Good morning!

rgoglesby.weebly.com

1. First and Last name as participant.

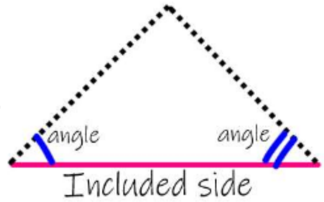
2. Type "here" for attendance.

3. Quiz on Thursday. Test is on Tuesday next week (after Labor Day).

4. Continue Notes and practice for Congruent Triangles.

Vocabulary to help us with our next postulate:

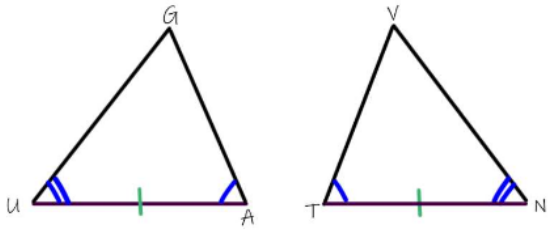
The side length that is between two angles is called the **included side.**



Postulate #3

Angle Side Angle (ASA)-If two angles and the included side of one triangle are congruent to two angles and the included side of another triangle, then the two triangles are congruent.

8. Example:

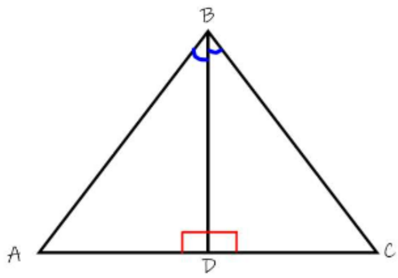


From the diagram we see: $\angle U \cong \angle N$ and

$\angle A \cong \angle T$ and the included sides $\overline{UA} \cong \overline{NT}$

Therefore... $\triangle UGA \cong \triangle NVT$ by ASA

9. . **Lets Take a Look:**



From the diagram, we know that

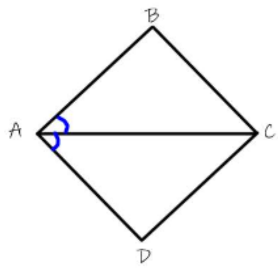
$\angle ABD \cong \angle$ and $\angle ADB \cong$

But that's only two angles. We the included sides to be congruent for ASA.

Remember, we **MUST** have a property or justification to add anything to our diagram...Do you see anything we are allowed to mark?

Since by the Therefore

$\triangle ABD \cong \triangle$ by



10. Another Property we might see dealing with angles:

Given: $\overline{AC}$ is an **angle bisector** for $\angle BCD$.

Can you prove the two triangles are congruent? We know....

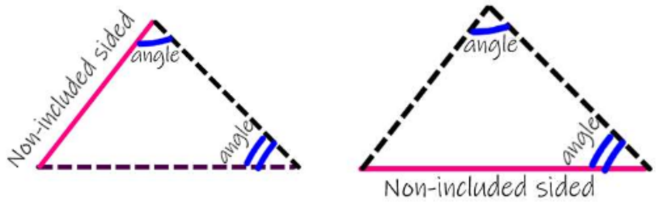
$\angle BAC \cong \angle$ from the diagram, and by the reflexive Property.

Define Angle Bisector: Therefore,

$\angle BCA \cong \angle$ and that means that $\triangle ABC \cong \triangle$ by

Vocabulary for our next postulate:

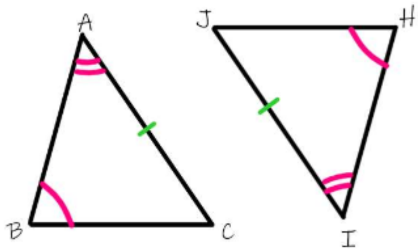
A side length that is not directly in between to angles is called a **non-included** side.



Theorem #4

Angle Angle Side(AAS): If two angles and a non-included side of one triangle are congruent the two angles and the corresponding non-included side of another triangle, the two triangles are congruent.

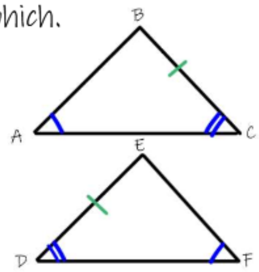
Example:



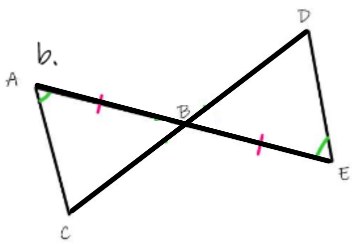
11. From the diagram we see: $\angle A \cong \angle I$ and $\angle B \cong \angle H$ and the corresponding **non-included** sides $\overline{AC} \cong \overline{IJ}$ Therefore... $\triangle ABC \cong \triangle IHJ$ by AAS

12. Two of the examples below are examples of AAS, one is an example of ASA. Decide which is which.

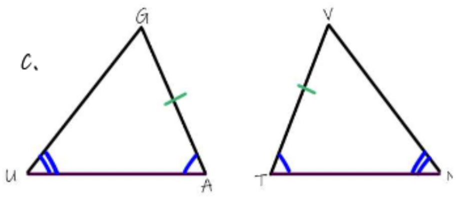
a.



b.

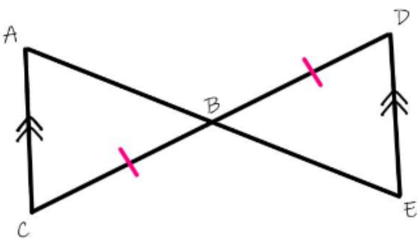


c.



$\triangle ABC \cong$ ____ by ____ $\triangle ABC \cong$ ____ by ____ $\triangle UGA \cong$ ____ by ____

13. Another property we may see with angles...



Given: $\overline{AC} \parallel \overline{DE}$, prove the two triangles congruent.

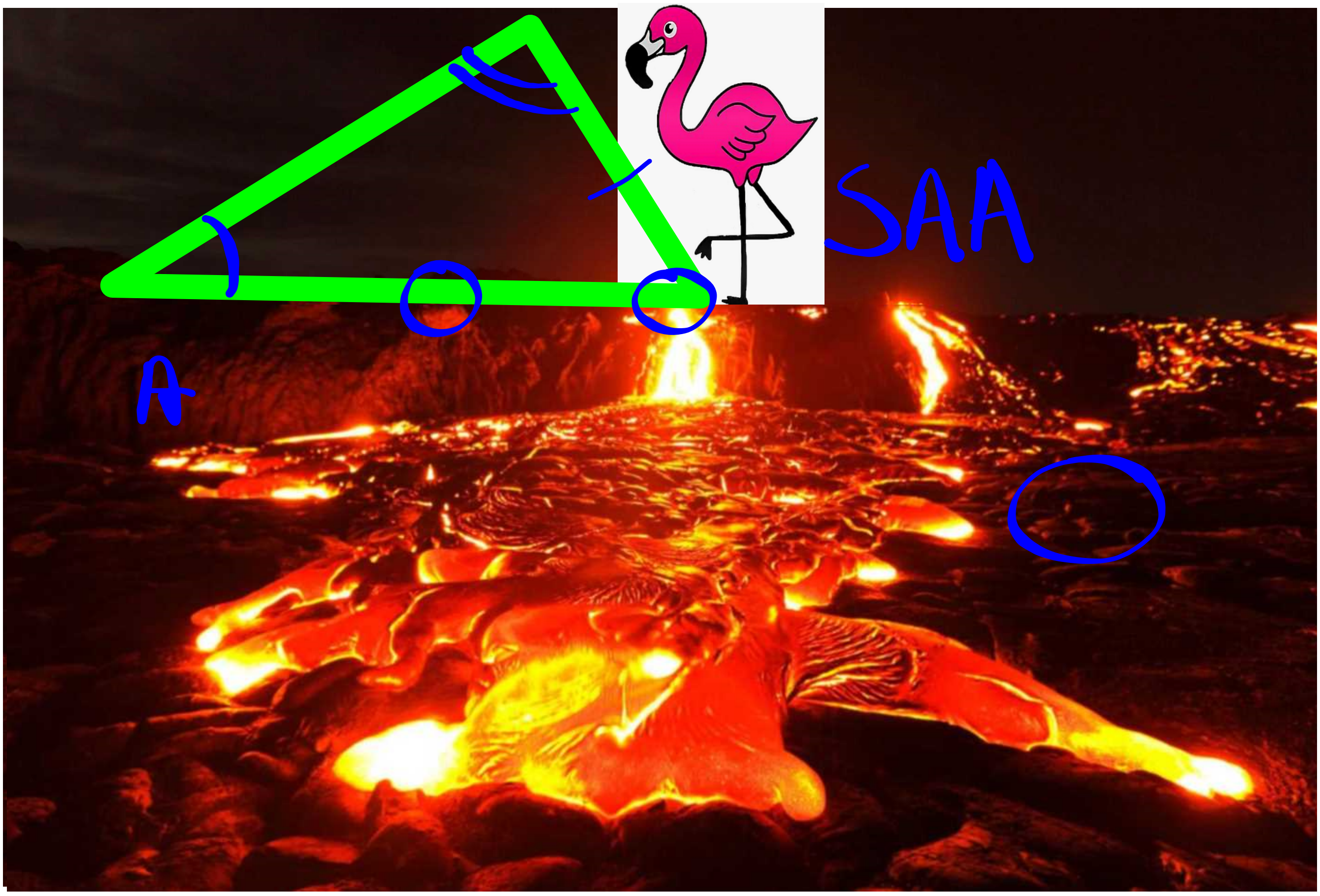
We know.... $\overline{CB} \cong \overline{DB}$ from the diagram, and

____ $\cong$ ____ because they are vertical angles.

Since $\overline{AC} \parallel \overline{DE}$, what kind of angles are $\angle A$ and $\angle E$?

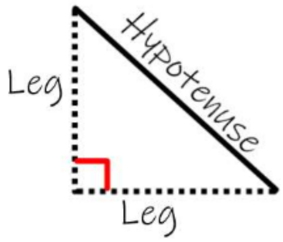
____

Therefore, $\angle A \cong \angle$ ____ and that means that $\triangle ABC \cong \triangle$ ____ by ____ $\angle C$ and $\angle D$ are also ____ so there is more than one correct way to do this one. 😊


SAA
A

<u>Recall: Right Triangles</u>

In a Right triangle, the side lengths that form the right angle are called the of the triangle, and the side opposite the right angle is called the



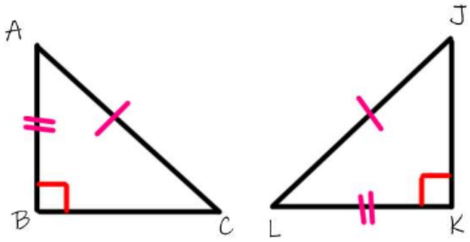
- Right triangles have many special properties! We have a triangle congruence theorem that works ONLY for right triangles!
- All our other postulates and theorems work for right triangles too! Right triangles just have an extra on that is special just for them.

<u>Hypotenuse Leg (HL):</u> If the hypotenuse and one leg in a right triangle are congruent to the hypotenuse and one leg of another right triangle, the two triangles are congruent.

Example:

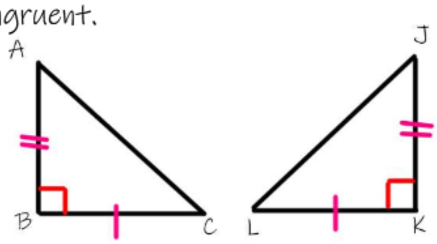
14. From the diagram we see: $\angle B$ and $\angle K$ are both right angles, making these right triangles. $\overline{AB} \cong \overline{LK}$. These are of the right triangles. $\overline{AC} \cong \overline{LK}$ These segments are the of the right triangles.

Therefore... $\triangle ABC \cong \triangle LKJ$ by HL

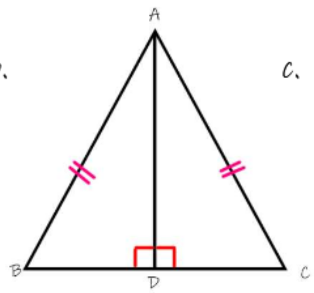


15. <u>You Try!</u> Determine which postulate or theorem you can use to prove the triangles congruent.

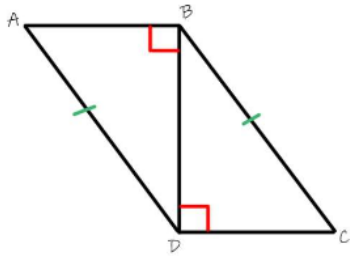
a.



b.



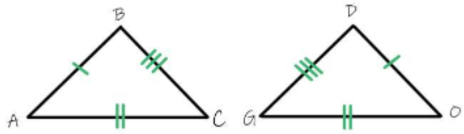
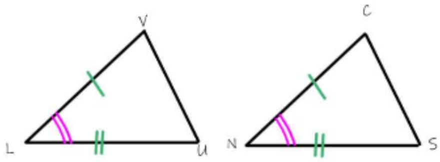
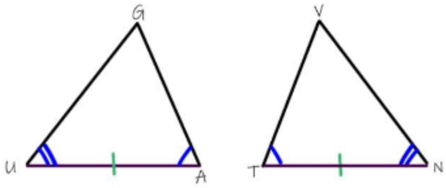
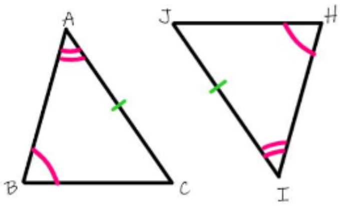
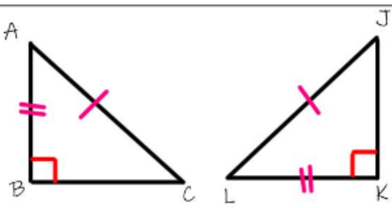
c.



d. <u>True or False:</u> HL is the only method to prove that two right triangles are congruent.

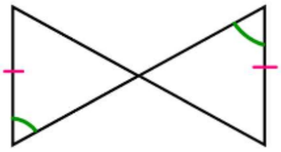

SSA
HL for right triangles

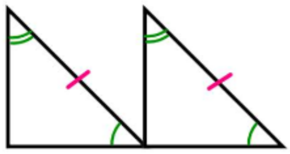
Congruent Triangles Summary

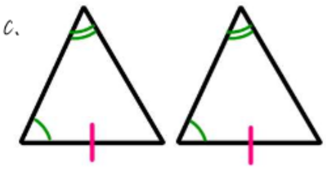
Side Side Side (SSS):	 △ABC ≅ △ODG
Side Angle Side (SAS):	 △LVU ≅ △NCS
Angle Side Angle (ASA)-	 △UGA ≅ △NVT
Angle Angle Side(AAS):	 △ABC ≅ △IHJ
Hypotenuse Leg(HL):	 △ABC ≅ △LKJ

ASA, AAS, and HL Congruence Practice

1. Determine which of the following is NOT an example of AAS congruence, then state which type of congruence it is.

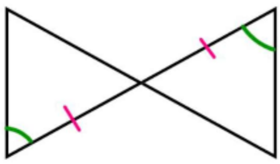
a. 

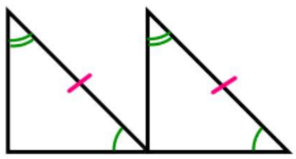
b. 

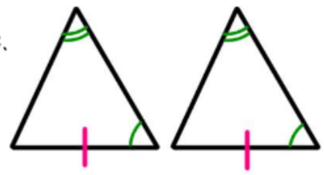
c. 

__________ __________ __________

2. Determine which of the following is NOT an example of ASA Congruence, then state which type it is.

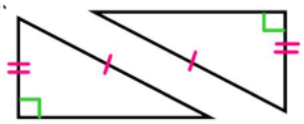
a. 

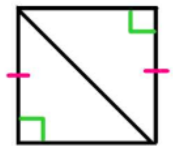
b. 

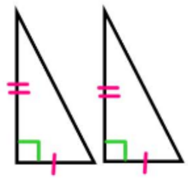
c. 

__________ __________ __________

3. Determine which of the following is NOT an example of HL, then state which type it is.

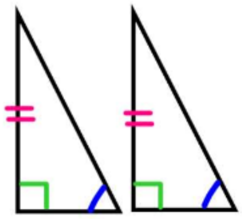
a. 

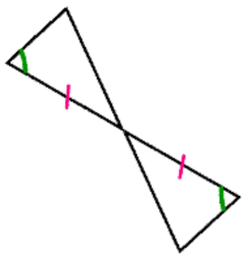
b. 

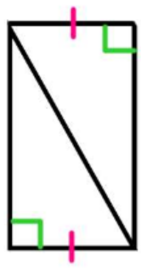
c. 

__________ __________ __________

4. Match each triangle to the correct postulate/theorem. There will be one of each of the following: ASA, AAS, HL.

a. 

b. 

c. 

__________ __________ __________

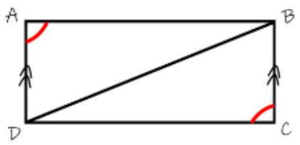
@mro-geo

to 81010

remind

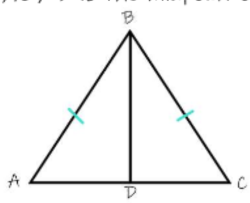
5. Given the information, determine which postulate you can use to prove the triangles congruent.

a. $\overline{AD} \parallel \overline{BC}$



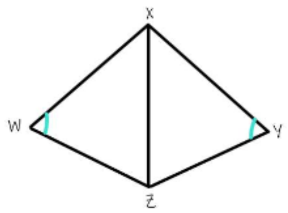
$\triangle ABD \cong \triangle$_______ by ___________

b. $\overline{BD} \perp \overline{AC}$; D is the midpoint of $\overline{AC}$



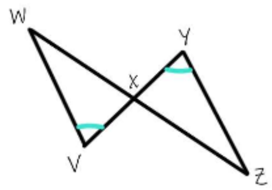
$\triangle ADB \cong \triangle$_______ by ___________

c. $\overline{XZ}$ is bisecting $\angle WXY$



$\triangle WXZ \cong \triangle$_______ by ___________

d. X is the midpoint of $\overline{YV}$



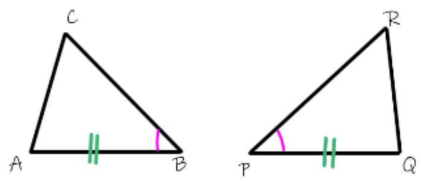
$\triangle WXV \cong \triangle$_______ by ___________

Challenge Section, TEST PREP:

5. What **additional** information is needed to prove....

a. $\triangle ABC \cong \triangle QPR$ by **ASA**?

If _______ is congruent to _______ then that would meet the criteria for ASA.



b. $\triangle ABC \cong \triangle QPR$ **AAS**?

If _______ is congruent to _______ then that would meet the criteria for AAS.