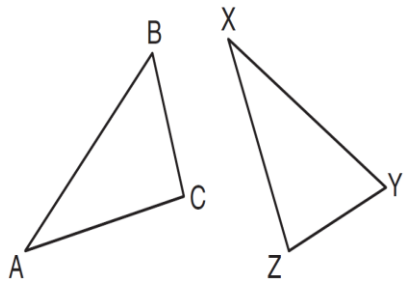
Name: _____ Date: _____

UNIT 3 **LESSON 3**

AIM: WHAT ARE THE SAS AND AAS SHORTCUTS TO PROVE TRIANGLES ARE CONGRUENT?

Do Now: In the diagram below, $\triangle ABC \cong \triangle XYZ$.



Which two statements identify corresponding congruent parts for these triangles?

1) $\overline{AB} \cong \overline{XY}$ and $\angle C \cong \angle Y$

2) $\overline{AB} \cong \overline{YZ}$ and $\angle C \cong \angle X$

3) $\overline{BC} \cong \overline{XY}$ and $\angle A \cong \angle Y$

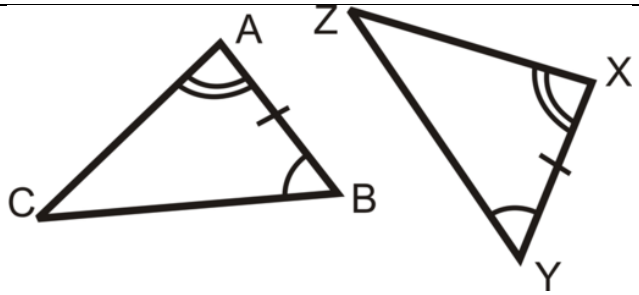
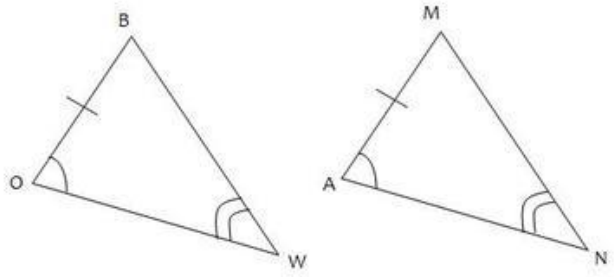
4) $\overline{BC} \cong \overline{YZ}$ and $\angle A \cong \angle X$

So far, we have learned three shortcuts to prove triangles are congruent without knowing all sides and angles:

_____, _____ and _____.

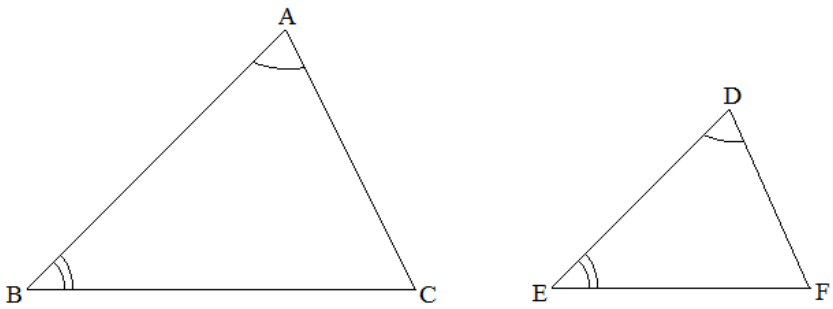
We have also learned that _____ can NOT be used to prove triangles are congruent.

BUT WAIT…THERE ARE **<u>TWO</u>** MORE!

ASA (Angle-Side-Angle)	**AAS (Angle-Angle-Side)**
 *The side **<u>MUST</u>** be included between the two sides*	 *The side is **<u>NOT</u>** included between the two angles*

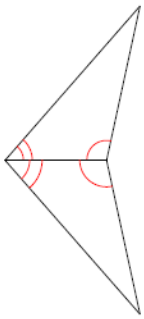
BEWARE! There is also one more that does **<u>NOT</u>** work… AAA. **<u>WHY?!</u>**

Angles can remain congruent while side lengths can change!

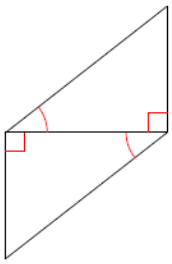


For each of the following, if possible, identify which postulate will prove these triangles congruent (ASA, AAS or Neither)

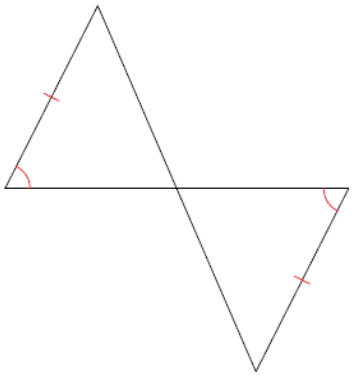
1)



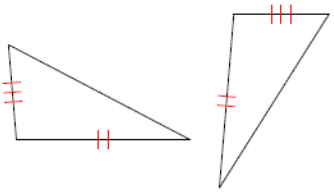
2)



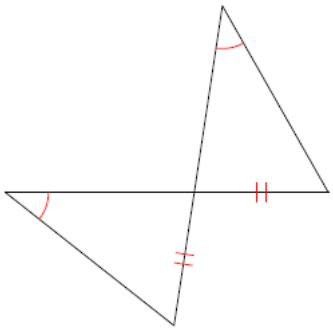
3)



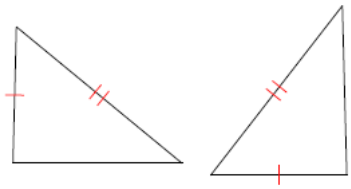
4)



5)



6)

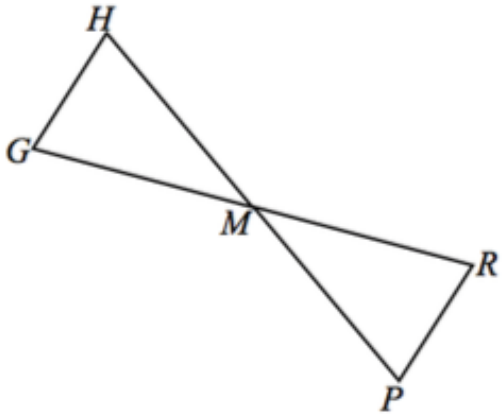


Based on the given information, determine what shortcut should be used and write a plan on how you would prove the triangles congruent.

6. Given: *M* is the midpoint of $\overline{HP}$, $\angle H \cong \angle P$

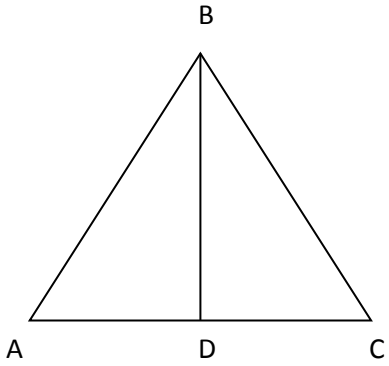
   Prove: $\Delta GHM \cong \Delta RPM$

   PLAN:



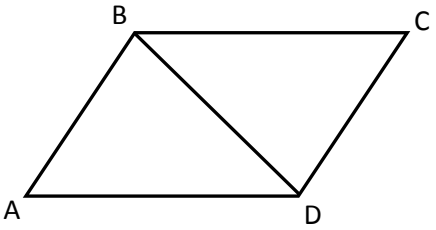
7. Given: $\overline{BD}$ bisects $\angle ABC$, $\overline{BD} \perp \overline{AC}$
   Prove: $\triangle ABD \cong \triangle CBD$

   PLAN:



8. Given: $\overline{BC} \parallel \overline{AD}$ and $\angle A \cong \angle C$
   Prove: $\triangle ABD \cong \triangle CDB$

   PLAN:



SUMMARY:

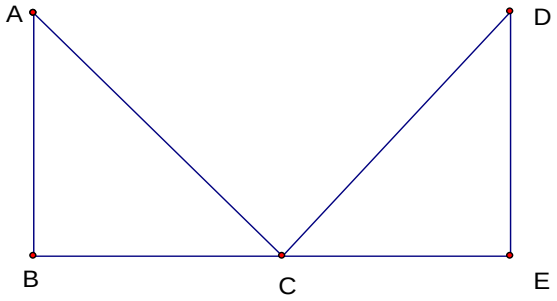
- To prove triangles are congruent, you need at least _____ pieces of information.
- The five "short cuts" to prove triangles are congruent are:
  - _____
  - _____
  - _____
  - _____
  - _____
- Steps to proving triangles are congruent:
  - Mark the diagram with _____ information.
  - Look for visual freebies (_____ and _____)
  - Identify _____
  - Write plan!

Name: _____ Date: _____

UNIT 3 **LESSON 3**

HOMEWORK

1. Using the given information, determine the shortcut used and write a plan



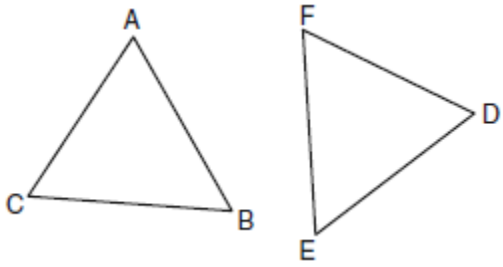
Given: $\angle ACB \cong \angle DCE$ $\overline{AB} \perp \overline{BE}, \overline{DE} \perp \overline{BE}$ C is the midpoint of $\overline{BE}$

Prove: $\Delta ABC \cong \Delta DEC$

PLAN:

2. In the diagram of $\triangle ABC$ and $\triangle DEF$ below, $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$, and $\angle B \cong \angle E$.

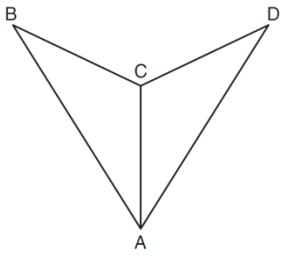
Which method can be used to prove $\triangle ABC \cong \triangle DEF$?



1) SSS
2) SAS
3) ASA
4) HL

3. As shown in the diagram below, $\overline{AC}$ bisects $\angle BAD$ and $\angle B \cong \angle D$.

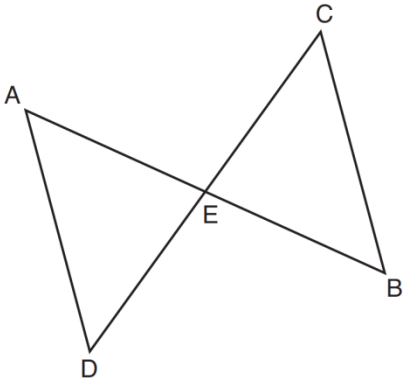
Which method could be used to prove $\triangle ABC \cong \triangle ADC$?



1) SSS
2) AAA
3) SAS
4) AAS

4. In the diagram below of $\triangle DAE$ and $\triangle BCE$, $\overline{AB}$ and $\overline{CD}$ intersect at *E*, such that $\overline{AE} \cong \overline{CE}$ and $\angle BCE \cong \angle DAE$.

Triangle *DAE* can be proved congruent to triangle *BCE* by

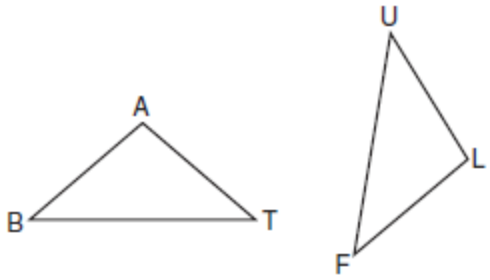


1) ASA
2) SAS
3) SSS
4) HL

5. In the accompanying diagram of triangles *BAT* and *FLU*, $\angle B \cong \angle F$ and $\overline{BA} \cong \overline{FL}$.

   Which statement is needed to prove $\triangle BAT \cong \triangle FLU$?

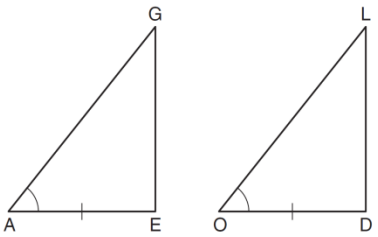
   1) $\angle A \cong \angle L$
   2) $\overline{AT} \cong \overline{LU}$
   3) $\angle A \cong \angle U$
   4) $\overline{BA} \parallel \overline{FL}$



6. In the diagram below of $\triangle AGE$ and $\triangle OLD$, $\angle GAE \cong \angle LOD$, and $\overline{AE} \cong \overline{OD}$.

   To prove that $\triangle AGE$ and $\triangle OLD$ are congruent by SAS, what other information is needed?

   1) $\overline{GE} \cong \overline{LD}$
   2) $\overline{AG} \cong \overline{OL}$
   3) $\angle AGE \cong \angle OLD$
   4) $\angle AEG \cong \angle ODL$



ASA

AAS