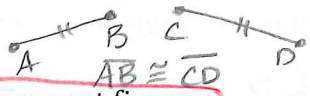
TOPIC: **4.2 Apply Congruence and Triangles**	NAME: Mrs. H DATE: Key

ESSENTIAL QUESTION: What are congruent figures?

QUESTIONS:

Vocabulary:

congruent segments — Line segments w/ same length



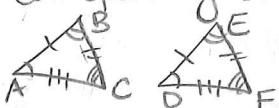
$\overline{AB} \cong \overline{CD}$

congruent angles — Angles that have the same measure

$\angle A \cong \angle B$

congruent figures — figures w/ same size & shape

corresponding sides & $\angle$'s $\cong$



$\angle A \cong \angle D$ $\quad \overline{AB} \cong \overline{DE}$

$\angle B \cong \angle E$ $\quad \overline{BC} \cong \overline{EF}$

$\angle C \cong \angle F$ $\quad \overline{AC} \cong \overline{DF}$

$\triangle ABC \cong \triangle DEF$

corresponding parts — Sides or $\angle$'s that have the same relative position in 2 figures

$\angle A$ & $\angle J$ correspond

$\overline{AC}$ & $\overline{JL}$

A1. In the diagram, $\Delta EFG \cong \Delta OPQ$. Complete the statement.

a. $\overline{EF} \cong$ $\overline{OP}$

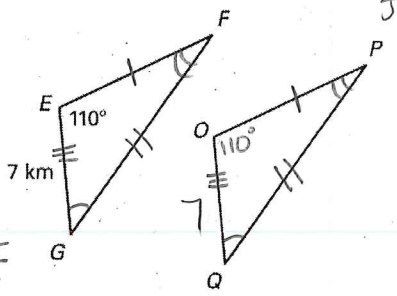
b. $\angle P \cong$ $\angle F$

c. $\angle G \cong$ $\angle Q$

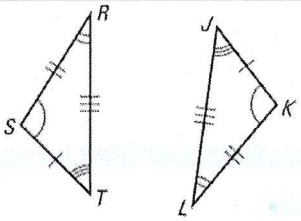
d. $m\angle O =$ $110°$

e. $QO =$ 7 km

f. $\Delta QOP \cong$ ΔGEF



A2. Write a congruence statement for the triangles. Identify all pairs of corresponding congruent parts



$\Delta SRT \cong \Delta KLJ$

$\overline{SR} \cong \overline{KL}$ $\quad \angle S \cong \angle K$

$\overline{RT} \cong \overline{LJ}$ $\quad \angle R \cong \angle L$

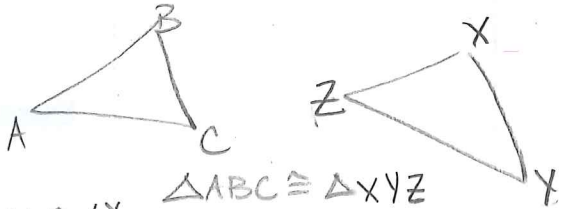
$\overline{ST} \cong \overline{KJ}$ $\quad \angle T \cong \angle J$

SUMMARY:

Same shape & size

corresponding sides are $\cong$

corresponding $\angle$'s are $\cong$



$\Delta ABC \cong \Delta XYZ$

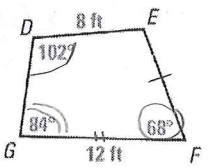
$\angle A \cong \angle X$ $\quad \overline{AB} \cong \overline{XY}$

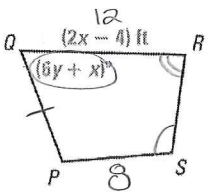
$\angle B \cong \angle Y$ $\quad \overline{BC} \cong \overline{YZ}$

$\angle C \cong \angle Z$ $\quad \overline{CA} \cong \overline{ZX}$

QUESTIONS:

A3. In the diagram below, $DEFG \cong SPQR$. Find the values of x and y.





$2x-4=12$

$2x=16$

$x=8$

$6y+x=68$

$6y+8=68$

$6y=60$

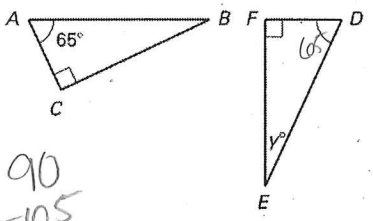
$y=10$

Theorem 4.3: Third Angles Theorem

If two angles of one triangle are congruent to to two ∠s of another triangle, then the third angles are also congruent.

A4. Find the value of y.

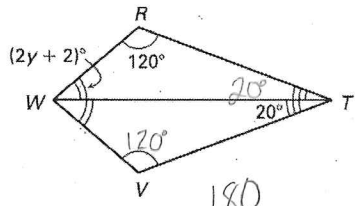
a.



$90-105=25$

$y=25°$

b.



$2y+2=40$

$2y=38$

$y=19$

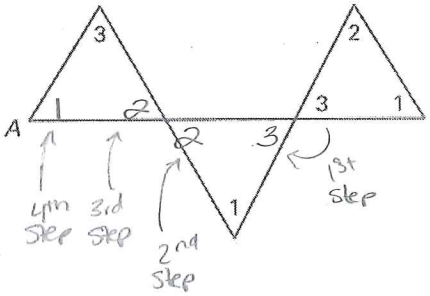
$180-120-20=40$

A3. Complete the statement ...

$\angle A \cong$ ∠1 because

VA, Third ∠s Thm

VA, Third ∠s Thm



Theorem 4.4: Properties of Congruent Triangles

Reflexive Property

For any triangle ABC, $\Delta ABC \cong$ ΔABC.

Symmetric Property

If $\Delta ABC \cong \Delta DEF$ then $\Delta DEF \cong \Delta ABC$.

Transitive Property

If $\Delta ABC \cong \Delta DEF$ and $\Delta DEF \cong \Delta JKL$, then $\Delta ABC \cong \Delta JKL$.