Name the two triangles that are congruent by the ASA postulate.
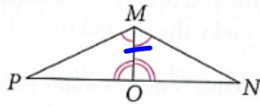
1. __RQP__ ≅ __WXV__
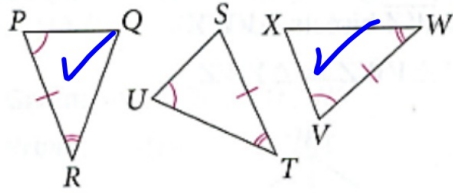
2. __DEF__ ≅ __BAC__
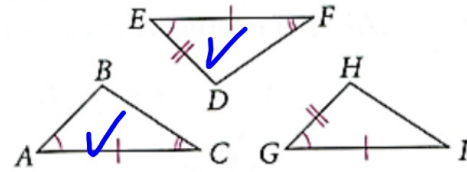
Answer each question. Drawing a triangle may be helpful.

3. Which side is included between ∠R and ∠S in $\triangle RST$? __$\overline{RS}$__

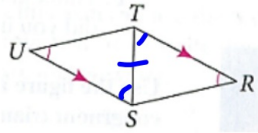4. Which angles include $\overline{NO}$ in $\triangle NOM$? __∠N__ and __∠O__

Write a congruence statement for each pair of triangles. Name the postulate or theorem that justifies your statement. It may help to mark the "freebies".
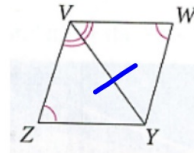
5. _PMO ≅ NMO_   6. _TSU ≅ TSR_   7. _YVZ ≅ YUN_

Justification: **ASA**   Justification: **AAS**   Justification: **AAS**

8. For the triangles given, $\angle D \cong \angle T$, $\angle E \cong \angle U$, and $EO \cong UX$. Which of the following statements is true?

A) $\triangle TUX \cong \triangle DOE$ by ASA

B) $\triangle UTX \cong \triangle DEO$ by AAS ✓

C) $\triangle TXU \cong \triangle ODE$ by ASA
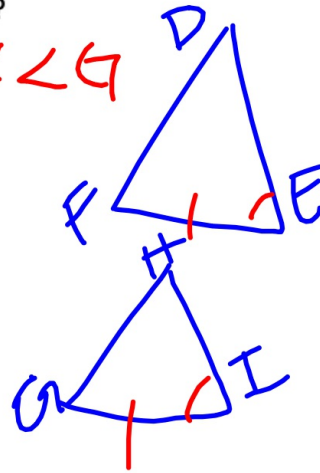
D) $\triangle TUX \cong \triangle DEO$ by AAS ✓
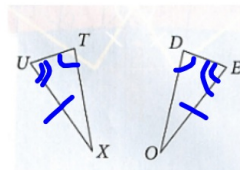
9. $\angle E \cong \angle I$ and $\overline{FE} \cong \overline{GI}$. What else must you know to prove $\triangle FDE \cong \triangle GHI$?
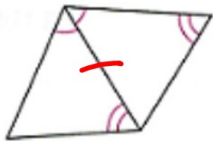
a) by AAS?

$\angle D \cong \angle H$

B) by ASA?
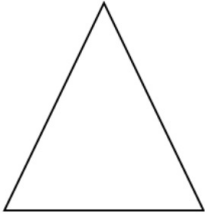
$\angle F \cong \angle G$

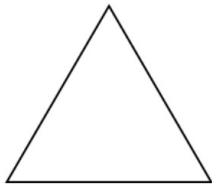10. Can you prove the triangles below congruent using ASA or AAS? Explain why or why not

Objective 1: The Isosceles Triangle Theorems

Recall that an isosceles triangle has _____ $2 \cong$ sides _____

Recall that an equilateral triangle has _____ all sides $\cong$. _____

We are going to look today at some theorems about these two types of triangles.

Theorem 4-3: Isosceles Triangle Theorem

If two sides of a triangle are congruent, then angles opposite those sides are ≅.

$$\angle A \cong \angle B$$

Theorem 4-4: Converse of Isosceles Triangle Theorem

If two angles of a triangle are congruent, then sides opposite the ∠'s are ≅.
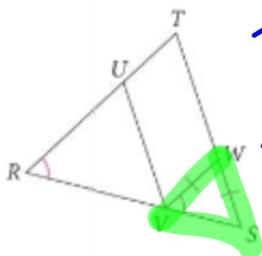
$$\overline{AC} \cong \overline{BC}$$

Theorem 4-5: The bisector of the vertex angle of an isosceles triangle

is the ⊥ bisector to the base

$$CD \perp AB$$

Example 1: Explain why each statement below is true using the given figure.

By thm 4-3
$$\angle WVS \cong \angle S$$

By thm 4-4
$$\angle R \cong \angle WVS$$
$$\angle R \cong \angle S$$
∴
$$\overline{TR} \cong \overline{TS}$$

A) $\angle WVS \cong \angle S$

B) $\overline{TR} \cong \overline{TS}$

QC 1: Can you conclude that $\triangle RUV$ is an isosceles triangle? Explain.

No. point U
could be anywhere
btw R, T.

Example 2:

A) Find the value of y. $y = 27°$

B) Suppose $\angle L = 43°$. Now find the value of y.

$y = 47.$

A corollary is a statement that follows immediately from a theorem. We have 2 corollaries involving the isosceles triangle theorem.

Corollary 1: If a triangle is equilateral, then *the △ is equiangular* $\angle X \cong \angle Y \cong \angle Z$

Corollary 2: If a triangle is equiangular, then *the △ is equilateral* $XY \cong YZ \cong XZ$

Hwk #24 - due Wednesday

Sec. 4-5

Pages: 230 - 232

Problems: 1, 4, 5, 7, 8, 10-12, 20, 21, 24, 32

Use the handout I gave

IXL #14 - K.5 & K.11 due Friday at 4pm!