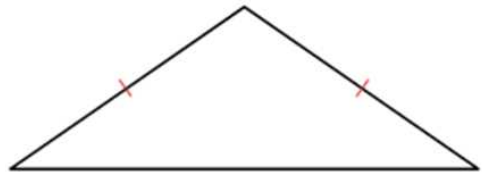


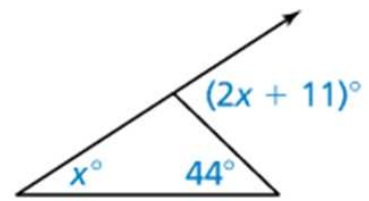
**Starter** 9/29/2015

1. Classify the triangle by its sides and by measuring its angles.



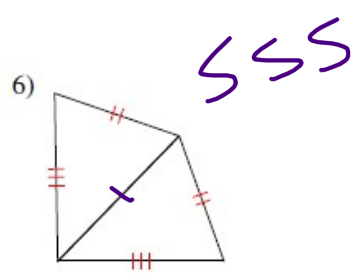
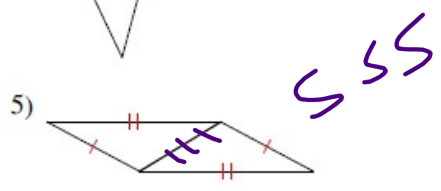
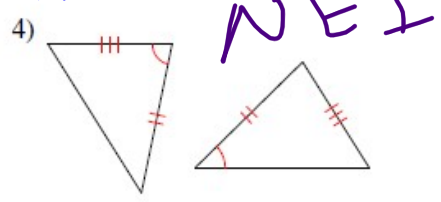
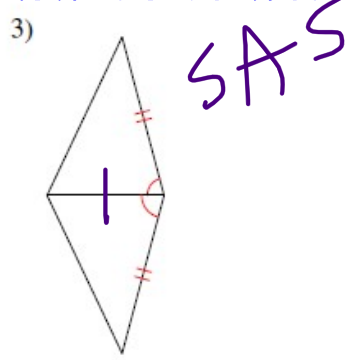
obtuse isosceles triangle

2. Find the measure of the exterior angle.



77°

answers to worksheet SSS and SAS



7)

SSS

8)

SAS

9)

NEI

10)

SAS

Write a proof.

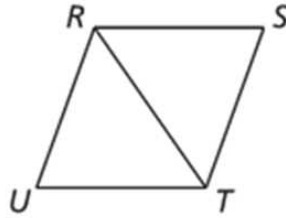
**Given**  $\overline{KL} \cong \overline{NL}$ ,  $\overline{KM} \cong \overline{NM}$

**Prove**  $\triangle KLM \cong \triangle NLM$

□

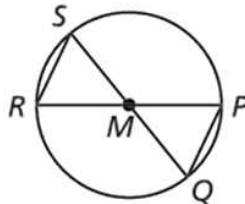
STATEMENTS	REASONS
S 1. $\overline{KL} \cong \overline{NL}$	1. Given
S 2. $\overline{KM} \cong \overline{NM}$	2. Given
S 3. $\overline{LM} \cong \overline{LM}$	3. Reflexive Property of Congruence
4. $\triangle KLM \cong \triangle NLM$	4. SSS Congruence Theorem

Name that included angle between the pair of sides given.



1.  $\overline{RU}$  and  $\overline{UT}$   $\angle RUT$     2.  $\overline{ST}$  and  $\overline{TR}$   $\angle STR$   
 3.  $\overline{TR}$  and  $\overline{RS}$   $\angle TRS$     4.  $\overline{UT}$  and  $\overline{TR}$   $\angle UTR$   
 5.  $\overline{SR}$  and  $\overline{RT}$   $\angle SRT$     6.  $\overline{RS}$  and  $\overline{ST}$   $\angle RST$

In the diagram,  $\overline{QS}$  and  $\overline{RP}$  pass through the center  $M$  of the circle. What can you conclude about  $\triangle MRS$  and  $\triangle MPQ$ ?



**SOLUTION**

Because they are vertical angles,  $\angle PMQ \cong \angle RMS$ . All points on a circle are the same distance from the center, so  $\overline{MP}$ ,  $\overline{MQ}$ ,  $\overline{MR}$ , and  $\overline{MS}$  are all congruent.

► So,  $\triangle MRS$  and  $\triangle MPQ$  are congruent by the SAS Congruence Theorem.

3) Construct a triangle with two angles congruent to these and this side included between the angles.

ASA

4 Ways to Prove Triangles Congruent

ANGLE-SIDE-ANGLE

3) \*ASA Postulate If 2  $\angle$ s and the included side of one  $\Delta$  are  $\cong$  to 2  $\angle$ s and the included side of another  $\Delta$ , then the  $\Delta$ s are  $\cong$ .

$\angle B \cong \angle E$

$\overline{BC} \cong \overline{DE}$

$\angle C \cong \angle D$

$\triangle ABC \cong \triangle FED$   
 by the *ASA* Postulate

4) Construct a triangle with two angles congruent to these and the side NOT included between the angles.

AAS

# 4 Ways to Prove Triangles Congruent

ANGLE - ANGLE - SIDE

4) \*AAS Theorem If 2  $\angle$ s and the nonincluded side of one  $\Delta$  are  $\cong$  to 2  $\angle$ s and the nonincluded side of another  $\Delta$ , then the  $\Delta$ s are  $\cong$ .

$\angle B \cong \angle E$

$\overline{BC} \cong \overline{DE}$

$\angle A \cong \angle F$

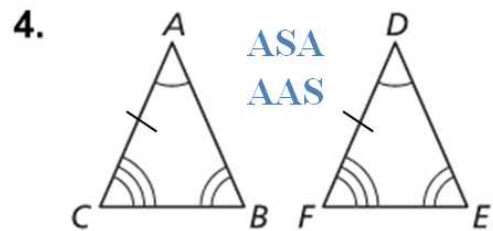
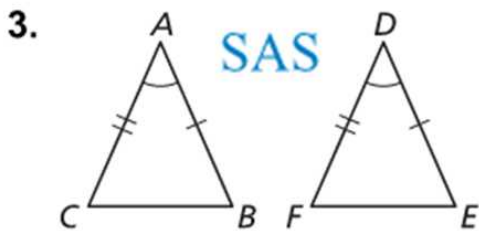
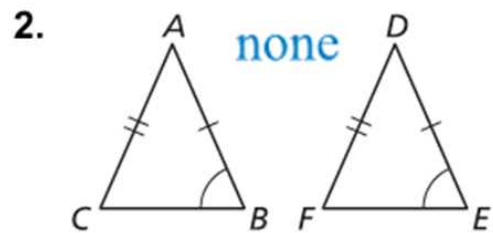
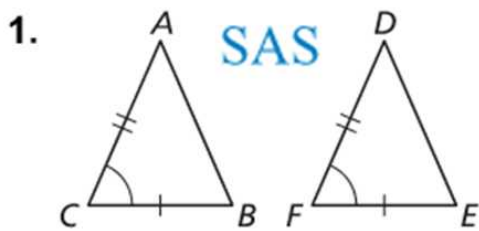
$\Delta ABC \cong \Delta FED$   
by the AAS Theorem

Ex. 2 **AAS**  
 $\triangle ABC \cong \triangle DEF$

Ex. 3 **SSS**  
 $\triangle ABC \cong \triangle CDA$

Ex. 4 **SAS**

Determine which triangle congruence theorem, if any, can be used to prove the triangles are congruent.



# Homework Worksheet ASA and AAS methods