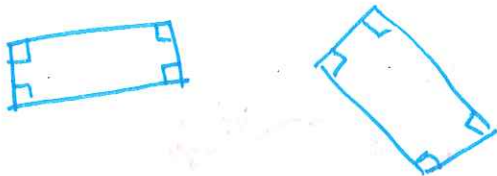


Learning Target(s): I can identify congruent parts of congruent triangles and prove that two figures are congruent
I can use the properties of congruent figures to solve problems about congruent figures

Notes: 4.2 Apply Congruence and Triangles

congruent: the polygons have the same size & shape

Examples of Congruent



Examples of Not Congruent



congruent figures: all the corresponding parts are congruent

corresponding parts: angles & sides

Ex. 1

Write a congruence statement for the triangles.

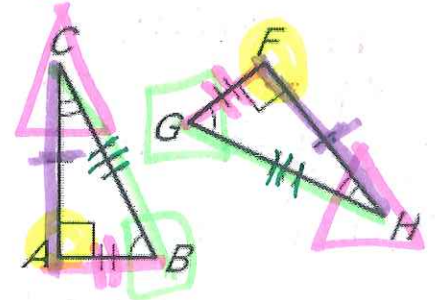
#order matters

Identify all pairs of congruent corresponding parts.

$$\triangle CAB \cong \triangle HFG$$

Corresponding angles:

$$\angle A \cong \angle F, \angle C \cong \angle H, \angle B \cong \angle G$$



Corresponding sides:

$$\overline{CA} \cong \overline{HF}, \overline{AB} \cong \overline{FG}, \overline{HG} \cong \overline{CB}$$

Ex. 2

In the diagram, $QRST \cong WXYZ$.

a) Find the value of x.

$$\begin{array}{r} 5x + 5 = 65 \\ -5 \quad -5 \\ \hline 5x = 60 \\ \frac{5x}{5} = \frac{60}{5} \end{array}$$

$$x = 12$$

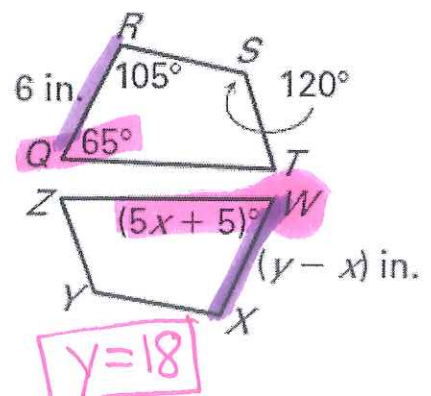
$$y - x = 6$$

$$y - 12 = 6$$

$$y = 18$$

b) Find the value of y.

$$\overline{WX} \cong \overline{QR}$$



$$y = 18$$

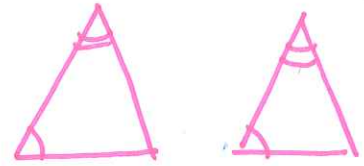
Third Angles Theorem

If 2 angles of one triangle are \cong

to 2 angles of another triangle, then the third

angles are also congruent.

if 2 \angle s \cong , then 3rd \angle s \cong

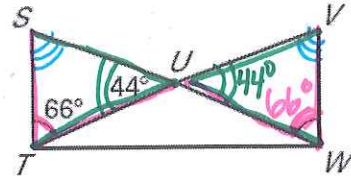


Ex. 3

Find $m\angle V$.

$$\begin{array}{r} 66 \\ + 44 \\ \hline 110 \end{array}$$

$$\begin{array}{r} 180 \\ - 110 \\ \hline 70^\circ = m\angle V \end{array}$$



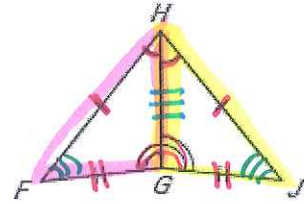
Ex. 4

Write a proof.

Given: $\overline{FH} \cong \overline{JH}$, $\overline{FG} \cong \overline{JG}$,

$\angle FHG \cong \angle JHG$, $\angle FGH \cong \angle JGH$

Prove: $\triangle FGH \cong \triangle JGH$



1. $\overline{FH} \cong \overline{JH}$, $\overline{FG} \cong \overline{JG}$

$\angle FHG \cong \angle JHG$,

$\angle FGH \cong \angle JGH$

2. $\angle HFG \cong \angle HJG$

3. $\overline{HG} \cong \overline{HG}$

4. $\triangle FGH \cong \triangle JGH$

1. Given

2. If 2 \angle s \cong , then 3rd \angle s \cong

3. Reflexive

4. If corr. parts \cong , then Δ s \cong

Properties of Congruent Triangles

Reflexive

For any triangle ABC $\triangle ABC \cong \triangle ABC$

Symmetric

If $\triangle ABC \cong \triangle DEF$, then $\triangle DEF \cong \triangle ABC$

Transitive

If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle JKL$, then $\triangle ABC \cong \triangle JKL$