Name ____________________ Date ____________

LESSON 4.5

# Study Guide

*For use with pages 249–255*

**GOAL** **Use two more methods to prove congruences.**

## Vocabulary

A **flow proof** uses arrows to show the flow of a logical argument.

**Postulate 21 Angle-Side-Angle (ASA) Congruence Postulate:** If two angles and the included side of one triangle are congruent to two angles and the included side of a second triangle, then the two triangles are congruent.

**Theorem 4.6 Angle-Angle-Side (AAS) Congruence Theorem:** If two angles and a non-included side of one triangle are congruent to two angles and the corresponding non-included side of a second triangle, then the two triangles are congruent.

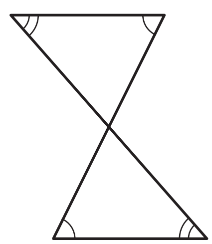


**EXAMPLE 1** 

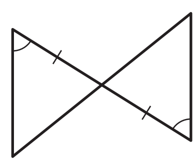
## Identify congruent triangles

**Can the triangles be proven congruent with the information given in the diagram? If so, state the postulate or theorem you would use.**

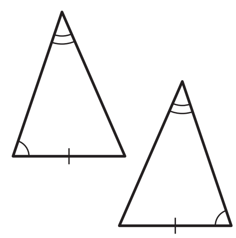
**a.**



**b.**



**c.**



**Solution**

**a.** The vertical angles are congruent, so three pairs of angles are congruent. There is not enough information to prove the triangles are congruent, because no sides are known to be congruent.

**b.** The vertical angles are congruent, so two pairs of angles and their included sides are congruent. The triangles are congruent by the ASA Congruence Postulate.

**c.** Two pairs of angles and a non-included pair of sides are congruent. The triangles are congruent by the AAS Congruence Theorem.

LESSON 4.5

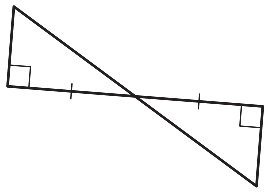
# Study Guide *continued*

*For use with pages 249–255*

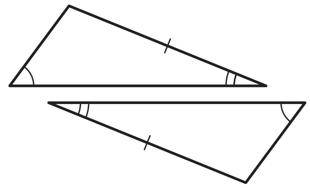
## Exercises for Example 1

**Can the triangles be proven congruent with the information given in the diagram? If so, state the postulate or theorem you would use.**

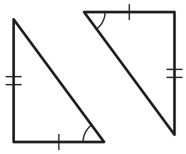
**1.**



**2.**



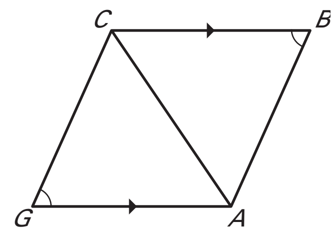
**3.**



**EXAMPLE 2**

## Write a flow proof

**In the diagram, ≥ *G* ≅ ≥ *B* and $\overline{CB}$∑∑$\overline{GA}$.**
**Write a flow proof to show △*GCA* ≅ △*BAC*.**




**Solution**

**GIVEN:** ≥ *G* ≅ ≥ *B*, $\overline{CB}$∑∑$\overline{GA}$

**PROVE:** △*GCA* ≅ △*BAC*

$\overline{CB}$∑∑$\overline{GA}$ (Given) → ≥ *BCA* ≅ ≥ *GAC* (Alternate Interior ⦞s)

≥ *G* ≅ ≥ *B* (Given)

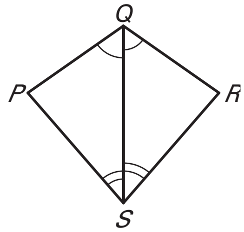
$\overline{AC}$ ≅ $\overline{AC}$ (Reflexive Property)

→ △*GCA* ≅ △*BAC* (AAS Congruence Theorem)

## Exercises for Example 2

**Write a flow proof to show that the triangles are congruent.**

**4.** **GIVEN:** ≥ *PQS* ≅ ≥ *RQS*
≥ *QSP* ≅ ≥ *QSR*
**PROVE:** △*PQS* ≅ △*RQS*




**5.** **GIVEN:** ≥ *OMN* ≅ ≥ *ONM*
≥ *LMO* ≅ ≥ *JNO*
**PROVE:** △*MJN* ≅ △*NLM*