

5.1 Apply Congruence to Triangles

Vocabulary

Congruent figures



Congruent
(\cong)

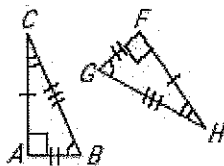


Similar
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Example 1: Identify congruent parts

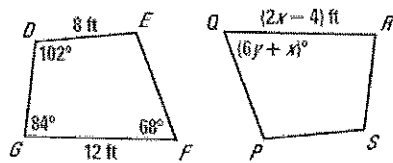
1. Identify all pairs of congruent corresponding parts. Then write a congruence statement.



Sides	Angles	Congruence Statement
$\overline{AC} \cong \overline{FH}$	$\angle ACB \cong \angle FHG$	
$\overline{AB} \cong \overline{FG}$	$\angle CBA \cong \angle HGF$	
$\overline{CB} \cong \overline{HG}$	$\angle CAB \cong \angle HFG$	$\triangle ABC \cong \triangle FGH$

Example 2: Use properties of congruent figures

1. $DEFG \cong SPQR$. Find the values of x and y .



$$6y + x = 68, \quad 2x - 4 = 12$$

$$6y + 8 = 68 \quad \leftarrow \quad x = 8$$

$$y = 10$$

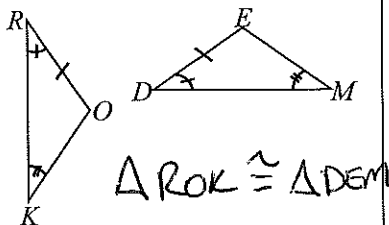
WRITING A CONGRUENCE STATEMENT

- Pick a marked angle (or mark two \cong angles)
- Name 1st triangle in any order (start with the marked angle)
- Match the second triangle (start with the corresponding marked angle)

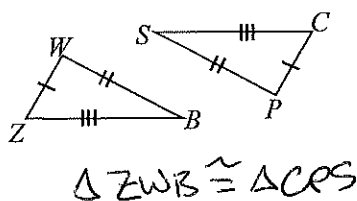
NOTE: Order matters!!

Example 3: Congruence statements

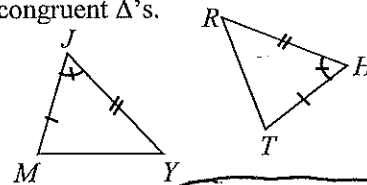
1. Write a congruence statement for the congruent triangles below.



2. Write a congruence statement for the congruent triangles below.

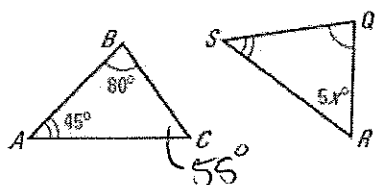


3. Choose the correct congruence statement for the congruent Δ 's.



- A. $\triangle MYJ \cong \triangle RTH$ B. $\triangle YJM \cong \triangle RHT$
 C. $\triangle JYM \cong \triangle HTR$ D. $\triangle MYJ \cong \triangle HRT$

4. Write a congruence statement for the two congruent triangles shown below. Then solve for x .



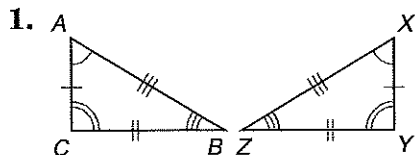
$\triangle CBA \cong \triangle RQS$

$5x = 55 \Rightarrow x = 11$

Skills Practice

Congruent Triangles

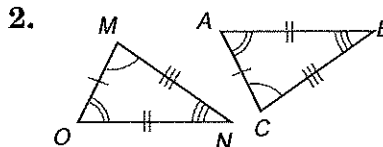
Name the congruent angles and sides for each pair of congruent triangles. Then draw arcs and slash marks to show the congruent angles and sides.



$$\triangle ACE \cong \triangle XYZ$$

$$\angle A \cong \angle X, \angle C \cong \angle Y, \angle E \cong \angle Z,$$

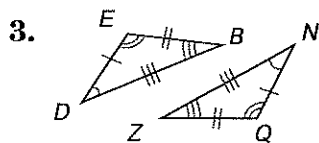
$$\overline{AC} \cong \overline{XY}, \overline{CE} \cong \overline{YZ}, \overline{AE} \cong \overline{XZ}$$



$$\triangle MNO \cong \triangle CBA$$

$$\angle M \cong \angle C, \angle N \cong \angle B, \angle O \cong \angle A,$$

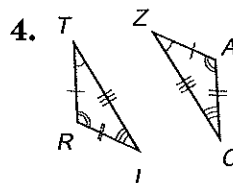
$$\overline{MN} \cong \overline{CB}, \overline{NO} \cong \overline{BA}, \overline{MO} \cong \overline{CA}$$



$$\triangle BDE \cong \triangle ZNQ$$

$$\angle B \cong \angle Z, \angle D \cong \angle N, \angle E \cong \angle Q,$$

$$\overline{BD} \cong \overline{ZN}, \overline{DE} \cong \overline{NQ}, \overline{BE} \cong \overline{ZQ}$$

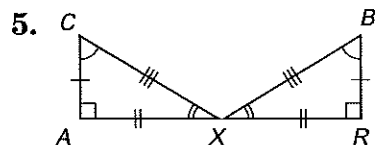


$$\triangle TRI \cong \triangle ZAC$$

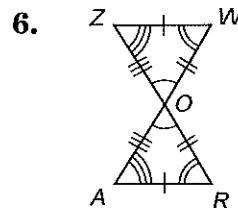
$$\angle T \cong \angle Z, \angle R \cong \angle A, \angle I \cong \angle C,$$

$$\overline{TR} \cong \overline{ZA}, \overline{RI} \cong \overline{AI}, \overline{TI} \cong \overline{ZI}$$

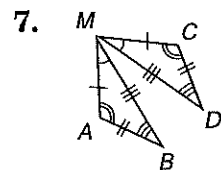
Complete each congruence statement.



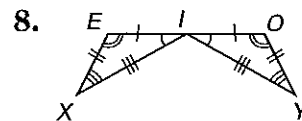
$$\triangle CAX \cong \triangle \quad ? \quad BRX$$



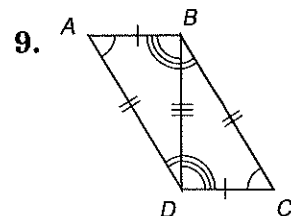
$$\triangle ZWO \cong \triangle \quad ? \quad ARO$$



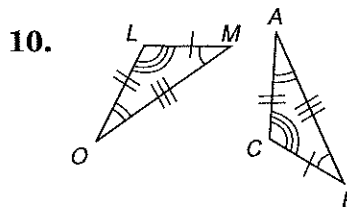
$$\triangle MAB \cong \triangle \quad ? \quad MCD$$



$$\triangle EIX \cong \triangle \quad ? \quad OIY$$



$$\triangle ABD \cong \triangle \quad ? \quad CDB$$



$$\triangle LMO \cong \triangle \quad ? \quad CBA$$