HW Answers

SECTIONS 4.2

APPLY CONGUENCE AND TRIANGLES

Triangles

Corresponding angles

$\angle A \cong \angle P$

$\angle B \cong \angle Q$

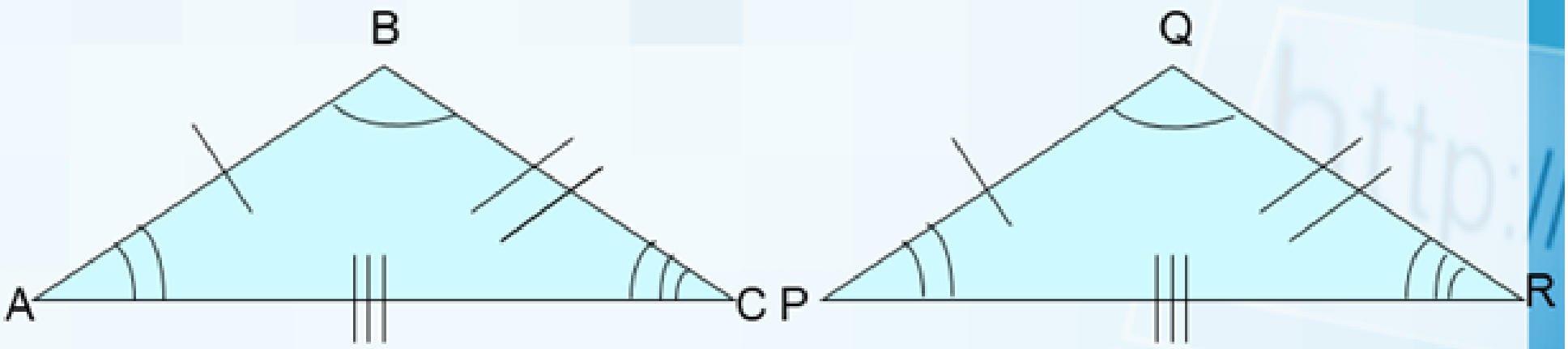
$\angle C \cong \angle R$

Corresponding Sides

$\overline{AB} \cong \overline{PQ}$

$\overline{BC} \cong \overline{QR}$

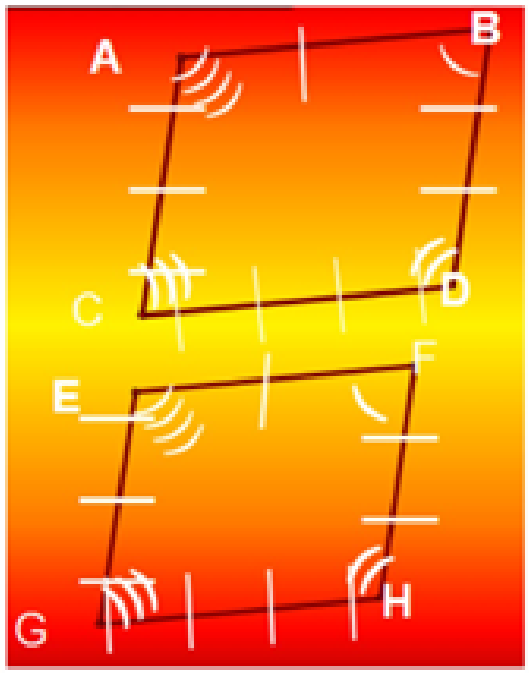
$\overline{CA} \cong \overline{RP}$



Congruent Figures

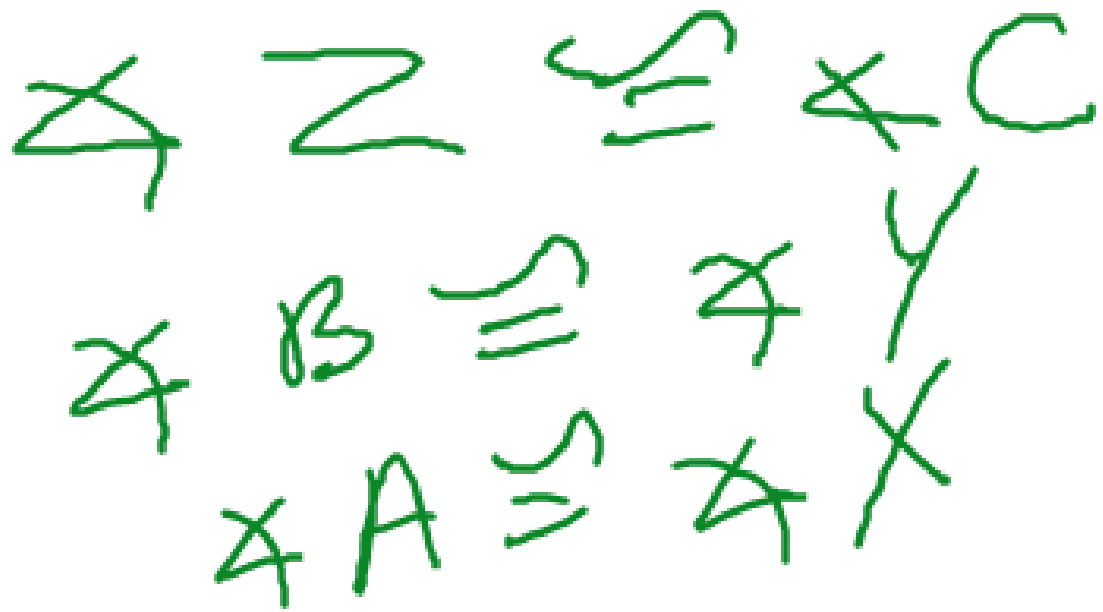
- 2 figures are congruent if they have the exact same size and shape

- When 2 figures are congruent the corresponding parts are also congruent (angles and sides)



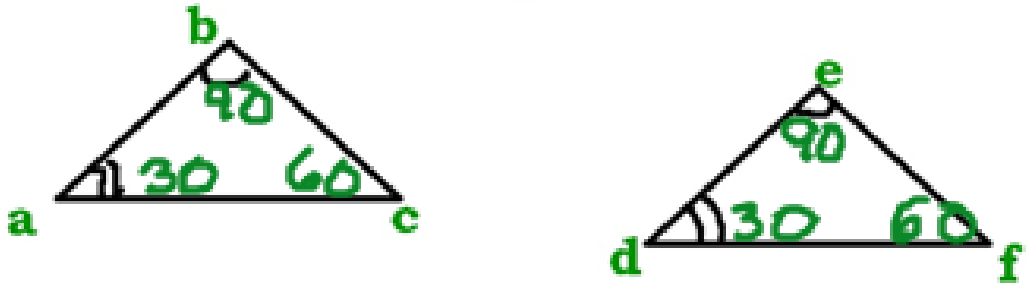
- Quad ABCD is congruent to Quad EFGH

- If Δ ABC is ≅ to Δ XYZ, which angle is ≅ to ∠C?



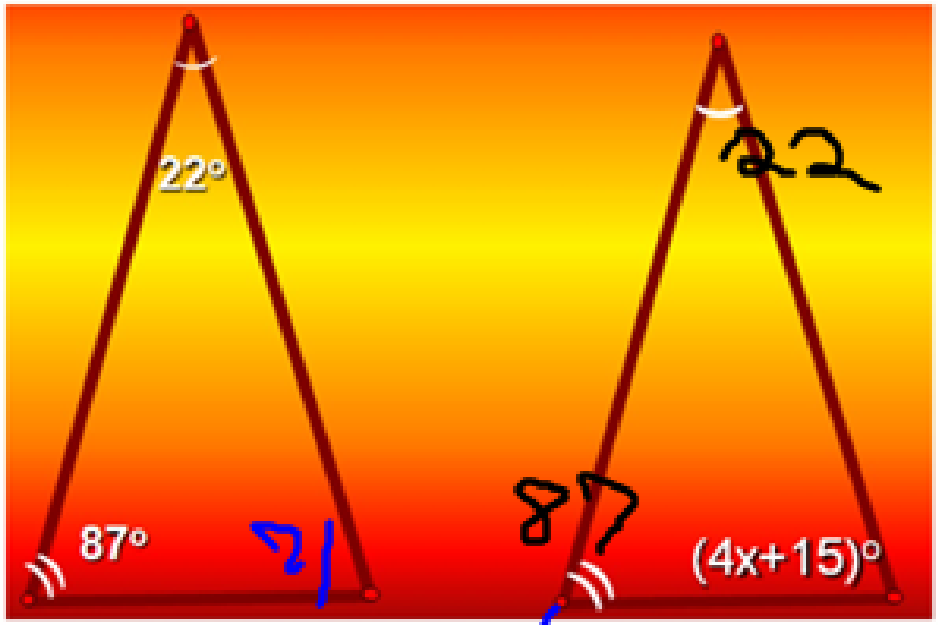
Theorem 4.3 Third Angles Theorem

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



If <A≅<D and <B≅<E, then <C≅<F

Example: Solve for x



$180-(22+87)=$

$180-109=71$

$4x+15=71$

$\boxed{x=14}$

$x+87+22=180$

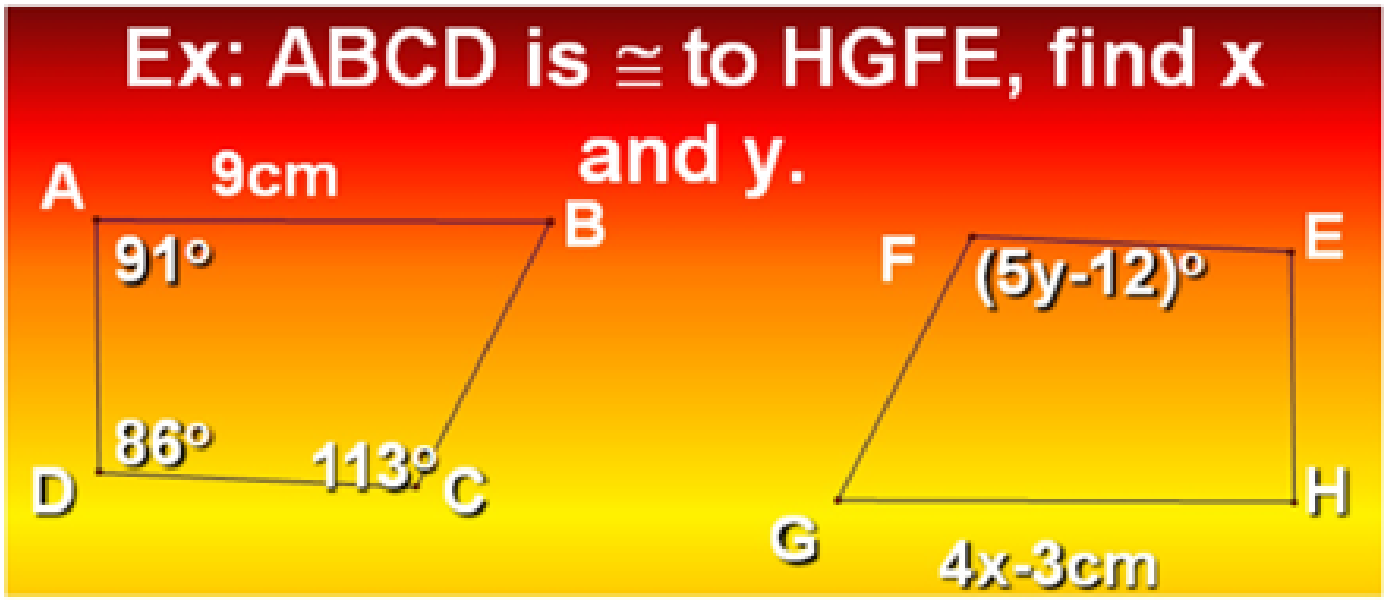
$x+109=180$

$x=71$

$4x+15=71$

$x=14$

Ex: ABCD is ≅ to HGFE, find x and y.



$4x-3=9$

$4x=12$

$x=3$

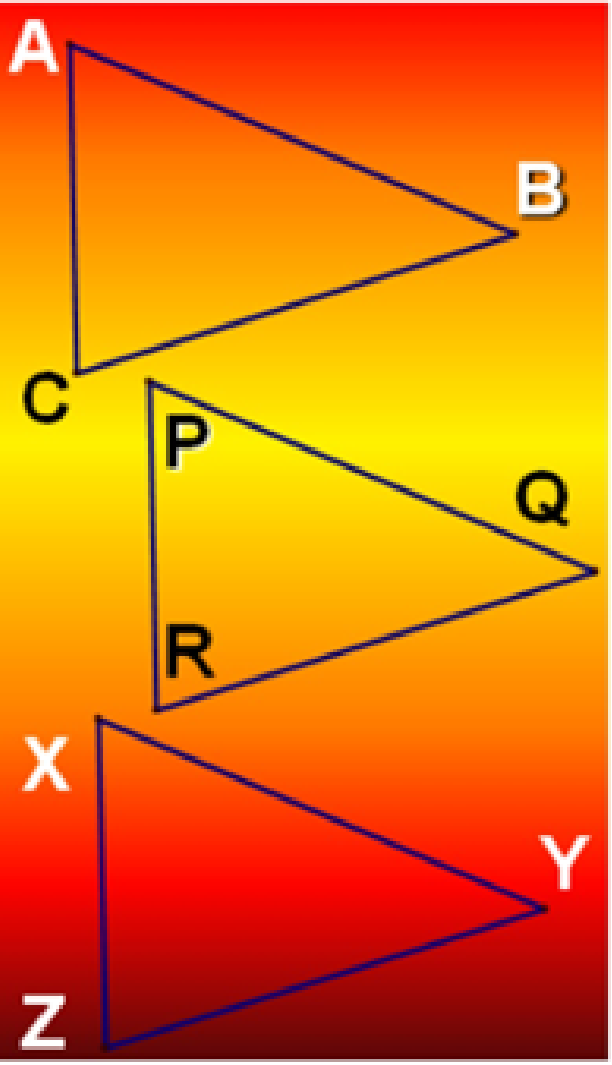
$5y-12=113$

$5y=125$

$y=25$

Theorem 4.4:
Properties of Congruent Triangles

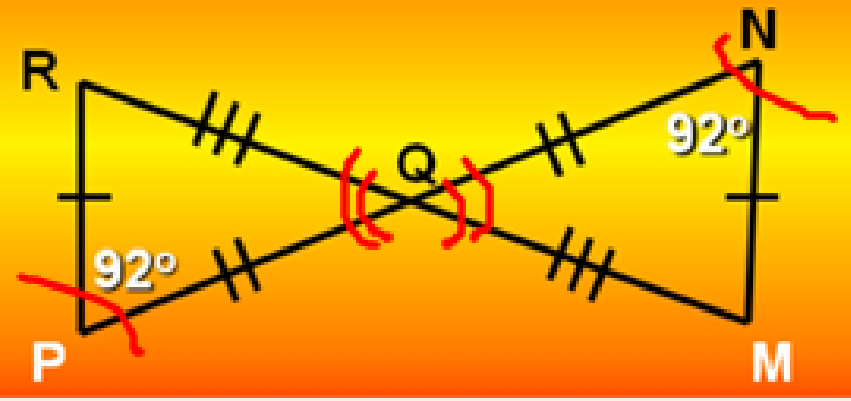
- **Reflexive prop of Δ ≅** - Every Δ is ≅ to itself (ΔABC ≅ ΔABC).
- **Symmetric prop of Δ ≅** - If ΔABC ≅ ΔPQR, then ΔPQR ≅ ΔABC.
- **Transitive prop of Δ ≅** - If ΔABC ≅ ΔPQR & ΔPQR ≅ ΔXYZ, then ΔABC ≅ ΔXYZ.



Proving Congruency
(yes, you can do this!)

Given: seg RP ≅ seg MN, seg PQ ≅ seg NQ , seg RQ ≅ seg MQ, m∠P=92° and m∠N is 92°.

Prove: ΔRQP ≅ ΔMQN



Statement	Reason
① $\overline{RP} \cong \overline{MN}$	① Given
$\overline{PQ} \cong \overline{NQ}$	
$\overline{RQ} \cong \overline{MQ}$	
$\angle P = 92$	
$\angle N = 92$	
② $\angle P \cong \angle N$	b/c they have the same measure. (def. of $\cong$ $\angle$s)
③ $\angle RQP \cong \angle NQM$	③ Vertical angles.
④ $\angle R \cong \angle M$	④ 3rd $\angle$s Theorem
⑤ $\triangle RQP \cong \triangle MQN$	⑤ Def. of $\cong$ $\triangle$s

Hint:
definition of congruent triangles:
all corresponding sides and corresponding angles are equal