

Parent Guide for Student Success

For use with Chapter 4

Chapter Overview One way that you can help your student succeed in Chapter 4 is by discussing the lesson goals in the chart below. When a lesson is completed, ask your student to interpret the lesson goals for you and to explain how the mathematics of the lesson relates to one of the key applications listed in the chart.

<i>Lesson Title</i>	<i>Lesson Goals</i>	<i>Key Applications</i>
4.1: Triangles and Angles	Classify triangles by their sides and angles. Find angle measures in triangles.	<ul style="list-style-type: none"> • Weaving Loom • Making a Billiard Rack • Wing Deflectors
4.2: Congruence and Triangles	Identify congruent figures and corresponding parts. Prove that two triangles are congruent.	<ul style="list-style-type: none"> • Triangular Postage Stamp • Crop Circles • Origami
4.3: Proving Triangles are Congruent: SSS and SAS	Prove that triangles are congruent using the SSS and SAS Congruence Postulates. Use congruence postulates in real-life problems.	<ul style="list-style-type: none"> • Architecture • Navajo Rug • Seaplane's Wing
4.4: Proving Triangles are Congruent: ASA and AAS	Prove that triangles are congruent using the ASA Congruence Postulate and the AAS Congruence Theorem. Use congruence postulates and theorems in real-life problems.	<ul style="list-style-type: none"> • Meteorites • Orienteering • Quilting
4.5: Using Congruent Triangles	Use congruent triangles to plan and write proofs. Use congruent triangles to prove constructions are valid.	<ul style="list-style-type: none"> • Stained Glass Window • Cat's Cradle String Game • Bridges
4.6: Isosceles, Equilateral, and Right Triangles	Use properties of isosceles, equilateral, and right triangles.	<ul style="list-style-type: none"> • Television Antenna • Color Wheel • Rays of Light
4.7: Triangles and Coordinate Proof	Place geometric figures in a coordinate plane. Write a coordinate proof.	<ul style="list-style-type: none"> • Plant Stand • Technology

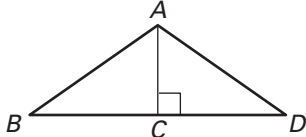
Study Strategy

Remembering Theorems is the study strategy featured in Chapter 4 (see page 192). Be sure your student keeps a list of theorems in his or her math notebook. Encourage your student to think of a name for each theorem or draw a sketch to help remember it. Have your student tell you about each theorem the day it is introduced in class.

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Key Ideas Your student can demonstrate understanding of key concepts by working through the following exercises with you.

Lesson	Exercise	
4.1	The variable expressions represent the angle measures of a triangle. Find the measure of each angle. Then classify the triangle by its angles. $m\angle P = x^\circ$, $m\angle Q = (x - 5)^\circ$, $m\angle R = (5x + 10)^\circ$	
4.2	The gable of a house is diagrammed in the figure. Suppose you know $\triangle BAC \cong \triangle DAC$ and $m\angle B = 35^\circ$. Find $m\angle D$.	
4.3	The gable diagrammed in the 4.2 Exercise is constructed so $\overline{AC} \perp \overline{BD}$ and C is the midpoint of \overline{BD} . How could you prove $\triangle ACB \cong \triangle ACD$?	
4.4	Suppose the carpenter constructed the gable diagrammed in the 4.2 Exercise so $\overline{AC} \perp \overline{BD}$. She then used a miter to make $\angle B \cong \angle D$. Under these circumstances, how could you prove $\triangle ACB \cong \triangle ACD$?	
4.5	You stake a young tree by attaching two ropes that are the same length to a tree at point A and to the ground at points B and C, equidistant from the base of the tree. Let D be the point where the tree enters the ground. Points B, C, and D are collinear. Why is the tree perpendicular to the ground?	
4.6	You are making a pennant for the high school basketball team. You want the triangular shaped flag to be isosceles. Each of the base angles has a measure that is two and a half times the third angle. Find the measures of all three angles.	
4.7	Place an isosceles right triangle in a coordinate plane. Give the coordinates of the vertices.	

Home Involvement Activity

Directions: Find three pairs of congruent triangles in your home. What information would you need to prove each pair of triangles congruent?

Answers: 4.1: $m\angle P = 25^\circ$, $m\angle Q = 20^\circ$, $m\angle R = 135^\circ$; obtuse 4.2: 35° 4.3: Since C is the midpoint of \overline{BD} , $\overline{BC} \cong \overline{DC}$. Since both are right angles formed by perpendicular segments, $\angle ACB \cong \angle ACD$. $\overline{AC} \cong \overline{AC}$ by the Reflexive Property of Congruence. Therefore, $\triangle ACB \cong \triangle ACD$ by SAS. 4.4: It's given that $\angle B \cong \angle D$ and $\angle ACB \cong \angle ACD$. By the Reflexive Property of Congruence, $\overline{AC} \cong \overline{AC}$. Therefore, $\triangle ACB \cong \triangle ACD$ by AAS. 4.5: Prove $\triangle ABD \cong \triangle ACD$ by SSS. $\angle ADB \cong \angle ADC$ because they are corresponding parts of congruent triangles. $\angle ADB$ and $\angle ADC$ are supplementary and therefore right angles. Thus, $\overline{AD} \perp \overline{BC}$ 4.6: 75° , 75° , 30° 4.7: Sample Answer: $(0, 0)$, $(0, h)$, $(h, 0)$

Answers