Glencoe McGraw-Hill

Study Notebook

Geometry

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Note-Taking Tips

Your notes are a reminder of what you learned in class. Taking good notes can help you succeed in mathematics. The following tips will help you take better classroom notes.

- Before class, ask what your teacher will be discussing in class. Review mentally what you already know about the concept.
- Be an active listener. Focus on what your teacher is saying. Listen for important concepts. Pay attention to words, examples, and/or diagrams your teacher emphasizes.
- Write your notes as clear and concise as possible. The following symbols and abbreviations may be helpful in your note-taking.

Word or Phrase	Symbol or Abbreviation	Word or Phrase	Symbol or Abbreviation
for example	e.g.	not equal	$\neq$
such as	i.e.	approximately	$\approx$
with	w/	therefore	$\therefore$
without	w/o	versus	vs
and	+	angle	$\angle$

- Use a symbol such as a star (★) or an asterisk (∗) to emphasis important concepts. Place a question mark (?) next to anything that you do not understand.
- Ask questions and participate in class discussion.
- Draw and label pictures or diagrams to help clarify a concept.
- When working out an example, write what you are doing to solve the problem next to each step. Be sure to use your own words.
- Review your notes as soon as possible after class. During this time, organize and summarize new concepts and clarify misunderstandings.

Note-Taking Don'ts

- Don't write every word. Concentrate on the main ideas and concepts.
- Don't use someone else's notes as they may not make sense.
- Don't doodle. It distracts you from listening actively.
- Don't lose focus or you will become lost in your note-taking.

NAME _____ DATE _____ PERIOD _____

CHAPTER 1

The Tools of Geometry

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	The Tools of Geometry
	• Collinear points are lines that run through the same point.
	• Line segments that are congruent have the same measure.
	• Distance on a coordinate plane is calculated using a form of the Pythagorean Theorem.
	• The Midpoint Formula can be used to find the coordinates of the endpoint of a segment.
	• The formula to find the area of a circle is $A = \pi r^2$.

FOLDABLES® Study Organizer

Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When taking notes, summarize the main ideas presented in the lesson.** Summaries are useful for condensing data and realizing what is important.
- **When you take notes, write descriptive paragraphs about your learning experiences.**

NAME _____ DATE _____ PERIOD _____

The Tools of Geometry

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on linear measure, one fact might be that unlike a line, a line segment can be measured because it has two endpoints. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
1-1 Points, Lines, and Planes	
1-2 Linear Measure	
1-3 Distance and Midpoints	
1-4 Angle Measure	
1-5 Angle Relationship	
1-6 Two-Dimensional Figures	
1-7 Three-Dimensional Figures	

NAME _____ DATE _____ PERIOD _____

1-1 Points, Lines, and Planes

What You'll Learn

Scan the text in Lesson 1-1. Write two facts you learned about points, lines, and planes as you scanned the text.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

undefined term ▶ _____

point ▶ _____

line ▶ _____

plane ▶ _____

_____

collinear ▶ _____

coplanar ▶ _____

intersection ▶ _____

_____

definition / defined term ▶ _____

_____

space ▶ _____

Lesson 1-1

Main Idea	Details

Points, Lines, and Planes
pp. 5–6

Model a point, line, and plane with a representative drawing. Label your drawing.

Intersections of Lines and Planes
pp. 6–7

Compare *undefined* and *defined terms* by completing the table. Provide definitions and examples.

Term	Definition	Examples
defined term		
undefined term		

Helping You Remember

Recall or look in a dictionary for the meaning of the prefix *co-*. What does the prefix mean? How can it help you remember the meaning of *collinear*?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

1-2 Linear Measure

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

betweenness of points ▶ Between any two _____ on a line there is another _____.

line segment ▶ a portion of a _____ with two _____

between ▶ point A is between two other points, B and C; A, B, and C are on the same line, and _____ + _____ = _____

construction ▶ method of creating _____ without _____

congruent segment ▶ two _____ with the same _____

Vocabulary Link *Congruent segments* can be illustrated by real-world examples. Consider opposite sides of this book. The lines are the same size. Write some real-world examples of other *congruent segments*.

_____

_____

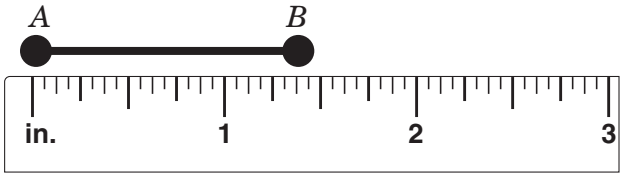
_____

Lesson 1-2

Main Idea	Details

Measure Line Segments
pp. 14–15

Use the model to fill in each blanks.



1. Each inch is divided into _____.

2. Point B is closer to the _____ inch mark.

3. $\overline{AB}$ is about _____ inches long.

Calculate Measures
pp. 15–17

Model the three types of methods to calculate measures of a line segment with an example.

Find measurements by adding.	**Find measurements by subtracting.**	**Find measurements by writing and solving equations.**

Helping You Remember

Construction is a word used in everyday English as well as in mathematics. Look up *construction* in the dictionary. Explain how the everyday definition can help you remember how *construction* is used in mathematics.

_____

_____

NAME _____ DATE _____ PERIOD _____

1-3 Distance and Midpoints

What You'll Learn

Skim Lesson 1-3. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

distance ▶ _____

_____

midpoint ▶ _____

_____

segment bisector ▶ _____

_____

Vocabulary Link *Midpoint* can have non-mathematical meanings as well. Look up *midpoint* in the dictionary. Explain how the English definition can help you remember how *midpoint* is used in mathematics.

_____

_____

_____

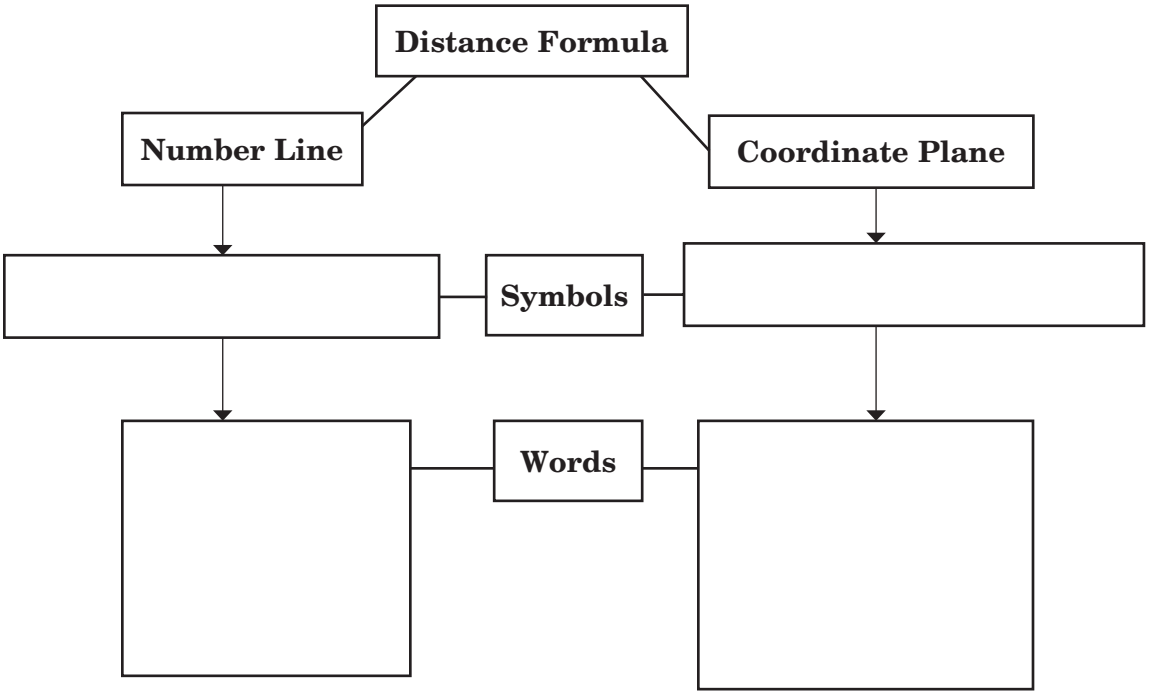
_____

Lesson 1-3

Main Idea	Details

Distance Between Two Points
pp. 25–26

Fill in the organizer for the *distance formula* on a number line and a coordinate plane with line segment *AB*, with endpoints (x_1, y_1) and (x_2, y_2).



Midpoint of a Segment
pp. 27–30

Model the solution to find the distance between the points on the coordinate plane. Use the lines to show your calculations. Round to the nearest tenth if necessary.

$(x_1, y_1) =$ (_____) ; $(x_2, y_2) =$ (_____)

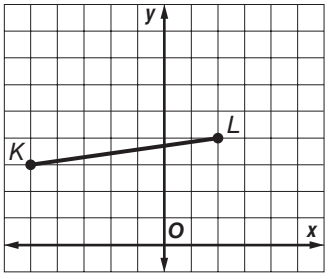
$KL =$

_____

_____

_____

_____



NAME _____ DATE _____ PERIOD _____

1-4 Angle Measure

What You'll Learn

Skim the Examples for Lesson 1-4. Predict two things you think you will learn about angle measures.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ angle with measure of 90°

_____ ▶ where two rays meet to form an angle

_____ ▶ angle with measure greater than 90°

_____ ▶ a ray that divides an angle into two congruent angles

_____ ▶ the region of a plane inside of an angle

_____ ▶ angle with measure less than 90°

_____ ▶ a ray that forms part of an angle

_____ ▶ part of a line with one endpoint and one end that extends forever

_____ ▶ formed by two noncollinear rays with a common endpoint

_____ ▶ units used to measure angles

_____ ▶ extend in two directions from a point on a line

_____ ▶ the region of a plane outside of an angle

Main Idea	Details
Measure and Classify Angles pp. 36–38	**Summarize information about angles in the graphic organizer below.** **1.** Draw and label an obtuse, acute, and right angle. **2.** Draw and label one angle that has these 3 names: $\angle B$, $\angle ABC$, and $\angle 3$.
Congruent Angles pp. 39–40	**Model a pair of congruent angles. Use a compass and straightedge.**

Helping You Remember

Compare and contrast *congruent segments* and *congruent angles*.

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

1-5 Angle Relationships

What You'll Learn

Scan Lesson 1-5. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Label the diagram with the correct terms. Use each term once.

adjacent ▶

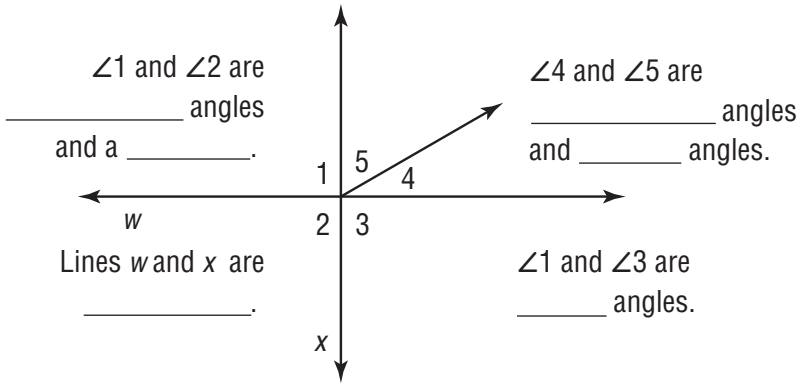
linear pair ▶

vertical ▶

complementary ▶

supplementary ▶

perpendicular ▶



Vocabulary Link *Perpendicular* has a nonmathematical meaning. Look up *perpendicular* in the dictionary. List at least five examples of things that are perpendicular in everyday life.

_____

_____

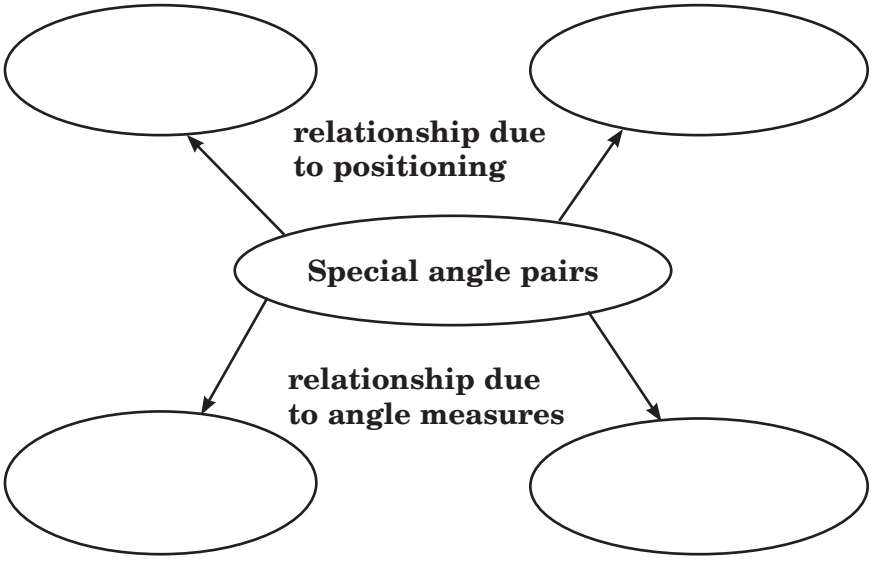
_____

Lesson 1-5

Main Idea	Details

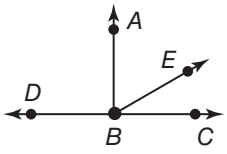
Pairs of Angles
pp. 46–48

Summarize angle relationships by completing the graphic organizer with the terms *adjacent angles*, *complementary angles*, *vertical angles*, and *supplementary angles*.



Perpendicular Lines
pp. 48–50

If $m\angle ABC = 2x + 12$, find x so that $\overrightarrow{BC} \perp \overrightarrow{BA}$.



$\square = \square$ definition of perpendicular

$\square = \square$ Simplify.

Helping You Remember

Look up the nonmathematical meaning of *supplementary* in a dictionary. How can this definition help you to remember the meaning of *supplementary angles*?

_____

_____

NAME _____ DATE _____ PERIOD _____

1-6 Two-Dimensional Figures

What You'll Learn

Skim the lesson. Write two things you already know about two-dimensional figures.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write each term next to its definition.

_____ ▶ where two sides of a polygon intersect

_____ ▶ polygon with no side that passes through the figure's interior

_____ ▶ a convex polygon that is equilateral and equiangular

_____ ▶ a polygon where all angles are congruent

_____ ▶ perimeter of a circle

_____ ▶ a polygon with n number of sides

_____ ▶ closed figure formed by coplanar segments where two segments intersect at a common noncollinear endpoint

_____ ▶ polygon with some side that passes through the figure's interior

_____ ▶ a polygon where all sides are congruent

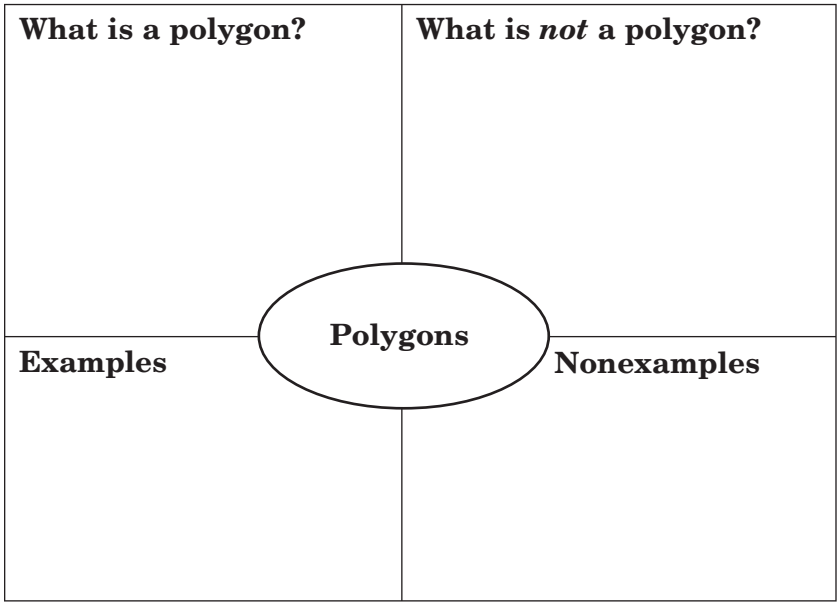
_____ ▶ sum of the lengths of a polygon's sides

_____ ▶ number of square units needed to cover a surface

Main Idea	Details

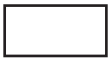
Identify Polygons
pp. 56–57

Fill in the organizer about *polygons*.



Perimeter, Circumference, and Area
pp. 58–60

Summarize the formulas for perimeter, circumference, and area of the figures by completing the chart.

				
Area				
Perimeter				
Circumference				

NAME _____ DATE _____ PERIOD _____

1-7 Three-Dimensional Figures

What You'll Learn

Scan the text in Lesson 1-7. Write two facts you learned about three-dimensional figures.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

prism ▶ _____

_____

pyramid ▶ _____

_____

cylinder ▶ _____

_____

base ▶ _____

_____

cone ▶ _____

_____

sphere ▶ _____

_____

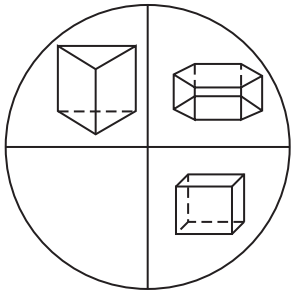
Lesson 1-7

Main Idea	Details

Identify Three-Dimensional Figures

pp. 67–68

Complete the concept circle by drawing in a fourth example. Then state the relationship of the 4 figures on the line below the concept circle.

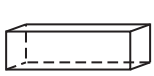
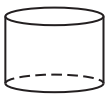
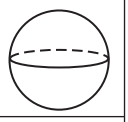


The relationship is: _____

Surface Area and Volume

pp. 69–70

Organize information about volume and surface area in the chart.

Figure					
Surface Area					
Volume					

Helping You Remember

A good way to remember the characteristics of geometric solids is to think of how different solids are alike. Name a way which pyramids and cones are alike.

_____

_____

_____

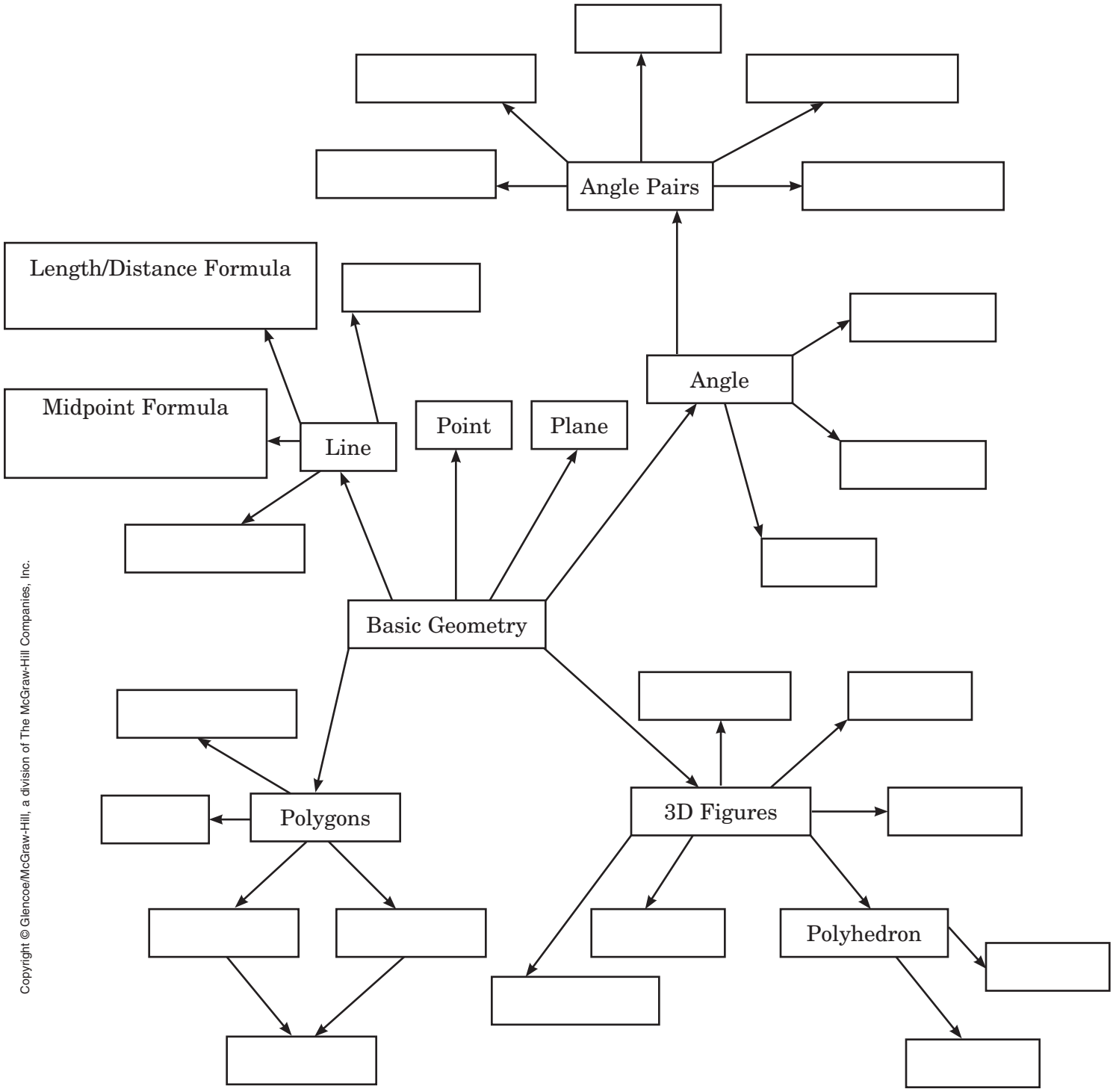
NAME _____ DATE _____ PERIOD _____

CHAPTER 1

The Tools of Geometry

Tie It Together

Complete the graphic organizer with a term or formula from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 1 The Tools of Geometry

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

The Tools of Geometry	After You Read
• Collinear points are lines that run through the same point.	
• Line segments that are congruent have the same measure.	
• Distance on a coordinate plane is calculated using a form of the Pythagorean Theorem.	
• The Midpoint Formula can be used to find the coordinates of the endpoint of a segment.	
• The formula to find the area of a circle is $A = \pi r^2$.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 1.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 1 Study Guide and Review in the textbook.

☐ I took the Chapter 1 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- Make a calendar that includes all of your daily classes. Besides writing down all assignments and due dates, include in your daily schedule time to study, work on projects, and reviewing notes you took during class that day.

NAME _____ DATE _____ PERIOD _____

CHAPTER 2

Reasoning and Proof

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Reasoning and Proof
	• Listing a counterexample is a method to prove a conjecture is true.
	• A Venn diagram can illustrate a conjunction.
	• A form of inductive reasoning is the Law of Detachment.
	• The statement *a line contains two points*, is an example of a postulate.
	• Supplementary angles have measures whose sum is 90º.

FOLDABLES® Study Organizer

Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, you may wish to use a highlighting marker to emphasize important concepts.**
- **When you take notes, think about the order in which the concepts are being presented.**

  Write why you think the concepts were presented in this sequence.

NAME _____ DATE _____ PERIOD _____

CHAPTER 2

The Reasoning and Proof

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on inductive reasoning and conjecture, one fact might be a concluding statement reached using inductive reasoning is called a conjecture. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
2-1 Inductive Reasoning and Conjecture	
2-2 Logic	
2-3 Conditional Statements	
2-4 Deductive Reasoning	
2-5 Postulates and Paragraph Proofs	
2-6 Algebraic Proof	
2-7 Proving Segment Relationships	
2-8 Proving Angle Relationships	

NAME _____ DATE _____ PERIOD _____

2-1 Inductive Reasoning and Conjecture

What You'll Learn

Scan Lesson 2-1. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

inductive reasoning ▶ _____ that uses a number of specific _____ to arrive at a _____

conjecture ▶ the _____ that is reached within inductive reasoning

counterexample ▶ an example that _____ a _____

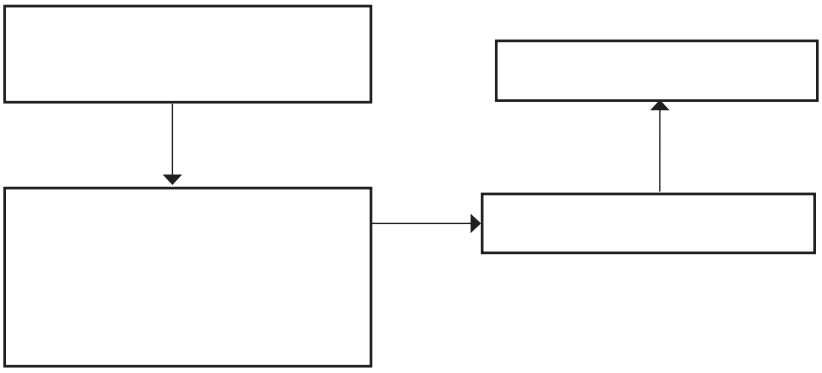
Vocabulary Link *Conjecture* is a word that is used in everyday English. Find the definition of *conjecture* using a dictionary. Write how the definition of conjecture can help you remember the mathematical definition of *conjecture*.

_____

_____

_____

Main Idea	Details
Make Conjectures pp. 89–91	**Sequence the steps of making a *conjecture* with algebraic terms or geometric terms.**



Find Counterexamples p. 92	**Write a statement in which you can make a true *conjecture*. Then write another statement in which you can make a false *conjecture*. Provide a *counterexample* of the false conjecture.**

True Conjecture: _____

_____

_____

False Conjecture: _____

_____

_____

Helping You Remember

Write a short sentence that can help you remember why it only takes one counterexample to prove that a conjecture is false.

_____

_____

NAME _____ DATE _____ PERIOD _____

2-2 Logic

What You'll Learn

Skim the Examples for Lesson 2-2. Predict two things you think you will learn about logic.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Match the term with the correct definition by drawing a line between the two.

truth table	a sentence that is either true or false
disjunction	two or more statements joined by *and* or *or*
statement	a compound statement that uses the word *or*
truth value	the value of a statement as either true or false
conjunction	statement with the opposite meaning and opposite truth
negation	a compound statement that uses the word *and*
compound statement	convenient method to determine the truth value of statement

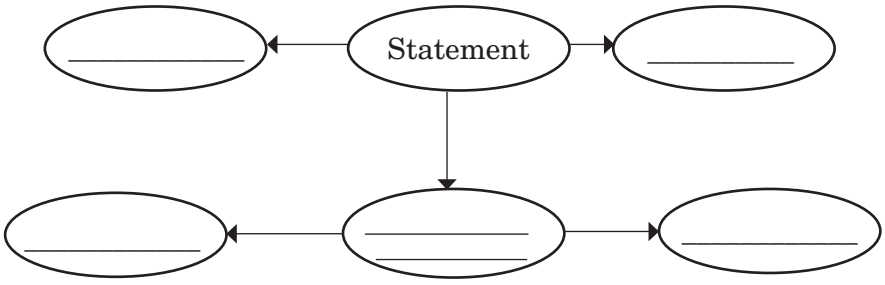
Vocabulary Link *Negation* is a word used in everyday English as well as in mathematics. Look up *negation* in the dictionary. Explain how the English definition can help you remember how *negation* is used in mathematics.

_____

_____

Lesson 2-2

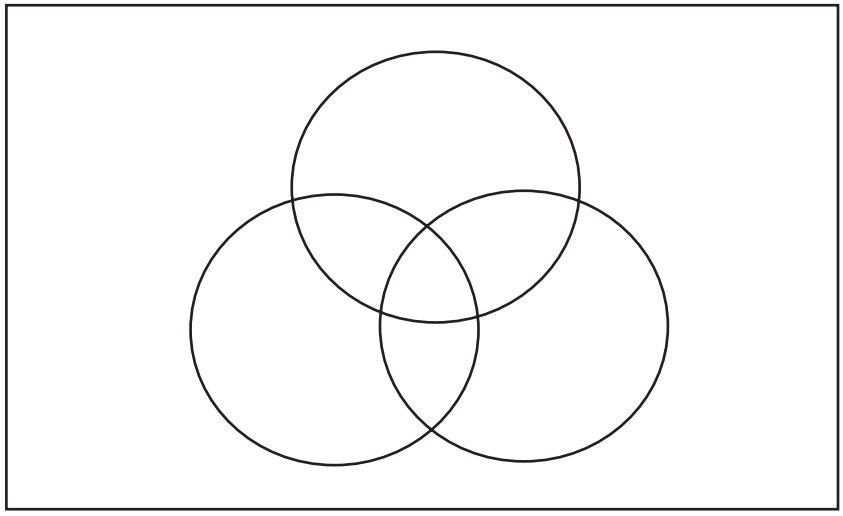
Main Idea	Details
Determine Truth Values pp. 97–99	**Fill in the blanks to summarize negations, conjunctions, and disjunctions. Write a description of each term.**



Venn Diagrams
pp. 99–100

Model the situation using a Venn diagram.

At Terrace Middle school, 68 students play basketball, 77 play volleyball, 19 play soccer and basketball, and 27 play all three sports. If 13 students play both volleyball and basketball, how many students play *just* basketball?



Helping You Remember

Prefixes can often help you remember the meaning of words or distinguish between similar words. Use your dictionary to find the meanings of the prefixes *con* and *dis* and explain how these meanings can help you remember the difference between a conjunction and disjunction.

_____

_____

NAME _____ DATE _____ PERIOD _____

2-3 Conditional Statements

What You'll Learn

Skim Lesson 2-3. Predict two things you will learn based on the headings and the Key Concept box.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

conditional statement ▶ _____

if-then statement ▶ _____

converse ▶ _____

_____

hypothesis ▶ _____

_____

inverse ▶ _____

_____

contrapositive ▶ _____

_____

logically equivalent ▶ _____

related conditionals ▶ _____

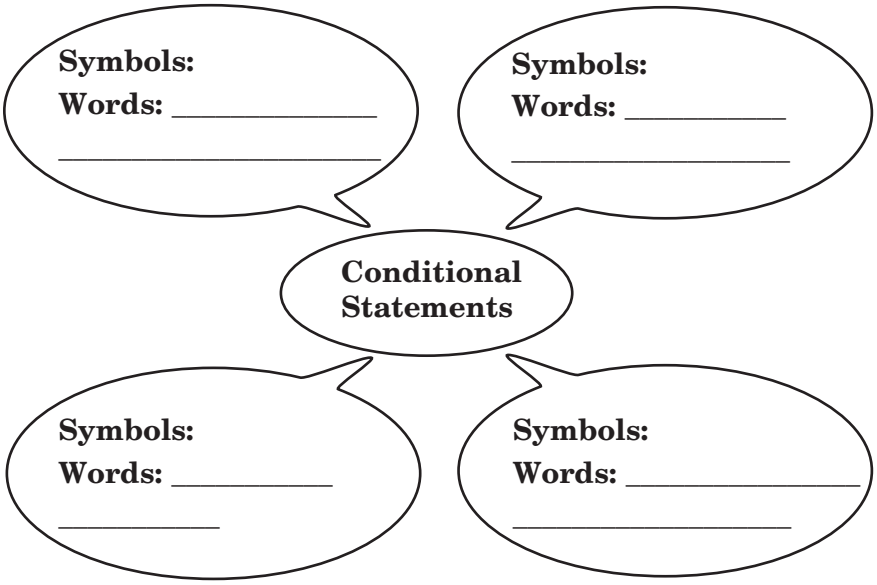
_____

conclusion ▶ _____

_____

Lesson 2-3

Main Idea	Details
If-Then Statements pp. 105–107	**Identify the hypothesis and conclusion of each conditional statement. Circle the hypothesis and underline the conclusion.** **1.** _____ if the sum of its digits is divisible by 9. **2.** If the measure of an angle is less than 90 degrees, it is an acute angle.
Related Conditionals pp. 107–108	**Fill in the organizer for related conditionals.**



Helping You Remember

When working with a conditional statement and its three related conditional, what is an easy way to remember which statements are logically equivalent?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

2-4 Deductive Reasoning

What You'll Learn

Scan the text in Lesson 2-4. Write two facts you learned about deductive reasoning as you scanned the text.

1. _____

_____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ allows you to draw conclusions from two true conditional statements when the conclusion of one statement is the hypothesis of the other

_____ ▶ uses facts, rules, definitions, or properties to reach logical conclusions from given statements

_____ ▶ form of deductive reasoning that states that if all the facts are true, then the conclusion reached is also true

Vocabulary Link *Syllogism* is a word used in everyday English as well as in mathematics. Look up *syllogism* in the dictionary. Explain how the English definition can help you remember how *syllogism* is used in mathematics.

_____

_____

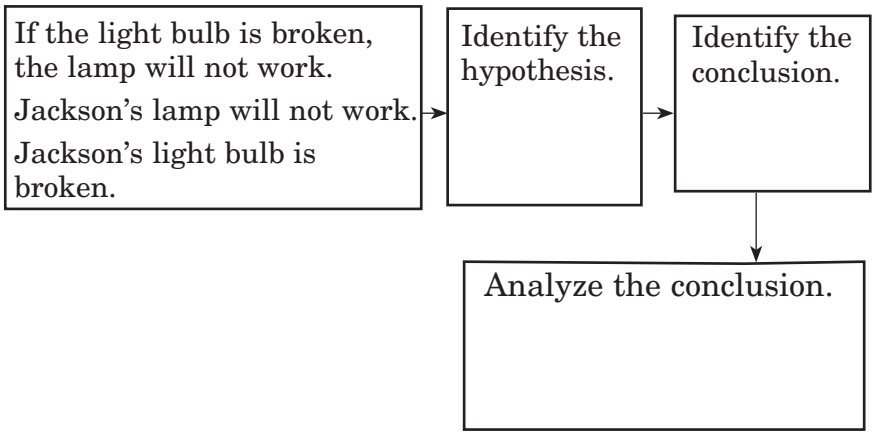
_____

_____

Main Idea	Details

Law of Detachment
pp. 115–117

Identity the steps to validate the two conclusions by completing the graphic organizer.



Law of Syllogism
pp. 117–118

Match the portions of each statement with the correct term by drawing a line to connect the two. Then write the true conditional statement and the valid conclusion using the Law of Syllogism.

p	you buy bread
q	you walk to the store
r	you can make toast

_____

_____

Helping You Remember

A good way to remember something is to explain it to someone else. Suppose that a classmate is having trouble remembering the Law of Detachment. In your own words, explain what the Law of Detachment means?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

2-5 Postulates and Paragraph Proofs

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

postulate ▶ a _____ that is accepted as _____ without _____

proof ▶ a logical _____ in which each statement you make is _____ by a statement that is _____ as _____

deductive argument ▶ a logical _____ of _____ that link the _____ to what you are trying to prove

theorem ▶ a _____ or conjecture that has been _____

paragraph proof ▶ writing a _____ to explain why a _____ for a given situation is _____

informal proof ▶ same as _____

axiom ▶ same as _____

Main Idea	Details
Points, Lines, and Planes pp. 125–126	**Write a postulate of points, lines, and planes. Then model the postulate.** _____ _____
Paragraph Proofs pp. 126–127	**Sequence the steps in the proof process by completing the organizer.**

Steps in the Proof Process

Step 1: List the _____; draw a _____ if possible.

↓

Step 2: State the _____ or conjecture to be _____.

↓

Step 3: Create a _____ by forming a _____ of statements linking the given to what you are trying to prove.

↓

Step 4: Justify each _____ with a reason. Reasons include definitions, algebraic _____, postulates, and _____.

↓

Step 5: State what has been _____.

NAME _____ DATE _____ PERIOD _____

2-6 Algebraic Proof

What You'll Learn

Skim the lesson. Write two things you already know about algebraic proof.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Write the definition next to the term. *(Lesson 2-4)*

deductive reasoning ▶ _____

_____

New Vocabulary Match the term with its definition by drawing a line to connect the term.

algebraic proof	same as formal proof
two-column proof	contains statements and reasons in two columns
formal proof	uses a group of algebraic steps to solve problems and justify each step.

Vocabulary Link *Proof* is a word that is used in everyday English. Find the definition of *proof* using a dictionary. Explain how the English definition can help you remember how *proof* is used in mathematics.

_____

_____

_____

Main Idea

Details

Algebraic Proof
pp. 134–135

Write a 2-column proof by completing each step.

Given: $\frac{8}{3} + x = 6 - \frac{1}{3}x$ Prove: $x = 2\frac{1}{2}$

Statements	Reasons
$\frac{8}{3} + x = 6 - \frac{1}{3}x$	
$3\left(\frac{8}{3} + x\right) = 3\left(6 - \frac{1}{3}x\right)$	
$8 + 3x = 18 - x$	
	Addition Prop of Equality
$8 + 4x = 18$	Simplify.
$8 + 4x - 8 = 18 - 8$	
	Substitution Prop of Equality
$\frac{4}{4}x = \frac{10}{4}$	
$x = \frac{10}{4}$ or $2\frac{1}{2}$	

Geometric Proof
p. 136

Match the property with its example by drawing a line to connect the example.

Symmetric Property	If $ST = WX$, and $WX = YZ$, then $ST = YZ$.
Reflective Property	If $\angle C = \angle D$, then $\angle D = \angle C$.
Transitive Property	$\angle A = \angle A$

NAME _____ DATE _____ PERIOD _____

2-7 Proving Segment Relationships

What You'll Learn

Scan the text in Lesson 2-7. Write two facts you learned about proving segment relationships.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Write the definition next to each term. *(Lessons 2-1 and 2-3)*

inductive reasoning ▶ _____

_____

conjecture ▶ _____

_____

counterexample ▶ _____

conditional statement ▶ _____

converse ▶ _____

_____

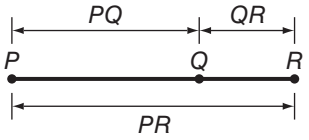
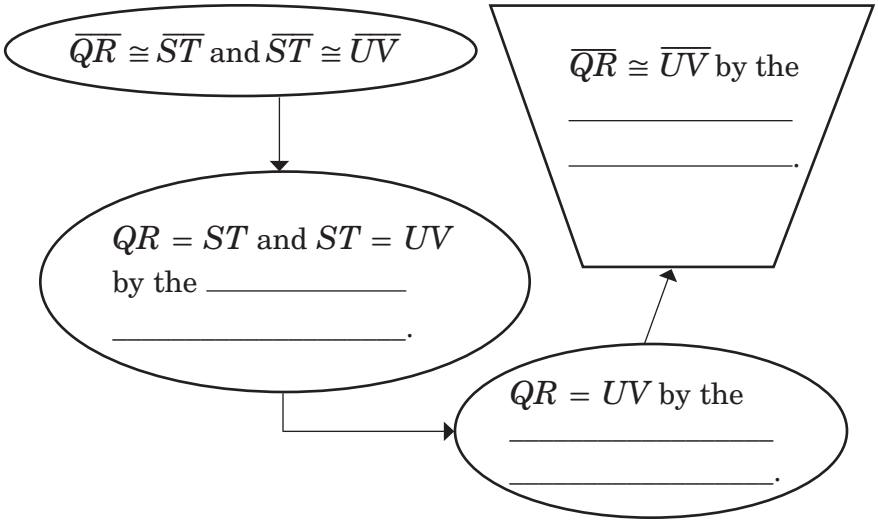
contrapositive ▶ _____

_____

inverse ▶ _____

_____

Lesson 2-7

Main Idea	Details
Ruler Postulate pp. 142–143	Use the Model and Fill in each blank to summarize the *Segment Addition Postulate*. If P, Q, and R are _____, then point __ is between __ and __ if and only if ____ + ____ = PR. 
Segment Congruence pp. 143–144	**Complete the graphic organizer to prove the statement below.** **Given:** $\overline{QR} \cong \overline{ST}$; $\overline{ST} \cong \overline{UV}$ **Prove:** $\overline{QR} \cong \overline{UV}$ 

Helping You Remember

A good way to keep the names straight in your mind is to associate something in the name of the postulate with the content of the postulate. How can you use this idea to distinguish between the Rule Postulate and the Segment Addition Postulate?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

2-8 Proving Angle Relationships

What You'll Learn

Scan Lesson 2-8. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 1-4 and 1-5)*

complementary angles ▶ two _____ angles with measures that have a sum of _____

adjacent angles ▶ angles with a common _____

supplemetary angles ▶ two _____ angles with measures that have a sum of _____

interior ▶ the region of a plane _____ an angle

exterior ▶ the region of a plane _____ an angle

acute angle ▶ an angle with a measure of _____

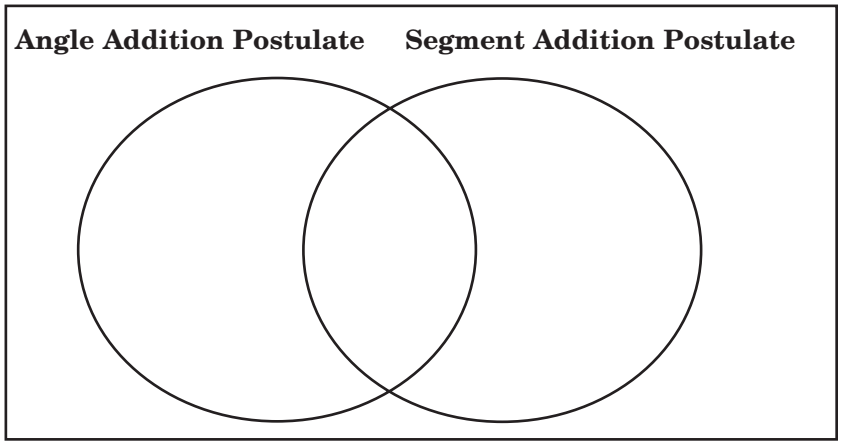
obtuse angle ▶ an angle with a measure of _____

Lesson 2-8

Main Idea	Details

Supplementary and Complementary Angles
pp. 149–150

Compare and contrast the Angle Addition Postulate and the Segment Addition Postulate by completing the Venn diagram.

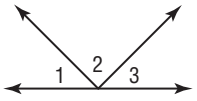


Congruent Angles
pp. 151–153

Write a two-column proof to prove the statement by completing the chart.

Given: $m\angle 2 = 90$
$\angle 1 \cong \angle 3$

Prove: $m\angle 1 = 45$



Statements	Reasons
1. $m\angle 2 = 90$ $\angle 1 \cong \angle 3$	
2. $m\angle 3 = m\angle 1$	
3. $m\angle 1 + m\angle 3 + m\angle 2 = 180$	
4. $m\angle 1 + m\angle 1 + 90 = 180$	
5. $m\angle 1 + m\angle 3 + 90 - 90 = 180 - 90$	
6. $m\angle 1 + m\angle 1 = 90$	
7. $\frac{m\angle 1 + m\angle 1}{2} = 90 \div 2$	
8. $m\angle 1 = 45$	

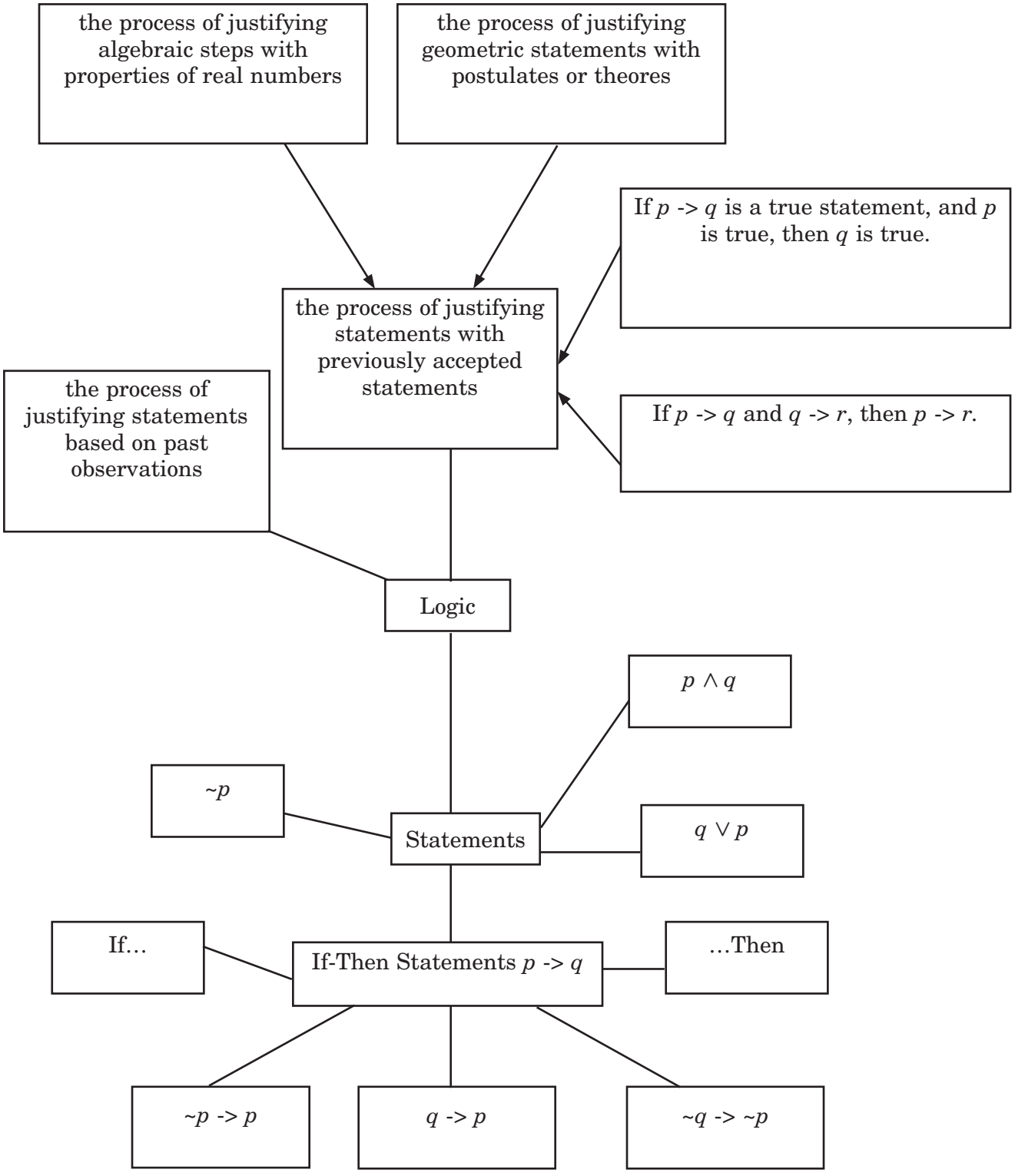
NAME _____ DATE _____ PERIOD _____

CHAPTER 2

Reasoning and Proof

Tie It Together

Complete the graphic organizer with a term from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 2

Reasoning and Proof

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Reasoning and Proof	After You Read
• Listing a counterexample is a method to prove a conjecture is true.	
• A Venn diagram can illustrate a conjunction.	
• A form of inductive reasoning is the Law of Detachment.	
• The statement *a line contains two points*, is an example of a postulate.	
• Supplementary angles have measures whose sum is 90°.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 2.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 2 Study Guide and Review in the textbook.

☐ I took the Chapter 2 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- Make up acronyms to remember lists or sequences. PEMDAS is one acronym for remembering the order of operations (parentheses, exponents, multiply and divide, add and subtract). (**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally).

NAME _____ DATE _____ PERIOD _____

CHAPTER 3

Parallel and Perpendicular Lines

Before You Read

Before you read the chapter, think about what you know about the topic. List three things you already know about parallel and perpendicular lines in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, preview the lesson and make generalizations about what you think you will learn.**
  Then compare that with what you actually learned after each lesson.
- **Before each lesson, skim through the lesson and write any questions that come to mind in your notes.**
  As you work through the lesson, record the answer to your question.

NAME _____ DATE _____ PERIOD _____

CHAPTER 3

Parallel and Perpendicular Lines

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on parallel lines and transversals, one fact might be parallel planes are planes that do not intersect. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
3-1 Parallel Lines and Transversals	
3-2 Angles and Parallel Lines	
3-3 Adding and Subtracting Polynomials	
3-4 Equations of Lines	
3-5 Proving Lines Parallel	
3-6 Perpendiculars and Distance	

NAME _____ DATE _____ PERIOD _____

3-1 Parallel Lines and Transversals

What You'll Learn

Skim the Examples for Lesson 3-1. Predict two things you think you will learn about parallel lines and transversals.

1. _____

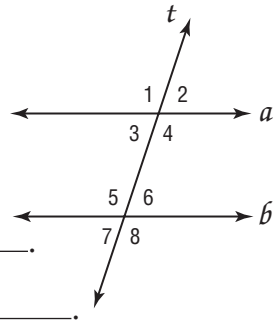
_____

2. _____

_____

Active Vocabulary

New Vocabulary Use the figure to complete each statement.



parallel lines ▶ t is a _____.

transversal ▶ $\angle 1$ and $\angle 7$ are _____.

interior angles ▶ $\angle 2$ and $\angle 6$ are _____.

exterior angles ▶ $\angle 4$ and $\angle 5$ are _____.

consecutive interior angles ▶ a and b are _____.

alternative interior angles ▶ $\angle 4$ and $\angle 6$ are _____.

alternate exterior angles ▶ $\angle 2$ and $\angle 7$ are _____.

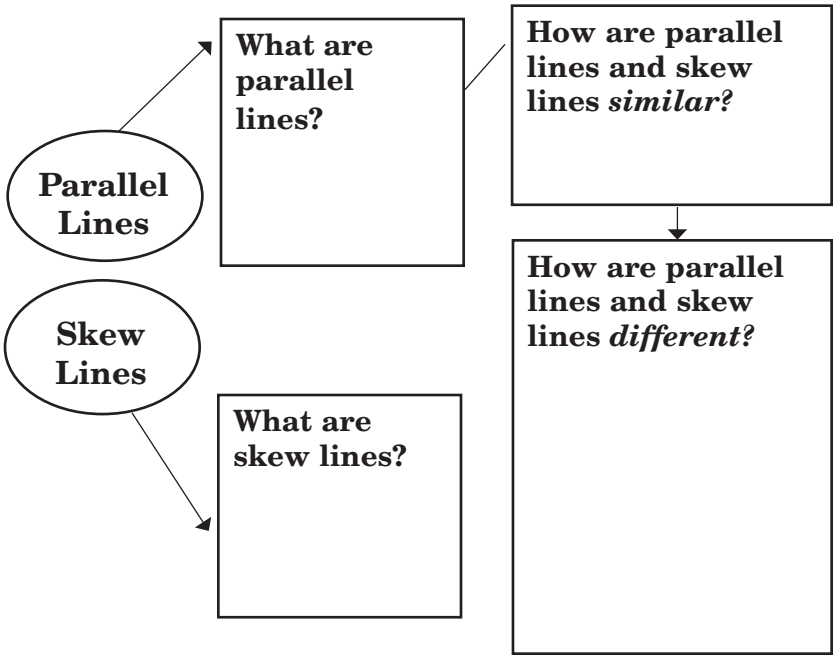
corresponding angles ▶ $\angle 5$ and $\angle 6$ are _____.

Vocabulary Link *Skew* is a word used in everyday English as well as in mathematics. Look up *skew* in the dictionary. Explain how the English definition can help you remember how *skew* is used in mathematics.

_____

_____

Main Idea	Details
Relationships Between Lines and Planes pp. 171–172	**Summarize information about *parallel lines* and *skew lines* in the graphic organizer below.**



Transversal Angle Pair Relationships pp. 172–173	**Model a transversal *t* which intersects two or more parallel lines. Identify consecutive interior angles, alternative interior and exterior angles, and corresponding angles.**

Helping You Remember

Look up meaning of the prefix *trans-* in the dictionary. Write down 4 words that have *trans-* as a prefix. How can the meaning of the prefix help you remember the meaning of transversal?

_____

_____

NAME _____ DATE _____ PERIOD _____

3-2 Angles and Parallel Lines

What You'll Learn

Scan Lesson 3-2. List two headings you would use to make an outline of this heading.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Match the term with the correct definition by drawing a line between the two. *(Lesson 3-1)*

parallel lines	lie in the regions *not* between parallel lines that are cut by a transversal
skew	a line that intersects 2 or more coplanar lines at 2 different points
interior angles	lie on the same side of both the parallel lines and the transversal
exterior angles	coplanar lines that never intersect
consecutive interior angles	lie *between* parallel lines that are cut by a transversal
corresponding angles	interior lines that lie on the same side of a transversal
tranversal	lines that are not on the same plane and never intersect

Lesson 3-2

Main Idea	Details

Parallel Lines and Angle Pairs

pp. 178–179

Fill in the organizer about the Corresponding Angles Postulate.

Corresponding Angles Postulate

Definition	**Why is it useful?**
Example	**Nonexample**

Algebra and Angle Measures

pp. 180

Fill in each blank to summarize the Perpendicular Transversal Theorem.

The Perpendicular Transversal Theorem states that in a _____, if a line is _____ to one of two _____, then it is _____ to the other.

Helping You Remember

How can you use an everyday meaning of the adjective *alternate* to help you remember the types of angle pairs for two lines and a transversal?

_____

_____

NAME _____ DATE _____ PERIOD _____

3-3 Slopes of Lines

What You'll Learn

Scan the text in Lesson 3-3. Write two facts you learned about slopes of lines as you scanned the text.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lesson 1-1)*

line ▶ made up of _____ with no thickness or width

point ▶ a _____ without shape or size

defined term ▶ can be explained using _____ terms

undefined term ▶ can only be explained using _____ and _____

New Vocabulary Write the definition next to each term.

slope ▶ _____

_____

_____

_____

rate of change ▶ _____

_____

_____

_____

Lesson 3-3

Main Idea	Details

Slope of a Line
pp. 186–188

Complete the organizer to summarize the steps of finding the slope of a line. Then fill in each blank of the example.

Find the Slope of a Line

Step 1:
Label the cordinates as ( ) and ( ).

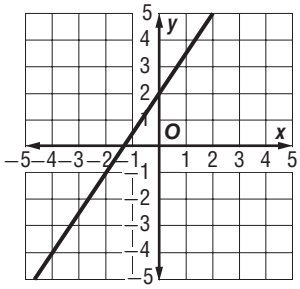
Step 2:
Substitute the coordinates into the

_____

$m =$

Step 3: Simplify.

Find the slope of a line.



Step 1: Substitute ( ) for (x_1, y_1) and ( ) for (x_2, y_2).
Step 2: Use the formula.
Step 3: Simplify.

Parallel and Perpendicular Lines
pp. 189–190

Fill in each blank for the Parallel and Perpendicular Lines Postulates.

Slopes of Parallel Lines: Two non-vertical _____ will have the same _____ if they are _____. Vertical lines are _____ parallel.

Slopes of Perpendicular Lines: Two _____ lines are _____ if the _____ of their _____ is ___. Vertical and horizontal lines are _____ perpendicular.

Helping You Remember

Suppose 2 non-vertical lines have slopes which are reciprocals of each other. Are they perpendicular? Explain.

_____

_____

NAME _____ DATE _____ PERIOD _____

3-4 Equations of Lines

What You'll Learn

Skim Lesson 3-4. Predict two things that you expect to learn based on the headings and the Key Concept Box.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Match the term with its definition by drawing a line to connect the two. *(Lesson 2-5)*

postulate	a logical chain of statements that link the given to what you are trying to prove
proof	a statement or conjecture that has been proven
deductive argument	a logical argument in which each statement you make is supported by a statement that is accepted as true
theorem	a statement that is accepted as true without proof

New Vocabulary Write the correct equation next to each term.

point-slope form ▶ _____

slope-intercept form ▶ _____

Vocabulary Link *Slope* is a word used in everyday English as well as in mathematics. Look up *slope* in the dictionary. Explain how the English definition can help you remember how *slope* is used in mathematics.

_____

_____

_____

_____

Lesson 3-4

Main Idea	Details

Write Equations of Lines
pp. 196–198

Complete the chart on how to write an equation of a line.

Writing an Equation of a Line	
Forms	**Procedures**
Given: **slope and *y*-intercept**	
Given: **slope and point on the line**	
Given: two points	
Given: **for a horizontal line, when $m = 0$**	
Given: equation of one line and one set of points for $\perp$ and $\parallel$ lines	

Write Equations to Solve Problems
p. 199

Fill in each blank to write the equations.

Alicia wants to paint for about 5 hours. One art studio charges an $8 fee plus $2 per hour. The second studio does not charge a fee and charges $4 an hour. Write two equations to represent the cost of each studio. Which studio should she choose?

Fee + Hourly fee $\times$ x for Number of Hours = Total Cost

____ + ____ $x = y$

____ + ____ $x = y$

The _____ studio charges a better deal for up to 4 hours.

NAME _____ DATE _____ PERIOD _____

3-5 Proving Lines Parallel

What You'll Learn

Skim the lesson. Write two things you already know about proving lines parallel.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lesson 3-1)*

_____ ▶ nonadjacent interior angles that lie on opposite sides of a transversal

_____ ▶ nonadjacent exterior angles that lie on opposite sides of a transversal

_____ ▶ angles that lie on the same side of the transversal and on the same side of parallel lines

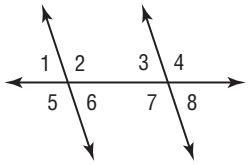
_____ ▶ coplanar lines that do not intersect

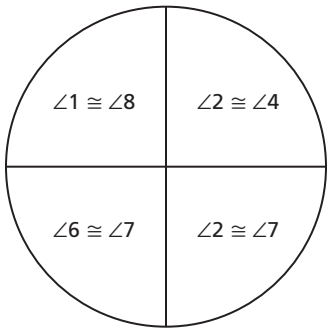
_____ ▶ line that intersects two or more parallel lines at two different points

_____ ▶ Where a transversal cuts through two parallel lines, these angles lie in the same region between parallel lines.

_____ ▶ Where a transversal cuts through two parallel lines, these angles lie in the same two regions that are not between the two parallel lines.

Main Idea	Details
Identify Parallel Lines pp. 205–207	**Use the model to cross out the congruence statement in the concept circle that does not belong.**





Prove Lines Parallel
p. 208

Fill in each blank to summarize the lesson about proving lines are parallel.

When two _____ lines are cut by a _____, the angle pairs formed are either _____ or _____. When a pair of lines form angles that do not meet this condition, the lines _____ be parallel.

Helping You Remember

A good way to remember something new is to draw a picture. How can a sketch help you to remember the Parallel Postulate?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

3-6 Perpendiculars and Distance

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Write the definition next to each term. *(Lesson 2-4)*

parallel lines ▶ _____

skew ▶ _____

New Vocabulary Fill in each blank with the correct term or phrase.

equidistance ▶ The _____ between two _____ lines when measured along a _____ line to the lines is always _____.

Vocabulary Link *Equidistance* is a word that is used in everyday English. Find the definition of *equidistance* using a dictionary. Explain how the English definition can help you remember how *equidistance* is used in mathematics.

_____

_____

_____

_____

Main Idea	Details

Distance from a Point to a Line
pp. 213–216

Summarize the steps to find the distance between a point p and a line ℓ on a coordinate plane.

Find the Distance between a Point and a Line.

Step 1: Write an _____ for the line ℓ.

Step 2: Write an _____ for the perpendicular line that goes through point p

Step 3: Use _____ to find the coordinates where line ℓ _____ the perpendicular line.

Step 4: Use the _____ to find the distance between point P and the point of intersection of the two lines.

Distance Between Parallel Lines
pp. 216–217

Fill in each blank to find the distance between the parallel lines.

1. $y = 3x - 7$ The lines are ____ units apart.
$y = 3x + 4$

2. $y = -2x - 8$ The lines are ____ units apart.
$y = -2x + 2$

Helping You Remember

Use your dictionary to find the meaning of the Latin root *aequus*. List three words that are derived from this root and give meaning to each.

_____

_____

_____

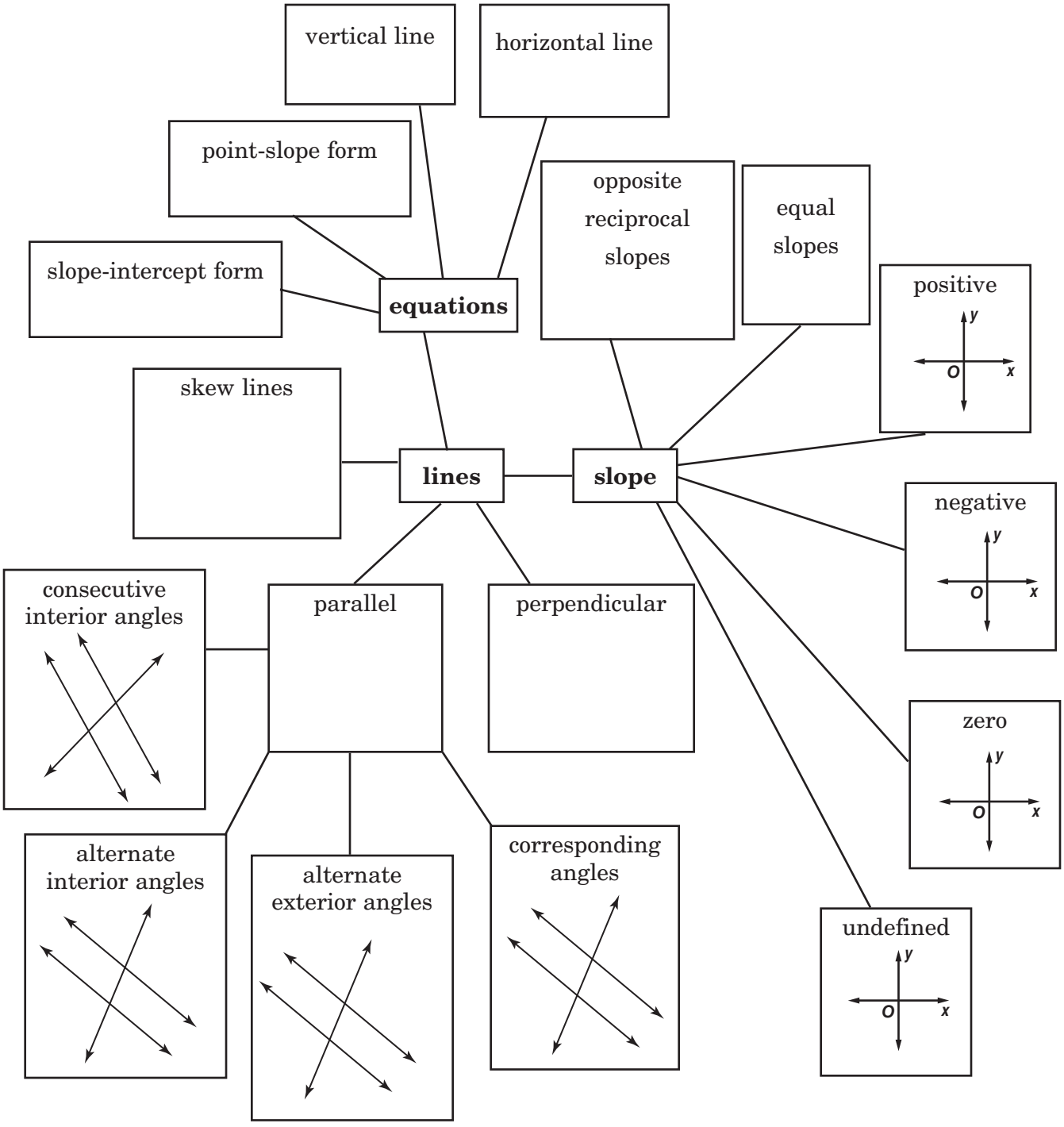
NAME _____ DATE _____ PERIOD _____

CHAPTER 3

Parallel and Perpendicular Lines

Tie It Together

Complete the graphic organizer with a term or formula from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 3

Parallel and Perpendicular Lines

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 3.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 3 Study Guide and Review in the textbook.

☐ I took the Chapter 3 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- Designate a place to study at home that is free of clutter and distraction. Try to study at about the same time each afternoon or evening so that it is part of your routine.

NAME _____ DATE _____ PERIOD _____

CHAPTER 4

Congruent Triangles

Before You Read

Before you read the chapter, think about what you know about congruent triangles. List three things you already know about them in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **Remember to always take notes on your own.**
  Don't use someone else's notes as they may not make sense.
- **When you take notes, listen or read for main ideas.**
  Then record those ideas in a simplified form for future reference.

NAME _____ DATE _____ PERIOD _____

CHAPTER 4

Congruent Triangles

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on congruent triangle, one fact might be that in two congruent triangles all of the side and angles of one triangle are congruent to the corresponding parts of the other triangle. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
4-1 Classifying Triangles	
4-2 Angles of Triangles	
4-3 Congruent Triangles	
4-4 Proving Triangles Congruent–SSS, SAS	
4-5 Proving Triangles Congruent–ASA, AAS	
4-6 Isosceles and Equilateral Triangles	
4-7 Congruence Transformations	
4-8 Triangles and Coordinate Proof	

NAME _____ DATE _____ PERIOD _____

4-1 Classifying Triangles

What You'll Learn

Scan Lesson 4-1. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Label the diagram with the correct terms.

acute triangle ▶

equiangular triangle ▶

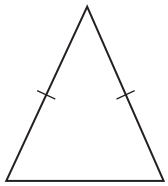
equilateral triangle ▶

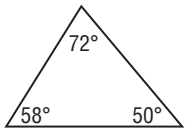
isosceles triangle ▶

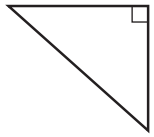
obtuse triangle ▶

right triangle ▶

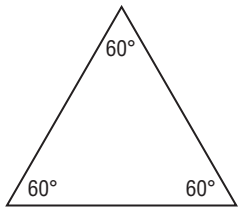
scalene triangle ▶

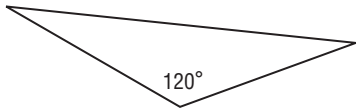




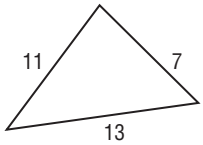


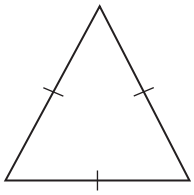
_____ _____ _____





_____ _____





_____ _____

Main Idea	Details

Classify Triangles by Angles

pp. 235–236

Classify the triangle below as *acute, equiangular, obtuse,* or *right*.

Acute: Does the triangle have 3 acute angles? _____

↓

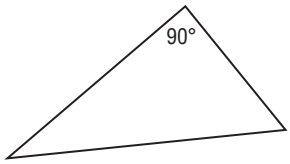
Equiangular: Does the triangle have 3 congruent acute angles? _____

↓

Obtuse: Does the triangle have an angle greater than 90°? _____

↓

Right: Does the triangle have 1 right angle? _____

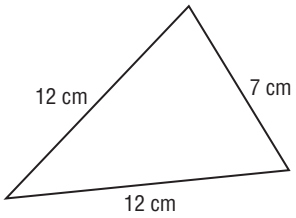


_____

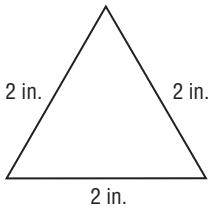
Classify Triangles by Sides

pp. 236–237

Classify each triangle below as *equilateral, isosceles,* or *scalene*.



_____



_____

Helping You Remember

A good way to remember a new mathematical term is to relate it to a nonmathematical definition of the same word. How is the use of the word *acute*, when used to describe *acute pain*, related to the use of the word *acute* when used to describe an *acute angle* or an *acute triangle*?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

4-2 Angles of Triangles

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ an extra line or segment drawn in a figure to help analyze geometric relationships

_____ ▶ one of two angles inside a triangle that is not adjacent to an angle outside the triangle

_____ ▶ an angle formed by one side of a triangle and the extension of an adjacent side

_____ ▶ a method of showing statements to be true using boxes and arrows to show the logical progression of an argument

Vocabulary Link *Auxiliary* is a word that is used in everyday English. Find the definition of *auxiliary* using a dictionary. Explain how the English definition can help you remember how *auxiliary line* is used in mathematics.

_____

_____

_____

_____

_____

Lesson 4-2

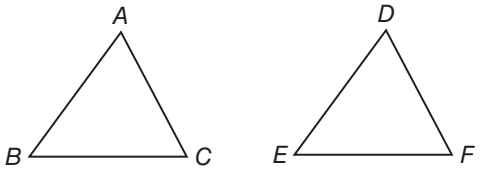
Main Idea	Details

Triangle Angle-Sum Theorem
pp. 244–245

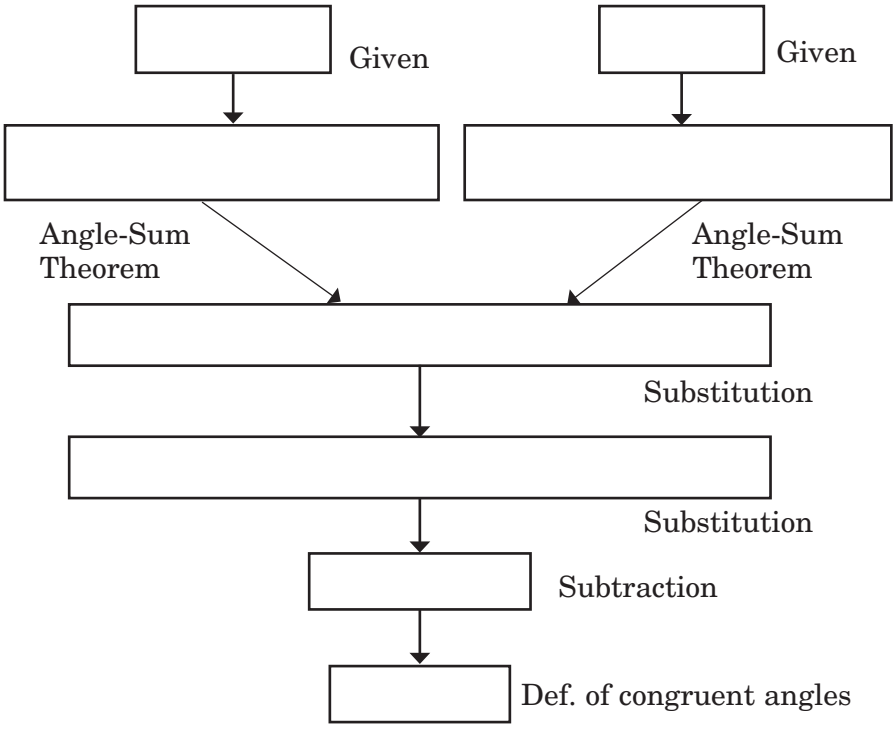
Fill in each box to complete the flow proof.

Given: $\angle A \cong \angle D$
$\angle B \cong \angle E$

Prove: $\angle C \cong \angle F$



Proof:

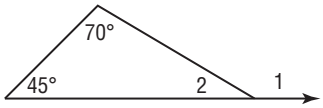


Exterior Angle Theorem
pp. 246–247

Solve for angles 1 and 2 in the figure below.

$m\angle 1 =$ _____

$m\angle 2 =$ _____



NAME _____ DATE _____ PERIOD _____

4-3 Congruent Triangles

What You'll Learn

Scan the lesson. Write two things you already know about congruent triangles.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the definition next to each term. *(Lesson 4-1)*

equiangular triangle ▶ _____

isosceles triangle ▶ _____

scalene triangle ▶ _____

New Vocabulary Fill in each blank with the correct term or phrase.

If two geometric figures have exactly the same shape and size, they are _____.

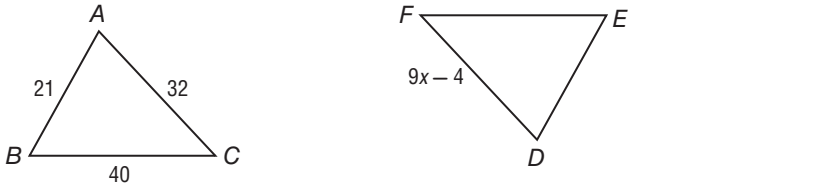
In two _____, all of the parts of one polygon are congruent to the _____ or matching parts of the other polygon.

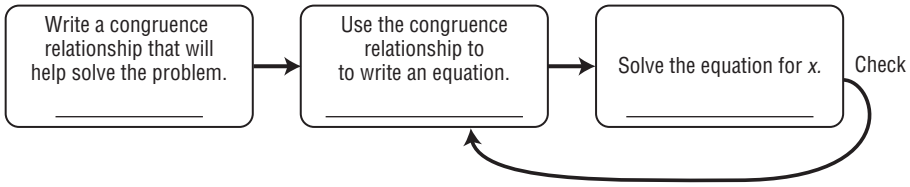
Lesson 4-3

Main Idea	Details

Congruent and Corresponding Parts
pp. 253–254

If $\triangle ABC \cong \triangle DEF$, complete the diagram to solve for x.





Prove Triangles Congruent
pp. 255–256

Name each property of triangle congruence.

If $\triangle ABC \cong \triangle DEF$, then $\triangle DEF \cong \triangle ABC$.

_____

$\triangle RST \cong \triangle RST$

_____

If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle LMN$, then $\triangle ABC \cong \triangle LMN$.

_____

Helping You Remember

Suppose a classmate is having trouble writing congruence statements for triangles because he thinks he has to match up three pairs of sides and three pairs of angles. How can you help him understand how to write correct congruence statements more easily?

_____

_____

NAME _____ DATE _____ PERIOD _____

4-4 Proving Triangles Congruent – SSS, SAS

What You'll Learn

Scan Lesson 4-4. List two headings you would use to make an outline of this lesson.

1. _____

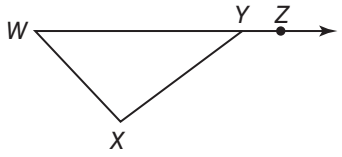
_____

2. _____

_____

Active Vocabulary

Review Vocabulary Use the diagram to write an example for each of the following. *(Lesson 4-2)*



auxiliary line ▶ _____

two remote interior angles to angle XYZ ▶ _____

exterior angle ▶ _____

New Vocabulary Write the definition next to the term.

included angle ▶ _____

_____

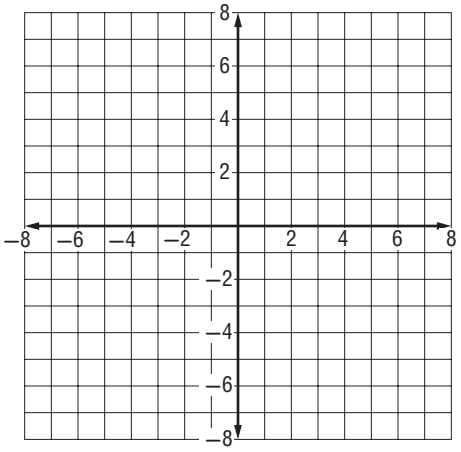
_____

_____

Main Idea	Details

SSS Postulate
pp. 262–264

Use the coordinate grid below to graph two triangles that are congruent. Explain how you could show they are congruent using the SSS postulate. Then show they are equivalent.



$\triangle ABC$	$\triangle DEF$
A(____, ____)	D(____, ____)
B(____, ____)	E(____, ____)
C(____, ____)	F(____, ____)

_____

_____

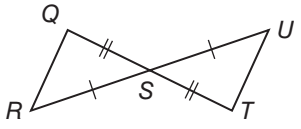
_____

_____

SAS Postulate
pp. 264–266

Use the SAS Postulate to write a triangle congruence statement for the figure below.

_____



NAME _____ DATE _____ PERIOD _____

4-5 Proving Triangles Congruent – ASA, AAS

What You'll Learn

Skim the Examples for Lesson 4-5. Predict two things you think you will learn about proving triangles congruent.

1. _____

_____

_____

2. _____

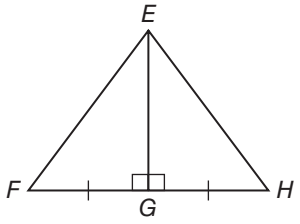
_____

_____

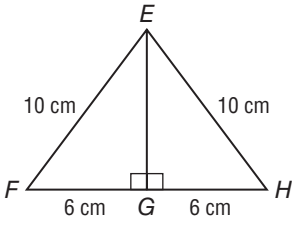
Active Vocabulary

Review Vocabulary Write the name of the postulate that could be used to prove $\triangle EFG \cong \triangle EHG$. *(Lesson 4-4)*

_____ ▶



_____ ▶



New Vocabulary Write the correct term next to the definition.

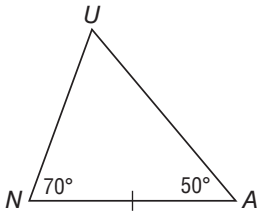
_____ ▶ the side located between two consecutive angles of a polygon

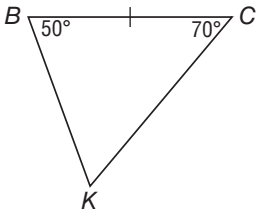
Lesson 4-5

Main Idea	Details

ASA Postulate
pp. 273–274

Fill in each blank with the appropriate terms in the following statements.





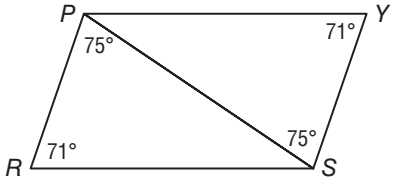
In order to apply the ASA Postulate to prove two triangles are congruent, two pairs of _____ and the _____ of one triangle must be _____ to the corresponding parts of a second triangle.

In the figure above, because ∠ ____ ≅ ∠ ____, ∠ ____ ≅ ∠ ____, and _____ ≅ _____, you know that △ _____ ≅ △ _____.

AAS Theorem
pp. 274–276

Use the AAS Theorem to write a triangle congruence statement for the figure below.

_____



Helping You Remember

Summarize what is needed to prove triangle congruence using the four methods learned so far.

SSS	SAS	ASA	AAS

NAME _____ DATE _____ PERIOD _____

4-6 Isosceles and Equilateral Triangles

What You'll Learn

Scan the text in Lesson 4-6. Write two facts you learned about isosceles and equilateral triangles as you scanned the text.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lesson 4-1)*

_____ ▶ a triangle with at least two congruent sides

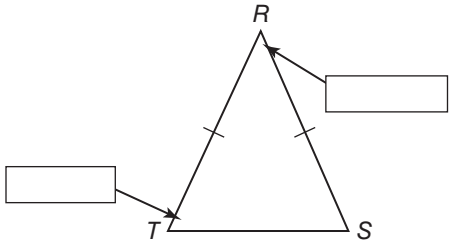
_____ ▶ a triangle with three congruent sides

_____ ▶ a triangle with one angle greater than 90°

New Vocabulary Label the diagram with the correct terms.

base angle ▶

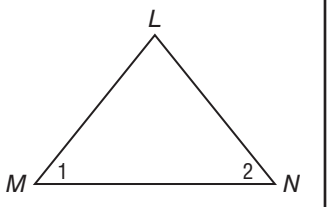
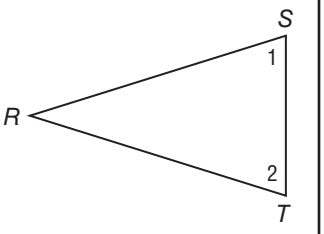
vertex angle ▶



Main Idea	Details

Properties of Isosceles Triangles
pp. 283–284

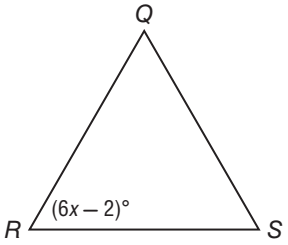
Describe the Isosceles Triangle Theorem and its converse in the boxes below. Then write a conditional statement using the figures to illustrate each theorem.

Isosceles Triangle Theorem	
Example: _____	
Converse of Isosceles Triangle Theorem	
Example: _____	

Properties of Equilateral Triangles
pp. 284–286

Solve for x in equilateral triangle QRS.

_____



Helping You Remember

If a theorem and its converse are both true, you can often remember them most easily by combining them into an "if-and-only-if" statement. Write such a statement for the Isosceles Triangle Theorem and its converse.

_____

_____

NAME _____ DATE _____ PERIOD _____

4-7 Classifying Triangles

What You'll Learn

Skim Lesson 4-7. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Match the term with its definition by drawing a line to connect the two.

congruence transformation	a transformation in which the position of the image may differ from that of the preimage, but the two figures remain congruent
image	a type of transformation that is a flip over a line
isometry	also known as a rigid transformation
preimage	the end result of a geometric transformation
reflection	an operation that maps an original geometric figure onto a new figure
rotation	a type of transformation that is a turn around a fixed point
transformation	a type of transformation that is a slide of a figure
translation	the original figure in a geometric transformation

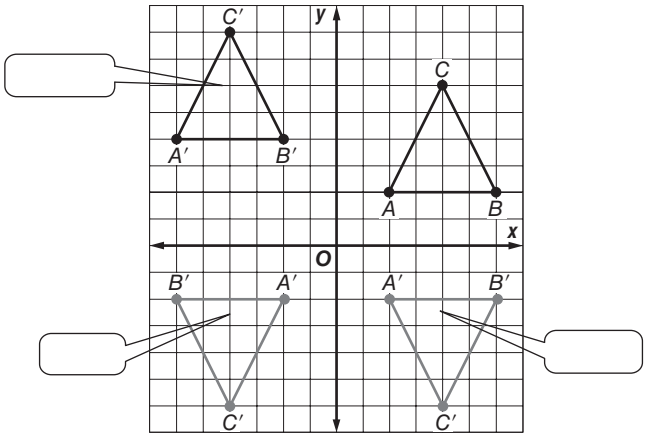
Lesson 4-7

Main Idea	Details

Identify Congruence Transformation

pp. 294–295

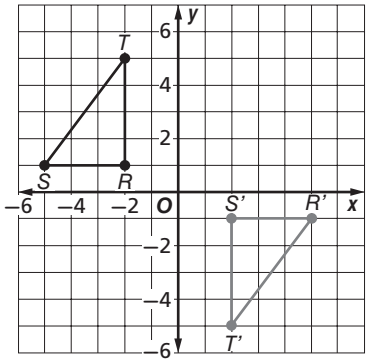
Write the type of transformation of triangle *ABC* (the preimage) in each box.



Verify Congruence

p. 296

Complete each statement to verify the congruence.



$RS =$ ____

$ST =$ ____

$RT =$ ____

$R'S' =$ ____

$S'T' =$ ____

$R'T' =$ ____

Helping You Remember

Geometric reflections, translations, and rotations are also known as *flips, slides*, and *turns*. Describe how these terms appropriately illustrate the corresponding transformations.

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

4-8 Triangles and Coordinate Proof

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lesson 4-7)*

_____ ▶ an operation that maps an original geometric figure onto a new figure

_____ ▶ a type of transformation that is a slide of a figure

_____ ▶ also known as a rigid transformation

_____ ▶ a type of transformation that is a flip over a line

_____ ▶ the end result of a geometric transformation

_____ ▶ a type of transformation that is a turn around a fixed point

_____ ▶ the original figure in a geometric transformation

New Vocabulary Write the definition next to the term.

coordinate proof ▶ _____

_____

_____

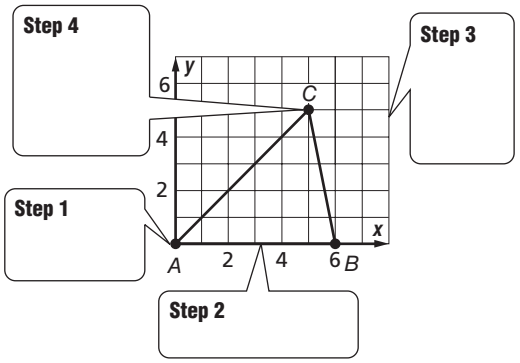
_____

Lesson 4-8

Main Idea	Details

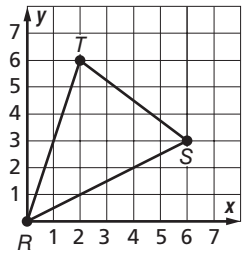
Position and Label Triangles
pp. 301–302

Complete the boxes below to illustrate the four key steps in placing a triangle on a coordinate grid to aid in coordinate proof.



Write Coordinate Proofs
pp. 302–303

Complete each statement showing the side lengths of triangle *RST*. Round to the nearest hundredth if necessary. Classify the triangle.



$RS \cong$ _____

$RT \cong$ _____

$TS \cong$ _____

Triangle RST is _____.

Helping You Remember

Many students find it easier to remember mathematical formulas if they can put them into words in a compact way. Describe how you can use coordinate proof to help you remember the midpoint formula.

_____

_____

_____

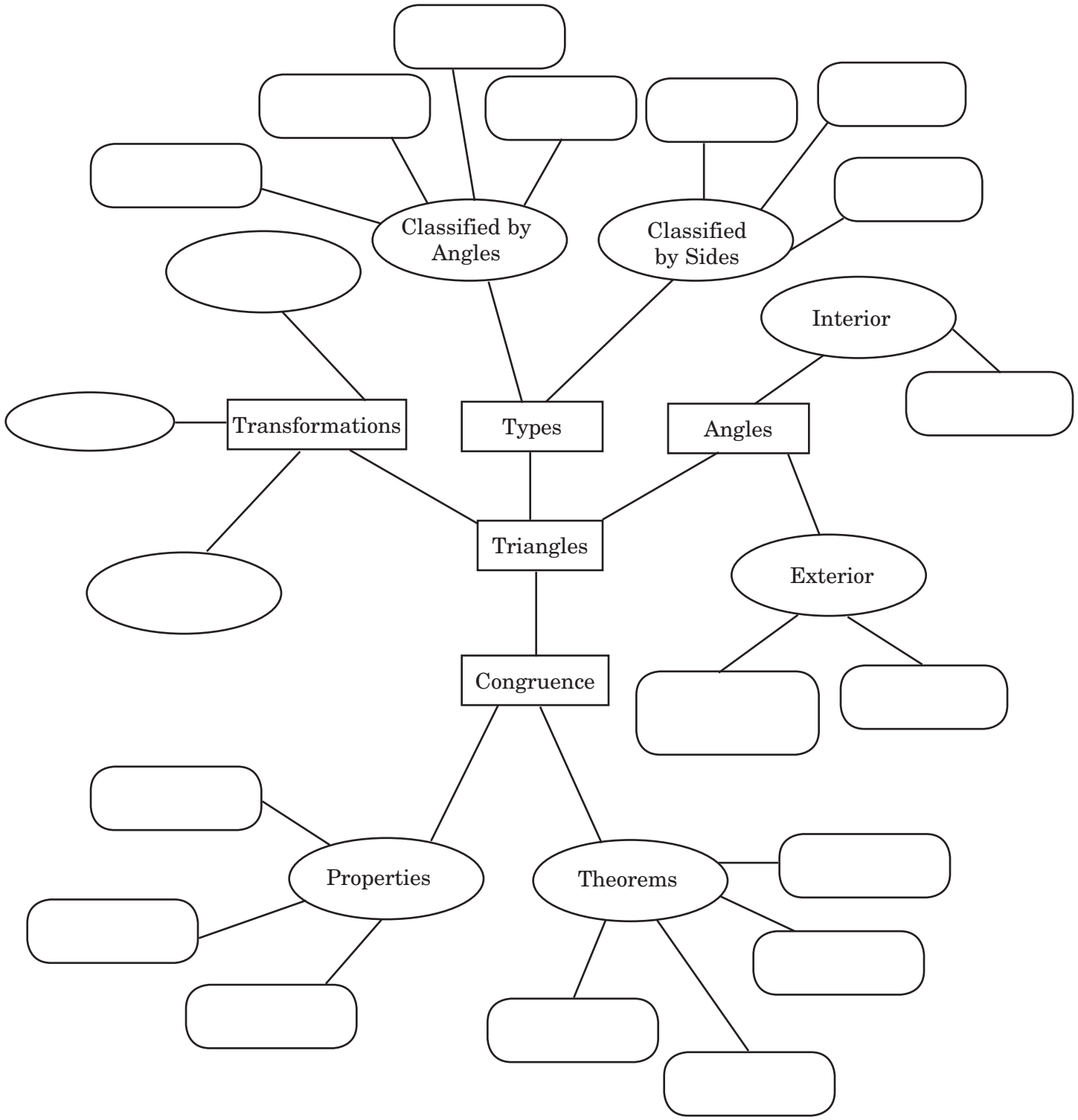
NAME _____ DATE _____ PERIOD _____

CHAPTER 4

Congruent Triangles

Tie It Together

Complete the graphic organizer with a term or formula from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 4

Congruent Triangles

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 4.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 4 Study Guide and Review in the textbook.

☐ I took the Chapter 4 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- Be an active listener in class. Take notes, circle or highlight information that your teacher stresses, and ask questions when ideas are unclear to you.

NAME _____ DATE _____ PERIOD _____

CHAPTER 5

Relationships in Triangles

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Relationships in Triangles
	• Concurrent lines do not intersect and stay the same distance apart.
	• To find the incenter of a triangle, draw a circle within the triangle.
	• Every triangle has 3 medians that are concurrent.
	• The largest angle in a triangle is opposite the longest side.
	• The Hinge Theorem is a way of proving triangle relationships.

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, include personal experiences that relate to the lesson and ways in which what you have learned will be used in your daily life.**
- **When you take notes, write questions you have about the lessons in the margin of your notes.**

  Then include the answers to these questions as you work through the lesson.

NAME _____ DATE _____ PERIOD _____

CHAPTER 5

Relationships in Triangles

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on medians and altitudes of triangles, one fact might be lines containing the altitudes of a triangle are concurrent, intersecting at a point called the orthocenter. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
5-1 Bisectors of Triangles	
5-2 Medians and Altitudes of Triangles	
5-3 Inequalities of One Triangle	
5-4 Indirect Proof	
5-5 The Triangle Inequality	
5-6 Inequalities in Two Triangles	
5-7 Congruence Transformations	
5-8 Triangles and Coordinate Proof	

NAME _____ DATE _____ PERIOD _____

5-1 Bisectors of Triangles

What You'll Learn

Skim Lesson 5-1. Predict two things that you expect to learn based on the headings and figures in the lesson.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ the place where three or more intersecting lines meet

_____ ▶ a segment, line, or plane that intersects a segment at its midpoint and is perpendicular to the segment

_____ ▶ the point of intersection of the perpendicular bisectors of the three sides of a triangle

_____ ▶ three or more lines that intersect at a common point

_____ ▶ the point of intersection of the angle bisectors of the three angles of a triangle

Vocabulary Link Look up the definition of *bisect*. Use it to write the meaning of an angle *bisector*.

_____

_____

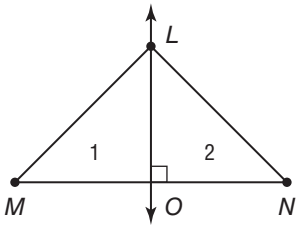
_____

Main Idea	Details

Perpendicular Bisectors
pp. 322–324

Describe the Perpendicular Bisector Theorem in the box below. Then write a conditional statement using the figures to illustrate the theorem.

Perpendicular Bisector Theorem

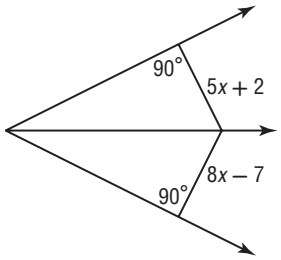


Example:

Angle Bisectors
pp. 324–326

Solve for x in the figure below.

$x =$ _____



Helping You Remember

A good way to remember theorems and postulates in geometry is to explain them to other classmates in your own words. How would you describe the Angle Bisector Theorem to a classmate who is having difficulty understanding the theorem

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

5-2 Medians and Altitudes of Triangles

What You'll Learn

Skim the Examples for Lesson 5-2. Predict two things you think you will learn about medians and altitudes of triangles.

1. _____

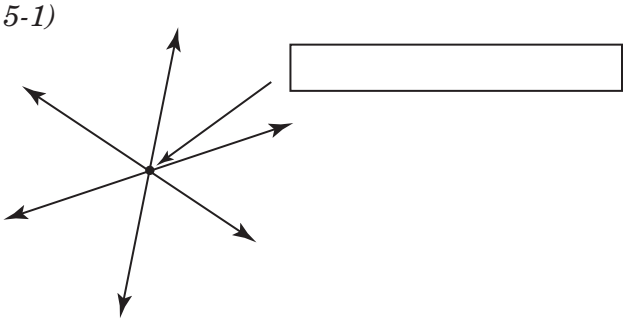
_____

2. _____

_____

Active Vocabulary

Review Vocabulary Label the diagram with the correct term. *(Lesson 5-1)*



New Vocabulary Write the definition next to each term.

median ▶ _____

_____

centroid ▶ _____

_____

altitude ▶ _____

_____

_____

orthocenter ▶ _____

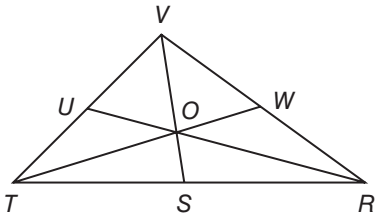
_____

Lesson 5-2

Main Idea	Details

Medians
pp. 333–335

Point *O* is the centroid of triangle *VTR*. Use the Centroid Theorem to complete each statement.

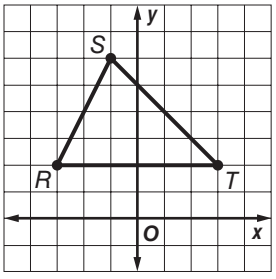


$TO =$ _____ TW $WR =$ _____

$VS =$ _____ VO $2\,RS =$ _____

Altitudes
pp. 335–337

Name the orthocenter of $\triangle RST$.



(___, ___)

Helping You Remember

A good way to remember something is to explain it to someone else. Suppose that a classmate is having trouble remembering whether the center of gravity of a triangle is the orthocenter, the centroid, the incenter, or the circumcenter of the triangle. Suggest a way to remember which point it is.

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

5-3 Inequalities in One Triangle

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

_____

2. _____

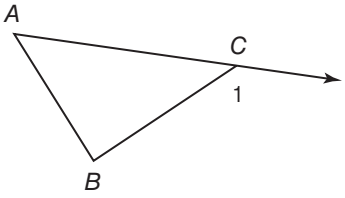
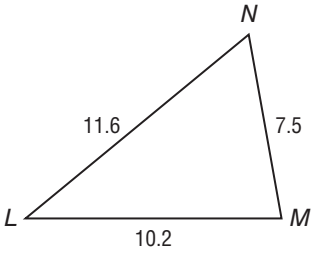
_____

_____

Active Vocabulary

Review Vocabulary Match the term with its definition by drawing a line to connect the two. *(Lessons 5-1 and 5-2)*

perpendicular bisector	the place where three or more intersecting lines meet
orthocenter	the point of concurrency of the medians of a triangle
altitude	a segment of a triangle from a vertex that is perpendicular to the line containing the opposite of the triangle
incenter	the point of concurrency of the lines containing the altitudes of a triangle
point of concurrency	a segment with endpoints being a vertex of a triangle and the midpoint of the opposite side
median	a segment, line, or plane that intersect a segment at its midpoint and is perpendicular to the segment
circumcenter	three or more lines that intersect at a common point
concurrent lines	the point of intersection of the perpendicular bisectors of the three sides of a triangle
centroid	the point of intersection of the angle bisectors of the three angles of a triangle

Main Idea	Details
Angle Inequalities pp. 342–343	**Describe the Exterior Angle Inequality Theorem in your own words. Then use the figure below to write two inequalities.** 
Angle-Side Inequalities pp. 343–345	**List the angles of $\triangle LMN$ in order from least to greatest.** 

Helping You Remember

Explain how the Exterior Angle Inequality Theorem is related to the Exterior Angle Theorem, and why the Exterior Angle Inequality Theorem must be true if the Exterior Angle Theorem is true.

NAME _____ DATE _____ PERIOD _____

5-4 Indirect Proof

What You'll Learn

Scan Lesson 5-4. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

indirect reasoning ▶ Indirect reasoning is a method of thinking that assumes that a conclusion is _____ and then showing that this assumption leads to a contradiction.

indirect proof ▶ In an indirect proof, you temporarily assume that what you are trying to prove is false. By showing this assumption to be logically impossible, you prove your assumption false and the _____ true.

proof by contradiction ▶ To construct a proof by contradiction, the first step is to _____ that the conclusion you want to prove is false.

Vocabulary Link Think of other times you have encountered the word *indirect* in mathematics. Describe any similarities to an *indirect proof*.

_____

_____

_____

_____

Main Idea	Details

Indirect Algebraic Proof
pp. 351–353

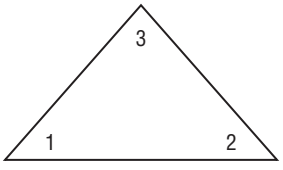
Complete the table below showing the steps involved in constructing an indirect proof.

How to Write an Indirect Proof	
Step 1	_____
Step 2	_____
Step 3	_____

Indirect Proof with Geometry
pp. 353–354

Suppose you want to prove that the sum of interior angles of a triangle is equal to 180°. What assumption would you make to form an indirect proof of this statement?

_____



Helping You Remember

A good way to remember a new concept in mathematics is to relate it to something you have already learned. How is the process of indirect proof related to the relationship between a conditional statement and its contrapositive?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

5-5 The Triangle Inequality

What You'll Learn

Scan the text in Lesson 5-5. Write two facts you learned about the triangle inequality.

1. _____

_____

_____

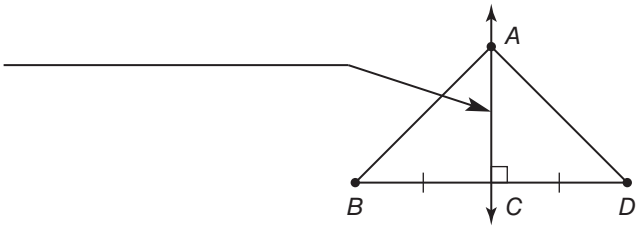
2. _____

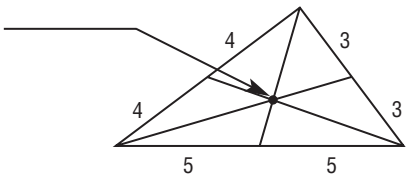
_____

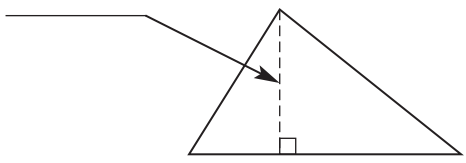
_____

Active Vocabulary

Review Vocabulary Label each figure with the correct term. *(Lessons 5-1 and 5-2)*





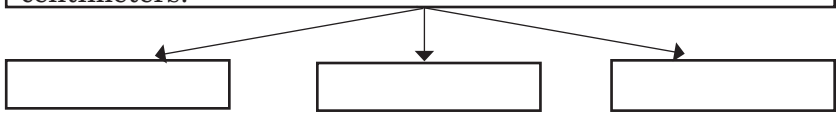


Main Idea	Details

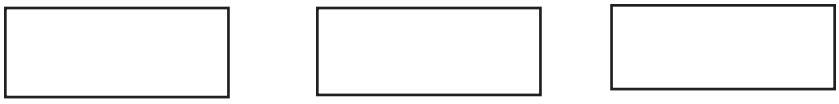
The Triangle Inequality
pp. 360–361

If the measures of two sides of a triangle are 4 centimeters and 9 centimeters, what is the *least* possible whole number measure for the third side?

Step 1: Use the triangle inequality to write three inequalities for a triangle with sides 4, 9, and x centimeters.



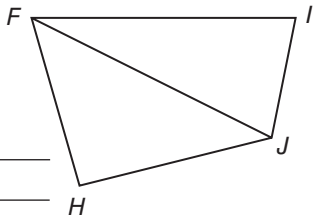
Step 2: Solve each the inequalities.



Step 3: Use the inequalities to solve the problem.

Proofs Using the Triangle Inequality
p. 362

Complete the two-column proof.



Given: $\overline{FI} \cong \overline{FJ}$

Prove: $FI + FH > HJ$

Statements	Reasons
1. _____	**1.** _____
2. _____	**2.** _____
3. _____	**3.** _____
4. _____	**4.** _____

Helping You Remember

A good way to remember a new theorem is to state it informally in different words. How could you restate the Triangle Inequality Theorem?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

5-6 Inequalities in Two Triangles

What You'll Learn

Skim the lesson. Write two things you already know about inequalities in two triangles.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lessons 5-1 and 5-2)*

_____ ▶ a segment of a triangle from a vertex that is perpendicular to the line containing the opposite of the triangle

_____ ▶ a segment, line, or plane that intersect a segment at its midpoint and is perpendicular to the segment

_____ ▶ the point of intersection of the perpendicular bisectors of the three sides of a triangle

_____ ▶ the point of concurrency of the medians of a triangle

Vocabulary Link Describe how the hinge of a door can be used to illustrate the Hinge Theorem.

_____

_____

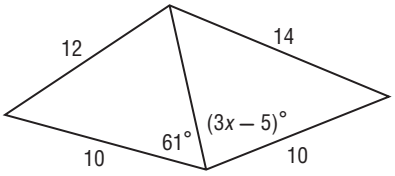
_____

_____

Main Idea	Details

Hinge Theorem
pp. 367–370

Find the range of possible values for x in the figure below.



Write an inequality using the Converse of the Hinge Theorem.
_____

Write an inequality given the angle is less than 180º.
_____

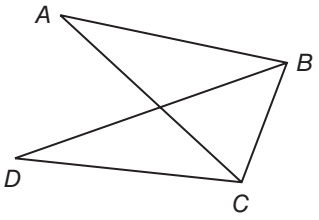
Solve for x.
_____

Solve for x.
_____

What are the possible values of x ?
_____

Prove Relationships in Two Triangles
pp. 370–371

Describe how you could use the Hinge Theorem to complete the proof below.
Given: $AC = CD$
Prove: $BD > AB$



Helping You Remember

A good way to remember something is to think of it in concrete terms. How can you illustrate the Hinge Theorem with everyday objects?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

CHAPTER 5

Relationships in Triangles

Tie It Together

Complete each graphic organizer with a term, description, diagram, or theorem from the chapter.

Segment	Definition	Point of Concurrency	Property of Point	Diagram
	a segment that bisects the side of a triangle at a right angle			
		incenter		
			center of gravity of the triangle	
altitude				

Triangle Inequalities	
Exterior Angles	
Angle-Side	
Triangle Inequality	
Hinge	

NAME _____ DATE _____ PERIOD _____

CHAPTER 5

Relationships in Triangles

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Relationships in Triangles	After You Read
• Concurrent lines do not intersect and stay the same distance apart.	
• To find the incenter of a triangle, draw a circle within the triangle.	
• Every triangle has 3 medians that are concurrent.	
• The largest angle in a triangle is opposite the shortest side.	
• The Hinge Theorem is a way of proving triangle relationships.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 5.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 5 Study Guide and Review in the textbook.

☐ I took the Chapter 5 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- Get a good nights rest before a test. Students that take the time to sleep usually do better than students who stay up late cramming.

NAME _____ DATE _____ PERIOD _____

CHAPTER 6

Quadrilaterals

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Quadrilaterals
	• The sum of the interior angles of a convex polygon is $(n - 1) \times 180$.
	• A diagonal cuts a parallelogram into 2 congruent triangles.
	• A rhombus is a quadrilateral.
	• If a parallelogram has 1 right angle, then it has 4 right angles.
	• A trapezoid can have 0 or 1 set of parallel sides.

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, look for written real-world examples in your everyday life.**

  Comment on how writers use statistics to prove or disprove points of view and discuss the ethical responsibilities writers have when using statistics.

- **When you take notes, include visuals.**

  Clearly label the visuals and write captions when needed.

NAME _____ DATE _____ PERIOD _____

CHAPTER 6

Quadrilaterals

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on rectangles, one fact might be a parallelogram with four right angles is a rectangle. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
6-1 Angles of Polygons	
6-2 Parallelograms	
6-3 Tests for Parallelograms	
6-4 Rectangles	
6-5 Rhombi and Squares	
6-6 Trapezoids and Kites	

NAME _____ DATE _____ PERIOD _____

6-1 Angles of Polygons

What You'll Learn

Skim Lesson 6-1. Predict two things that you expect to learn based on the headings and figures in the lesson.

1. _____

_____

_____

2. _____

_____

_____

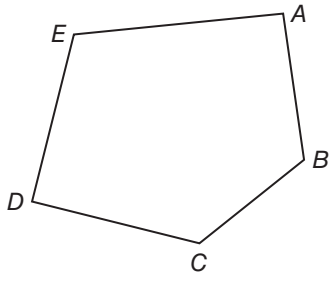
Active Vocabulary

New Vocabulary Write the definition next to the term.

diagonal ▶ _____

_____

Name all of the diagonals in polygon *ABCDE*.



_____

Vocabulary Link Look up how television screens are measured. What does it mean for a television to have a 32-inch screen?

_____

_____

_____

Main Idea	Details

Polygon Interior Angles Sum

pp. 389–392

Complete the following table for convex polygons. For middle column, find the number of triangles you can divide the polygon into by drawing all the possible diagonals from one vertex.

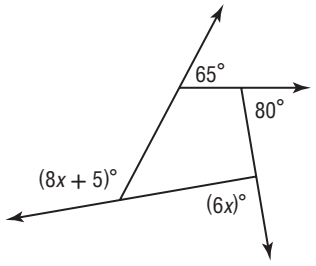
polygon	number of sides	number of triangles	sum of interior angle measures
triangle			
hexagon			
octagon			
nonagon			
n-gon			

Polygon Exterior Angles Sum

pp. 392–393

Find the value of x in the figure below.

_____



Helping You Remember

A good way to remember a new mathematical idea or formula is to relate it to something you already know. How can you use your knowledge of the Angle Sum Theorem (for a triangle) to help you remember the Interior Angle Sum Theorem?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

6-2 Parallelograms

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

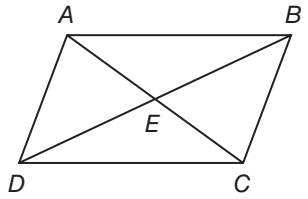
New Vocabulary Write the definition of the term.

parallelogram ▶ _____

_____

_____

Fill in each blank using parallelogram *ABCD*.



$\overline{AB} \parallel$ _____

$\overline{BE} \cong$ _____

$\overline{AD} \cong$ _____

$\overline{BC} \parallel$ _____

$\overline{AE} \cong$ _____

Main Idea **Details**

Sides and Angles of Parallelograms

pp. 399–400

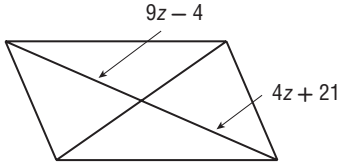
Complete the table using Theorems 6.3, 6.4, 6.5, and 6.6 in the Student Edition.

Properties of Parallelograms	
Theorem	**Property**
6.3	If a quadrilateral is a parallelogram, then its opposite sides are _____.
6.4	If a quadrilateral is a parallelogram, then its opposite angles are _____.
6.5	If a quadrilateral is a parallelogram, then its opposite sides are _____.
6.6	If a parallelogram has one right angle, then it has four _____.

Diagonals of Parallelograms

pp. 401–402

Find the value of z in the parallelogram below.



_____

Helping You Remember

A good way to remember new theorems in geometry is to relate them to theorems you learned earlier. Name a theorem about parallel lines that can be used to remember the theorem that says, "If a parallelogram has one right angle, it has four right angles."

_____

NAME _____ DATE _____ PERIOD _____

6-3 Tests for Parallelograms

What You'll Learn

Skim the Examples for Lesson 6-3. Predict two things you think you will learn about tests for parallelograms.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 6-1 and 6-2)*

diagonal ▶ A diagonal is a segment in a polygon that connects any two _____ vertices.

parallelogram ▶ A parallelogram is a quadrilateral with both pairs of _____ parallel.

Fill in each blank to review the properties of parallelograms.

The _____ sides of a parallelogram are congruent.

The opposite angles of a parallelogram are _____.

Consecutive angles in a parallelogram are _____.

If a parallelogram has one _____ angle, then it has four _____ angles.

Lesson 6-3

Main Idea **Details**

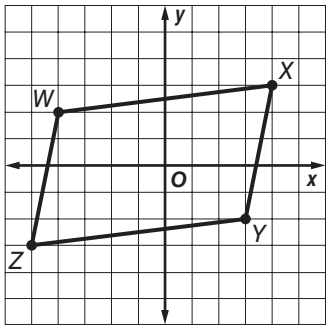
Conditions for Parallelograms
pp. 409–411

Complete the table using Theorems 6.9, 6.10, 6.11, and 6.12 in the student book for any quadrilateral *ABCD*.

Properties of Parallelograms	
Theorem	**Property**
6.9	If both pairs of opposite sides of *ABCD* are _____, then *ABCD* is a parallelogram.
6.10	If both pairs of opposite angles of *ABCD* are _____, then *ABCD* is a parallelogram.
6.11	If the diagonals of *ABCD* _____ each other, then *ABCD* is a parallelogram.
6.12	If one pair of opposite sides of *ABCD* is both _____, then *ABCD* is a parallelogram.

Parallelograms on the Coordinate Plane
pp. 412–413

Find the slope of each line segment to verify that *WXYZ* is a parallelogram.



slope of $\overline{WX}$ = _____

slope of $\overline{XY}$ = _____

slope of $\overline{YZ}$ = _____

slope of $\overline{WZ}$ = _____

Helping You Remember

A good way to remember a large number of mathematical ideas is to think of them in groups. How can you state the conditions as one group about the sides of a quadrilateral that guarantee it is a parallelogram?

_____

_____

NAME _____ DATE _____ PERIOD _____

6-4 Rectangles

What You'll Learn

Scan Lesson 6-4. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the definition of the term.

rectangle ▶ _____

_____

Fill in each blank using rectangle *ABCD*.

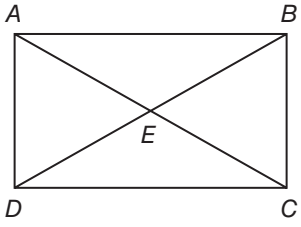
$\overline{AB} \parallel$ _____

$\overline{AC} \cong$ _____

$m\angle ADC =$ _____

$m\angle BCD =$ _____

$\overline{AD} \cong$ _____

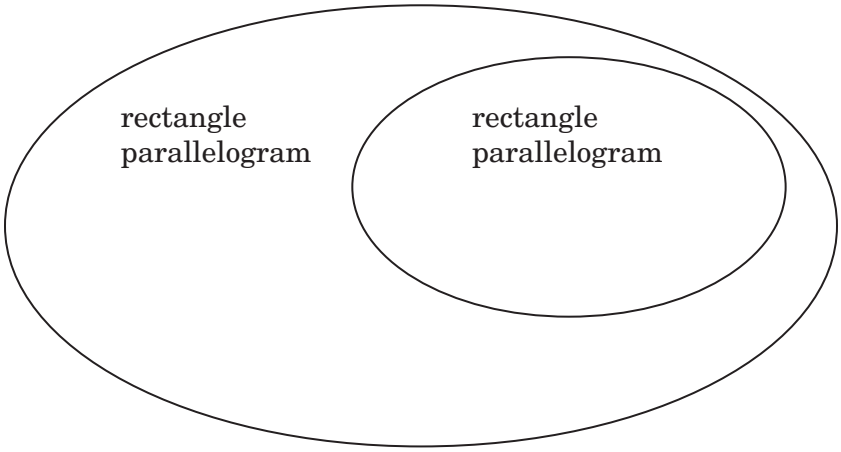


Lesson 6-4

Main Idea	Details

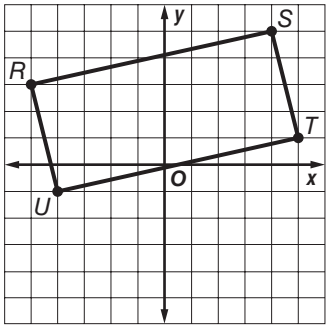
Properties of Rectangles
pp. 419–420

Cross out the incorrect quadrilateral to complete the Venn diagram and illustrate the relationship between rectangles and parallelograms. Then write the definition of the correct quadrilateral in the space provided.



Prove That Parallelograms Are Rectangles
pp. 420–421

Use the Distance Formula to determine whether or not parallelogram *RSTU* is a rectangle.



$RT \approx$ _____

$SU \approx$ _____

_____

Helping You Remember

It is easier to remember a large number of geometric relationships and theorems if you are able to combine some of them. How can you combine the two theorems about diagonals that you studied in this lesson?

_____

_____

NAME _____ DATE _____ PERIOD _____

6-5 Rhombi and Squares

What You'll Learn

Scan the text in Lesson 6-5. Write two facts you learned about rhombi and squares.

1. _____

_____

_____

2. _____

_____

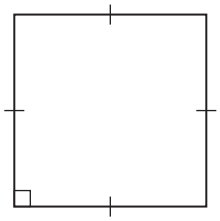
_____

Active Vocabulary

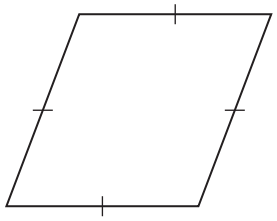
New Vocabulary Label the diagrams with the correct terms.

rhombus ▶

square ▶



_____



_____

Vocabulary Link A square is a shape that you learn at a very early age. Name some everyday items that are shaped like a square. Can you name any items that are shaped like a rhombus?

_____

_____

_____

_____

Main Idea	Details

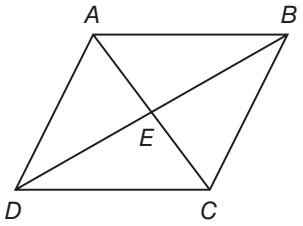
Properties of Rhombi and Squares

pp. 426–428

Use the properties of rhombi to solve for x in rhombus $ABCD$.

$AD = 8x - 11$

$DC = 5x + 13$



What property of rhombi can you use to help you solve for x?

_____

↓

Use the property to write an equation.

_____

↓

Solve for x.

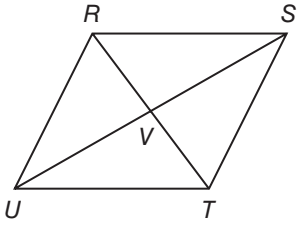
_____

Check

Prove That Quadrilaterals Are Rhombi or Squares

pp. 428–430

Describe how you could prove that $RS^2 = RV^2 + SV^2$ in rhombus $RSTU$.



_____

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

6-6 Trapezoids and Kites

What You'll Learn

Skim the lesson. Write two things you already know about trapezoids and kites.

1. _____

_____

_____

_____

2. _____

_____

_____

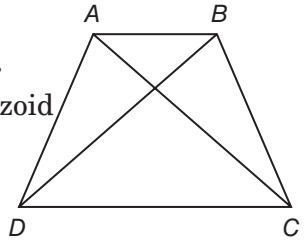
_____

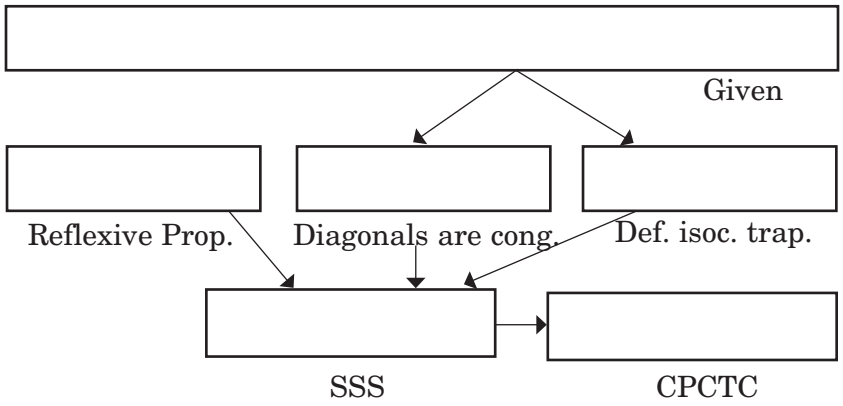
Active Vocabulary

New Vocabulary Match the term with its definition by drawing a line to connect the two.

base angles	the segment that connects the midpoints of the legs of the trapezoid
bases	a quadrilateral with exactly two pairs of consecutive congruent sides
isosceles trapezoid	the nonparallel sides of a trapezoid
kite	the parallel sides of a trapezoid
legs of a trapezoid	the angles formed by the base and one of the legs of a trapezoid
midsegment of a trapezoid	a quadrilateral with exactly one pair of parallel sides
trapezoid	a trapezoid with congruent legs

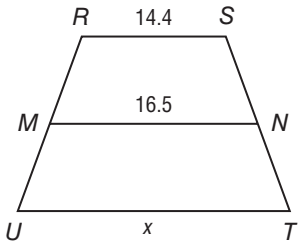
Main Idea	Details
Properties of Trapezoids pp. 435–438	**Complete the flow proof below.** **Given:** $ABCD$ is an isosceles trapezoid with bases $\overline{AB}$ and $\overline{CD}$. **Prove:** $\angle BDC \cong ACD$





Properties of Kites pp. 438–439

Solve for x if $\overline{MN}$ is a midsegment of trapezoid $RSTU$.



$x =$ _____

Helping You Remember

A good way to remember a new geometric theorem is to relate it to one you already know. Name and state in words a theorem about triangles that is similar to the theorem in this lesson about the median of a trapezoid.

_____

_____

_____

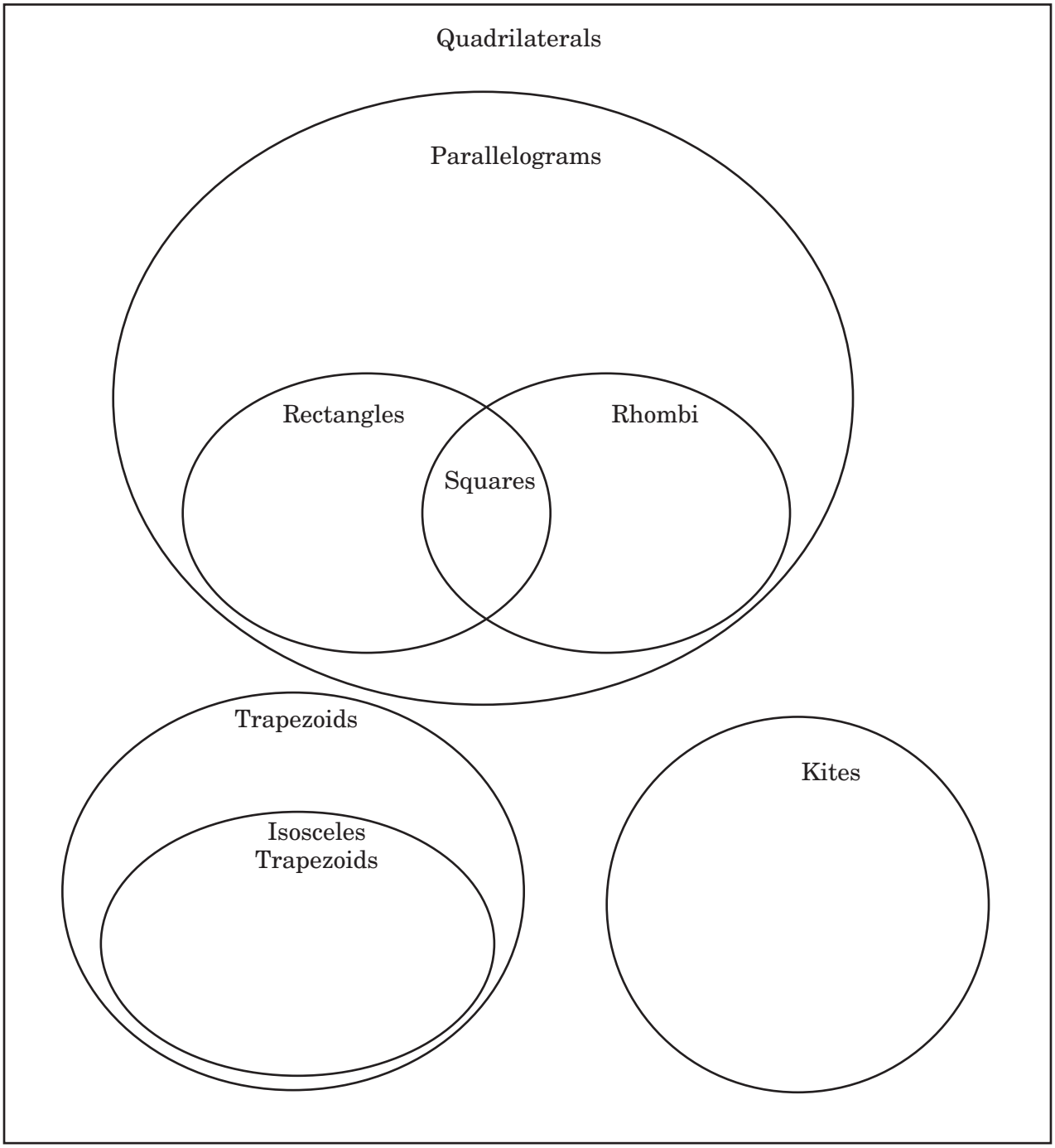
NAME _____ DATE _____ PERIOD _____

CHAPTER 6

Quadrilaterals

Tie It Together

Complete the graphic organizer with properties of the figure from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 6

Quadrilaterals

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Quadrilaterals	After You Read
• The sum of the interior angles of a convex polygon is $(n - 1) \times 180$.	
• A diagonal cuts a parallelogram into 2 congruent triangles.	
• A rhombus is a quadrilateral.	
• If a parallelogram has 1 right angle, then it has 4 right angles.	
• A trapezoid can have 0 or 1 set of parallel sides.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 6.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 6 Study Guide and Review in the textbook.

☐ I took the Chapter 6 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- When you are preparing to read new material, scan the text first, briefly looking over headings, highlighted text, pictures, and call out boxes. Think of questions that you can search the text for as you read.

NAME _____ DATE _____ PERIOD _____

CHAPTER 7

Proportions and Similarity

Before You Read

Before you read the chapter, think about what you know about proportions and similarity. List three things you already know about proportions and similarity in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, write instructions on how to do something presented in each lesson.**
  Then follow your own instructions to check them for accuracy.
- **When you take notes, be sure to describe steps in detail.**
  Include examples of questions you might ask yourself during problem solving.

NAME _____ DATE _____ PERIOD _____

CHAPTER 7

Proportions and Similarity

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on similar polygons, one fact might be similar polygons have the same shape but not the same size. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
7-1 Ratios and Proportions	
7-2 Similar Polygons	
7-3 Similar Triangles	
7-4 Parallel Lines and Proportional Parts	
7-5 Parts of Similar Triangles	
7-6 Similarity Transformations	
7-7 Scale Drawings and Models	

NAME _____ DATE _____ PERIOD _____

7-1 Ratios and Proportions

What You'll Learn

Skim the Examples for Lesson 7-1. Predict two things you think you will learn about ratios and proportions.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Match the term with its definition by drawing a line to connect the two.

cross product	the numbers a and d in the proportion $\frac{a}{b} = \frac{c}{d}$
extended ratio	an equation stating that two ratios are equal
extremes	a ratio that compares three or more numbers
means	the product of the extremes, ad, and the product of the means, bc in the proportion $\frac{a}{b} = \frac{c}{d}$
proportion	a comparison of two quantities using division
ratio	the numbers b and c in the proportion $\frac{a}{b} = \frac{c}{d}$

Vocabulary Link Look up the meaning of the word *proportional*. How does this relate to a proportion in mathematics?

_____

_____

_____

Main Idea	Details
Write and Use Ratios pp. 457–458	**The ratio of the measures of the angles in *DEF* is 4:5:9. Find the measures of the angles.** **Step 1:** Multiply the ratio by x to represent the unknown angle measures. _____ : _____ : _____ **Step 2:** Write an equation using the extended ratio and the Triangle Sum Theorem. _____ **Step 3:** Solve for x. _____ **Step 4:** Find the angle measures. _____
Use Properties of Proportions pp. 458–459	**A quality control engineer randomly samples 120 car stereos coming off an assembly line. He finds that 3 of them have cosmetic blemishes. How many car stereos would you expect to have cosmetic blemishes in a production run of 8000 car stereos?** Write a proportion. _____ Solve the proportion. _____

Helping You Remember

Sometimes it is easier to remember a mathematical idea if you put it into words without using any mathematical symbols. How can you use this approach to remember the concept of equality of cross products?

_____

_____

NAME _____ DATE _____ PERIOD _____

7-2 Similar Polygons

What You'll Learn

Skim Lesson 7-2. Predict two things that you expect to learn based on the headings and figures in the lesson.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the definition next to each term. *(Lesson 7-1)*

proportion ▶ _____

extended ratio ▶ _____

extremes ▶ _____

ratio ▶ _____

New Vocabulary Write the correct term next to each definition.

_____ ▶ the scale factor between two similar polygons

_____ ▶ polygons that have the same shape but not necessarily the same size

_____ ▶ the ratio of the lengths of the corresponding sides of two similar polygons

Lesson 7-2

Main Idea	Details
Identify Similar Polygons pp. 465–466	**Model two similar triangles by writing the side lengths of $\triangle XYZ$. Then tell the scale factor from $\triangle HIJ$ to $\triangle XYZ$.** scale factor: _____
Use Similar Figures pp. 467–468	**Solve for y in the similar trapezoids below.**  $y =$ _____

Helping You Remember

A good way to remember a new mathematical vocabulary term is to relate it to words used in everyday life. The word *scale* has many meanings in English. Give three phrases that include the word *scale* in a way that is related to proportions.

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

7-3 Similar Triangles

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 7-1, 7-2)*

extremes ▶ The extremes are the numbers _____ and _____ in the proportion $\frac{a}{b} = \frac{c}{d}$.

means ▶ The means are the numbers _____ and _____ in the proportion $\frac{a}{b} = \frac{c}{d}$.

proportion ▶ A proportion is an equation stating that _____ are equal.

scale factor ▶ The scale factor is the ratio of the lengths of the _____ sides of two similar polygons.

ratio ▶ A ratio is a comparison of two quantities using _____.

similar polygons ▶ Similar polygons have the same _____ but not necessarily the same _____.

Lesson 7-3

Main Idea	Details
Identify Similar Triangles pp. 474–477	**Determine whether the triangles are similar. If so, write a similarity statement. Explain your reasoning.**

_____

Use Similar Triangles
pp. 477–478

Complete the table to show the properties of similarity in Theorem 7.5.

Theorem 7.5 Properties of Similarity	
Reflexive Property	
Symmetric Property	
Transitive Property	

Helping You Remember

A good way to remember something is to explain it to somone else. Suppose one of your classmates is having trouble understanding the difference between SAS for congruent triangles and SAS for similar triangles. How can you explain the difference to him or her?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

7-4 Parallel Lines and Proportional Parts

What You'll Learn

Scan Lesson 7-4. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Label the diagrams with the correct terms. *(Lesson 7-1)*

extreme ▶ _____

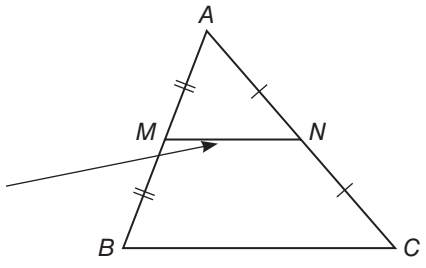
mean ▶

extended ratio ▶ _____

_____

New Vocabulary Label the diagram with the correct terms.

_____



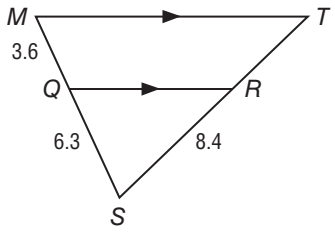
Lesson 7-4

Main Idea	Details

Proportional Parts Within Triangles

pp. 484–486

Use the Triangle Proportionality Theorem to find *RT*.



Step 1: Use the Triangle Proportionality Theorem to write a proportion.

_____

Step 2: Substitute the known values into the proportion.

_____

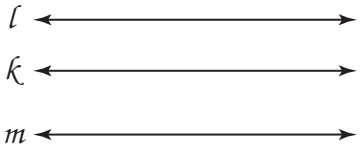
Step 3: Solve the proportion for *RT*.

_____

Proportional Parts with Parallel Lines

pp. 486–488

Model Corollary 7.1 by drawing two transversals on the parallel lines below and writing a proportion.



_____

Helping You Remember

A good way to remember a new mathematical term is to relate it to other mathematical vocabulary that you already know. What is an easy way to remember the definition of *midsegment* using other geometric terms?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

7-5 Parts of Similar Triangles

What You'll Learn

Scan the text in Lesson 7-5. Write two facts you learned about parts of similar triangles.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

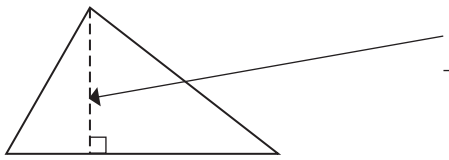
Active Vocabulary

Review Vocabulary Label the diagrams with the correct terms. *(Lessons 5-1 and 5-2)*

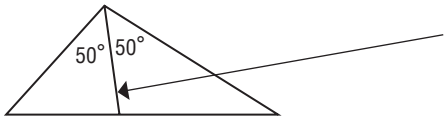
angle bisector ▶

altitude ▶

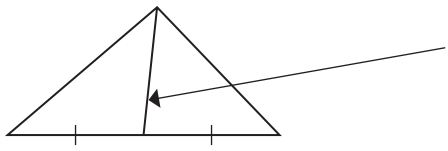
median ▶



_____



_____

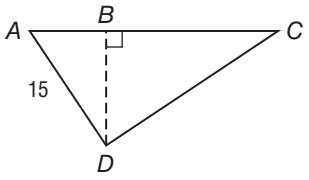


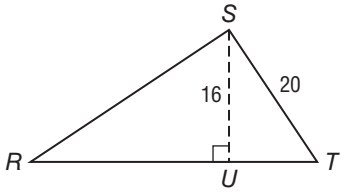
_____

Main Idea	Details

Special Segments of Similar Triangles
pp. 495–497

Use Theorem 7.8 in the student book to solve for *BD* in the similar triangles below.





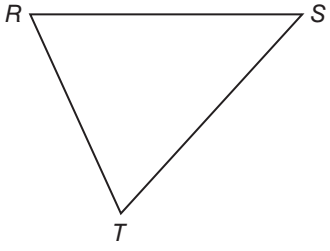
Step 1: Use Theorem 7.8 to write a proportion. _____

Step 2: Substitute the known values into the proportion. _____

Step 3: Solve the proportion for *BD*. _____

Triangle Angle Bisector Theorem
p. 498

Model the Triangle Angle Bisector Theorem by drawing an angle bisector and writing a proportion.



_____

Helping You Remember

A good way to remember a large amount of information is to remember key words. What key words will help you remember the features of similar triangles that are proportional to the lengths of the corresponding sides?

_____

_____

NAME _____ DATE _____ PERIOD _____

7-6 Similarity Transformations

What You'll Learn

Skim the lesson. Write two things you already know about similarity transformations.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

center of dilation ▶ Dilations are performed with respect to a _____ called the center of dilation.

dilation ▶ A dilation is a transformation that _____ or _____ the original figure proportionally.

enlargement ▶ A dilation with a scale factor _____ produces an enlargement.

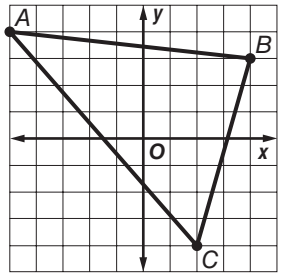
scale factor of a dilation ▶ The scale factor of a dilation describes the _____ of the dilation.

similarity transformation ▶ A similarity transformation is a transformation that maps a figure onto a _____ figure.

reduction ▶ A dilation with a scale factor _____ produces a reduction.

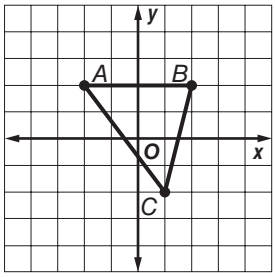
Main Idea	Details
Identify Similarity Transformations pp. 505–506	**Model a reduction and an enlargement by drawing a similar triangle on each coordinate grid. Write the scale factor of each dilation.**

Reduction



scale factor: _____

Enlargement



scale factor: _____

Verify Similarity
p. 507

Graph the original figure and its dilated image on a sheet of graph paper. Verify that the dilation is a similarity transformation.

Preimage: $A(0, 0)$, $B(2, 3)$, $C(4, 1)$

Image: $A'(0, 0)$, $B'(4, 6)$, $C'(8, 2)$

Helping You Remember

A good way to develop a higher understanding of a concept is to compare and contrast it with other similar topics. Compare and contrast similarity transformations with the congruency transformations that you learned about in chapter 6.

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

7-7 Scale Drawings and Models

What You'll Learn

Scan the text in Lesson 7-7. Write two facts you learned about scale drawings and models.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

scale ▶ _____

_____

scale drawing ▶ _____

_____

scale model ▶ _____

_____

New Vocabulary Scale drawings and models have a wide range of applications. For instance, a roadmap is a real world example of a scale drawing. Can you think of other real world examples of scale drawings and scale models?

_____

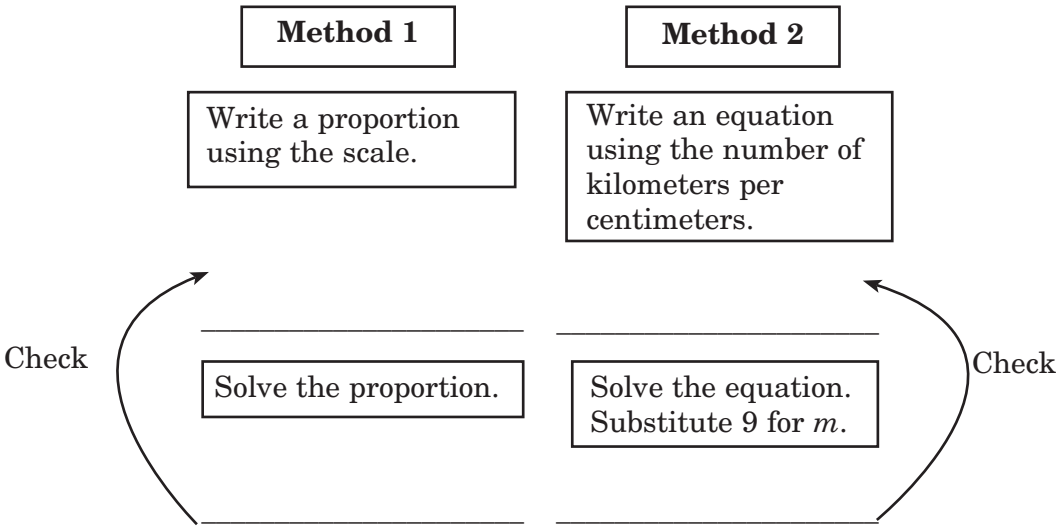
_____

Lesson 7-7

Main Idea **Details**

Scale Models
pp. 512–513

The scale on a map is 2 centimeters : 15 kilometers. If the distance between two cities on the map is 9 centimeters, find the actual distance between the cities.



Suppose a model airplane has a wingspan of 8 inches. The actual plane has a wingspan of 48 feet.

1. What is the scale of the model? _____ in. : _____ ft

2. How many times as long as the actual plane is the model? _____

Helping You Remember

A good way to remember something is to explain it to someone else. Suppose one of your classmates is having trouble understanding how to use the scale on a map to calculate actual distances. How can you explain the procedure to her?

_____

_____

_____

_____

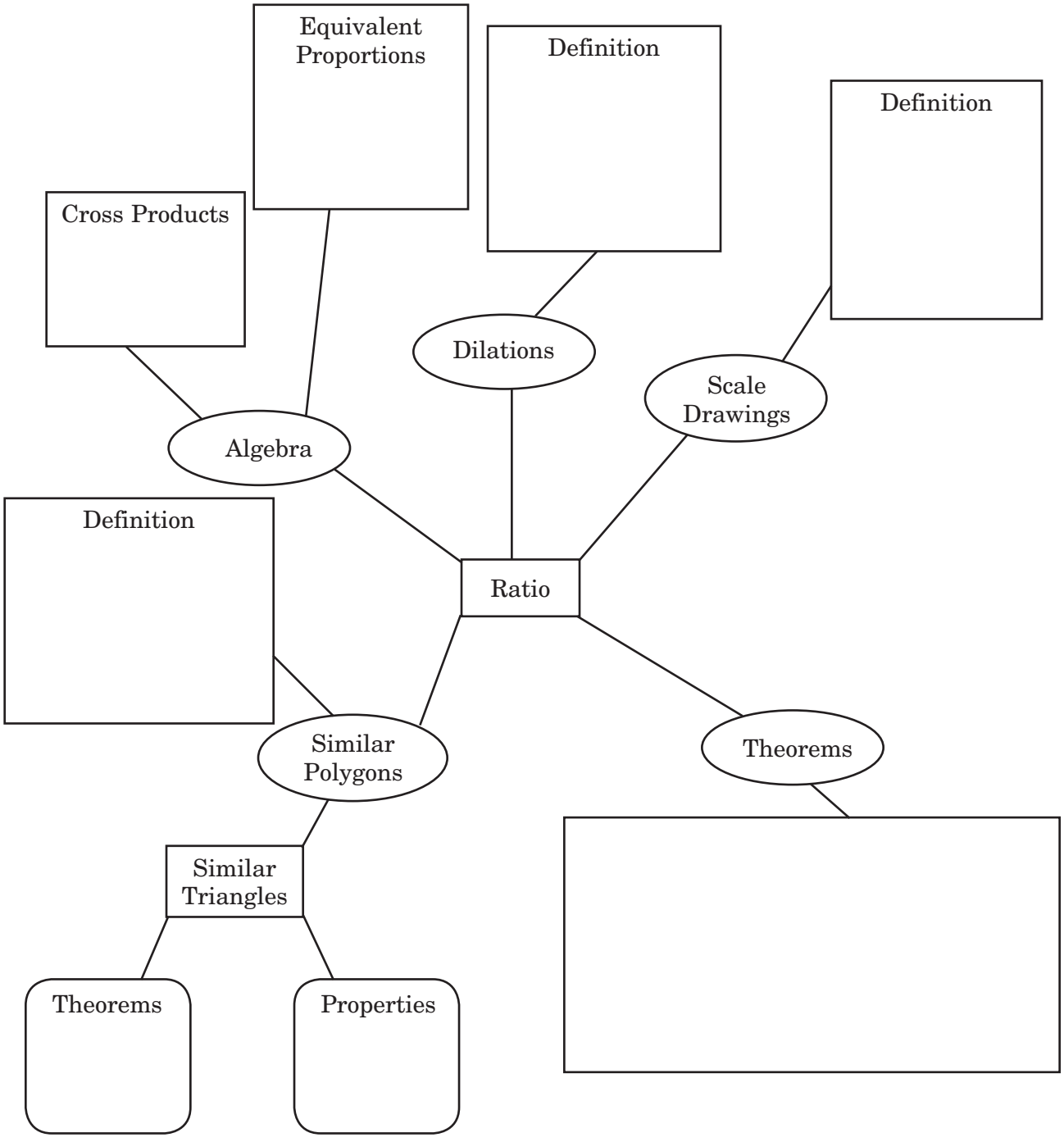
NAME _____ DATE _____ PERIOD _____

CHAPTER 7

Proportions and Similarity

Tie It Together

Complete the graphic organizer with a phrase or formula from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 7

Proportions and Similarity

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 7.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 7 Study Guide and Review in the textbook.

☐ I took the Chapter 7 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- Complete reading assignments before class. Write down or circle any questions you may have about what was in the text.

NAME _____ DATE _____ PERIOD _____

CHAPTER 8

Right Triangles and Trigonometry

Before You Read

Before you read the chapter, think about what you know about right triangles and trigonometry. List three things you already know about them in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When searching for the main idea of a lesson, ask yourself, "What is this paragraph or lesson telling me?"**
- **When you take notes, include definitions of new terms, explanations of new concepts, and examples of problems.**

NAME _____ DATE _____ PERIOD _____

CHAPTER 8

Right Triangles and Trigonometry

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on geometric mean, one fact might be the geometric mean between two numbers is the positive square root of their product. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
8-1 Geometric Mean	
8-2 The Pythagorean Theorem and Its Converse	
8-3 Special Right Triangles	
8-4 Trigonometry	
8-5 Angles of Elevation	
8-6 The Law of Sines and Law of Cosines	
8-7 Vectors	

NAME _____ DATE _____ PERIOD _____

8-1 Geometric Mean

What You'll Learn

Skim Lesson 8-1. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lesson 7-1)*

_____ ▶ an equation stating that two ratios are equal

_____ ▶ the numbers a and d in the proportion $\frac{a}{b} = \frac{c}{d}$

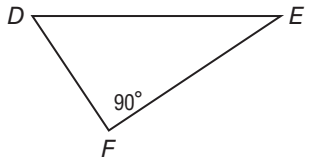
_____ ▶ the numbers b and c in the proportion $\frac{a}{b} = \frac{c}{d}$

New Vocabulary Complete each statement by filling in the blank with the correct term or phrase or writing the correct formula.

geometric mean ▶ The geometric mean of two positive numbers a and b is the number x such that _____.

The measure of the altitude drawn from the vertex of a right triangle to its hypotenuse is the geometric mean between the measures of the two segments of the _____.

The geometric mean of two positive numbers a and b can be calculated using the expression _____.

Main Idea	Details
Geometric Mean p. 531	**Find the geometric mean between 8 and 18.** _____ **definition of geometric mean** _____ **Substitute for a and b.** _____ **Multiply.** _____ **Simplify.**
Geometric Means in Right Triangles pp. 531–534	**Model Theorem 8.2, the Geometric Mean (Altitude) Theorem, by drawing a segment on right triangle *DEF* and writing a proportion.**  _____

Helping You Remember

A good way to remember a new mathematical concept is to relate it to something you already know. How can the meaning of *mean* in a proportion help you to remember how to find the geometric mean between two numbers?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

8-2 The Pythagorean Theorem and Its Converse

What You'll Learn

Scan the text in Lesson 8-2. Write two facts you learned about the Pythagorean Theorem and its converse as you scanned the text.

1. _____

_____

_____

2. _____

_____

_____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lesson 1-5)*

geometric mean ▶ The geometric mean of two _____ numbers a and b can be calculated using the expression $x = \sqrt{ab}$. The measure of the _____ drawn from the vertex of the right triangle to its hypotenuse is the geometric mean between the measures of the two segments of the hypotenuse.

New Vocabulary Write the definition next to the term.

Pythagorean triple ▶ _____

_____

_____

Lesson 8-2

Main Idea	Details

The Pythagorean Theorem
pp. 541–544

Circle each set of numbers that is a Pythagorean triple.

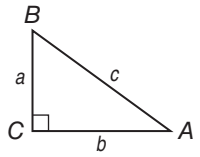
1. 6, 8, 10 **2.** 7, 21, 25 **3.** 5, 12, 13

4. 24, 45, 51 **5.** 14, 48, 50 **6.** 10, 15, 17

7. 21, 72, 75 **8.** 16, 30, 36 **9.** 15, 36, 39

Converse of the Pythagorean Theorem
pp. 544–545

Fill in each blank to complete the converse of the Pythagorean Theorem.



Converse of the Pythagorean Theorem	
Words	If the sum of the _____ of the lengths of the shortest sides of a triangle is equal to the square of the length of the _____ side, then the triangle is a right triangle.
Symbols	If $a^2 + b^2 = c^2$, then _____.

Helping You Remember

Many students who studied geometry long ago remember the Pythagorean Theorem as the equation $a^2 + b^2 = c^2$, but cannot tell you what this equation means. A formula is useless if you don't know what it means and how to use it. How could you help someone who has forgotten the Pythagorean Theorem remember the meaning of the equation $a^2 + b^2 = c^2$?

_____

_____

NAME _____ DATE _____ PERIOD _____

8-3 Special Right Triangles

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

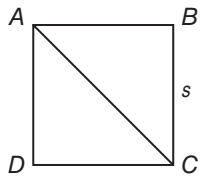
New Vocabulary Quadrilateral $ABCD$ is a square with side lengths s. Fill in each blank to show what you know about the figure.

$AB =$ _____

$m\angle ADC =$ _____

$m\angle ACD =$ _____

$AC =$ _____



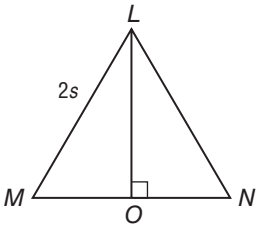
Triangle LMN is equilateral with side lengths $2s$. Fill in each blank to show what you know about the figure.

$ON =$ _____

$m\angle OLN =$ _____

$m\angle LNO =$ _____

$LO =$ _____



Lesson 8-3

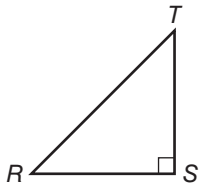
Main Idea	Details

Properties of 45º-45º-90º Triangles

pp. 552–553

Fill in each blank and label the figure to illustrate the 45º-45º-90º Triangle Theorem.

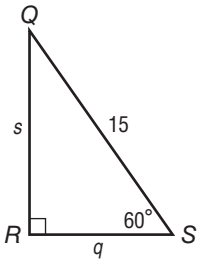
45º-45º-90º Triangle Theorem
In a 45º-45º-90º triangle, the legs ℓ are _____ and the length of the hypotenuse h is _____ times the length of a leg.



Properties of 30º-60º-90º Triangles

pp. 553–555

Solve for q and s in the figure below.



q = _____

s = _____

Helping You Remember

Some students find it easier to remember mathematical concepts in terms of specific numbers rather than variables. How can you use specific numbers to help you remember the relationship between the lengths of the three sides in a 30º-60º-90º triangle?

_____

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

8-4 Trigonometry

What You'll Learn

Skim the Examples for Lesson 8-4. Predict two things you think you will learn about trigonometry.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ the ratio of the opposite leg to the hypotenuse of a right triangle

_____ ▶ the measure of $\angle A$ if $\sin A$ is known

_____ ▶ the study of triangle measurement

_____ ▶ the measure of $\angle A$ if $\tan A$ is known

_____ ▶ the ratio of the adjacent leg to the hypotenuse of a right triangle

_____ ▶ the measure of $\angle A$ if $\cos A$ is known

_____ ▶ a ratio of the lengths of two sides of a right triangle

_____ ▶ the ratio of the opposite leg to the adjacent leg of a right triangle

Main Idea	Details

Trigonometric Ratios
pp. 562–564

Complete the statements to show the trigonometric ratios for angles *H* and *K*.

$\sin H =$ _____

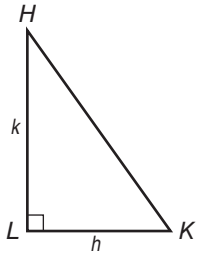
$\sin K =$ _____

$\cos H =$ _____

$\cos K =$ _____

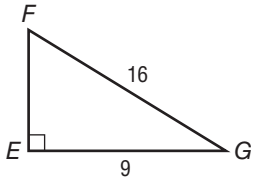
$\tan H =$ _____

$\tan K =$ _____



Use Inverse Trigonometric Ratios
pp. 564–566

Use a calculator to find $m\angle F$ to the nearest tenth.



$m\angle F \approx$ _____

Helping You Remember

How can the *co* in *cosine* help you remember the relationship between the sines and the cosines of the two acute angles of a right triangle?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

8-5 Angles of Elevation and Depression

What You'll Learn

Skim the lesson. Write two things you already know about angles of elevation and depression.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Write the definition next to each term.

angle of elevation ▶ _____

_____

_____

angle of depression ▶ _____

_____

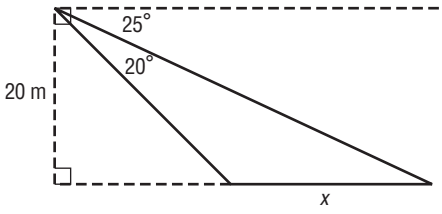
_____

Vocabulary Link What are some real-world examples of angles of elevation and depression?

_____

_____

_____

Main Idea	Details
Angles of Elevation and Depression pp. 574–575	**A plane takes off and climbs at an angle of elevation of 35°. How high above the ground is the plane after traveling 250 yards? Model the situation with a diagram and solve.**
Two Angles of Elevation or Depression pp. 575–576	**Solve for x in the figure below.**  $x \approx$ _____

Helping You Remember

A good way to remember something is to explain it to someone else. Suppose a classmate finds it difficult to distinguish between angles of elevation and angles of depression. What are some hints you can give her to get it right every time?

_____

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

8-6 The Law of Sines and Law of Cosines

What You'll Learn

Scan Lesson 8-6. List two headings you would use to make an outline of this lesson.

1. _____

2. _____

Active Vocabulary

Review Vocabulary Match the term with its definition by drawing a line to connect the two. *(Lesson 1-5)*

tangent	the angle formed by a horizontal line and an observer's line of sight to an object above the horizontal line
angle of depression	the ratio of the opposite leg to the adjacent leg of a right triangle
cosine	the angle formed by a horizontal line and an observer's line of sight to an object above the horizontal line
angle of elevation	the ratio of the adjacent leg to the hypotenuse of a right triangle

New Vocabulary Fill in each blank with the correct term or phrase.

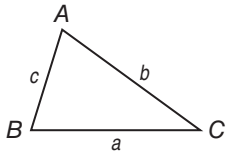
Law of Sines ▶ You can use the Law of Sines to solve a _____ if you know the measures of _____ and _____ (AAS). If given ASA, use the Triangle Angle Sum Theorem to find the measure of the _____.

Law of Cosines ▶ You can use the Law of Cosines to solve a triangle if you know the measures of two _____ and the _____ (SAS).

Main Idea	Details

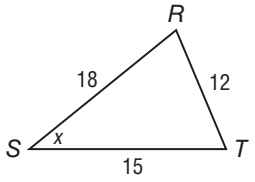
Law of Sines
pp. 582–583

Complete the statement below to illustrate the Law of Sines for $\triangle ABC$.

Law of Sines	
If $\triangle ABC$ has lengths a, b, and c, representing the length of the sides opposite the angles with measures A, B, and C, then _____.	

Law of Cosines
pp. 583–585

Use the Law of Cosines to solve for x to the nearest tenth.



_____

Helping You Remember

Many students remember mathematical equations and formulas better if they can state them in words. State the Law of Sines in your own words without using variables or mathematical symbols.

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

8-7 Vectors

What You'll Learn

Skim the Examples for Lesson 8-7. Predict two things you think you will learn about vectors.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ a description of a vector in terms of its horizontal change x and vertical change y from its initial point to its terminal point

_____ ▶ the angle that is formed with the x-axis or any other horizontal line

_____ ▶ the length of the vector from its initial point to its terminal point

_____ ▶ a way to find the sum of two vectors using a parallelogram

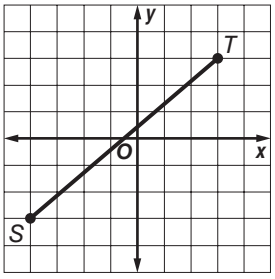
_____ ▶ the sum of two vectors

_____ ▶ a vector that is placed in the coordinate plane with its initial point at the origin

_____ ▶ a way to find the sum of two vectors using a triangle

_____ ▶ a quantity that has both magnitude and direction

Lesson 8-7

Main Idea	Details
Describe Vectors pp. 593–594	**Write the component form of $\overrightarrow{ST}$.** _____ 
Vector Addition pp. 594–596	**Model the parallelogram method and the triangle method below by drawing two vectors and showing the resultant.**

Parallelogram Method	Triangle Method

Helping You Remember

A good way to remember a new mathematical term is to relate it to a term you already know. You learned about *scale factors* when you studied similarity and dilations. How is the idea of a *scalar* related to *scale factors?*

_____

_____

_____

_____

_____

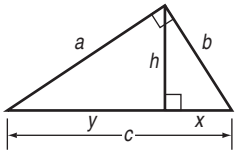
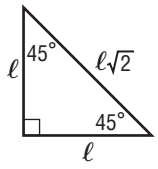
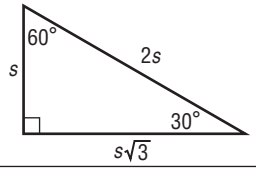
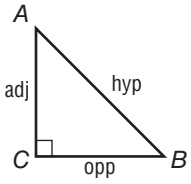
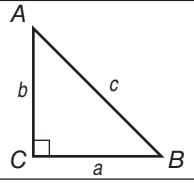
NAME _____ DATE _____ PERIOD _____

CHAPTER 8

Right Triangles and Trigonometry

Tie It Together

Complete the graphic organizer with a term or formula from the chapter.

Right Triangles		
	Notation	**Diagram/Examples**
Similar Right Triangles		
Geometric Mean		
Right Triangle Geometric Mean Theorem		
Pythagoras		
Pythagorean Theorem		
Pythagorean Inequality Theorems		
Special Right Triangles		
45°-45°-90°		
30°-60°-90°		
Trigonometry		
Ratios		
Law of Sines Law of Cosines		

NAME _____ DATE _____ PERIOD _____

CHAPTER 8

Right Triangles and Trigonometry

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 8.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 8 Study Guide and Review in the textbook.

☐ I took the Chapter 8 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- While note-taking use abbreviations to use less time and room. Write neatly and place a question mark by any information that you do not understand.

NAME _____ DATE _____ PERIOD _____

CHAPTER 9

Transformations and Symmetry

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Transformations and Symmetry
	• The orientation of an image that undergoes a reflection stays the same.
	• The image after a 180° rotation is equal to the original image.
	• An image after 2 reflections in parallel lines is equal to a translation.
	• Vectors can be used to define translations.
	• Dilations can have positive or negative scale factors.

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **At the end of each lesson, write a summary of the lesson, or write in your own words what the lesson was about.**
- **As you read each lesson, list examples of ways the new knowledge has been or will be in your daily life.**

NAME _____ DATE _____ PERIOD _____

CHAPTER 9

Transformations and Symmetry

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on symmetry, one fact might be the number of times a figure maps onto itself as it rotates from 0° to 360° is called the order of symmetry. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
9-1 Reflections	
9-2 Translations	
9-3 Rotations	
9-4 Compositions of Transformations	
9-5 Symmetry	
9-6 Dilations	

NAME _____ DATE _____ PERIOD _____

9-1 Reflections

What You'll Learn

Scan the text in Lesson 9-1. Write two facts you learned about reflections as you scanned the text.

1. _____

_____

_____

2. _____

_____

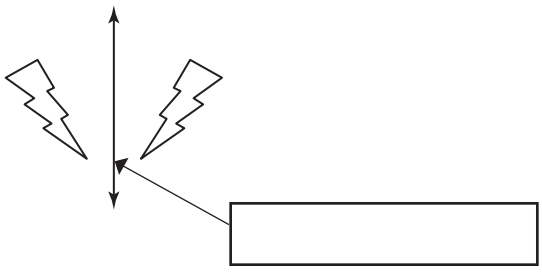
Active Vocabulary

Review Vocabulary Write the definition next to the term. *(Lesson 7-2)*

similar polygons ▶ _____

_____

New Vocabulary Label the diagram with the correct term.

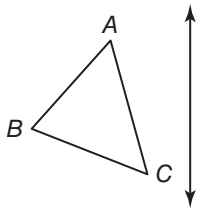


Vocabulary Link When you look into a mirror, you see your reflection. Explain how this relates to reflections in geometry.

_____

_____

_____

Main Idea	Details
Draw Reflections pp. 615–616	**Reflect $\triangle ABC$ in the line shown.** 
Draw Reflections in the Coordinate Plane pp. 616–618	**Describe the similarities and differences between reflecting a point in the x-axis and reflecting a point in the y-axis.** Similarities _____ _____ _____ _____ Differences _____ _____ _____ _____

Helping You Remember

Sometimes it is helpful to put a geometric concept into your own words to help you remember it. Explain in your own words how you can reflect a point (x, y) in the line $y = x$.

_____

_____

NAME _____ DATE _____ PERIOD _____

9-2 Translations

What You'll Learn

Skim the Examples for Lesson 9-2. Predict two things you think you will learn about translations.

1. _____

_____

_____

2. _____

_____

_____

Lesson 9-2

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lesson 8-7)*

_____ ▶ a quantity that has both magnitude and direction

_____ ▶ the length of the vector from its initial point to its terminal point

_____ ▶ a description of a vector in terms of its horizontal change x and vertical change y from its initial point to its terminal point

_____ ▶ a vector that is placed in the coordinate plane with its initial point at the origin

New Vocabulary Fill in each blank with the correct term or phrase.

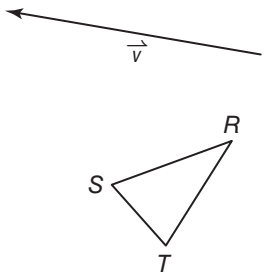
translation vector ▶ A translation maps each point to its image along a _____, called the translation vector, such that

- each _____ joining a point and its image has the same _____ as the vector, and
- this segment is also _____ to the vector.

Main Idea	Details

Draw Reflections
pp. 615–616

Draw the translation of $\triangle RST$ along the translation vector.



Draw Reflections in the Coordinate Plane
pp. 616–618

Complete the following table to demonstrate how to translate a point in the coordinate plane.

Words	To translate a point along vector (a, b), _____ _____
Symbols	$(x, y) \rightarrow$ _____
Example	The image of point $R(2, 9)$ translated along vector $(1, -4)$ is _____.

Helping You Remember

A good way to remember a new mathematical term is to relate it to an everyday meaning of the same word. How is the meaning of *translation* in geometry related to the idea of *translation* from one language to another?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

9-3 Rotations

What You'll Learn

Skim Lesson 9-3. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Fill in each blank with the correct term or phrase.

center of rotation ▶

angle of rotation ▶

A rotation about a _____, called the center of rotation, through an angle of x° maps a point to its image such that

- if the point is the center of rotation, then the image and preimage are the _____, or
- if the point is not the center of rotation than the image and preimage are the same _____ from the center of rotation. The measure of the angle of rotation formed by the preimage, center of rotation, and image points is x.

Vocabulary Link Describe some real-world examples of rotations that you have encountered.

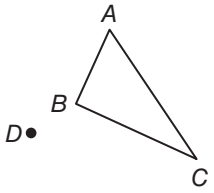
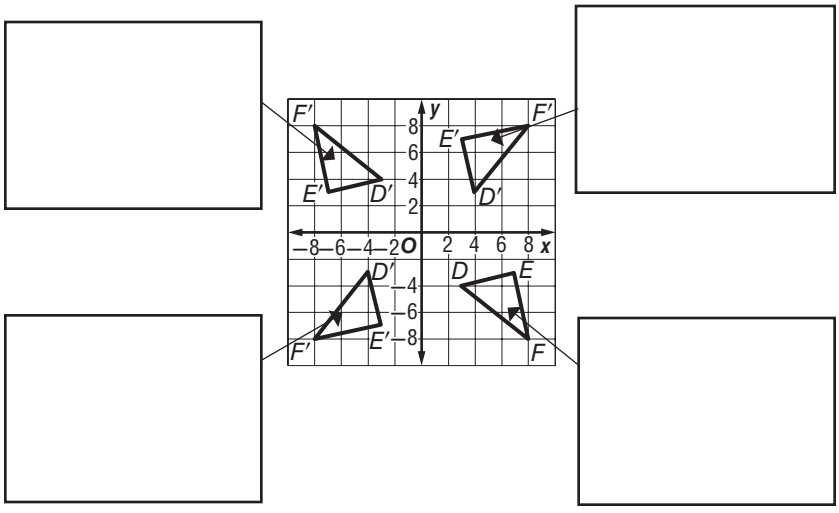
_____

_____

_____

_____

Lesson 9-3

Main Idea	Details
Draw Rotations pp. 632–633	**Draw a 90° counterclockwise rotation of $\triangle ABC$ about point D.** 
Draw Rotations in the Coordinate Plane pp. 633–634	**Fill in the boxes to describe the rotation of $\triangle DEF$ about the origin. Include the angle of rotation and the direction.** 

Helping You Remember

A good way to help you remember a concept in geometry is to explain it to someone else. Suppose a classmate is having difficulty remembering how to find the coordinates of a point after a 180° rotation about the origin. How would you explain it to him?

_____

_____

NAME _____ DATE _____ PERIOD _____

9-4 Compositions of Transformations

What You'll Learn

Scan Lesson 9-4. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Match the term with its definition by drawing a line to connect the two. *(Lesson 1-5)*

center of rotation	a line such that the points of a preimage and its image are the same distance from the line
line of reflection	the object that determines the distance and direction that a preimage is slid to create its image
angle of rotation	the point about which a preimage is turned to create its image
translation vector	the amount a preimage is turned to create its image

New Vocabulary Write the correct term next to each definition.

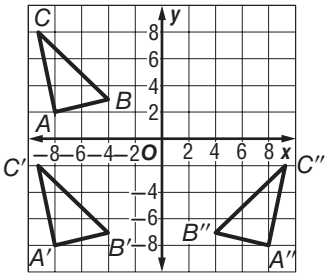
_____ ▶ the result when a transformation is applied to a figure and then another transformation is applied to its image

_____ ▶ the composition of a translation followed by a reflection in a line parallel to the translation vector

Main Idea	Details

Glide Reflections
pp. 641–642

Describe the composition of transformations that lead to $\triangle A''B''C''$.



Compositions of Two Reflections
pp. 642–644

State the type of transformation that is achieved by each of the following compositions.

Compositions of Transformations		
the composition of a reflection and a translation	the composition of two reflections in parallel lines	the composition of two reflections in intersecting lines

Helping You Remember

Theorem 9.1 in the student text states that the composition of two or more isometries is also an isometry. Describe what this means in your own words, and state a property of congruence that leads to this theorem.

NAME _____ DATE _____ PERIOD _____

9-5 Symmetry

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ also called the axis of symmetry

_____ ▶ also called the point of symmetry

_____ ▶ the number of times a figure maps onto itself as it rotates from 0° to 360°

_____ ▶ the characteristic of a figure if there exists a rigid motion that maps the figure onto itself

_____ ▶ the smallest angle through which a figure can be rotated so that it maps onto itself

_____ ▶ the characteristic of a figure if the figure can be mapped onto itself by a reflection in a line

_____ ▶ the characteristic of a figure if the figure can be mapped onto itself by a rotation between 0° and 360°

Vocabulary Link *Symmetry* is a word that is used in everyday English. Find the definition of *symmetry* using a dictionary. Describe how the definition of *symmetry* can help you remember the mathematical definition of *symmetry*.

_____

_____

_____

_____

_____

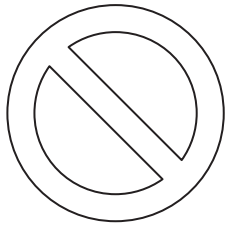
Main Idea	Details

Symmetry in Two-Dimensional Figures
pp. 653–654

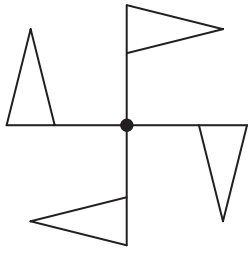
Circle the figures that have rotational symmetry.

1.

2.



3.



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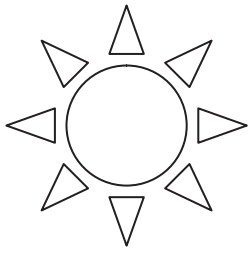
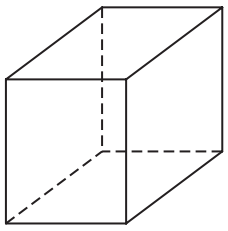


Symmetry in Three-Dimensional Figures
p. 655

State whether the figure below has *plane symmetry, axis symmetry, both, or neither.*



Step 1: Can the figure be mapped onto itself by a reflection in a plane?

↓

Step 2: Can the figure be mapped onto itself by a rotation between 0° and 360° in a line?

↓

Step 3: What kind of symmetry does the figure have?

Helping You Remember

What is an easy way to remember the order and magnitude of the rotational symmetry of a regular polygon?

_____

_____

NAME _____ DATE _____ PERIOD _____

9-6 Dilations

What You'll Learn

Skim the lesson. Write two things you already know about dilations.

1. _____

_____

_____

2. _____

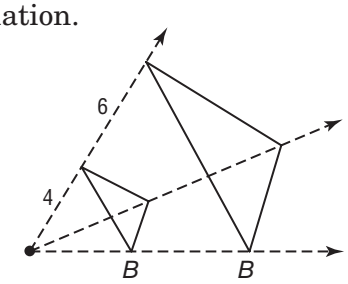
_____

_____

_____

Active Vocabulary

New Vocabulary State whether the dilation from figure B to B' is an enlargement or a reduction. Then find the scale factor of the dilation.



type of dilation: _____

scale factor: _____

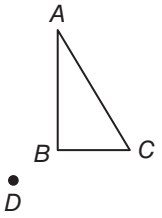
Vocabulary Link Describe how the pupils of your eyes serve as a real-world example of dilation in different lighting conditions.

_____

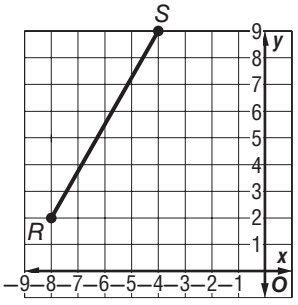
_____

_____

Main Idea	Details
Draw Dilations pp. 660–662	**Draw the image of $\triangle ABC$ under a dilation with center D and scale factor 2.5.**



Dilations in the Coordinate Plane p. 662	**Model a reduction by giving the coordinates of segment $R'S'$ and plotting it on the coordinate grid. Tell what scale factor you used in your reduction.**



Helping You Remember

A good way to remember a new concept in geometry is to explain it to someone else in your own words. How would you describe the process of dilating a point (x, y) about the origin by a scale factor k?

_____

_____

_____

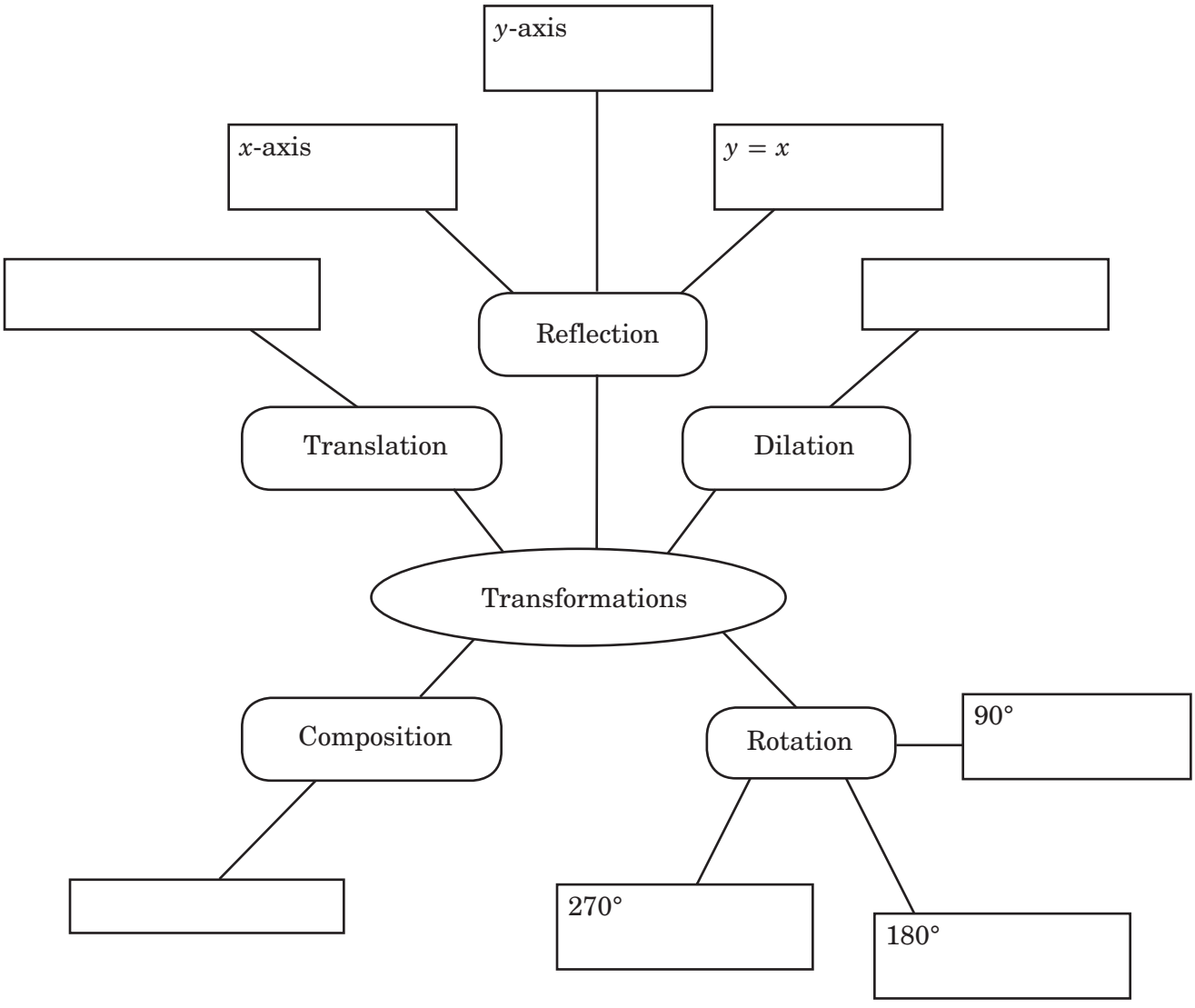
NAME _____ DATE _____ PERIOD _____

CHAPTER 9

Transformations and Symmetry

Tie It Together

Complete the graphic organizer with a term or formula from the chapter.



NAME _____ DATE _____ PERIOD _____

CHAPTER 9 Transformations and Symmetry

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Transformation and Symmetry	After You Read
• The orientation of an image that undergoes a reflection stays the same.	
• The image after a 180° rotation is equal to the original image.	
• An image after 2 reflections in parallel lines is equal to a translation.	
• Vectors can be used to define translations.	
• Dilations can have positive or negative scale factors.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 9.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 9 Study Guide and Review in the textbook.

☐ I took the Chapter 9 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- On test day, look over the entire test to get an idea of its length and scope so that you can pace yourself. Answer what you know first, skipping over material you do not know. When finished, go back and check for errors. Don't change an answer unless you are certain you are correct.

NAME _____ DATE _____ PERIOD _____

CHAPTER 10 Circles

Before You Read

Before you read the chapter, think about what you know about circles. List three things you already know about them in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, record real-life examples of how you can use fractions, decimals, and percents, such as telling time and making change.**
- **When you take notes, listen or read for main ideas.**
  Then record those ideas for future reference.

NAME _____ DATE _____ PERIOD _____

CHAPTER 10 Circles

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on measuring angles and arcs, one fact might be a central angle is an angle with a vertex in the center of the circle. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
10-1 Circles and Circumference	
10-2 Measuring Angles and Arcs	
10-3 Arcs and Chords	
10-4 Inscribed Angles	
10-5 Tangents	
10-6 Secants, Tangents, and Angle Measures	
10-7 Special Segments in a Circle	
10-8 Equations of a Circle	

NAME _____ DATE _____ PERIOD _____

10-1 Circles and Circumference

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ the distance around the circle

_____ ▶ a segment with endpoints at the center and on the circle

_____ ▶ the locus or set of all points in a plane equidistant from a given point

_____ ▶ two coplanar circles that have the same center

_____ ▶ a chord which passes though the center of a circle and is made up of collinear radii

_____ ▶ an irrational number which by definition is the ratio of the circumference of a circle to the diameter of the circle

_____ ▶ descriptor give to a polygon which is drawn inside a circle such that all of its vertices lie on the circle

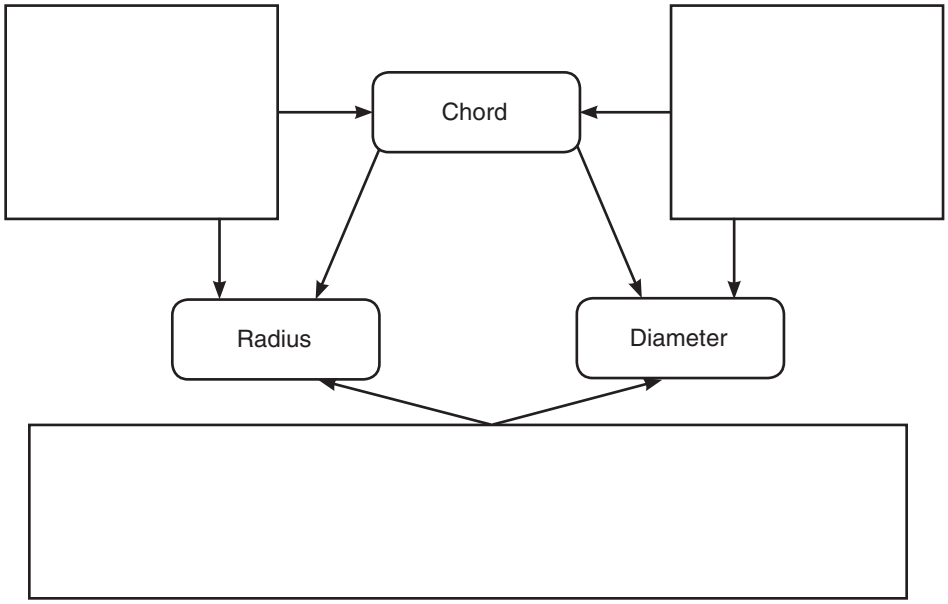
_____ ▶ the name used to describe the given point in the definition of a circle

_____ ▶ a segment with endpoints on the circle

_____ ▶ descriptor given to a circle which is drawn about a polygon such that the circle contains all of the vertices of the polygon

_____ ▶ two circles with congruent radii

Main Idea	Details
Segments in a circle pp. 683–685	**Compare and contrast the pairs of special segments of a circle in the diagram below.**



Circumference pp. 685–686	**The circumference of a circle is 234 inches. Determine the radius and the diameter of the circle to the nearest hundredth inch.**

Start with $C = \pi d$, and fill in what you know.	Solve for the unknown.	Determine the radius.

Helping You Remember

Look up the origins of the two parts of the word *diameter* in your dictionary. Explain the meaning of each part and give a term you already know that shares the origin of that part.

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

10-2 Measuring Angles and Arcs

What You'll Learn

Scan the text in Lesson 10-2. Write two facts you learned about measuring angles and arcs as you scanned the text.

1. _____

_____

_____

_____

2. _____

_____

_____

_____

Active Vocabulary

New Vocabulary Label the diagram with the terms listed at the left.

central angle ▶

arc ▶

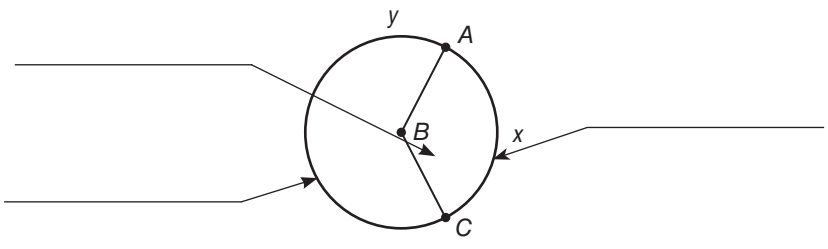
minor arc ▶

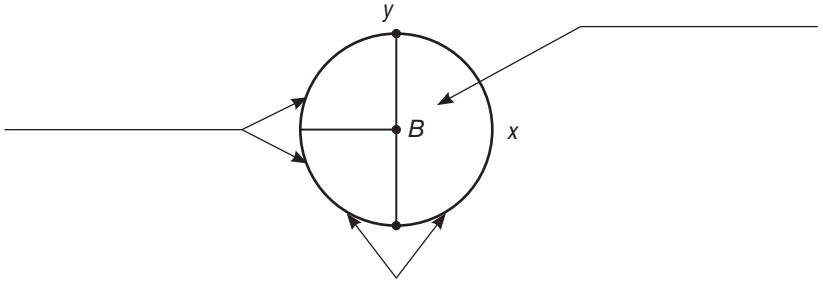
major arc ▶

semicircle ▶

congruent arcs ▶

adjacent arcs ▶





_____

Lesson 10-2

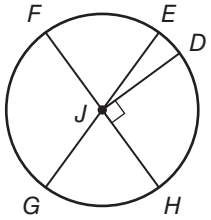
Main Idea	Details

Angles and Arcs
pp. 692–694

Given the $m\angle EJD = 15$, find each measure in $\odot J$ in the order specified. Justify your answer.

$m\widehat{EFG} =$ _____

$m\widehat{GH} =$ _____

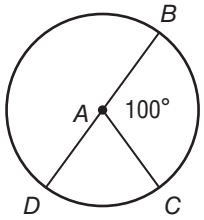


$m\widehat{ED} =$ _____

$m\widehat{EDH} =$ _____

Arc Length
p. 695

Find the length of $\widehat{BC}$ and $\widehat{BDC}$. The radius of $\odot A$ is 5 centimeters. What is the relationship between the two arc lengths?



$m\widehat{BC} =$ _____

$m\widehat{BDC} =$ _____

Relationship: _____

NAME _____ DATE _____ PERIOD _____

10-3 Arcs and Chords

What You'll Learn

Scan Lesson 10-3. List two headings you would use to make an outline of this lesson.

1. _____

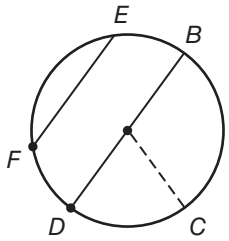
_____

2. _____

_____

Active Vocabulary

Review Vocabulary In the circle provided, draw a chord which is not a diameter using a regular line, a diameter using a heavy line, and a radius using a dashed line. Identify 3 arcs that were created on the circle. *(Lessons 10-1 and 10-2)*



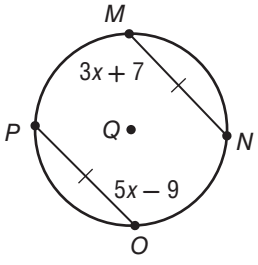
Arcs

Main Idea

Arcs and Chords
pp. 701–702

Details

Find the value of x.



Use the definition of congruence to write an equation. Solve the equation for x.

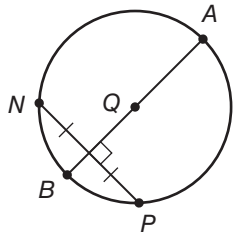
What is PO? _____ What is MN? _____

What realtionship exists between $\overset{\frown}{PO}$ and $\overset{\frown}{MN}$?

_____

Lesson 10-3

Main Idea	Details
Bisecting Arcs and Chords pp. 702–704	**Use the diagram below to state Theorems 10.3 and 10.4, from the student book, in your own words.**



Theorem 10.3 _____

_____

_____

Theorem 10.4 _____

_____

_____

Helping You Remember

Writing a mathematical concept in your own words can help you better remember the concept. Describe Theorem 10.5, from the student book, in your own words.

_____

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

10-4 Inscribed Angles

What You'll Learn

Skim Lesson 10-4. Predict two things that you expect to learn based on the headings and figures.

1. _____

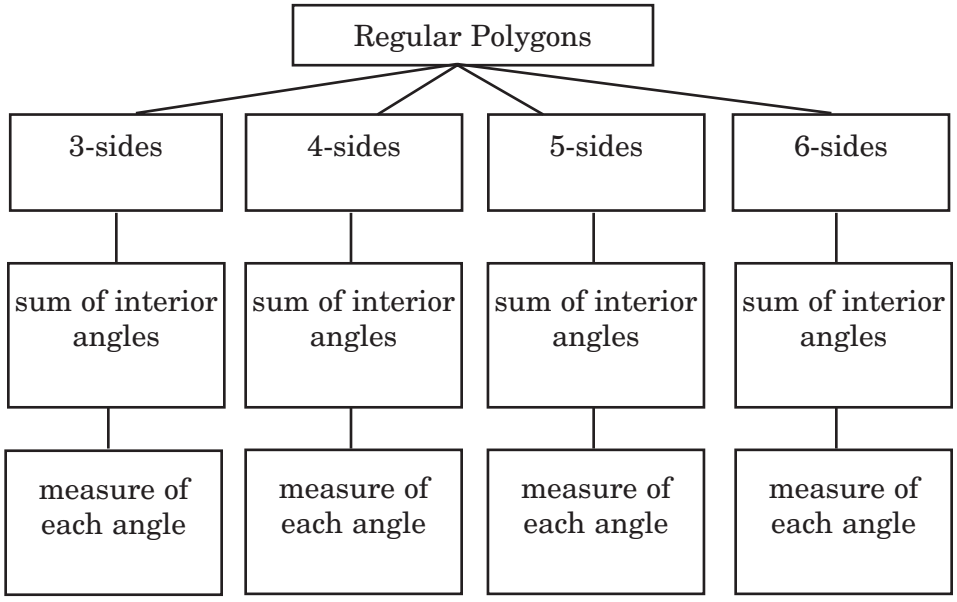
_____

2. _____

_____

Active Vocabulary

Review Vocabulary Complete the chart below. *(Lesson 6-1)*



New Vocabulary Write the definition next to each term.

inscribed angle ▶ _____

_____

intercepted arc ▶ _____

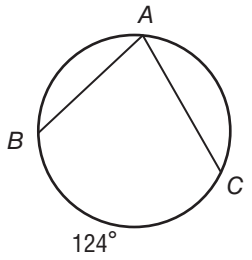
_____

Main Idea	Details

Inscribed Angles
pp. 709–711

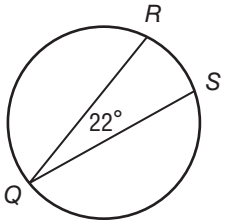
Find the indicated measure for each figure.

1.



$m\angle BAC =$ _____

2.



$m\overset{\frown}{RS} =$ _____

Angles of Inscribed Polygons
pp. 711–712

Provide details for Theorem 10.9 in the student book by defining each boldface word.

If a **quadrilateral** is **inscribed** in a circle, then its **opposite angles** are **supplementary**.

Helping You Remember

Describe how you could make a sketch that would help you remember the relationship between the measure of an inscribed angle and the measure of its intercepted arc.

NAME _____ DATE _____ PERIOD _____

10-5 Tangents

What You'll Learn

Skim the Examples for Lesson 10-5. Predict two things you think you will learn about tangents.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Use the Pythagorean Theorem to determine if the triangles with the specified sides are right triangles. *(Lesson 8-2)*

$a = 6, b = 8, c = 10$	$a = 4, b = 5, c = 41$	$a = 9, b = 40, c = 41$

New Vocabulary Fill in each blank with the correct term or phrase.

tangent ▶ a _____ in the same plane as a _____ that _____ the circle in exactly _____ point

point of tangency ▶ the point where a _____ line intersects a _____

Vocabulary Link Use a dictionary to look up the origin of the word *tangent*. How can the origin of this word help you remember the definition of a tangent line?

_____

_____

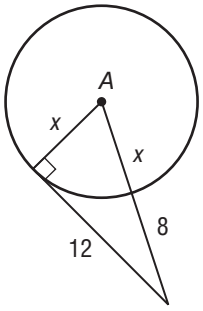
_____

_____

Main Idea	Details

Tangents
pp. 718–720

Find the value of x. Assume that segments that appear to be tangent are tangent. Show your work in each box as indicated.



Identify the length of each side of the right triangle.

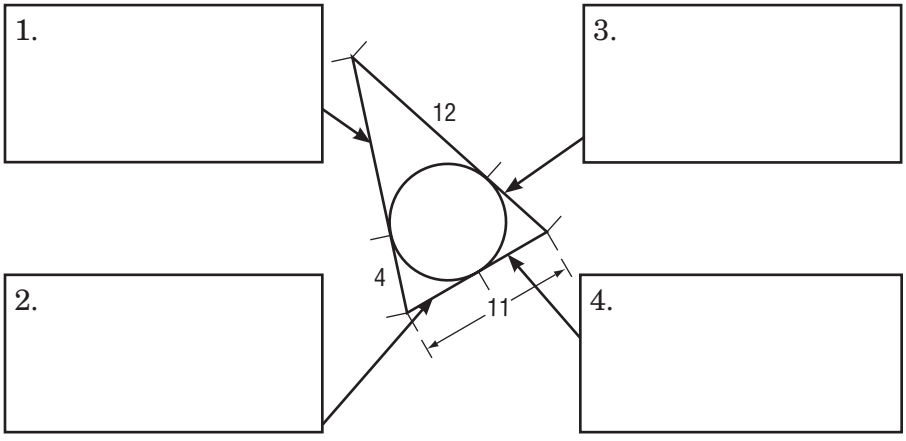
Leg 1 = _____ Leg 2 = _____

Hyp = _____

Use the Pythagorean Theorem to write an equation, then solve for x.

Circumscribed Polygons
p. 721

Fill in the missing measurements in the diagram below in the order specified. Justify each measurement.



NAME _____ DATE _____ PERIOD _____

10-6 Secants, Tangents, and Angle Measures

What You'll Learn

Skim the lesson. Write two things you already know about secants, tangents, and angle measures.

1. _____

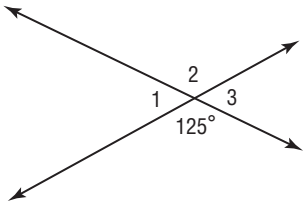
_____

2. _____

_____

Active Vocabulary

Review Vocabulary Determine the measure of each angle in the diagram. Justify your answers. *(Lesson 1-5)*



Angle 1
Angle 2
Angle 3

New Vocabulary Write the definition next to the term.

secant ▶ _____

_____

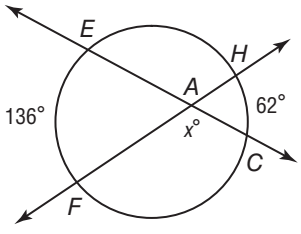
Main Idea

Intersections On or Inside a Circle

pp. 727–729

Details

Find the value of x. Show your work in each box as indicated.



Determine the measure of $\angle EAF$.

$m\angle EAF = \frac{1}{2}(\_\_\_\_ + \_\_\_\_) = \_\_\_\_$

Determine the measure of $\angle CAF$.

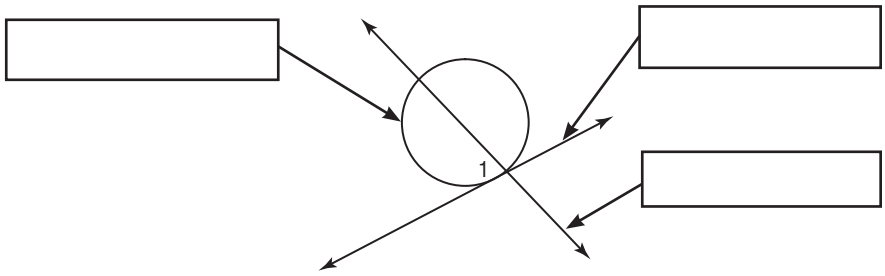
_____

Main Idea

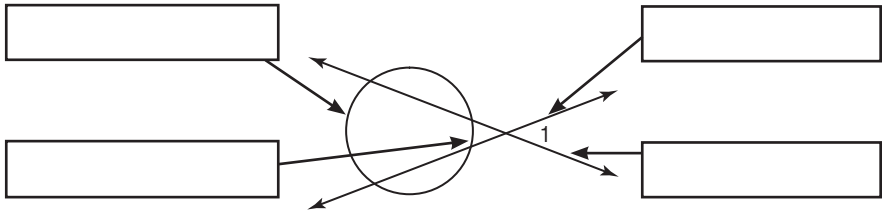
Intersections Outside a Circle

pp. 729–731

Label each diagram and explain how you would determine the measure of ∠1 in each diagram.



The measure of ∠1 is



The measure of ∠1 is

Helping You Remember

Some students have trouble remembering the difference between a secant and a tangent. What is an easy way to remember which is which?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

10-7 Special Segments in a Circle

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in the lesson.

1. _____

_____

_____

2. _____

_____

_____

_____

Active Vocabulary

Review Vocabulary Write the definition next to each term. *(Lessons 10-1, 10-5, and 10-6)*

chord ▶ _____

secant ▶ _____

tangent ▶ _____

New Vocabulary Match each term with its definition by drawing a line to connect the two.

tangent segment	a segment formed when two chords intersect inside a circle
secant segment	a segment of a secant line that has exactly one endpoint on the circle
external secant segment	a segment of a tangent line that has exactly one endpoint on the circle
chord segment	a segment of a secant line that has an endpoint which lies in the exterior of the circle

Lesson 10-7

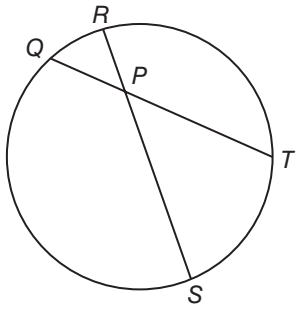
Main Idea	Details

Segments Intersecting Inside a Circle

pp. 736–737

Use Theorem 10.15 from the student book to find x.

$RP = 12$, $PS = 3x + 5$, $QP = 15$, $PT = 24$



$RP \cdot PS = QP \cdot PT$

_____ • _____ = _____ • _____

_____ = _____

_____ = _____

Segments Intersecting Outside a Circle

pp. 738–739

Compare and contrast Theorem 10.16 with Theorem 10.15 from the student book.

How are they the same?	How are they different?

NAME _____ DATE _____ PERIOD _____

10-8 Equations of Circles

What You'll Learn

Skim the lesson. Write two things you already know about equations of circles.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Use the Distance Formula to find the distance between the given pairs of points on the coordinate plane. *(Lesson 1-5)*

(1, 2) and (9, 11)	(1, 2) and (−7, −7)	(9, 11) and (−7, −7)

New Vocabulary Fill in the blank with the correct term or phrase.

compound locus ▶ _____

_____

Vocabulary Link Previously, you wrote the equation of a line when given the graph of the line. Compare and contrast this process with writing the equation of a circle given the graph of the circle.

_____

_____

_____

_____

_____

Lesson 10-8

Main Idea	Details

Equation of a Circle
pp. 744–745

Write the equation of a circle that has a center at (1, 3) and passes though (6, −3).

Find the length of the radius using the center and the point of the circle.

_____

Determine h, k, and r^2.

$h =$ _____ $k =$ _____ $r^2 =$ _____

Write the equation of the circle.

$(x -$ _____$)^2 + (y -$ _____$)^2 =$ _____

Graph Circles
pp. 745–746

Graph the circle given by the equation $(x + 4)^2 + (y - 2)^2 = 16$.

Rewrite the equation in standard form.

_____

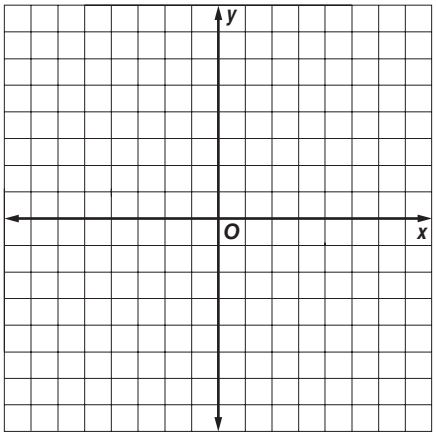
Identify the center. _____

Identify the radius. _____

Use the center and radius to identify four points on the circle.

_____

_____

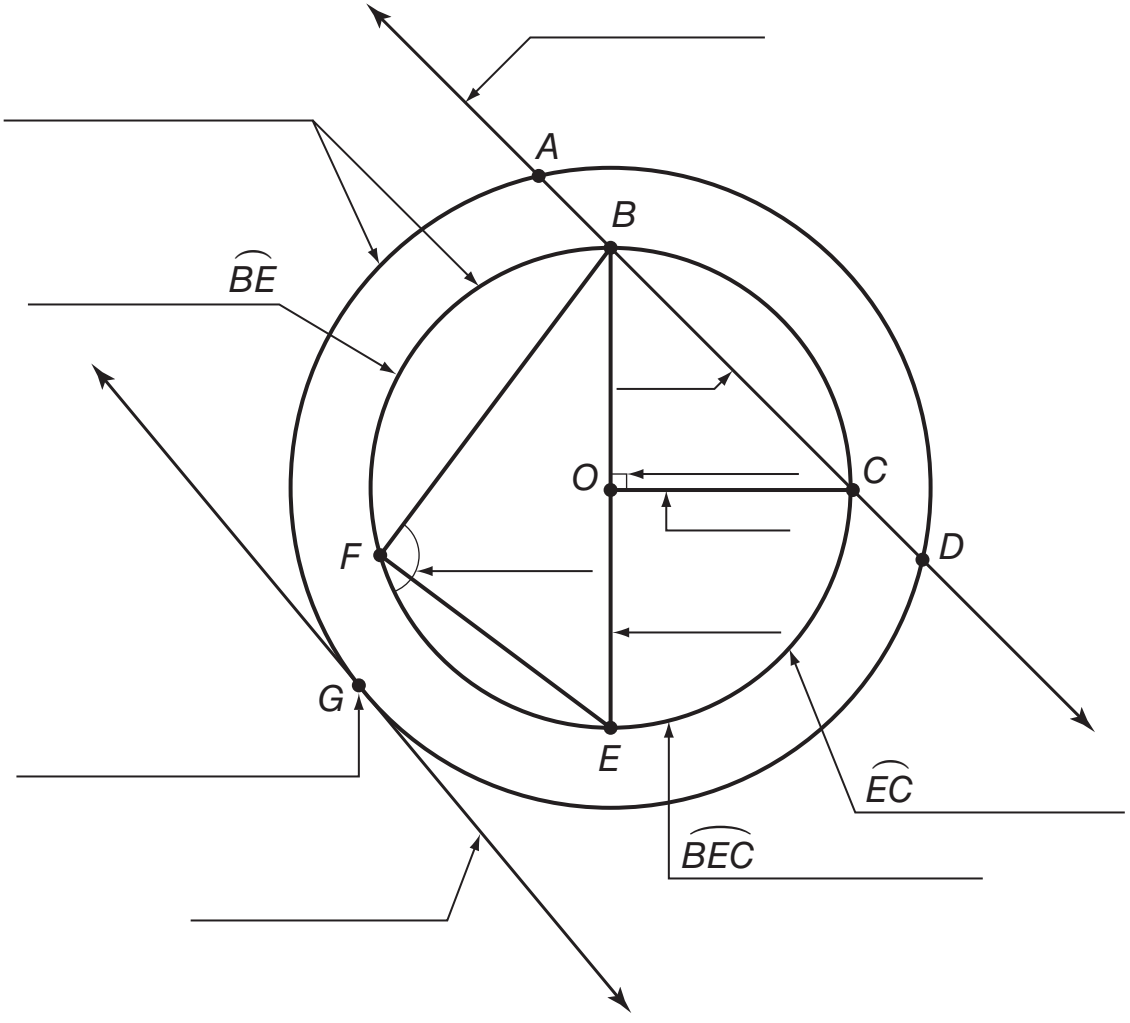


NAME _____ DATE _____ PERIOD _____

CHAPTER 10 Circles

Tie It Together

Name each part of the circle shown below.



NAME _____ DATE _____ PERIOD _____

CHAPTER 10 Circles

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

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☐ I completed the Chapter 10 Study Guide and Review in the textbook.

☐ I took the Chapter 10 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

- To prepare to take lecture notes, make a column to the left about 2 inches wide. Use this column to write additional information from your text, place question marks, and to summarize information.

NAME _____ DATE _____ PERIOD _____

CHAPTER 11

Areas of Parallelograms and Triangles

Before You Read

Before you read the chapter, think about what you know about areas of parallelograms and triangles. List three things you already know about them in the first column. Then list three things you would like to learn about them in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **Write down questions that you have about what you are reading in the lesson.**
  Then record the answer to each question as you study the lesson.
- **A visual (graph, diagram, picture, chart) can present information in a concise, easy-to-study format.**
  Clearly label your visuals and write captions when needed.

NAME _____ DATE _____ PERIOD _____

CHAPTER 11

Areas of Parallelograms and Triangles

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on areas of circles and sectors, one fact might be a sector of a circle is a region of a circle bounded by a central angle and its intercepted arc. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
11-1 Areas of Parallelograms and Triangles	
11-2 Areas of Trapezoids, Rhombi, and Kites	
11-3 Areas of Circles and Sectors	
11-4 Areas of Regular Polygons and Composite Figures	
11-5 Areas of Similar Figures	

NAME _____ DATE _____ PERIOD _____

11-1 Areas of Parallelograms and Triangles

What You'll Learn

Skim Lesson 11-1. Predict two things you expect to learn based on the headings and the Key Concept box.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Define *parallelogram* in your own words. *(Lesson 6-2)*

_____

_____

New Vocabulary Match each term with its definition.

base of a parallelogram	the perpendicular distance between any two parallel bases
height of a parallelogram	any side of a triangle
base of a triangle	any side of a parallelogram
height of a triangle	the length of an altitude drawn to a given base

Vocabulary Link *Formula* is a word that is used in everyday English. This lesson introduces two new *formulas.* Find the definition of *formula* using a dictionary. Explain how its English definition can help you understand the meaning of *formula* in mathematics.

_____

_____

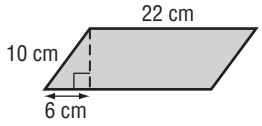
_____

_____

Main Idea	Details

Areas of Parallelograms
pp. 763–764

Find the perimeter and area of the parallelogram below. Round to the nearest tenth if necessary.



The perimeter measures _____ cm.

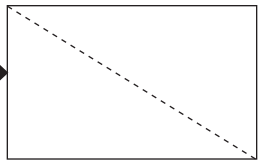
The height of the parallelogram measures _____ cm.

The area of the parallelogram measures _____ cm^2.

Areas of Triangles
pp. 765–766

Use the organizer below to determine how the area of a triangle is related to the area of a rectangle.

Area of a rectangle? → $A = bh$

Draw a diagonal. →  Now you have two ◺ 's.

How do these triangles relate to the rectangle? → **Conclusion:**

Area of Triangle =

Helping You Remember

A good way to remember a new formula in geometry is to relate it to a formula you already know. How can you use the formula for the area of a rectangle to help you remember the formula for the area of a parallelogram?

_____

_____

NAME _____ DATE _____ PERIOD _____

11-2 Areas of Trapezoids, Rhombi, and Kites

What You'll Learn

Scan the text in Lesson 11-2. Write two facts you learned about trapezoids, rhombi, and kites as you scanned the text.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 6-2, 6-6, and 11-1)*

parallelogram ▶ The _____ is any side of a triangle.

trapezoid ▶ A quadrilateral with both pairs of opposites sides is known as a(n) _____.

base of a triangle ▶ A(n) _____ is a quadrilateral with exactly one pair of parallel sides.

New Vocabulary Define *height of a trapezoid* in your own words.

_____

_____

Vocabulary Link *Area* is a word that is used in everyday English. Find the definition of *area* using a dictionary. Explain how its English definition can help you understand its meaning in mathematics.

_____

_____

_____

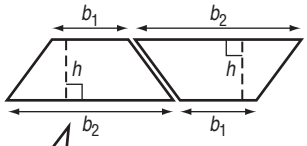
Lesson 11-2

Main Idea	Details

Areas of Trapezoids
pp. 773–774

Derive the formula for the area of a trapezoid.

Take a basic trapezoid and make a glide reflection of it.



These two congruent trapezoids together make one parallelogram.

Area of parallelogram = $(b_1 + b_2)h$

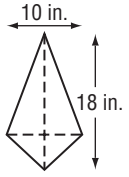
Therefore, the formula for the area of a trapezoid
=

Areas of Rhombi and Kites
pp. 775–776

In the formula for finding the area of a rhombus or kite, $A = \frac{1}{2}d_1d_2$, what do d_1 and d_2 represent?

_____

Find the area of the kite.



The area of the kite is _____.

Helping You Remember

A good way to remember a new geometric formula is to state it in words. Write a short sentence that tells how to find the area of a trapezoid in a way that is easy to remember.

_____

_____

NAME _____ DATE _____ PERIOD _____

11-3 Areas of Circles and Sectors

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about areas of circles and sectors.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Write the correct term next to each definition. *(Lessons 10-2, 11-1, and 11-2)*

_____ ▶ any side of a triangle

_____ ▶ an angle with a vertex in the center of a circle and with sides that contain two radii of the circle

_____ ▶ the length of an altitude drawn to a given base of a triangle

_____ ▶ the distance between the two bases of a trapezoid

_____ ▶ a portion of a circle defined by two endpoints

_____ ▶ any side of a parallelogram

New Vocabulary Define the *sector of a circle* in your own words.

_____

_____

_____

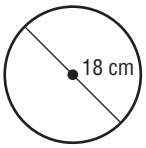
Lesson 11-3

Main Idea	Details

Areas of Circles
pp. 782–783

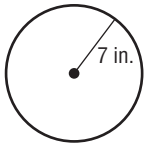
Find the area of each circle. Round to the nearest tenth.

1.



_____

2.



_____

Areas of Sectors
pp. 783–784

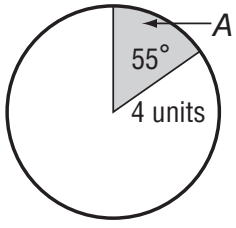
Use the organizer below and fill in the parts of the proportion that can be used to find the area of a sector.

The ratio of the area A of a sector to the area of the whole circle, πr^2, is equal to the ratio of the degree measure of the intercepted arc x to 360.

$$\frac{\square}{\square} = \frac{\square}{\square}$$

Use the completed proportion to find the area of the shaded sector. Round to the nearest tenth.

$A \approx$ _____



Helping You Remember

A good way to remember something is to explain it to someone else. Suppose your classmate Joelle is having trouble remembering which formula is for circumference and which is for area. How can you help her?

_____

_____

NAME _____ DATE _____ PERIOD _____

11-4 Areas of Regular Polygons and Composite Figures

What You'll Learn

Skim the Examples for Lesson 11-4. Predict two things you think you will learn about areas of regular polygons and composite figures.

1. _____

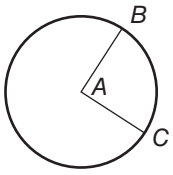
_____

2. _____

_____

Active Vocabulary

Review Vocabulary Answer the questions about the elements of the diagram below. *(Lesson 10-2)*



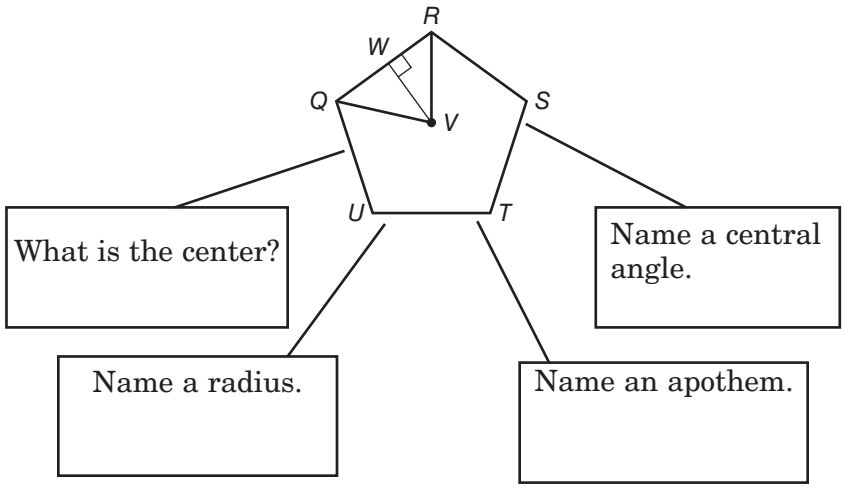
1. Angle A is what type of angle? _____

2. The portion of the circle that is defined by endpoints B and C is known as a(n) _____.

New Vocabulary Match each term with its definition.

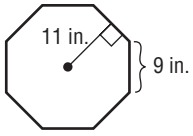
apothem	the radius of the circle that is circumscribed about the regular polygon
radius of a regular polygon	the center of the circle in which the regular polygon is inscribed
center of a regular polygon	has its vertex at the center of the polygon and its sides pass through consecutive vertices of the polygon
central angle of a polygon	a segment drawn perpendicular to a side of a regular polygon

Main Idea	Details
Areas of Regular Polygons pp. 791–793	**Identify the parts of the regular polygon.**



Areas of Composite Figures
pp. 793–794

Using the formula $A = \frac{1}{2}aP$, where A is the area of a regular polygon, a is the apothem, and P is the perimeter, find the area of the regular octagon below.



The area of the regular octagon is _____.

Helping You Remember

Rolando is having trouble remembering when to subtract an area when finding the area of a composite figure. How can you help him remember?

_____

_____

NAME _____ DATE _____ PERIOD _____

11-5 Areas of Similar Figures

What You'll Learn

Scan Lesson 11-5. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Define *similar polygons* in your own words. *(Lesson 7-2)*

_____

_____

_____

Fill in each blank with the correct term or phrase. *(Lessons 10-1 and 11-3)*

segment of a circle ▶ A slice of pie would be an example of a(n) _____.

sector of a circle ▶ A figure or shape enclosed by another geometric shape or figure is _____.

inscribed ▶ A(n) _____ is the part of the interior of a circle bound by a chord and an arc.

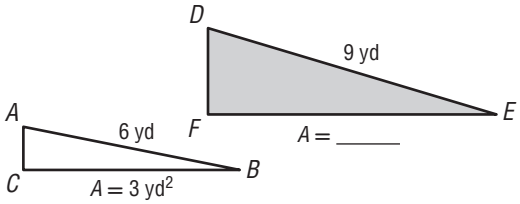
Vocabulary Link *Similar* is a word that is used in everyday English. Find the definition of *similar* using a dictionary. Explain how its English definition can help you understand its meaning in mathematics.

_____

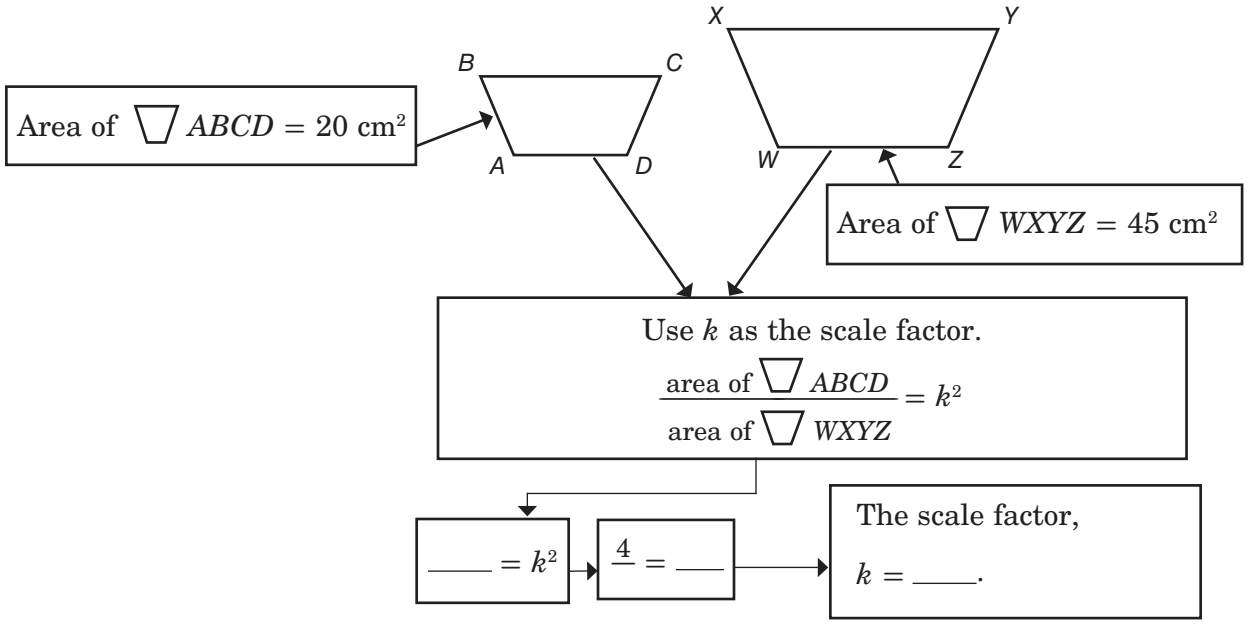
_____

_____

Main Idea	Details
Areas of Similar Figures pp. 802–803	**For the pair of similar triangles below, find the area of $\triangle DEF$.**



Scale Factors and Missing Measures in Similar Figures pp. 803–804	**Complete the missing parts of the proportion below.** If you know the areas of two similar geometric shapes, you can use them to find the scale factor between them.



Helping You Remember

Anthony thinks that similar figures are equal figures. How can you explain to him that similar and equal are not the same?

_____

_____

_____

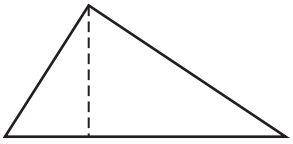
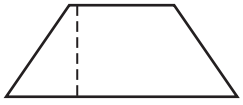
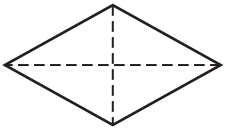
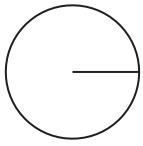
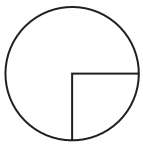
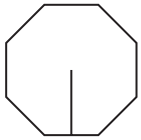
NAME _____ DATE _____ PERIOD _____

CHAPTER 11

Areas of Polygons and Circles

Tie It Together

Complete the graphic organizer with a formula from the chapter and identify the variables in the diagram.

Figure	Formula	Diagram
Parallelogram		
Triangle		
Trapezoid		
Rhombus Kite		
Circle		
Sector		
Regular Polygon		

NAME _____ DATE _____ PERIOD _____

CHAPTER 11 Areas of Polygons and Circles

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 11.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 11 Study Guide and Review in the textbook.

☐ I took the Chapter 11 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- If possible, rewrite your notes. Not only can you make them clearer and neater, rewriting them will help you remember the information.

NAME _____ DATE _____ PERIOD _____

CHAPTER 12

Extending Surface Area and Volume

Before You Read

Before you read the chapter, think about what you know about surface area and volume. List three things you already know about extending surface area and volume in the first column. Then list three things you would like to learn about in the second column.

K What I know…	W What I want to find out…

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When you take notes, listen or read for main ideas.**
  Then record those ideas for future reference.
- **To help you organize data, create study cards when taking notes, recording and defining vocabulary words, and explaining concepts.**

NAME _____ DATE _____ PERIOD _____

CHAPTER 12

Extending Surface Area and Volume

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on volumes of pyramids and cones, one fact might be pyramids use $\frac{1}{3}$ of the area of base in the formula for volume. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
12-1 Representations of Three-Dimensional Figures	
12-2 Surface Areas of Prisms and Cylinders	
12-3 Surface Areas of Pyramids and Cones	
12-4 Volumes of Prisms and Cylinders	
12-5 Volumes of Pyramids and Cones	
12-6 Surface Areas and Volumes of Spheres	
12-7 Spherical Geometry	
12-8 Congruent and Similar Solids	

NAME _____ DATE _____ PERIOD _____

12-1 Representations of Three-Dimensional Figures

What You'll Learn

Skim the Examples for Lesson 12-1. Predict two things you think you will learn about representations of three-dimensional figures.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Define *arc of a circle* in your own words. *(Lesson 11-3)*

_____

_____

New Vocabulary Write the correct term next to each definition.

_____ ▶ the intersection of a solid and a plane

_____ ▶ a corner view of a three-dimensional geometric solid on two-dimensional paper

Vocabulary Link *Cross section* is an expression that is used in everyday English. Either find the definition of *cross section* using a dictionary or think of how you have heard it used outside of geometry. Explain any similarities between its everyday use and its use in mathematics.

_____

_____

_____

_____

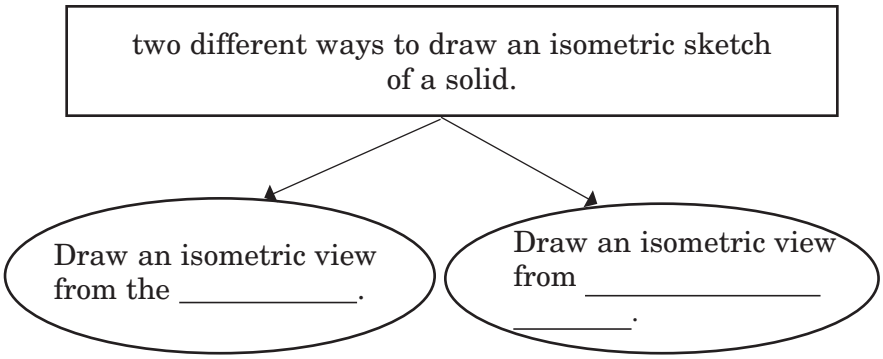
_____

_____

Main Idea	Details

Draw Isometric Views
pp. 823–824

Complete the graphic organizer below.



Investigate Cross Sections
p. 824

Name the different cross sections of a cylinder. State how the plane would have to intersect the cylinder to get that particular cross section.

1. _____

_____

2. _____

_____

3. _____

_____

Helping You Remember

Look up the word *isometry* in the dictionary. Compare its definition with the definition of corner view and perspective view. Why are corner views considered isometric views, but three-dimensional views not considered isometric views?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

12-2 Surface Areas of Prisms and Cylinders

What You'll Learn

Scan Lesson 12-2. List two headings you would use to make an outline of this lesson.

1. _____

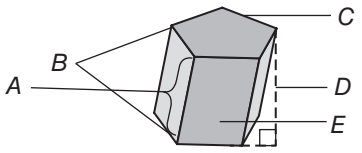
_____

2. _____

_____

Active Vocabulary

New Vocabulary Label the elements of this oblique pentagonal prism with the correct terms.



altitude ▶ **1.** Arrow "*A*" is pointing to a(n) _____.

lateral edge ▶ **2.** Arrow "*B*" is pointing to _____.

lateral face ▶ **3.** Arrow "*C*" is pointing to a(n) _____.

base edge ▶ **4.** Arrow "*D*" is pointing to a(n) _____.

bases ▶ **5.** Arrow "*E*" is pointing to a(n) _____.

Fill in each blank with the correct term or phrase

lateral area ▶ A(n) _____ of a cylinder is the segment with endpoints that are centers of the circular bases.

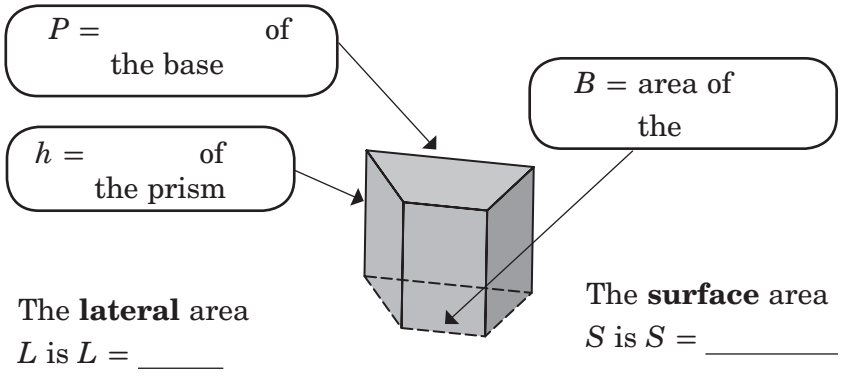
axis ▶ The _____ of a prism is the sum of the areas of the lateral faces.

Lesson 12-2

Main Idea	Details

Lateral Areas and Surface Areas of Prisms
pp. 830–831

Complete the diagram to show the parts of the area formulas for prisms.



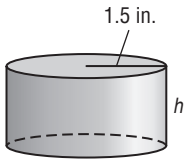
The **lateral** area L is $L =$ _____

The **surface** area S is $S =$ _____

Given the base edges of the prism above are: 8, 6, 5, and 5 inches, and that the height of the prism is 10 inches, find its lateral area.

Lateral Areas and Surface Areas of Cylinders
pp. 832–833

The cylindrical canister below has a surface area of 33 in². Use the formula $S = 2\pi rh + 2\pi r^2$.



What is the approximate height of the canister? .

Helping You Remember

A good way to remember a new mathematical term is to relate it to an everyday use of the same word. How can the way the word *lateral* is used in sports help you remember the meaning of the *lateral area* of a solid?

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

12-3 Surface Areas of Pyramids and Cones

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about surface areas of pyramids and cones.

1. _____

_____

_____

2. _____

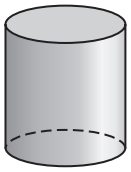
_____

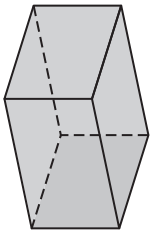
_____

Active Vocabulary

Review Vocabulary Label the following solids as *right or oblique. (Lesson 12-1)*

1. 

2. 

3. 

1. _____

2. _____

3. _____

New Vocabulary Match each term with its definition.

regular pyramid	the height of each lateral face of a regular pyramid
slant height	a figure where the axis of a cone is also its altitude
right cone	a figure with a base that is a regular polygon and the altitude has an endpoint at the center of the base
oblique cone	a figure where the axis of a cone is not its altitude

Lesson 12-3

Main Idea	Details

Lateral Area and Surface Area of Pyramids
pp. 838–840

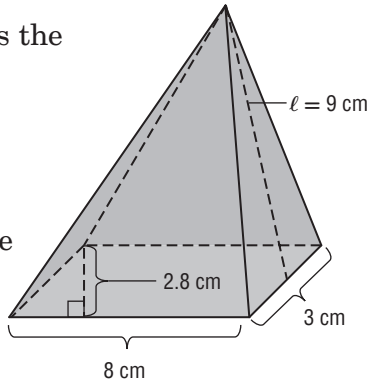
Use the formulas below to find the lateral and the surface area of the regular pyramid pictured.

Lateral area, $L = \frac{1}{2}P\ell$, where P is the perimeter of the base and ℓ is the slant height.

$L =$ _____

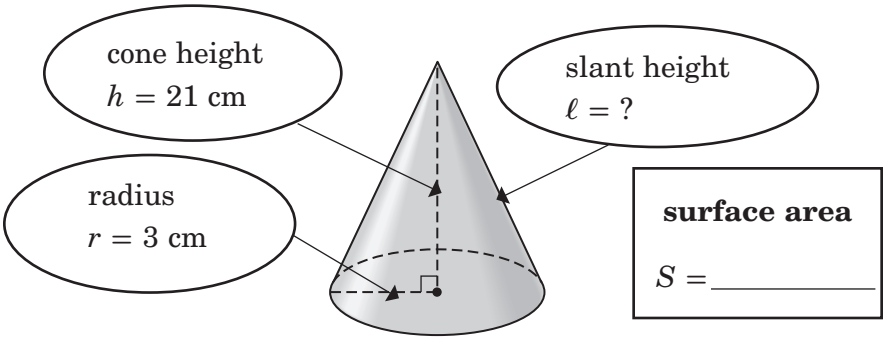
Surface area, $S = \frac{1}{2}P\ell + B$, where P is the perimeter of the base, ℓ is the slant height, and B is the area of the base.

$S =$ _____



Lateral Area and Surface Area of Cones
pp. 840–842

Follow the steps to find the surface area of a cone.



1. Use the Pythagorean Theorem to find the slant height of the cone. Round your answer to the nearest tenth.

   _____

2. Use the formula above to find the cone's surface area. Round to the nearest centimeter. _____

Helping You Remember

One way to remember a new formula is to relate it to a formula you already know. Explain how the formulas for the lateral areas of a pyramid and cone are similar.

_____

_____

NAME _____ DATE _____ PERIOD _____

12-4 Volumes of Prisms and Cylinders

What You'll Learn

Skim Lesson 12-4. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

_____

2. _____

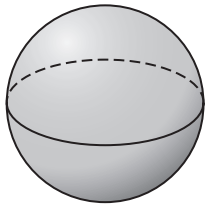
_____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 12-1 through 12-3)*

isometric ▶ What shape describes the cross section of this sphere? _____

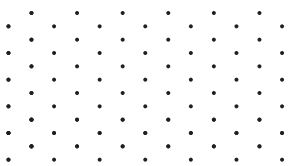


circle ▶ A(n) _____ of a cylinder is the segment with endpoints that are centers of the circular bases.

axis ▶ When the axis of a cone is not its altitude this represents a(n) _____ cone.

lateral area ▶ The _____ of a prism is the sum of the areas of the lateral faces.

oblique ▶ This type of paper is used to draw a(n) _____ view of a solid.



Lesson 12-4

Main Idea	Details

Volume of Prisms
p. 847

Complete the steps to finding the volume of the prism below.

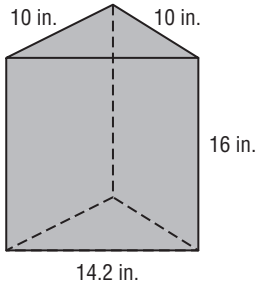
Use the _____ Theorem to find the area of the triangular base, B. Round to the nearest cubic inch. $B =$ _____

↓

To find the volume, V of the prism, multiply the base, B by the _____ of the prism.

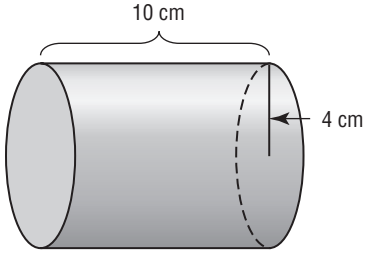
↓

$V =$ _____



Volume of Cylinders
pp. 848–849

Use the formula $V = \pi r^2 h$ to find the volume of the cylinder shown.



$V =$ _____

Helping You Remember

A good way to remember a mathematical concept is to explain it to someone else. Suppose that your younger sister, who is in eighth grade, is having trouble understanding why square units are used to measure area, but cubic units are needed to measure volume. How can you explain this to her in a way that will make it easy for her to understand and remember the correct units to use?

_____

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

12-5 Volumes of Pyramids and Cones

What You'll Learn

Skim the lesson. Write two things you already know about volumes of pyramids and cones.

1. _____

_____

_____

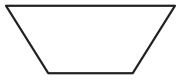
2. _____

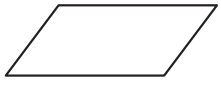
_____

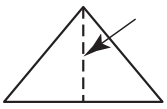
_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lessons 11-1 through 11-5)*

A. 

B. 

C. 

D. 

area of a trapezoid ▶ Polygon A represents a(n) _____.

height of a triangle ▶ Polygon B represents a(n) _____.

cubic unit ▶ The arrow in C is pointing to the _____.

area of a circle ▶ Figure D represents an example of a(n) _____.

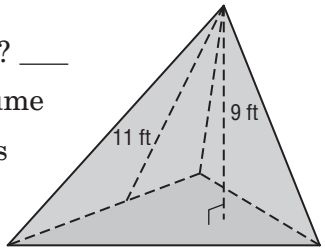
trapezoid ▶ πr^2 is the formula for the _____.

parallelogram ▶ $\frac{1}{2}(b_1 + b_2)h$ is the formula for the _____.

Main Idea	Details

Volume of Pyramids
p. 857

Use the pyramid shown to answer the following questions.



1. What is the height of the pyramid? ___

2. In the formula for finding the volume of a pyramid, $V = \frac{1}{3}Bh$, what does the B represent?

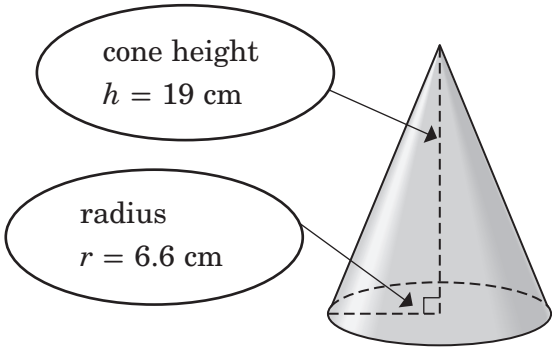
_____

3. Given that $B = 17.5$ ft^2, find the volume of this pyramid to the nearest tenth of a cubic foot. _____

Volume of Cones
p. 858

Use the diagram of a cone to fill in the missing measurements in the chart. Round your answer to the nearest tenth, as needed.

Volume
$V = \frac{1}{3}\pi r^2 h$
$h =$ _____
$r =$ _____
$V =$ _____



Helping You Remember

Many students find it easier to remember mathematical formulas if they can put them in words. Use words to describe in one sentence how to find the volume of any pyramid or cone.

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

12-6 Surface Areas and Volumes of Spheres

What You'll Learn

Scan the text in Lesson 12-6. Write two facts you learned about surface areas and volumes of spheres.

1. _____

_____

_____

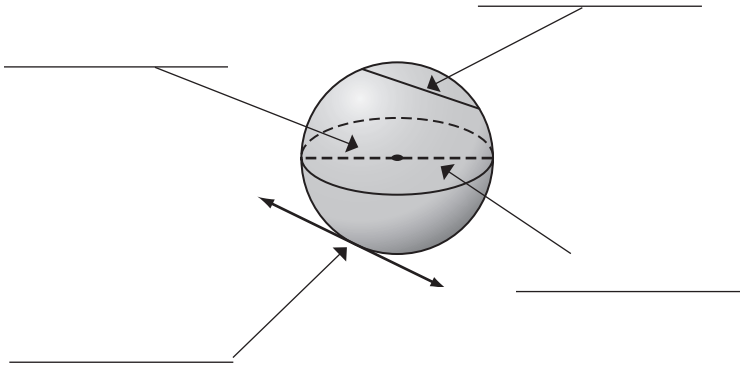
2. _____

_____

_____

Active Vocabulary

New Vocabulary Label the parts of the sphere pictured below.



Fill in each blank with the correct term or phrase.

great circle ▶ One of the two congruent halves of a sphere separated by the great circle is known as a(n) _____.

pole ▶ When a plane intersects a sphere to form a circle which contains the center of the sphere, this forms a(n) _____.

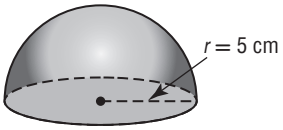
hemisphere ▶ A(n) _____ is one of the endpoints of a diameter of a great circle.

Main Idea	Details

Surface Area of Spheres
pp. 864–865

Follow the steps of the flowchart to find the surface area of the hemisphere.

The hemisphere's surface area is comprised of ____ of the surface area of the sphere, plus the area of the great _____.



↓

Numerically, that is
$S = \frac{1}{2}(4\pi r^2) + \_\_\_$.

↓

Using $r = 5$ cm, find the value, S, of the surface area of this hemisphere.
$S =$ _____

Volume of Spheres
pp. 866–867

Use the formula $V = \frac{4}{3}\pi r^3$ (the formula for finding the volume of a sphere) to answer each question. Round your answers to the nearest tenth.

1. Find the volume of a sphere with a diameter of 1.6 feet.

2. Find the volume of a sphere with a great circle circumference of 19 inches.

3. Find the volume of a hemisphere with a radius of 7 centimeters.

Helping You Remember

Many students have trouble remembering all of the formulas they have learned in this chapter. What is an easy way to remember the formula for the surface area of a sphere?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

12-7 Spherical Geometry

What You'll Learn

Scan Lesson 12-7. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Match each term with its definition. *(Lessons 12-1 and 12-3)*

oblique cone	the intersection of a solid and a plane
right cone	a figure with a base that is a regular polygon and the altitude has an endpoint at the center of the base
cross section	The axis of a cone is also its altitude.
isometric view	a corner view of a three-dimensional geometric solid on two-dimensional paper
regular pyramid	the height of each lateral face of a regular pyramid
slant height	The axis of a cone is not its altitude.

New Vocabulary Fill in each blank with the correct term or phrase.

_____ is geometry where a plane is the surface of a sphere.

A geometry where a plane is a flat surface made up of points that extend infinitely in all directions is known as _____.

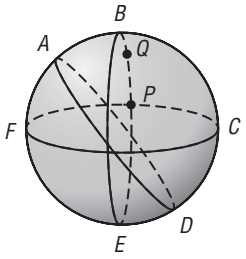
A type of geometry in which at least one of the postulates is from Euclidean geometry is known as _____.

Lesson 12-7

Main Idea	Details

Geometry on a Sphere
pp. 873–874

Use the diagram of the sphere below to answer each question.



1. Name two lines containing point ***P***.

2. Name a segment containing point ***Q***.

3. Name a triangle.

Compare Plane Euclidean and Spherical Geometries
p. 874

Complete the table below which compares different facts about Euclidean geometry and Spherical geometry.

Euclidean	Spherical
A *plane* is a flat surface.	A *plane* is a _____ surface.
The shortest distance between two points is a line _____.	The shortest distance between two points is a(n) ___ of a great circle.
A line is infinite.	A line is _____.
Through any two given points, there is exactly one ____ passing through them.	Through any two given points, there is one great passing through them.
A unit used to measure length is a(n) _____.	*Degrees* are the unit used to measure length.
Two points can be any distance apart. There is no greatest distance.	The greatest distance between two points is _____.

NAME _____ DATE _____ PERIOD _____

12-8 Congruent and Similar Solids

What You'll Learn

Scan the text under the Now heading. List two things you will learn about in this lesson.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

New Vocabulary Define the following terms in your own words.

similar solids ▶ _____

_____

congruent solids ▶ _____

_____

In your own words, what is meant by *scale factor*?

_____

_____

_____

_____

_____

Main Idea **Details**

Identify Congruent or Similar Solids

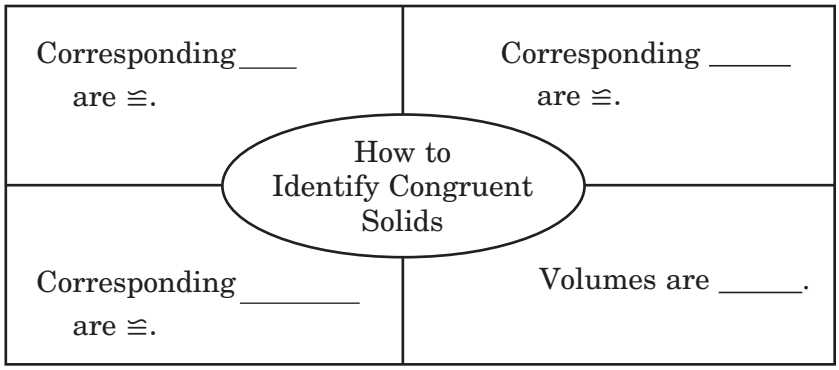
pp. 880–881

Fill in the missing parts to the organizer below.

How do you know if solids are similar?

They have the same _____.

Ratios of corresponding linear measures are _____.



Properties of Congruent and Similar Solids

pp. 881–882

Apply what you learned with Theorem 12.1 in the Student Edition to answer the following:

Two similar pyramids have volumes of 125 cubic inches and 64 cubic inches. What is the ratio of the slant height of the large pyramid to the slant height of the small pyramid?

_____

Helping You Remember

A good way to remember a new mathematical concept is to relate it to something you already know. How can what you know about the units used to measure lengths, areas, and volumes help you to remember the theorem about the ratios of surface areas and volumes of similar solids?

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

CHAPTER 12

Extending Surface Area and Volume

Tie It Together

Complete the graphic organizer with a formula from the chapter.

Shape	Lateral Area	Surface Area	Volume
Prism			
Cylinder			
Pyramid			
Cone			
Sphere			

NAME _____ DATE _____ PERIOD _____

CHAPTER 12

Extending Surface Area and Volume

Before the Test

Review the ideas you listed in the table at the beginning of the chapter. Cross out any incorrect information in the first column. Then complete the table by filling in the third column.

K What I know…	W What I want to find out…	L What I learned…

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 12.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 12 Study Guide and Review in the textbook.

☐ I took the Chapter 12 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- Use flash cards to study for tests by writing the concept on one side of the card and its definition on the other.

NAME _____ DATE _____ PERIOD _____

CHAPTER 13

Probability and Measurement

Before You Read

Before you read the chapter, respond to these statements.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Before You Read	Probability and Measurement
	• There are many different ways to represent the sample space of an experiment.
	• The Fundamental Counting Principle uses addition to count the total number of outcomes.
	• In a permutation, the order is not important.
	• Compound events can be independent or dependent.
	• When one event affects another event, the events are mutually exclusive.

FOLDABLES® Study Organizer Construct the Foldable as directed at the beginning of this chapter.

Note Taking Tips

- **When taking notes, use a table to make comparisons about the new material.**

  Determine what will be compared, decide what standards will be used, and then use what is known to find similarities and differences.

- **When taking notes on statistics, include your own statistical examples as you write down concepts and definitions.**

  This will help you to better understand statistics.

NAME _____ DATE _____ PERIOD _____

CHAPTER 13

Probability and Measurement

Key Points

Scan the pages in the chapter and write at least one specific fact concerning each lesson. For example, in the lesson on geometric probability, one fact might be probability that involves a geometric measure such as length or area is called geometric probability. After completing the chapter, you can use this table to review for your chapter test.

Lesson	Fact
13-1 Representing Sample Spaces	
13-2 Probabilities with Permutations and Combinations	
13-3 Geometric Probability	
13-4 Simulations	
13-5 Probabilities of Independent and Dependent Events	
13-6 Probabilities of Mutually Exclusive Events	

NAME _____ DATE _____ PERIOD _____

13-1 Representing Sample Spaces

What You'll Learn

Scan the text under the *Now* heading. List two things you will learn about in this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Match each term with its definition.

sample space	one way of representing a sample space, using line segments known as *branches,* to display possible outcomes
tree diagram	experiments with more than two stages
two-stage experiment	the set of all possible outcomes of an experiment
multi-stage experiment	a means used to find the entire sample space from an experiment that does not require listing all the possible outcomes
Fundamental Counting Principle	an experiment with two stages or events

Vocabulary Link *Experiment* is a word that is used in everyday English. Find the definition of *experiment* using a dictionary. Explain how its English definition can help you understand the meaning of *experiment* in mathematics.

_____

_____

_____

_____

_____

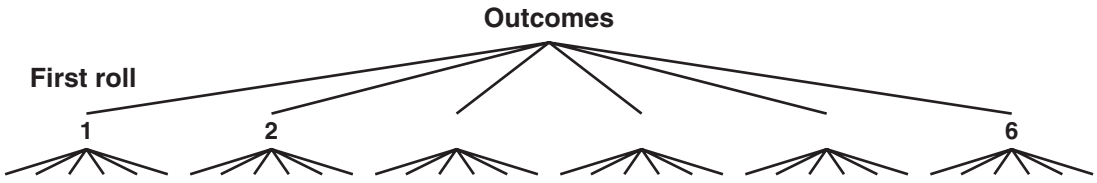
Lesson 13-1

Main Idea	Details

Represent a Sample Space

pp. 899–900

A number cube is rolled twice. Complete the sample space for this experiment.



How many possible outcomes are there? _____

Fundamental Counting Principle

p. 901

Sara takes orders at a restaurant where each sandwich is customized. Sara's manager requires her to ask the following series of questions when placing the orders.

Sandwich Shop

1. Would you like your chicken fried or grilled?

2. Would you like bbq, honey mustard, mayo, or no sauce?

3. Would you like your sandwich deluxe or regular?

Use the Fundamental Counting Principle to find the number of different types of sandwiches that represent the sample space for chicken sandwich orders?

_____

NAME _____ DATE _____ PERIOD _____

13-2 Probability with Permutations and Combinations

What You'll Learn

Scan Lesson 13-2. List two headings you would use to make an outline of this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

Review Vocabulary Define each term in your own words. *(Lesson 12-7)*

Non-Euclidean geometry ▶ _____

_____

Euclidean geometry ▶ _____

_____

Spherical geometry ▶ _____

_____

New Vocabulary Write the correct term next to each definition.

_____ ▶ given a positive integer n, it is the product of the integers less than or equal to n

_____ ▶ an arrangement of objects in which order is important

_____ ▶ an arrangement of objects in which order is *not* important

_____ ▶ an arrangement of objects in the form of a circle or loop

Lesson 13-2

Main Idea	Details

Probability Using Permutations

pp. 906–909

Follow and complete the steps in the flowchart below.

A marching band is divided into squads of 8 musicians. Each squad is required to select leaders: a head squad leader and an assistant squad leader. Anders and Matthew are in one of the squads.

If the positions are decided at random, what is the probability that Anders and Matthew are selected as leaders?

Step 1 The number of possible outcomes in the number of permutations of 8 people taken 2 at a time, ${}_8P_2$.

${}_8P_2 = \frac{8!}{(8 - \_)!} = \frac{8 \cdot 7 \cdot 6!}{\_!} = \_\_\_\_$

↓

Step 2 The number of favorable outcomes in the number of permutations of these 2 students in each of the 2-leader positions is 2!, which is $2 \cdot 1$ or 2.

↓

Step 3 So, the probability of Anders and Matthew being selected as the 2 squad leaders is $\frac{\_}{56}$ or $\_\_\_$.

Probability Using Combinations

pp. 909–910

Leah is packing for a trip to Florida. She decides to pack 3 of her 8 travel games to take on the trip. If she chooses to select games at random, what is the probability that the games chosen are Leah's 3 favorites?

Use the formula for combinations, ${}_nC_r = \frac{n!}{(n - r)!r!}$, when you have n objects taken r at a time.

NAME _____ DATE _____ PERIOD _____

13-3 Geometric Probability

What You'll Learn

Scan the text in Lesson 13-3. Write two facts you learned about geometric probability as you scanned the text.

1. _____

_____

_____

2. _____

_____

_____

Active Vocabulary

Review Vocabulary Fill in each blank with the correct term or phrase. *(Lesson 11-1)*

base of a parallelogram ▶ The _____ is the length of an altitude drawn to a given base.

base of a triangle ▶ Any side of a triangle is known as the _____.

height of a parallelogram ▶ Any side of a parallelogram is known as the _____ .

height of a triangle ▶ The _____ is the perpendicular distance between any two parallel bases.

New Vocabulary Define *geometric probability* in your own words.

_____

_____

_____

_____

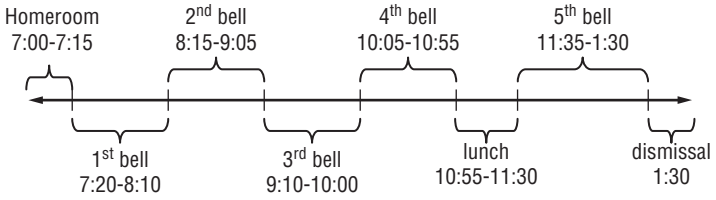
_____

Lesson 13-3

Main Idea	Details

Probability with Length
pp. 915–916

The schedule for Meghan's school is shown on the number line. The local fire department is going to randomly have a fire drill today. Find the probability the fire drill will be during Meghan's lunch.



probability of fire drill during lunch

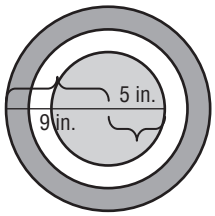
Find the total time of the school day. (Include time between classes.)
_____

Find the total time of the lunch period.
_____

Find the probability the drill will be during lunch.
≈ ____

Probability with Area
pp. 916–917

Darcy has a magnetic dartboard. What is the probability that Darcy's magnetic darts will land in the central circle?



_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

13-4 Simulations

What You'll Learn

Skim Lesson 13-4. Predict two things that you expect to learn based on the headings and the Key Concept box.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Match each term with its definition.

probability model	the average value of a random variable that one anticipates after repeating an experiment or simulation a theoretically infinite number of times
simulation	a variable that can assume a set of values, each with fixed probabilities
random variable	a mathematical model used to match a random phenomenon
expected value	as the number of trials of a random process increases, the average will approach the expected value
Law of Large Numbers	the use of a probability model to recreate a situation again and again so that the likelihood of various outcomes can be estimated

Vocabulary Link *Simulation* is a word that is used in everyday English. Explain how the English definition can help you remember how *simulation* is used in mathematics.

_____

_____

_____

_____

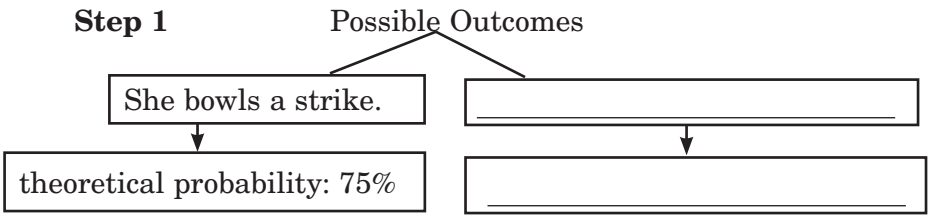
Main Idea	Details

Design a Simulation
pp. 923–924

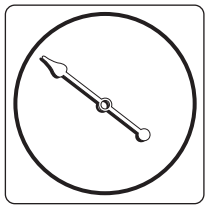
Miranda bowled a strike in 75% of her frames over the last 9 months. Design a simulation that can be used to estimate the probability that she will bowl a strike in the next frame.

Complete the missing pieces to the steps below.

Step 1



Step 2 Assume that Miranda will have the opportunity to bowl 50 more frames.



Step 3 Divide the spinner provided into two sectors to represent the two possible outcomes listed in Step 1.

bowl a strike	**not bowl a strike**
75%(____)	____(360°)

Step 4 A trial, one spin of a spinner, will represent bowling 1 frame.

What will a successful trial represent? _____

What will a failed trial represent? _____

The simulation will consist of how many spins? ____

Summarize Data from a Simulation
pp. 924–926

Conduct the simulation above and record your results in the table provided below. When your simulation is complete, find the *experimental probability* of Miranda bowling a strike on her next frame.

Outcome	Tally	Frequency
	𝍸 𝍸 |	
	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |||	
Total		50

$$\frac{\text{number of strikes}}{\text{number of non-strikes}} = \_\_\_\_\_$$

NAME _____ DATE _____ PERIOD _____

13-5 Probabilities of Independent and Dependent Events

What You'll Learn

Skim the Examples in Lesson 13-5. Predict two things you think you will learn about this lesson.

1. _____

_____

2. _____

_____

Active Vocabulary

New Vocabulary Write the correct term next to each definition.

_____ ▶ a specific type of tree diagram that includes probabilities

_____ ▶ events where the probability of one event occurring does not affect the probability of the other event occurring

_____ ▶ consists of two or more simple events

_____ ▶ a probability that uses the notation $P(B|A)$

_____ ▶ events where the probability of one event occurring in some way changes the probability that the other event occurs

Vocabulary Link *Independent* and *dependent* are words used in everyday English. How do their English definitions apply to their definitions in probability?

_____

_____

_____

_____

_____

_____

Main Idea	Details
Independent and Dependent Events pp. 931–933	**The probability that two independents occur follows the multiplication rule for probability: $P(A \text{ and } B) = P(A) \cdot P(B)$. Extend the use of this multiplication rule for probability by creating a model of another set of independent events that can be used to demonstrate this rule.**
Conditional Probabilities p. 934	**Ms. Alexander's class of 16 students sits at four different tables, with four students at each table. Ms. Alexander chose tables A and B to go to the lab, while those students at tables C and D remained seated. If Carly has to go to the lab, then what is the probability that she sits at Table A?**

NAME _____ DATE _____ PERIOD _____

13-6 Probabilities of Mutually Exclusive Events

What You'll Learn

Skim the lesson. Write two things you already know about mutually exclusive events.

1. _____

_____

2. _____

_____

Active Vocabulary

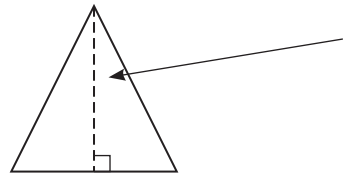
Review Vocabulary Label the part of each diagram to which the arrow is pointing. *(Lessons 11-1 and 11-2)*

trapezoid ▶

base of a parallelogram ▶

height of a triangle ▶

height of a parallelogram ▶



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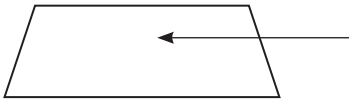

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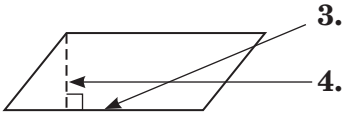


3. _____

4. _____

New Vocabulary Define the following terms in your own words.

mutually exclusive events ▶ _____

_____

complement ▶ _____

_____

_____

_____

Main Idea	Details

Mutually Exclusive Events
pp. 938–940

Model the following *mutually exclusive events* by representing their relationship in a Venn diagram below.

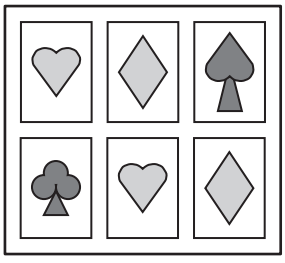
When a die is rolled, find the probability of rolling a 1 or 6.

Is the following event *mutually exclusive* or *not mutually exclusive*?

when a die is rolled, the probability of rolling a number less than 5 or an odd number _____

Probabilities of Complements
pp. 941–942

At the local carnival, the probability of a dart to land on one of the playing cards on the board is 33%.



Name the *complement* of landing on one of the cards and the probability of the *complement* occurring.

_____

_____

_____

_____

NAME _____ DATE _____ PERIOD _____

CHAPTER 13

Probability and Measurement

Tie It Together

Complete each graphic organizer with a definition or formula from the chapter.

Sample Space	
Experiment	
Outcome	
Event	

Calculating Probability	
Fundamental Counting Principle	
Permutations	
Combinations	
Circular Permutations	
Simulations	
Complement	

Types of Probability	
Geometric Probability	
Independent Events	
Dependent Events	
Conditional Probability	
Mutually Exclusive Events	

NAME _____ DATE _____ PERIOD _____

CHAPTER 13

Probability and Measurement

Before the Test

Now that you have read and worked through the chapter, think about what you have learned and complete the table below. Compare your previous answers with these.

1. Write an **A** if you agree with the statement.
2. Write a **D** if you disagree with the statement.

Probability and Measurement	After You Read
• There are many different ways to represent the sample space of an experiment.	
• The Fundamental Counting Principle uses addition to count the total number of outcomes.	
• In a permutation, the order is not important.	
• Compound events can be independent or dependent.	
• When one event affects another event the events are mutually exclusive.	

Math Online Visit *glencoe.com* to access your textbook, more examples, self-check quizzes, personal tutors, and practice tests to help you study for concepts in Chapter 13.

Are You Ready for the Chapter Test?

Use this checklist to help you study.

☐ I used my Foldable to complete the review of all or most lessons.

☐ I completed the Chapter 13 Study Guide and Review in the textbook.

☐ I took the Chapter 13 Practice Test in the textbook.

☐ I used the online resources for additional review options.

☐ I reviewed my homework assignments and made corrections to incorrect problems.

☐ I reviewed all vocabulary from the chapter and their definitions.

Study Tips

- You will do better on a test if you are relaxed. If you feel anxious, try some deep breathing exercises. Don't worry about how quickly others are finishing; do your best and use all the time that is available to you.