NAME _____ DATE _____ PERIOD ____

4-5 Study Guide and Intervention

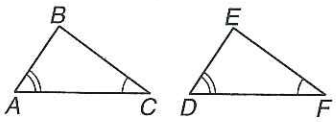
Proving Congruence—ASA, AAS

ASA Postulate The Angle-Side-Angle (ASA) Postulate lets you show that two triangles are congruent.

ASA 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 triangles are congruent.

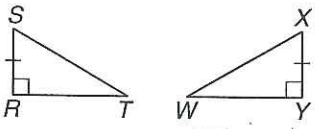
Example **Find the missing congruent parts so that the triangles can be proved congruent by the ASA Postulate. Then write the triangle congruence.**

a.



Two pairs of corresponding angles are congruent, $\angle A \cong \angle D$ and $\angle C \cong \angle F$. If the included sides $\overline{AC}$ and $\overline{DF}$ are congruent, then $\triangle ABC \cong \triangle DEF$ by the ASA Postulate.

b.

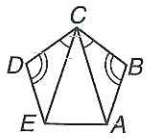


$\angle R \cong \angle Y$ and $\overline{SR} \cong \overline{XY}$. If $\angle S \cong \angle X$, then $\triangle RST \cong \triangle YXW$ by the ASA Postulate.

Exercises

What corresponding parts must be congruent in order to prove that the triangles are congruent by the ASA Postulate? Write the triangle congruence statement.

1.



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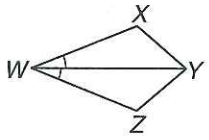
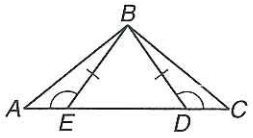
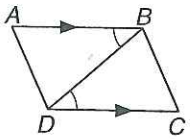


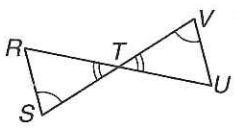
3.



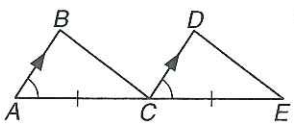
4.



5.



6.



Lesson 4-5

NAME _____ DATE _____ PERIOD ____

4-5 Study Guide and Intervention *(continued)*

Proving Congruence—ASA, AAS

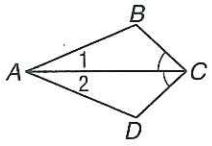
AAS Theorem Another way to show that two triangles are congruent is the Angle-Angle-Side (AAS) Theorem.

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

You now have five ways to show that two triangles are congruent.

- definition of triangle congruence
- SSS Postulate
- SAS Postulate
- ASA Postulate
- AAS Theorem

Example **In the diagram, $\angle BCA \cong \angle DCA$. Which sides are congruent? Which additional pair of corresponding parts needs to be congruent for the triangles to be congruent by the AAS Postulate?**



$\overline{AC} \cong \overline{AC}$ by the Reflexive Property of congruence. The congruent angles cannot be $\angle 1$ and $\angle 2$, because $\overline{AC}$ would be the included side. If $\angle B \cong \angle D$, then $\triangle ABC \cong \triangle ADC$ by the AAS Theorem.

Exercises

In Exercises 1 and 2, draw and label $\triangle ABC$ and $\triangle DEF$. Indicate which additional pair of corresponding parts needs to be congruent for the triangles to be congruent by the AAS Theorem.

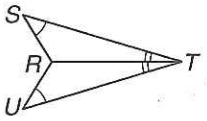
1. $\angle A \cong \angle D$; $\angle B \cong \angle E$

2. $BC \cong EF$; $\angle A \cong \angle D$

3. Write a flow proof.

Given: $\angle S \cong \angle U$; $\overline{TR}$ bisects $\angle STU$.

Prove: $\angle SRT \cong \angle URT$



NAME _____ DATE _____ PERIOD ____

4-5 Study Guide and Intervention

Proving Congruence—ASA, AAS

ASA Postulate The Angle-Side-Angle (ASA) Postulate lets you show that two triangles are congruent.

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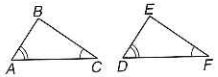
Example **Find the missing congruent parts so that the triangles can be proved congruent by the ASA Postulate. Then write the triangle congruence.**

a. 

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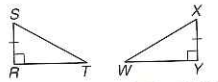
b. 

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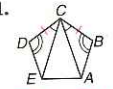
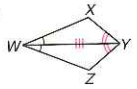
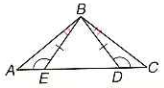
1. 

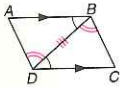
$\overline{DC} \cong \overline{BC}$; $\triangle CDE \cong \triangle CBA$

2. 

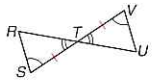
$\overline{WY} \cong \overline{WY}$; $\angle XYW \cong \angle ZYW$; $\triangle WXY \cong \triangle WZY$

3. 

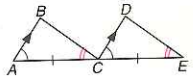
$\angle ABE \cong \angle CBD$; $\triangle ABE \cong \triangle CBD$

4. 

$\overline{BD} \cong \overline{DB}$; $\angle ADB \cong \angle CBD$; $\triangle ABD \cong \triangle CDB$

5. 

$\overline{ST} \cong \overline{VT}$; $\triangle RST \cong \triangle UVT$

6. 

$\angle ACB \cong \angle E$; $\triangle ABC \cong \triangle CDE$

Lesson 4-5

NAME _____ DATE _____ PERIOD ____

4-5 Study Guide and Intervention *(continued)*

Proving Congruence—ASA, AAS

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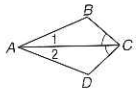

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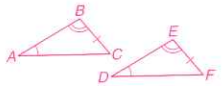
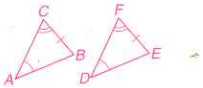


If $\overline{BC} \cong \overline{EF}$ (or if $\overline{AC} \cong \overline{DF}$), then $\triangle ABC \cong \triangle DEF$ by the AAS Theorem.

2. $BC \cong EF$; $\angle A \cong \angle D$



If $\angle C \cong \angle F$ (or if $\angle B \cong \angle E$), then $\triangle ABC \cong \triangle DEF$ by the AAS Theorem.

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