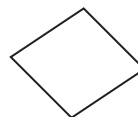
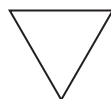
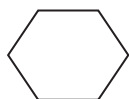




## Vocabulary

### Review

1. Cross out the figure(s) that are NOT *triangle(s)*.



2. A *triangle* is a polygon with 3 sides.
3. A *triangle* with a right angle is called a(n) right triangle.

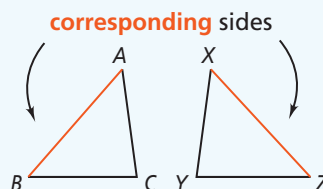
### Vocabulary Builder

**corresponding** (adjective) kawr uh SPAHN ding

**Other Word Forms:** correspond (verb); correspondence (noun)

**Definition:** **Corresponding** means similar in position, purpose, or form.

**Math Usage:** Congruent figures have congruent **corresponding** parts.



### Use Your Vocabulary

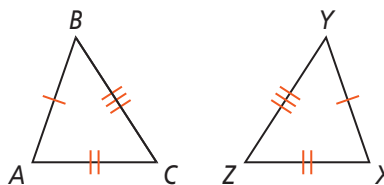
Draw a line from each part of  $\triangle ABC$  in Column A to the *corresponding* part of  $\triangle XYZ$  in Column B.

#### Column A

4.  $\overline{BC}$
5.  $\angle A$
6.  $\overline{AB}$
7.  $\angle C$
8.  $\overline{AC}$
9.  $\angle B$

#### Column B

- $\angle Z$
- $\angle Y$
- $\overline{YZ}$
- $\angle X$
- $\overline{XY}$
- $\overline{XZ}$



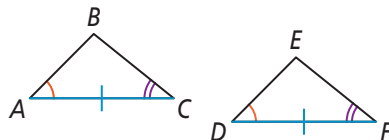
# Postulate 4-3 Angle-Side-Angle (ASA) Postulate

## Postulate

If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the two triangles are congruent.

If ...

$$\angle A \cong \angle D, \overline{AC} \cong \overline{DF}, \angle C \cong \angle F$$



Then ...

$$\triangle ABC \cong \triangle DEF$$

10. Explain how the ASA Postulate is different from the SAS Postulate.

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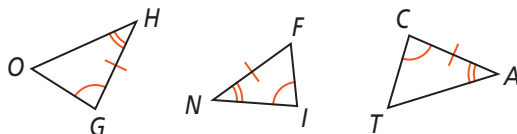


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## Problem 1 Using ASA

**Got It?** Which two triangles are congruent by ASA? Explain.



11. Name the triangles. List the vertices in corresponding order: list the vertex with the one arc first, the vertex with the two arcs second, and the third vertex last.

12.  $\angle G \cong \angle$    $\cong \angle$

13.  $\angle H \cong \angle$    $\cong \angle$

14.  $\overline{HG} \cong$    $\cong$

15. The congruent sides that are included between congruent angles are

and .

16. Write a congruence statement. Justify your reasoning.

$\triangle$    $\cong \triangle$

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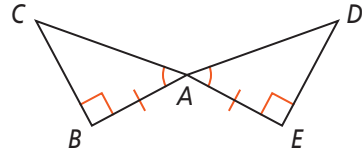


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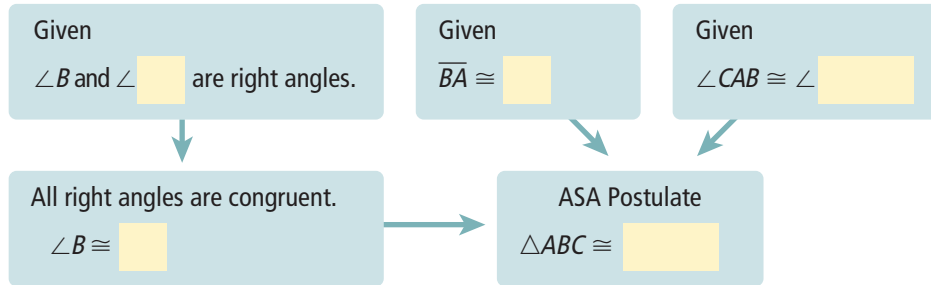


## Problem 2 Writing a Proof Using ASA

**Got It?** Given:  $\angle CAB \cong \angle DAE$ ,  $\overline{BA} \cong \overline{EA}$ ,  $\angle B$  and  $\angle E$  are right angles  
Prove:  $\triangle ABC \cong \triangle AED$



17. Complete the flow chart to prove  $\triangle ABC \cong \triangle AED$ .



Take note

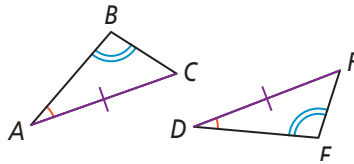
## Theorem 4-2 Angle-Angle-Side (AAS) Theorem

### Theorem

If two angles and a nonincluded side of one triangle are congruent to two angles and the corresponding nonincluded side of another triangle, then the two triangles are congruent.

If ...

$$\angle A \cong \angle D, \angle B \cong \angle E, \overline{AC} \cong \overline{DF}$$



Then ...

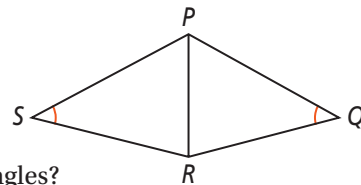
$$\triangle ABC \cong \triangle DEF$$

18. The nonincluded congruent sides of  $\triangle ABC$  and  $\triangle DEF$  are  and .



## Problem 3 Writing a Proof Using AAS

**Got It?** Given:  $\angle S \cong \angle Q$ ,  $\overline{RP}$  bisects  $\angle SRQ$   
Prove:  $\triangle SRP \cong \triangle QRP$



19. How do you know which angles in the diagram are corresponding angles?

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20. Complete the statements to prove  $\triangle SRP \cong \triangle QRP$ .

### Statements

1)  $\angle S \cong$

2)  $\overline{RP}$  bisects

3)  $\angle SRP \cong$

4)  $\overline{RP} \cong$

5)  $\triangle SRP \cong$

### Reasons

1) Given

2) Given

3) Definition of an angle bisector

4) Reflexive Property of Congruence

5) AAS



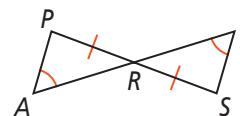
## Problem 4 Determining Whether Triangles Are Congruent

**Got It?** Are  $\triangle PAR$  and  $\triangle SIR$  congruent? Explain.

21. The congruence marks show that  $\angle A \cong$   and  $\overline{PR} \cong$  .

22. What other corresponding congruent parts exist? Explain.

23. Are  $\triangle PAR$  and  $\triangle SIR$  congruent? If so, what theorem proves them congruent?

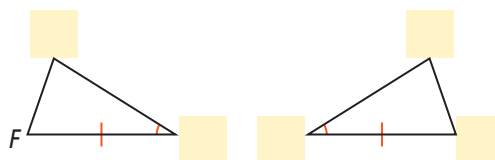


## Lesson Check • Do you UNDERSTAND?

**Reasoning** Suppose  $\angle E \cong \angle I$  and  $\overline{FE} \cong \overline{GI}$ . What else must you know in order to prove  $\triangle FDE$  and  $\triangle GHI$  are congruent by ASA? By AAS?

24. Label the diagram at the right.

25. To prove the triangles congruent by ASA, what do you need?



26. To prove the triangles congruent by AAS, what do you need?

27. If you want to use ASA,  $\angle$   and  $\angle$   must also be congruent.

28. If you want to use AAS,  $\angle$   and  $\angle$   must also be congruent.



## Math Success

Check off the vocabulary words that you understand.

☐ included

☐ nonincluded

☐ corresponding

Rate how well you can use ASA and AAS.

