# Geometry Lesson 28

Date: _____

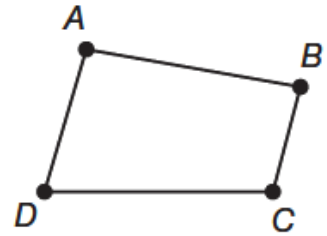Objective: TSW show triangles are congruent using SAS.

Period: _____

_____ Angle - The angle formed by two adjacent sides of a polygon.

_____ Side - The common side of two consecutive angles of a polygon.

**Example 1 Identifying Included Angles and Sides**

What is the included side of ∠A and ∠B? What is the included angle of $\overline{BC}\ and\ \overline{CD}$?

SOLUTION

> **Caution**
>
> In the SAS Postulate, the included angle is the angle that is formed by the two congruent sides. Remember that in the SAS Postulate, the A is between the two S's, showing that the angle is between the two sides.
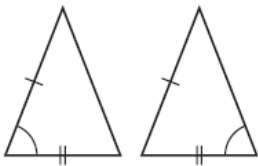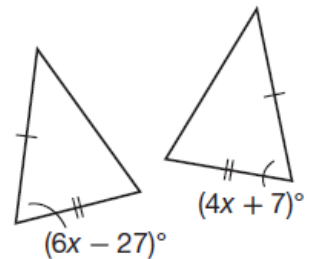
Side-Angle-Side (SAS) Triangle Congruence Postulate - If two sides and the included angle of one triangle are congruent to two sides and the included angle of another triangle, then the triangles are congruent by side-angle-side congruence.

**Example 2 Using the SAS Postulate to Determine Congruency**

Determine whether the pair of triangles is congruent by the SAS Postulate.

SOLUTION

**Example 3 Finding Missing Angle Measures**

Find the value of *x* that makes the triangles congruent.
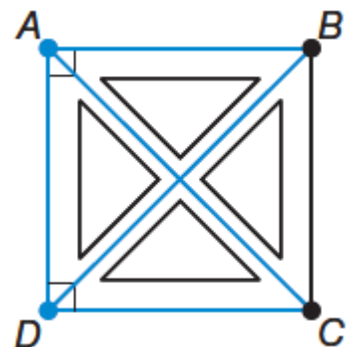
SOLUTION

$(4x + 7)°$

$(6x - 27)°$

The triangle congruence postulates and theorems will be used as justifications in proofs. An example is given below.

**Example 4 Using the SAS Postulate in a Proof**

Triangles make an "X" design on this barn door. Use the SAS Postulate to write a two-column proof.

Given: $\overline{AB} \cong \overline{DC}$

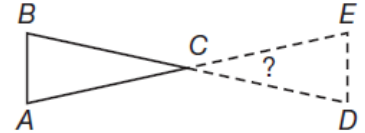Prove: $\triangle ABD \cong \triangle DCA$

SOLUTION

1.

2.

3.

4.

Example 5 Application: Design

An artist is designing patterned wallpaper made of congruent triangles. He starts by drawing $\triangle ABC$, shown below. He wants to design a mirror image of $\triangle ABC$, shown as $\triangle EDC$ below. How can he make sure that this new triangle is congruent to $\triangle ABC$ using the SAS pattern of triangle congruence?
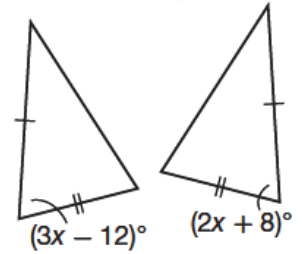
SOLUTION

You Try!!!!!

a. Determine whether the pair of triangles is congruent by the SAS Postulate.

b. Find the value of $x$ that makes the triangles congruent.

$(3x - 12)°$ $(2x + 8)°$

c. Use the SAS Postulate to prove $\triangle WXY \cong \triangle WZY$ if $\overline{WZ} \cong \overline{WX}$ and $\angle ZWY \cong \angle XWY$.