

I. What are Congruent Polygons?

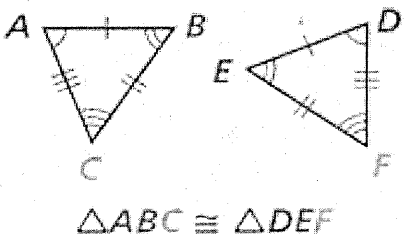
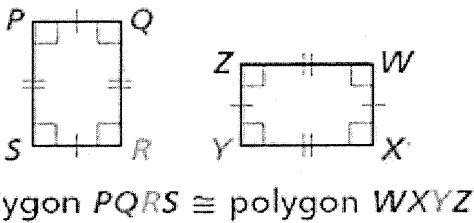
Geometric figures are **congruent** if they have:

1. the same size
2. the same shape

Corresponding Angles and Sides are in the same position in polygons with an equal number of sides.

CONCLUSION: Two polygons are **congruent polygons** iff their corresponding angles and sides are congruent.

PROPERTIES OF CONGRUENT POLYGONS

Diagram	Corresponding Angles	Corresponding Sides
 <p>$\triangle ABC \cong \triangle DEF$</p>	$\angle A \cong \angle D$ $\angle B \cong \angle E$ $\angle C \cong \angle F$	$\overline{AB} \cong \overline{DE}$ $\overline{AC} \cong \overline{DF}$ $\overline{BC} \cong \overline{EF}$
 <p>polygon $PQRS \cong$ polygon $WXYZ$</p>	$\angle P \cong \angle W$ $\angle Q \cong \angle X$ $\angle S \cong \angle Z$ $\angle R \cong \angle Y$	$\overline{PQ} \cong \overline{WX}$ $\overline{QR} \cong \overline{XY}$ $\overline{RS} \cong \overline{YZ}$ $\overline{PS} \cong \overline{WZ}$

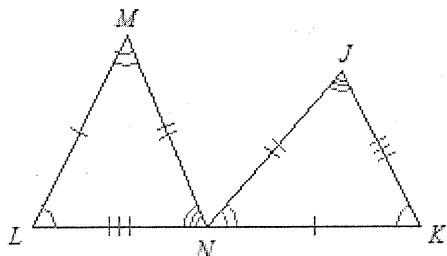
II. Naming Congruent Corresponding Parts:

Example: Given $\triangle PQR \cong \triangle STW$. Identify all pairs of congruent corresponding parts.

$$\begin{array}{ll} \angle P \cong \angle S & \overline{PQ} \cong \overline{ST} \\ \angle Q \cong \angle T & \overline{QR} \cong \overline{TW} \\ \angle R \cong \angle W & \overline{PR} \cong \overline{SW} \end{array}$$

Example: Write a statement that indicates that the triangles in each pair are congruent.

$$\triangle LMN \cong \triangle KNJ$$



Example: For two triangles, the following corresponding parts are given:

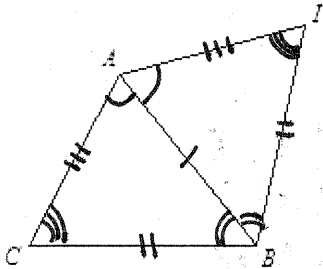
$$\overline{AB} \cong \overline{PQ}, \overline{BC} \cong \overline{QR}, \overline{AC} \cong \overline{PR}, \angle A \cong \angle P, \angle B \cong \angle Q, \angle C \cong \angle R$$

Write THREE DIFFERENT congruence statements.

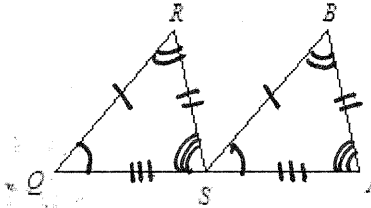
$$\begin{aligned} \triangle ABC &\cong \triangle PQR \\ \triangle BAC &\cong \triangle QPR \\ \triangle CAB &\cong \triangle RPQ \end{aligned}$$

Example: Mark the angles and sides of each pair of triangles to indicate that they are congruent.

1) $\triangle ABC \cong \triangle ABI$



2) $\triangle QRS \cong \triangle SBA$

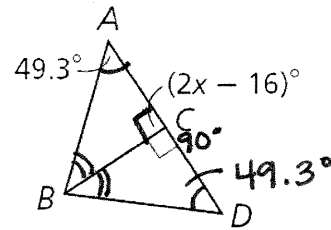


III. Applications of Corresponding Parts of Congruent Triangles

Example: Given: $\triangle ABC \cong \triangle DBC$.

Find the value of x and $m\angle DBC$.

$$\begin{aligned} 2x - 16 &= 90 & m\angle DBC &= 40.7^\circ \\ 2x &= 106 \\ x &= 53 \end{aligned}$$



DO THIS ONE FIRST!

Example: Given $\triangle ABC \cong \triangle DEF$

1) Find x .

$$2x - 2 = 6$$

2) Find $m\angle E$.

$$2x = 8$$

$$x = 4$$

$$m\angle E = 53^\circ$$

