4.2 Warm-Up:

1. When are two angles congruent?

If angle measures are the same.

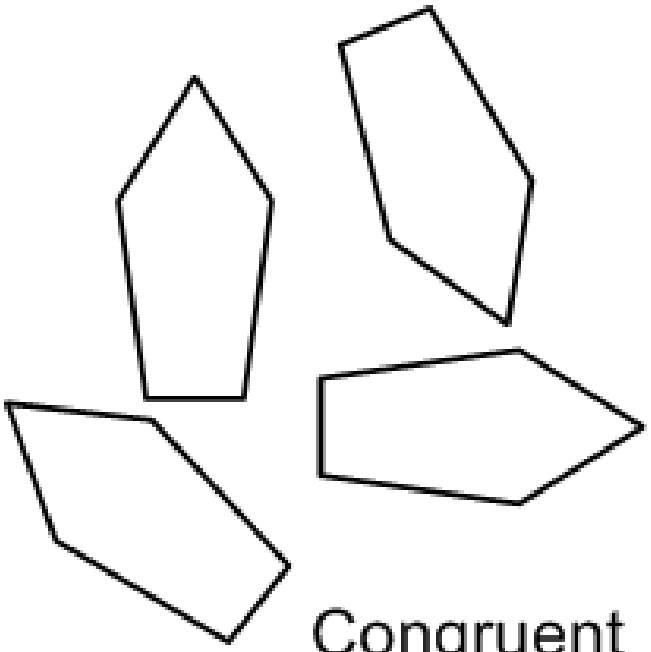
2. In $\triangle ABC$, if $m\angle A = 64°$ and $m\angle B = 71°$, what is $m\angle C$?

$64 + 71 + x = 180$.

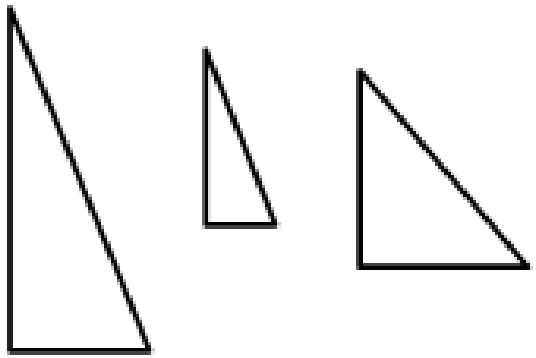
$x = 45°$

3. What property of angle congruence is illustrated by this statement? If $\angle A \cong \angle B$ and $\angle B \cong \angle C$, then $\angle A \cong \angle C$.

Transitive



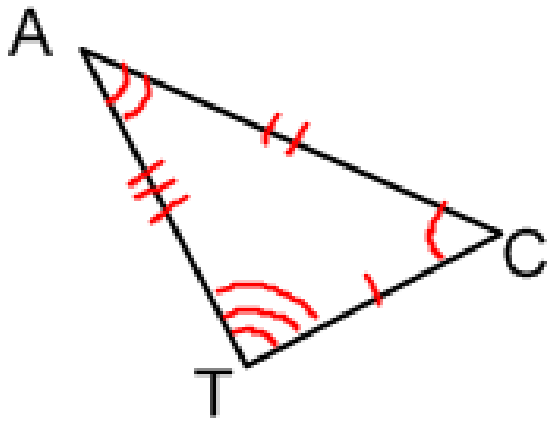
Congruent

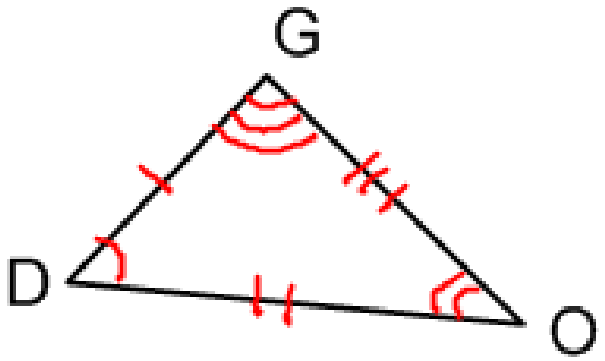


Not Congruent

congruent figures-all the parts of one figure are congruent to the corresponding parts(sides/angles) of the other figure.

pieces that match up





$\triangle TAC \cong \triangle GOD$

Congruence statement

Congruent figures

$\triangle ACT \cong \triangle ODG$

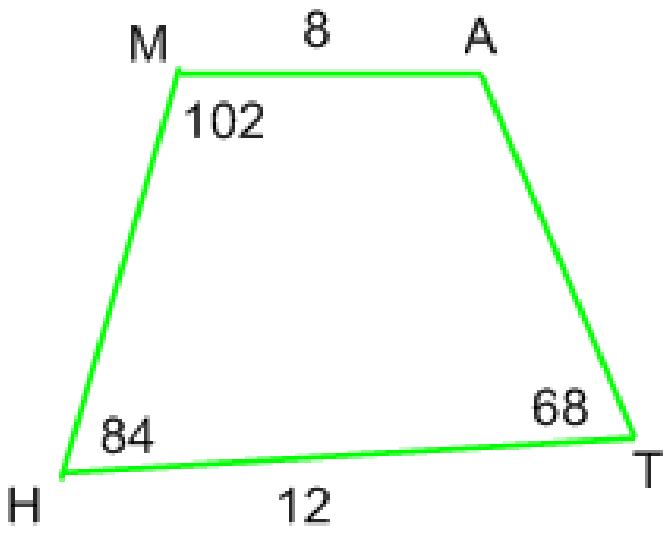
$\triangle DOG \cong \triangle CAT$

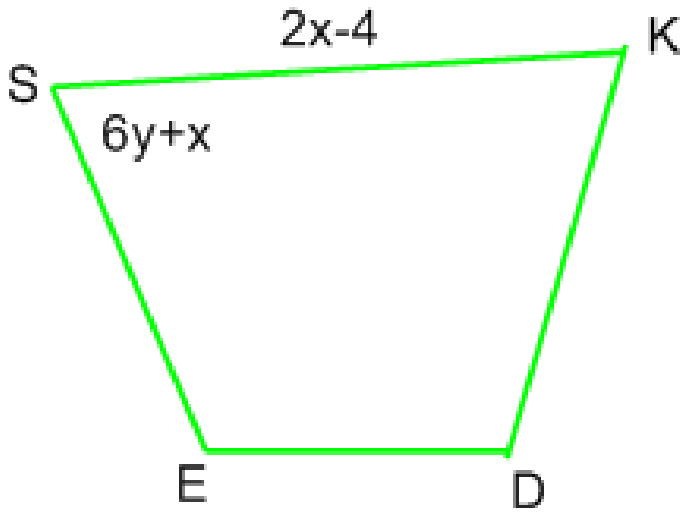
Congruent Angles

$\angle A \cong \angle O$, $\angle G \cong \angle T$, $\angle C \cong \angle D$

Congruent sides

$\overline{AC} \cong \overline{OD}$, $\overline{OG} \cong \overline{AT}$, $\overline{GD} \cong \overline{TC}$





THMA ≅ SKDE

Find x and y.

$\angle T \cong \angle S$

$6y + 8 = 68$

$6y = 60$

$y = 10$

$SK = TH$

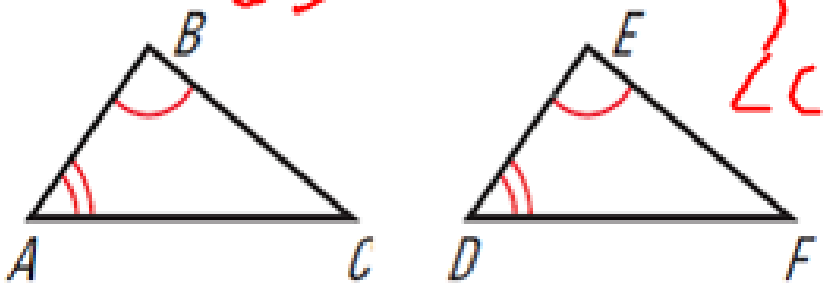
$2x - 4 = 12$

$2x = 16$

$x = 8$

Third Angle Thm

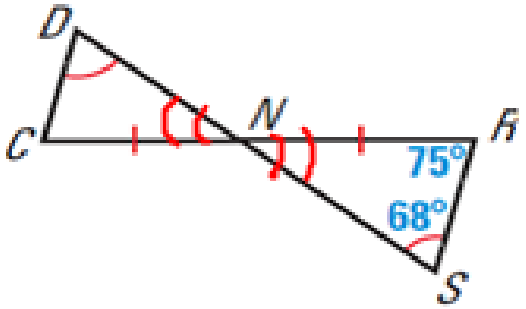
If $\angle A \cong \angle D$ & $\angle B \cong \angle E$, then $\angle C \cong \angle F$.



If 2 angles of one triangle are congruent to 2 angles of another triangle, then the third angles are... congruent

Use △ Sum Thm to prove.
& substitution.

what is $m\angle DCN$?

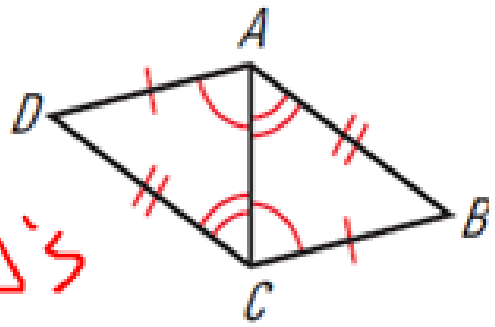


By Third ∠ Thm
$m\angle C = 75°$

Write a proof.

GIVEN ▶ $\overline{AD} \cong \overline{CB}$, $\overline{DC} \cong \overline{BA}$, $\angle ACD \cong \angle CAB$, $\angle CAD \cong \angle ACB$

PROVE ▶ $\triangle ACD \cong \triangle CAB$



Use Def of $\cong$ $\triangle$'s

1. $\overline{AD} \cong \overline{CB}$, $\overline{DC} \cong \overline{BA}$, $\angle ACD \cong \angle CAB$, $\angle CAD \cong \angle ACB$ — 1. Given
2. $\overline{AC} \cong \overline{AC}$ — 2. Reflexive Property
3. $\angle D \cong \angle B$ — 3. Third Angles Thm
4. $\triangle ACD \cong \triangle CAB$ — 4. Definition of $\cong$ $\triangle$s.

Congruence Theorems

Reflexive Property of Congruent Triangles

$\triangle ABC \cong \triangle ABC$

Symmetric Property of Congruent Triangles

$\triangle ABC \cong \triangle XYZ$, then $\triangle XYZ \cong \triangle ABC$

Transitive Property of Congruent Triangles

$\triangle ABC \cong \triangle DEF$ & $\triangle DEF \cong \triangle JKL$

then $\triangle ABC = \triangle JKL$.

Homework:

p 228-229
#'s 2, 4-10, 12-16 Even, 26, 28