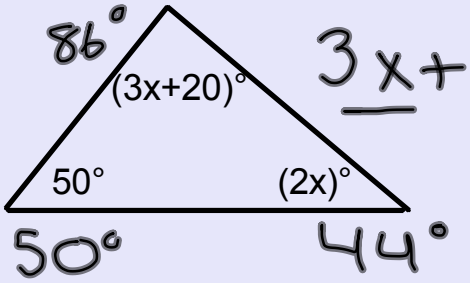
Bellwork
10/11/2011

1. Find x. Then classify the triangle by its angles.



Acute △

$3x+26+2x+50=180$

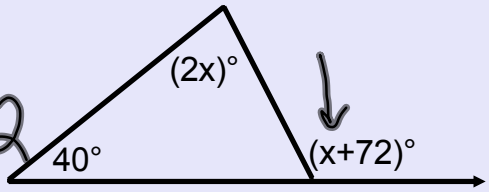
$5x+70=180$

$5x=110$

$x=22$

50° 44°

2. Find the measure of the exterior angle shown.



$40+2x=x+72$

$-40 \quad -40$

$2x=x+32$

$x=32$

104°

Pop Quiz
Get out a scrap sheet of paper.

1. Write the Exterior Angle Theorem.

2. Write the Triangle Sum Theorem.

3. What is a triangle?

Geometry
4.2 Apply Congruence and Triangles
Standard(s): 2,6

Vocabulary:

1. **Congruent Triangles: Two triangles with three angles congruent and three sides congruent.**

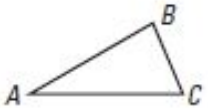
2. **Corresponding Parts: Matching parts in two different figures.**

THEOREM *For Your Notebook*

THEOREM 4.4 Properties of Congruent Triangles

Reflexive Property of Congruent Triangles

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

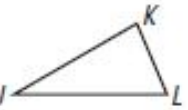


Symmetric Property of Congruent Triangles

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

Transitive Property of Congruent Triangles

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

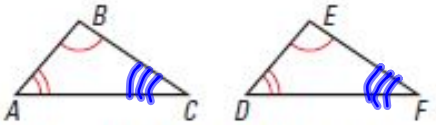


THEOREM *For Your Notebook*

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.

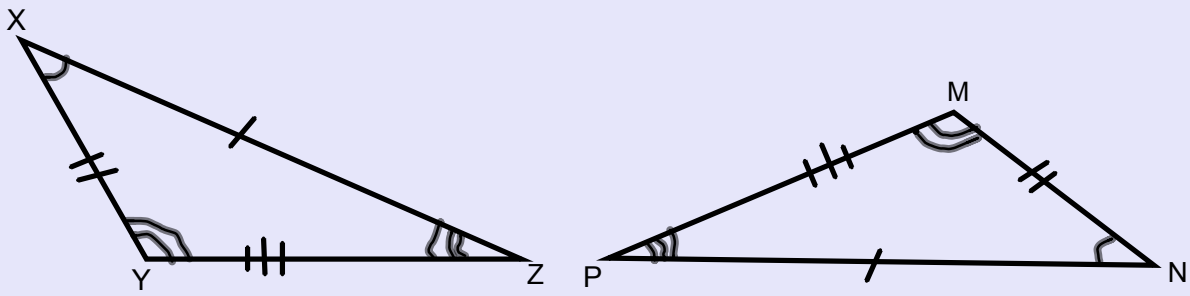
Proof: Ex. 28, p. 230



If $\angle A = \angle D$, and $\angle B = \angle E$, then $\angle C = \angle F$.

Identify Congruent Parts

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



$\triangle XYZ \cong \triangle NMP$

$\angle X \cong \angle N$

$\angle Y \cong \angle M$

$\angle Z \cong \angle P$

$\overline{XY} \cong \overline{NM}$

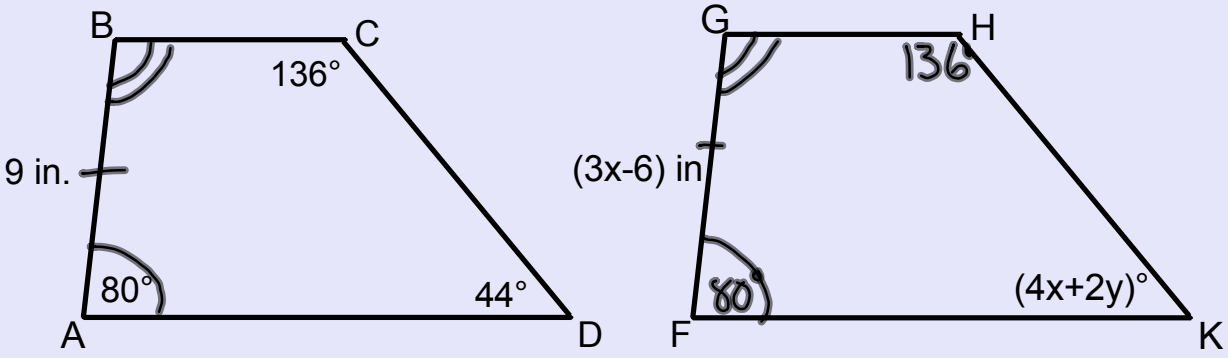
$\overline{YZ} \cong \overline{MP}$

$\overline{XZ} \cong \overline{NP}$

~~Classify a Triangle in a Coordinate Plane~~

Apply ≅ Statements

In the diagram, ABCD ≅ FGHK.



A. Find the value of x.

$3x-6=9$

$3x=15$

$x=5$

B. Find the value of y.

$4x+2y=44$

$4(5)+2y=44$

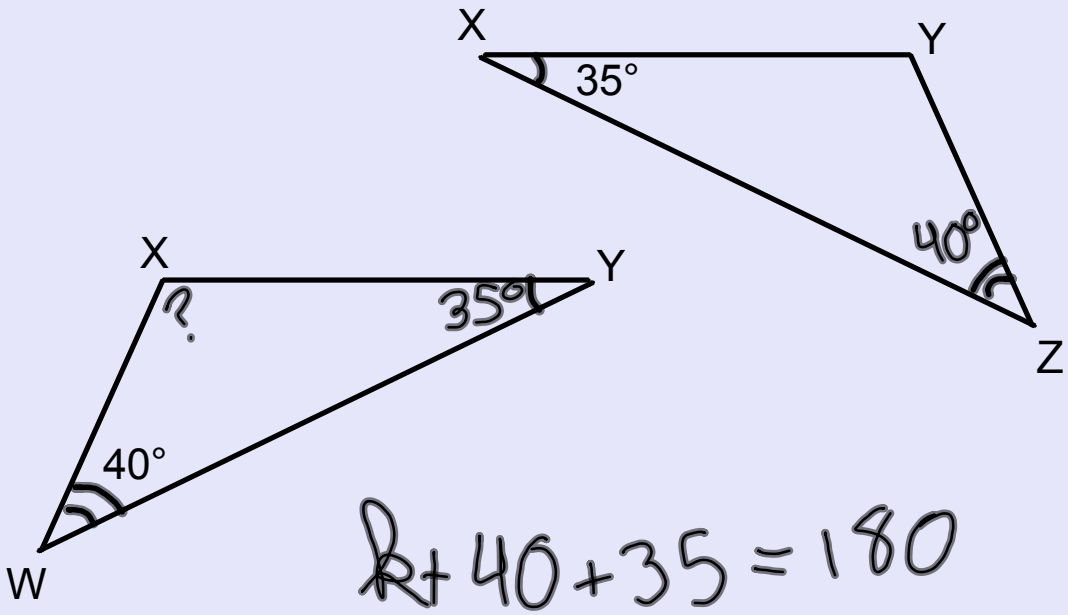
$20+2y=44$

$2y=24$

$y=12$

Use the Third Angles Theorem

Find $m\angle YXW$.



$k + 40 + 35 = 180$

$k + 75 = 180$

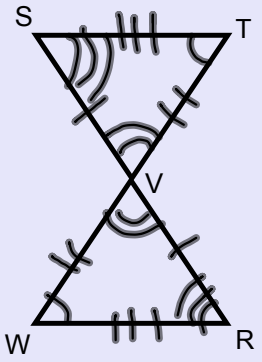
$-75 \quad -75$

$k = 105°$

$m\angle YXW = 105°$

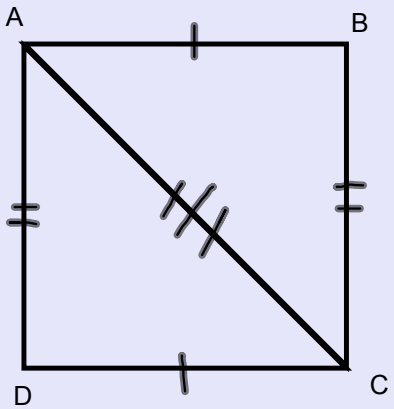
Prove That Triangles are Congruent

Given: $\overline{SV} \cong \overline{RV}$, $\overline{TV} \cong \overline{WV}$, $\overline{ST} \cong \overline{RW}$, $\angle T \cong \angle W$
Prove: $\triangle STV \cong \triangle RWV$



1. $\overline{SV} \cong \overline{RV}$, $\overline{TV} \cong \overline{WV}$, $\overline{ST} \cong \overline{RW}$, $\angle T \cong \angle W$	1. Given
2. $\angle SVT \cong \angle RVW$	2. Vertical $\angle$ $\cong$ thm.
3. $\angle TSV \cong \angle WVR$	3. Third $\angle$'s Thm.
4. $\triangle STV \cong \triangle RWV$	4. Def. of $\cong$ $\triangle$'s

***How many pairs of sides and pairs of angles must you show are congruent when you use the definition of congruent triangles to show that two triangles are congruent?**



$\overline{AC} \cong \overline{AC}$

Reflexive Prop.

Homework Assignment

Worksheet 4.2B