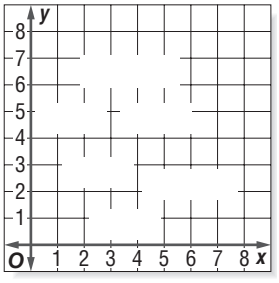
Think About It

How did you use the graph to determine how much more snow fell in February than in December?

If a weather graph was created for where you live, what weather feature would be best shown on the graph: rain, snow, or high temperatures? What month would show the highest bar on the graph for the weather feature you chose?

Connections to the Past

Plot each ordered pair on the graph below and label it.



(3, 5)

(1.5, 6)

(4, 2.5)

(2, 1)

(0,5)

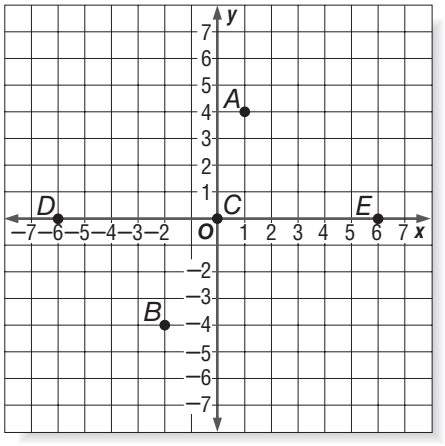
(1, 3)

How did you determine where to place each point?

I found this on page _____.

Vocabulary

Use the graph and word bank below to complete the questions that follow. Not all words will be used.



absolute value
coordinates
axes
line graph
negative numbers
opposites
ordered pair
origin
positive numbers
quadrants

▶ The _____ of point *A* are 1 and 4. When written as an _____, they are (1, 4).

▶ Point *C* on the graph is the _____.

▶ The *x* and *y* on the graph refer to the _____.

▶ The _____, or distance from zero, of Points *D* and *E* is 6.

▶ Points *A* and *B* lie in two different _____.

Family Letter

What examples of graphs have you seen in real life? What examples in newspapers or magazines did you find?

_____

_____

If you found a graph in a newspaper or magazine, what values were shown on the graph? How did you determine the value for each point?

_____

_____

_____

LESSON 8.1

Interpret Graphs

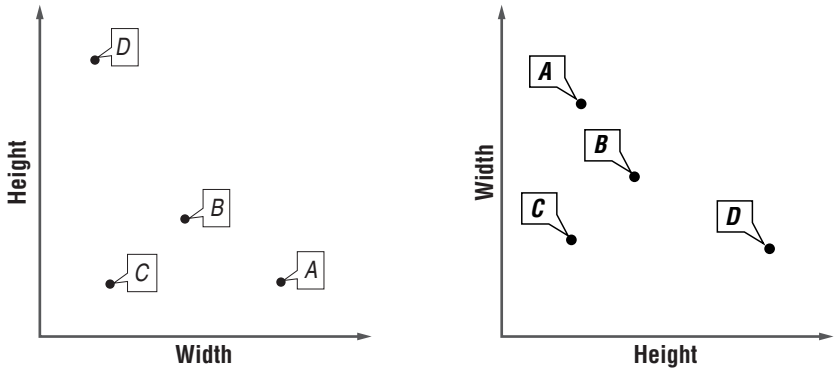
In Lesson 8.1, I expect to learn:

Investigation 1

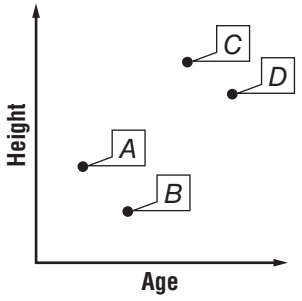
I found this on pages _____.

Develop & Understand: B

1. Explain how the following two graphs represent the same points.



2. The graph below compares the ages and heights of several basketball players. Use the graph to answer the questions that follow.



a. Is the youngest player also the shortest player? How do you know?

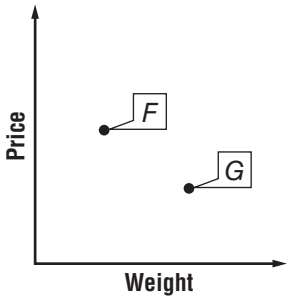
b. For Players *A, B, C,* and *D,* can we say that the older a player is, the taller he or she is? Explain how you know.

Investigation 2

I found this on page _____.

Develop & Understand: A

Use the graph below to answer Exercises 3 and 4.



3. What does the graph tell us about points *F* and *G*? Explain how you know.

4. What do you think the two variables could represent?

Develop & Understand: B and C

I found this on pages _____.

5. Explain how the graph showing bags of sugar is used to show the better value.

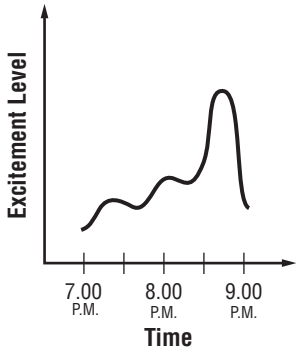
6. What pattern did you see when you answered the question about the graph showing time spent reading and watching TV?

Investigation 3

I found this on page _____.

Develop & Understand: A

7. The graph below shows the excitement level in a movie theater during a scary movie. The movie began at 7:00 P.M. and ended at 9:00 P.M. Explain how the events in the movie must have changed according to the graph.



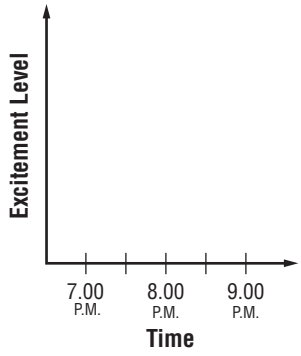
What Did You Learn?

I need to remember the following about:

interpreting graphs: _____

line graphs and curves: _____

A sample curve demonstrating the excitement level during a documentary is shown below:



LESSON 8.2

Draw and Label Graphs

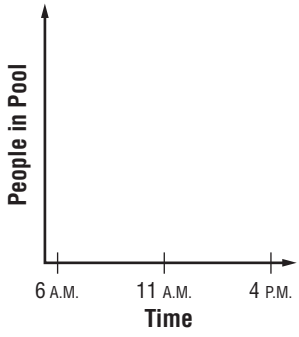
In Lesson 8.2, I expect to learn:

Investigation 1

I found this on page _____.

Develop & Understand: A

1. The school swim team comes in to practice at 6 A.M. They leave for classes at 7:30 A.M. Then, a swim class comes in at 9:30 A.M. and stays until 11:00 A.M. No one else uses the pool until 2:00 P.M. when another class starts and lasts until 4:00 P.M. Create a graph to show how the number of people in the school swimming pool changes throughout the day.



2. Explain how you created the graph.

Investigation 2

I found this on page _____.

3. Vocabulary Match each set of **coordinates** to its **ordered pair**.

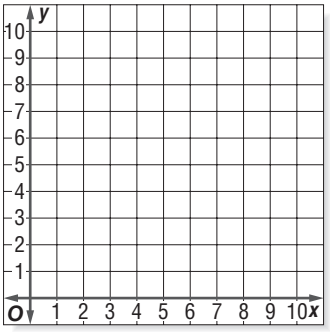
Coordinates in relation to (0, 0)	Ordered Pair
_____ 4 units right and 7 units up	A (6, 3)
_____ 7 units right and 4 units up	B (7, 4)
_____ 3 units right and 6 units up	C (4, 7)
_____ 6 units right and 3 units up	D (3, 6)

Develop & Understand: A

I found this on page _____.

4. Which coordinate do you write first when writing an ordered pair?

5. Plot the points from Exercise 3 on page 89 on the coordinate plane below.



Investigation 3

I found this on page _____.

6. Vocabulary The _____ on a graph tells the number of _____ each equal interval on a grid represents.

7. For a Fourth of July party, the Smiths want to have a barbecue. They know that food for each person costs $3.00. Complete the table below to help them determine how much the party will cost based on the number of guests.

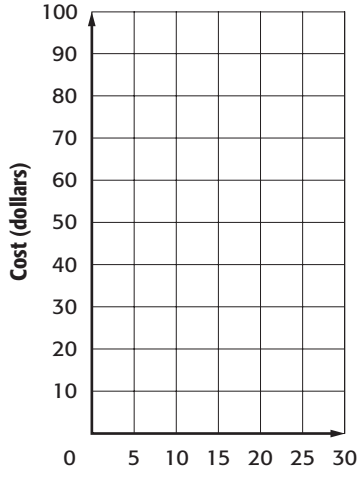
People	5	10	15	20	25
Cost (dollars)	$15				

Develop & Understand: B

8. For the graph of the table above, which would be a better scale for the *x*-axis, 2 people or 5 people? Why?

_____

9. Graph the data in the table shown above. Label the *x*-axis.



_____

Investigation 4

I found this on page _____.

Develop & Understand: A and B

10. Jahmal says that connecting the points on a graph is not always reasonable because not all points on the line would make sense. Hannah says connecting the points can be helpful. Write a sentence to help Hannah explain her reasoning to Jahmal.

_____

_____

11. Suppose you wanted to graph a set of data that shows the number of inches of rain that fell each month for a year with months on the horizontal axis, and inches of rain on the vertical axis. Should you connect the points with a dashed line or solid line?

_____

_____

_____

What Did You Learn?

I need to remember the following about:

drawing graphs: _____

_____

_____

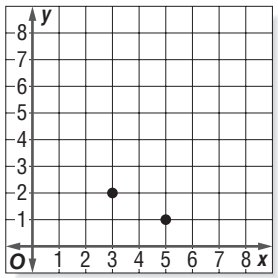
plotting points on a graph: _____

_____

_____

_____

ordered pairs: The ordered pairs _____ are shown on the coordinate plane below.



LESSON 8.3

Graph in Four Quadrants

In Lesson 8.3, I expect to learn:

_____

I found this on page _____.

Vocabulary

Write P for a *positive number* or N for a *negative number.*

−13°F	
84°F	
21°F	
−34°F	

Investigation 1

I found this on page _____.

1. Vocabulary Write the opposite for each number shown below. Then write the opposites of numbers of your own choosing.

Number	Opposite
32.5	
$-24\frac{1}{3}$	
−14.87	
$12\frac{5}{7}$	

Number	Opposite

2. What do you know about two numbers that are opposites?

_____

_____

3. What is the greatest number in the table to the left? How do you know?

_____

_____

4. What is the least number in the table to the left? How do you know?

_____

_____

Investigation 2

I found this on page _____.

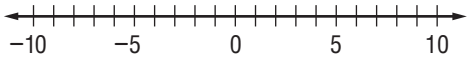
Develop & Understand: B

5. The absolute value of any number is sometimes negative. *True* or *False*? Explain your answer.

_____

_____

6. Use the number line below to find the distance from zero for each number.



a. -6.3 _____ **b.** $5\frac{1}{8}$ _____

7. Which number in Exercise 6 has the greater absolute value? Explain how you know.

_____

Develop & Understand: C

8. Which expression has the greatest value? How do you know?

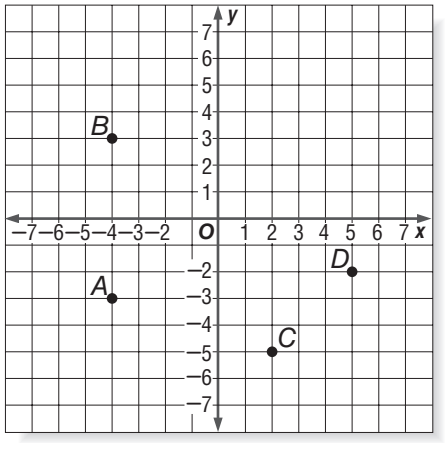
a. $|-8| - |3|$ **b.** $|10 - 6|$ **c.** $|4| + |3|$

_____

Investigation 3

I found this on page _____.

9. Use the coordinate plane below to complete the statements below.



a. The coordinates of point *A* are (_____, _____).

b. The point with coordinates (5, −2) is point _____.

c. Point *B* is located at (_____, _____).

I found this on page _____.

Develop & Understand: A

10. Explain how to plot a point with a negative coordinate.

11. Does the graph showing daily average temperatures in September have negative x-coordinates? Why or why not?

Investigation 4

I found this on page _____.

Develop & Understand: A

12. Without plotting each point, tell in which quadrant or on which axis each point is located.

Coordinates	Quadrant
(5, 8)	
(−2, −3)	
(5, 0)	
(7, −1)	
(−6, 4)	
(0, −3)	

13. How did you determine the quadrants for the points?

Inquiry

Investigation 5

I found this on page _____.

14. Suppose you want to find the shortest route from (2, −3) to (−1, 4) on the coordinate plane, without crossing any spaces. How many moves would it take, assuming that each space up, down, or to the left or right counts as one move?

What Did You Learn?

I need to remember the following about:

coordinate plane: _____

_____

_____

_____

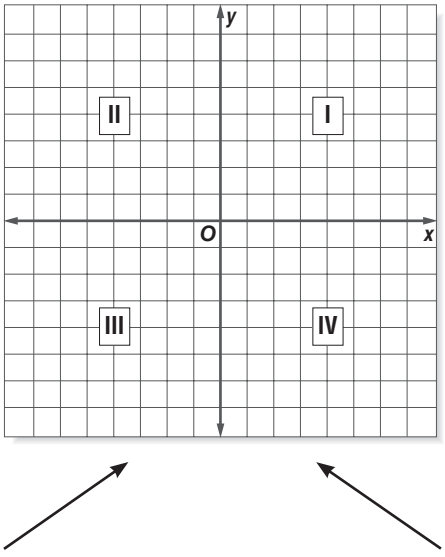
quadrants: _____

_____

_____

quadrants and the signs of the coordinates:

_____ (positive, positive)



_____ _____

plotting points: _____

_____

coordinates: _____

_____

_____

CHAPTER 9

Equations

Contents in Brief

Real-Life Math

This chapter begins with an example of how equations can be used to determine important information about running a business. Selling birdhouses can help Amy earn money, but she can only make as many birdhouses as she has supplies. She can determine how many birdhouses she can build by using an equation. The equation has one variable, which represents the number of birdhouses she builds.

Think About It

Since Amy's goal is to make a profit, she needs to determine how many birdhouses she has to sell. Using her formula, $m = \$8n$, where m is the amount of money she will earn and n is the number of birdhouses she sells, determine how much money she will earn if she sells 12 birdhouses. Explain how you found your answer.

Suppose Amy's dad loaned her $100 to make the birdhouses. How many birdhouses can she build? Which equation did you use?

Connections to the Past (Chapter 3)

Write the letter for the missing value next to each equation.

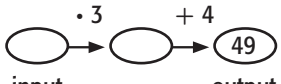
3 + _____ = 10	**A.** 5
8 − _____ = 6	**B.** 2
4 + 5 = _____	**C.** 9
12 − 7 = _____	**D.** 7

I found this on page _____.

Vocabulary

Write a word from the word bank to describe each expression or phrase.

backtracking	guess-check-and-improve	open sentence
equation	inequality	output
flowchart	input	solution

$3 < 5$ _____	 _____	$4 \cdot n = 20$ _____
 _____	Trying different values to solve an equation _____	$m - 2 \cdot 4 = 6$; $m = 14$ _____
$9 + 6 = 5 \cdot 3$ _____	Values you substitute into an equation _____	Values you get from an equation _____

▶ Choose two answers and explain how they are related.

_____

_____

Family Letter

What new strategies for solving equations could you share? How do you think learning these strategies can help you?

_____

_____

_____

What is one equation you wrote for someone else to solve? Explain how it should have been solved.

_____

_____

LESSON 9.1

Understand Equations

In Lesson 9.1, I expect to learn:

Investigation 1

I found this on page _____ .

1. Vocabulary Write E for equation or I for inequality.

$1.5 \cdot 8 = 4 \cdot 3$	
$12 \div 2 = 3 + 3$	
$6 + 1 < 10 - 2$	
$18 \cdot 2 \neq 17 \cdot 2$	
$24 + 3 = 9 \cdot 3$	
$51 - 47 > 2 + 1$	

2. How did you determine which statements were equations and which were inequalities? What is the difference?

I found this on page _____ .

Develop & Understand: A

3. Explain why each statement is true or false. Tell which symbol would make the statement true.

a. $13 \cdot 3 - 12 > 14 \cdot 2 - 1$

b. $22 \div 2 > 4 \cdot 2 + 1$

c. $51 - 12 < 14 \cdot 3 - 4$

Investigation 2

I found this on page _____.

4. Write the meaning for each term in your own words.

Word	Mathematical Meaning
open sentence	
solution	

I found this on page _____.

Develop & Understand: A

5. Find the solution for each open sentence. Explain how you found your solution.

a. $5 \cdot b + 2 = 17$

b. $t + 4 = 12$

Think & Discuss

6. How many solutions are there for the equation $n^2 - 4n = 0$? Give all solutions and explain how you found your answer.

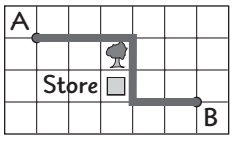
Inquiry

Investigation 3

I found this on page _____.

7. The directions for moving from point *A* to point *B* on the grid below are given. Use them to write a set of directions for moving from point *B* to point *A*. After you have written your directions, trace both paths and see if they match. If they do not match, find the error and correct your directions.

- Start at point *A*. Walk three blocks east to the oak tree.
- Turn right at the oak tree and walk two blocks south.
- Turn left at the store and walk two blocks east.



_____

_____

_____

8. Explain how you wrote the directions for moving from point *B* to point *A*. Did you have to correct any errors? What were they?

_____

_____

_____

What Did You Learn?

I need to remember the following about:

equations and inequalities: _____

_____

_____

_____

Examples of true equations and inequalities: _____

_____

Examples of open sentences: _____

solutions: _____

_____

LESSON 9.2

Backtracking

In Lesson 9.2, I expect to learn:

Investigation 1

I found this on page _____.

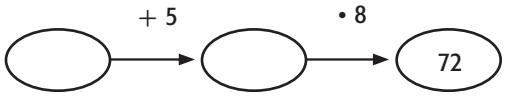
1. Vocabulary Draw a *flowchart* to help you *backtrack* to show this equation.

$$3 \cdot 4 + 3 = 15$$

2. If the flowchart represents $3 \cdot n + 3 = 15$, what solution did you find? Explain how you found it.

Develop & Understand: A and B

3. Complete the following flowchart.



4. Explain how you completed the flowchart. What solution does the flowchart show?

5. Circle the rule that fits the flowchart.

a. $(n + 5) \cdot 8 = 72$

b. $n + (8 - 5) = 72$

c. $n \cdot 8 + 5 = 72$

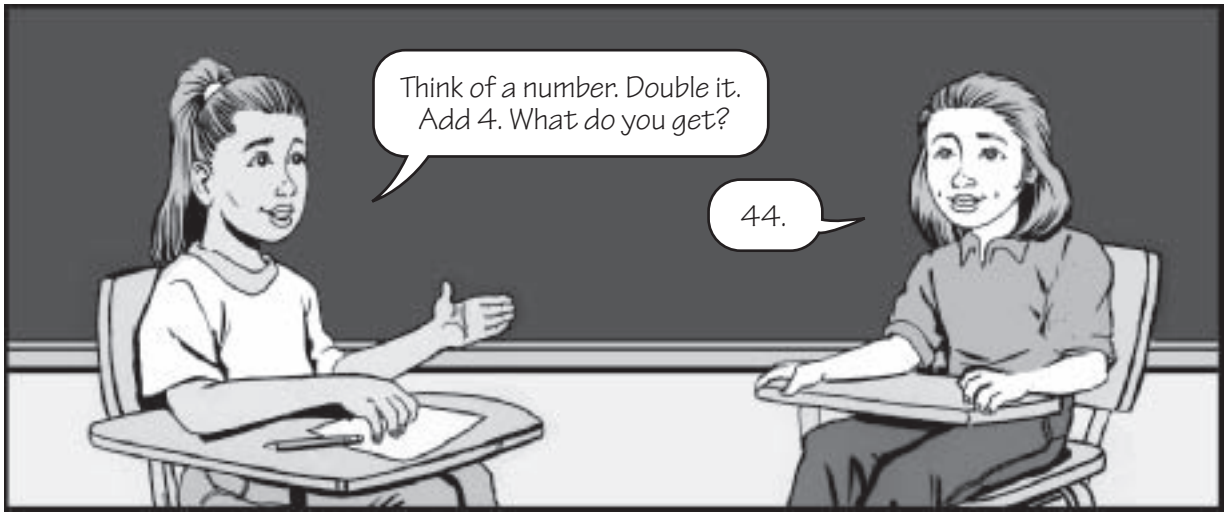
d. $8 \cdot (5 \cdot n) = 72$

Investigation 2

I found this on page _____.

Develop & Understand: A

6. Gabriela and Erin are playing a game *Think of a Number.*



What is Erin's starting number? Use the flowchart below to show how you found it. _____

7. Draw a flowchart to represent the following equation.

$$\frac{5 \cdot (x + 4)}{2} - 5 = 55.$$

8. Explain how you created the flowchart.

_____

_____

_____

Investigation 3

I found this on page _____.

Develop & Understand: A

9. Use the pattern in this table for Parts a and b on page 103.

x	1	2	3	4	5
y	45	87	129	171	213

a. Write a rule that relates x and y. _____

b. Write and solve an equation to find the value of x when y is 297. Draw a flowchart to show your steps.

_____

10. Explain how you wrote the equation. Did the flowchart help you? Why or why not?

_____

_____

_____

I found this on page _____.

Develop & Understand: B

11. Suppose you are selling wooden toys at a craft fair. You have to pay $8 to use the booth at the fair. You can sell the toys for $6 each. If you need to make $218 to buy a new skateboard, how many toys will you have to sell? Show your work.

_____

What Did You Learn?

I need to remember the following about:

flowcharts: _____

_____

_____

backtracking: _____

_____

_____

finding patterns in tables: _____

_____

n	0	8	16	24
y	7	9	11	13

LESSON 9.3

Guess-Check-and-Improve

In Lesson 9.3, I expect to learn:

Investigation 1

I found this on page _____.

1. Vocabulary What is *guess-check-and-improve?*

2. Explain why you would need to use guess-check-and-improve to solve some equations.

I found this on page _____.

Develop & Understand: A

3. Why is backtracking not appropriate to solve $r \cdot (r - 4) = 96$?

4. Use guess-check-and-improve to find the input for $r \cdot (r - 4) = 96$. Track your answers in the table.

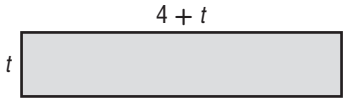
r	$r \cdot (r - 4) = 96$	Comment

Investigation 2

I found this on page _____.

Develop & Understand: A

5. A badminton court at the local gym is shaped like the rectangle below. The length of the court is 4 meters greater than the width.



a. Write a rule to show the connection between the floor's area A and the width t. _____

b. If the area of the rectangle is 117 square meters, write an equation to find the floor's width. _____

c. Explain how to use guess-check-and-improve to find a solution for the equation.

_____

_____

t	$(4 + t)$	$t \cdot (4 + t)$	Comment

Investigation 3

I found this on page _____.

Marcus and Rosita are trying to solve the equation $n \times (14 + 3n) = 304$. Help them explain whether or not backtracking will work to solve this equation.

Help Marcus and Rosita solve the equation using guess-check-and-improve. Use the table below to track your answers.

n	$n \times (14 + 3n) = 304$	Comment

What Did You Learn?

I need to remember the following about:

how to use guess-check-and-improve: _____

_____

_____

_____

when to use guess-check-and-improve: _____

_____

how to tell whether backtracking (B) or guess-check-and-improve (G) could be used to solve an equation: _____

_____

Equation	Solution Method
$x^2 + x = 6$	
$2y^2 = 72$	
$d^4 - d^2 = 16$	
$\frac{1}{x} + 2 = 15$	
$w(w + 2) = 36$	

CHAPTER 10

Data and Probability

Contents in Brief

Real-Life Math

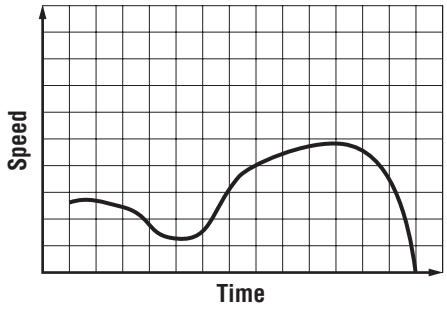
This chapter begins with a discussion of probability as a number between 0 and 1. The events discussed have a low probability, or they are very unlikely to happen. For example, tossing a coin to determine the answers of a 10-question true-false test and getting all of the answers correct has a low probability of 0.001.

Think About It

If the probability of rain for tomorrow is 60 percent, would you say it is likely or unlikely that there will be rain tomorrow? What decimal would you use to show the probability?

Connections to the Past (Chapter 8)

The graph below shows how fast Gerald's father drove on the way home. Write a sentence telling why he might have sped up and slowed down the way he did.



I found this on page _____.

Vocabulary

Give the correct letter connecting the vocabulary word to its meaning.

_____ distribution	A. the chance that an event will happen shown by a number between 0 and 1
_____ experimental probability	B. probability that is always the same for a particular event and does not depend on an experiment
_____ probability	C. a data display that shows things sorted into groups, illustrating how groups overlap
_____ theoretical probability	D. an estimated probability based on previous sets of data
_____ Venn diagram	E. the way data are spread out over a graph

Family Letter

Describe at least one situation that you found in everyday life. Were you surprised by any of the situations that you found? Why or why not?

What game of chance did you play at home? How did you use probability in the game?

LESSON 10.1

Data Displays

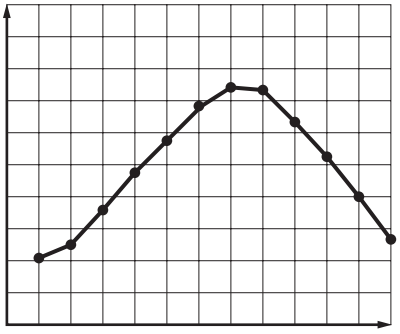
In Lesson 10.1, I expect to learn:

Investigation 1

I found this on pages _____.

Develop & Understand: A

1. If the graph below shows temperatures throughout the year for a place, what place do you think it might represent? Why?



2. How would a similar graph look for an island near the equator? Sketch a line on the graph above to show how you think it would look. Explain why you drew the line this way.

Investigation 2

I found this on pages _____.

Develop & Understand: A, B, and C

3. Would you choose a bar graph or a table to show the typical per-vehicle emissions for each year?

4. Explain why you need additional information to conclude that the total amount of hydrocarbons emitted by vehicles is decreasing. Does the additional data support the statement that the amount of hydrocarbon emissions is decreasing?

5. Vocabulary You can use a _____ to show the finishing times divided into equal intervals. The _____ counts the number of data values in each interval.

Investigation 3

I found this on page _____.

Develop & Understand: B

6. Why would there be intervals of a bar graph that do not show a bar?

Develop & Understand: C

7. What is another way to make a histogram showing the number of values in each interval for the frequency table on page 586?

Investigation 4

I found this on page _____.

8. Vocabulary When you need data to be sorted in groups, a useful display is circles in a _____. If an item is in two groups, it is placed in the space where two circles _____.

Develop & Understand: A

9. How did you represent the juniors who did not take Chinese or Spanish in your Venn diagram?

How did you show the students who took both languages?

10. Explain why you would use a Venn diagram to show the information.

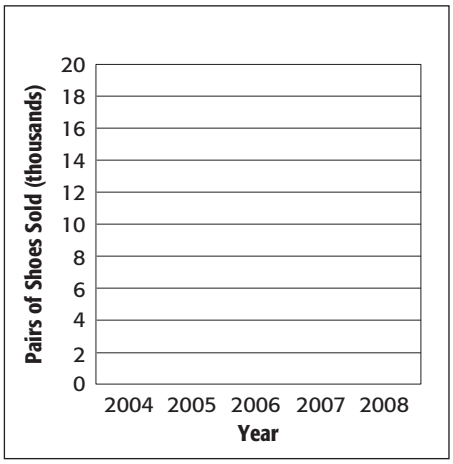
What Did You Learn?

I need to remember the following about:

data displays:

using tables to complete a bar graph:

Year	Pairs of Shoes (in thousands)
2004	8.5
2005	10.8
2006	12.2
2007	16.4
2008	19.3



LESSON 10.2

Collect and Analyze Data

In Lesson 10.2, I expect to learn:

_____

Investigation 1

I found this on page _____.

Develop & Understand: A

1. The following is a list of things to consider when conducting a survey. Tell whether you think each thing is important and why. Then revise the item the way that you think it should be written.

a. The items that go on the survey.

_____

_____

_____

b. The information you will get from the survey.

_____

_____

_____

_____

c. A plan for the survey.

_____

_____

_____

_____

_____

Investigation 2

I found this on page _____.

Develop & Understand: A

2. What information was the most useful in answering the questions about the activities?

_____

_____

Investigation 3 *Develop & Understand: A* and *B*

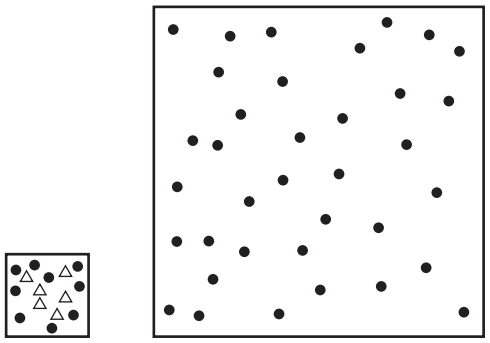
3. How do proportions help you estimate large quantities?

I found this on page _____.

To estimate large populations of animals, the _____ method is often used.

4. Suppose biologists wanted to determine the number of water snakes around a small island. They tagged and released 64 water snakes. The next year, they caught 72 water snakes and found that 18 of them had tags. Estimate the total number of water snakes in the area. Explain how you would make an estimate using a proportion.

5. Complete the drawing below to show how many triangles should be in square *B*, if square *A* is $\frac{1}{4}$ the size of square *B*.



Square *A* Square *B*

6. How did you determine the number of triangles that should be square *B*?

Investigation 4

I found this on page _____.

Develop & Understand: A

7. Twenty-four students were surveyed about the number of times they go to the movies each month. Here are the findings.

Number of Trips to the Movies	None	1	2	3	4 or more
Number of Students	3	7	7	5	2

Explain why a histogram would be the best choice for displaying the data from the table.

What Did You Learn?

I need to remember the following about:

Suppose you are doing a study for your local recreation department on the summer activities of kids ages 5 to 12. Employees of the recreation department want the information to help them decide which programs to offer for the summer. Tell how you would answer each question below.

Activity	Average Time Spent Each Week (hours)
Swimming	5
Going to the movies	3
Playing sports	6
Exercising	12
Drawing or painting	2
Reading	7

How would you analyze the study?

Which type of graph should you use to display the results of the study?

LESSON 10.3

The Language of Chance

In Lesson 10.3, I expect to learn:

_____

What are some words that you use when you make a prediction?

_____

Investigation 1

I found this on page _____.

1. Vocabulary Circle the numbers below that could be used to describe a *probability* that an event will happen.

0.64	0	$5\frac{1}{3}$	$\frac{2}{5}$
$\frac{3}{8}$	13	1.24	0.24

2. How did you determine which numbers could be used to show probability?

_____

_____

_____

Develop & Understand: A and B

3. The table below shows the Beamers basketball team's record. How many games has the team played in all? _____

Wins	Losses	Ties
13	4	1

a. Estimate the probability that the Beamers will win its next game. Explain how you found your estimate.

_____

_____

_____

b. Vocabulary What can you call the probability that you found? _____

Investigation 2

I found this on page _____.

4. Vocabulary Write EL to show that the events are *equally likely*, or NEL for *not equally likely*.

a. tossing heads or tails with a coin _____

b. tossing heads or rolling a 5 with a die _____

c. rolling 1 or 4 with a die _____

5. Explain how *experimental probability* is different from *theoretical probability*.

_____

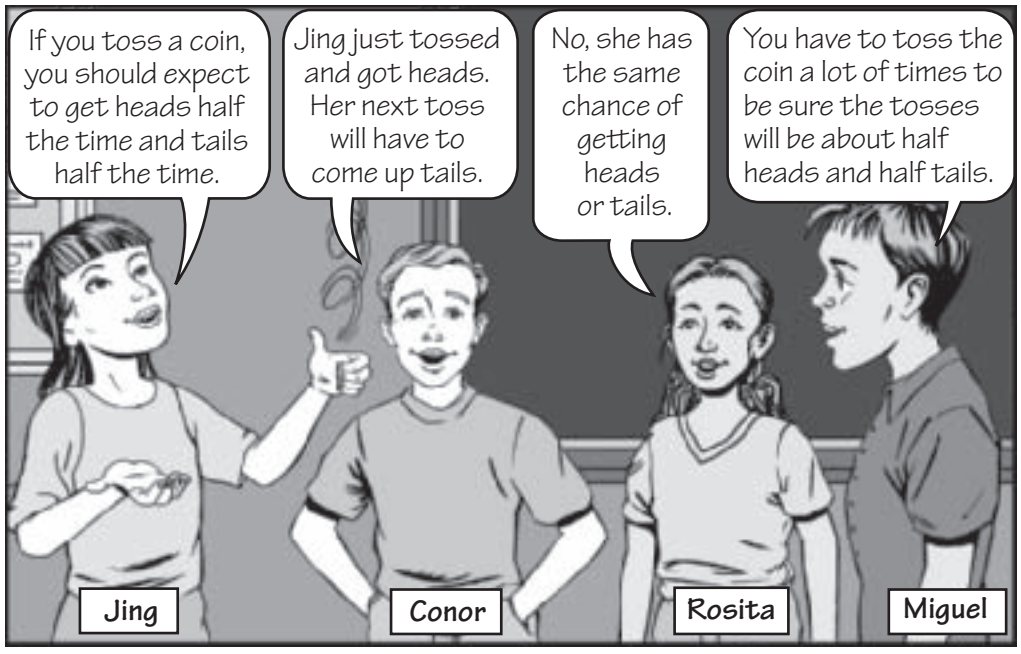
_____

_____

I found this on page _____.

Think & Discuss

6. Explain why all the students are correct except Conor.



_____

_____

_____

_____

7. If you toss a coin 50 times, how many coins would you expect to come up heads? Explain whether you based your answer on a theoretical or on an experimental probability.

Inquiry

Investigation 3

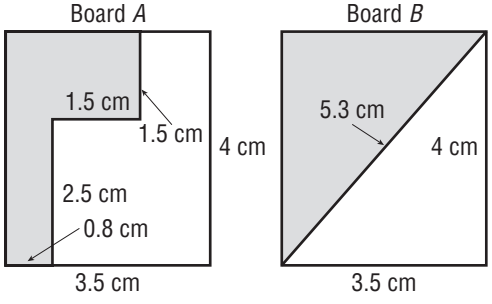
I found this on page _____.

8. Was the theoretical probability of winning counters different from the experimental probability when you played the *Spinning Top* game? Why or why not?

Investigation 4

I found this on page _____.

9. Look at the two game boards below. If you are playing the *Rice Drop* game, on which board are you more likely to land a piece of rice on a shaded area? Why?



What Did You Learn?

I need to remember the following about:

experimental probability: _____

theoretical probability: _____

LESSON 10.4

Make Matches

In Lesson 10.4, I expect to learn:

_____

_____

Investigation 1

I found this on page _____.

1. Vocabulary A _____ is an experiment in which I use different items to represent the items in a real situation.

2. Name two different ways you could create a *simulation* of an experiment that involves pulling black and blue socks from a drawer.

_____

_____

I found this on page _____.

Develop & Understand: A

3. Why can you use counters, blocks, or slips of paper to do the sock experiment?

_____

4. How do you read the outcomes of a tree diagram from the diagram?

_____

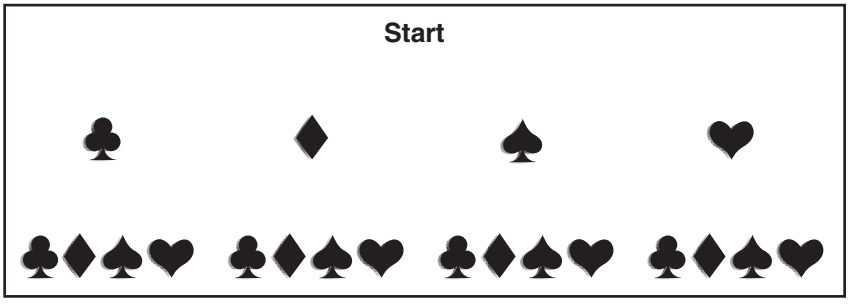
_____

Investigation 2

I found this on page _____.

Develop & Understand: C

The tree diagram below shows the outcomes of drawing a card, putting it back, and then drawing another card. Use the diagram to answer the questions on page 119.



5. Why do the outcomes for the second drawing show the same possibilities as the first drawing?

6. How would the next set of possible outcomes look if you drew another card? Why?

Investigation 3

I found this on page _____.

On Fun Day at summer camp, campers get to choose two morning activities among canoeing, hiking, horseback riding, or swimming. In the afternoon, they can choose from crafts, music, a movie, or badminton. Complete the table below to show the possibilities of choices for a camper on Fun Day.

	Crafts	Music	Movie	Badminton
Canoeing				
Hiking				
Horseback Riding				
Swimming				

7. How many possibilities are there for activity combinations? Could you have shown the possibilities in a tree diagram? If so, why was the table method shown?

8. Explain how you could have used the Fundamental Counting Principle to find the number of possible activity combinations for Fun Day. Would it have been easier? Why or why not?

What Did You Learn?

I need to remember the following about:

tree diagrams:

Fundamental Counting Principle:

Suppose you have three shirts and two pairs of pants. The shirts are red, blue, and yellow; the pants are brown and black. Draw a tree diagram to show the possible choices of outfits you could wear. What is the probability that you will wear a red shirt and brown pants? Explain how you know.

Use the Fundamental Counting Principle to find the number of possible outfits.

IMPACT Mathematics

Course 1 Contents

The McGraw-Hill Companies

Math Online glencoe.com

ISBN: 978-0-07-889752-8
MHID: 0-07-889752-1

9 0 0 0 0
9 780078 897528

www.glencoe.com

Mc Graw Hill Macmillan/McGraw-Hill Glencoe