

Goals aligned with Common Core Standards:

You will name and use corresponding parts of congruent triangles are congruent.

You will prove triangle congruence using the definition of congruence.

You will identify which type of transformations are congruent transformations.

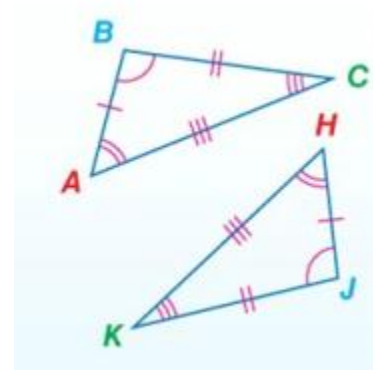
4.3 Congruent (\cong) Triangles

- Polygons that are the same size and shape are \cong polygons
- Each Δ has 3 angle and 3 sides
- If all 6 corresponding (matching) parts of 2 Δ 's are \cong , then the Δ 's are \cong .

Corresponding Angles
 $\angle A \cong \angle H$ $\angle B \cong \angle J$ $\angle C \cong \angle K$

Corresponding Sides
 $\overline{AB} \cong \overline{HJ}$ $\overline{BC} \cong \overline{JK}$ $\overline{AC} \cong \overline{HK}$

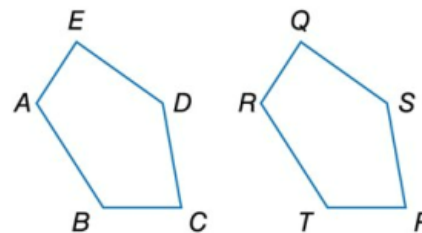
Congruence Statement
 $\Delta ABC \cong \Delta HJK$



Example:

Show that the polygons are congruent by identifying all of the congruent corresponding parts. Then write a congruence statement.

$$ABCDE \cong RTPSQ$$



$$\angle A \cong \angle R, \angle B \cong \angle T, \angle C \cong \angle P, \angle D \cong \angle S, \angle E \cong \angle Q$$

$$\overline{AB} \cong \overline{RT}, \overline{BC} \cong \overline{TP}, \overline{CD} \cong \overline{PS}, \overline{DE} \cong \overline{SQ}, \overline{AE} \cong \overline{RQ}$$

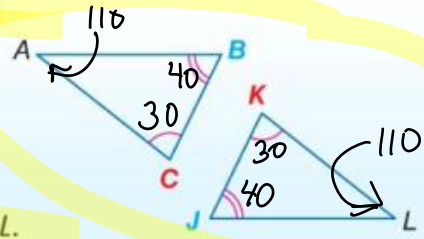
- CPCTC (Corresponding Parts of \cong Δ 's are \cong):
 2 Δ 's are \cong iff their corresponding parts are \cong .

Theorem 4.3

Third Angles Theorem

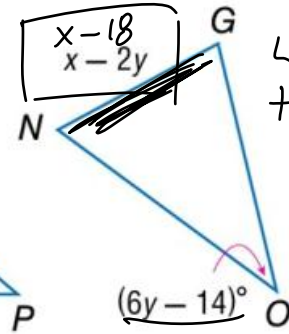
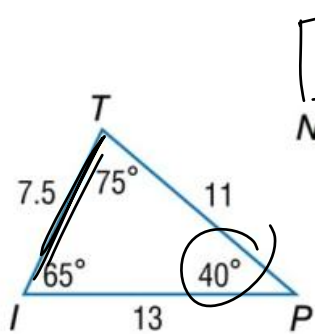
Words If two angles of one triangle are congruent to two angles of a second triangle, then the third angles of the triangles are congruent.

Example If $\angle C \cong \angle K$ and $\angle B \cong \angle J$, then $\angle A \cong \angle L$.



In the diagram, $\triangle ITP \cong \triangle NGO$. Find the values of x and y .

$$\begin{aligned} x - 18 &= 7.5 \\ + 18 &+ 18 \\ \hline x &= 25.5 \end{aligned}$$



$$\begin{aligned} 40 &= 6y - 14 \\ + 14 &+ 14 \\ \hline 54 &= 6y \\ \frac{54}{6} &= \frac{6y}{6} \\ 9 &= y \end{aligned}$$

Reflexive Property of Triangle Congruence

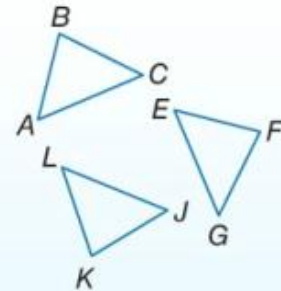
$$\triangle ABC \cong \triangle ABC$$

Symmetric Property of Triangle Congruence

If $\triangle ABC \cong \triangle EFG$, then $\triangle EFG \cong \triangle ABC$.

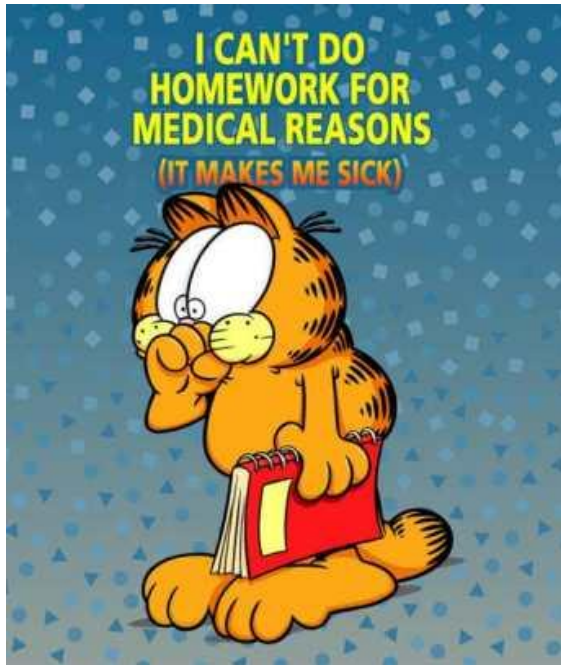
Transitive Property of Triangle Congruence

If $\triangle ABC \cong \triangle EFG$ and $\triangle EFG \cong \triangle JKL$, then $\triangle ABC \cong \triangle JKL$.



Homework:

4.3 Pg. 257 #11-16, 18, 22, 28-30, 37, 39, 48-51.



#39 challenge
question!