Name _____ Date _____

LESSON 4.4

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Study Guide

For use with pages 240–247

GOAL **Use sides and angles to prove congruence.**

Vocabulary

In a right triangle, the sides adjacent to the right angle are called the **legs.**

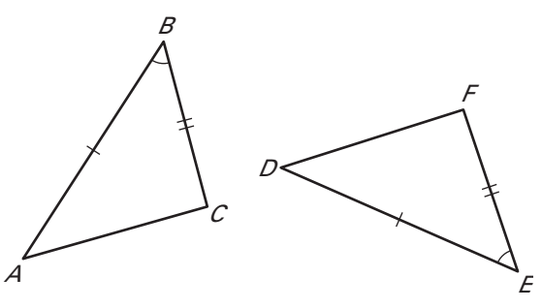
The side opposite the right angle is called the **hypotenuse** of the right triangle.

Postulate 20 Side-Angle-Side (SAS) Congruence Postulate: If two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle, then the two triangles are congruent.

Theorem 4.5 Hypotenuse-Leg Congruence Theorem: If the hypotenuse and a leg of a right triangle are congruent to the hypotenuse and a leg of a second right triangle, then the two triangles are congruent.

EXAMPLE 1 Use the SAS Congruence Postulate

Prove that $\triangle ABC \cong \triangle DEF$.



Solution

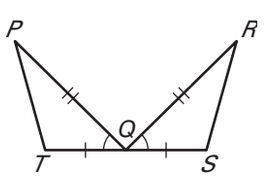
The marks on the diagram show that $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\geq B \cong \geq E$.

So, by the SAS Congruence Postulate, $\triangle ABC \cong \triangle DEF$.

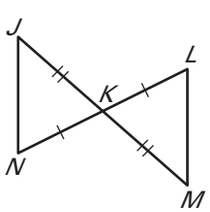
Exercises for Example 1

Decide whether enough information is given to prove that the triangles are congruent using the SAS Congruence Postulate.

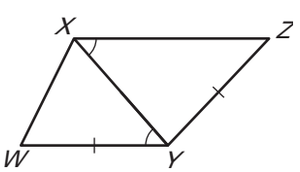
1. $\triangle PQT$, $\triangle RQS$



2. $\triangle NKJ$, $\triangle LKM$



3. $\triangle WXY$, $\triangle ZXY$



LESSON 4.4

Study Guide *continued*

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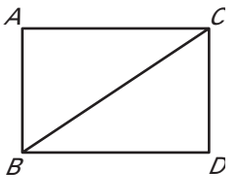
EXAMPLE 2 Use the Hypotenuse-Leg Theorem

Write a proof.

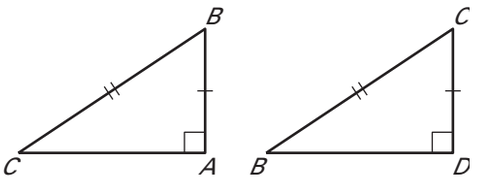
GIVEN: $\overline{AB} \cong \overline{DC}$, $\overline{BA} \perp \overline{AC}$, $\overline{CD} \perp \overline{DB}$

PROVE: $\triangle ABC \cong \triangle DCB$



Solution

Redraw the triangles so they are side by side with the corresponding parts in the same position. Mark the given information in the diagram.



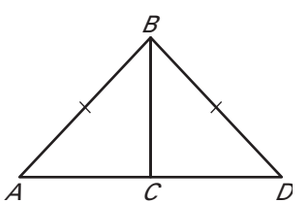
	Statements	Reasons
	1. $\overline{BA} \perp \overline{AC}$, $\overline{CD} \perp \overline{DB}$	**1.** Given
	2. $\angle A$ and $\angle D$ are right angles.	**2.** Definition of $\perp$ lines
	3. $\triangle ABC$ and $\triangle DCB$ are right triangles.	**3.** Definition of a right triangle
H	**4.** $\overline{CB} \cong \overline{BC}$	**4.** Reflexive Property of Congruence
L	**5.** $\overline{AB} \cong \overline{DC}$	**5.** Given
	6. $\triangle ABC \cong \triangle DCB$	**6.** HL Congruence Theorem

Exercises for Example 2

Write a proof.

4. **GIVEN:** $\overline{AB} \cong \overline{DB}$, $\overline{BC} \perp \overline{AD}$

PROVE: $\triangle ABC \cong \triangle DBC$



5. **GIVEN:** $m\angle JKL = m\angle MLK = 90°$

$\overline{JL} \cong \overline{MK}$

PROVE: $\overline{JK} \cong \overline{ML}$