**Activity 3.1.6 Angle-Angle-Side Congruency**

1. Determine the measure of A. m = \_\_\_\_\_\_.
2. Determine the measure of D. m = \_\_\_\_\_\_.
3. Determine the measure of I. m = \_\_\_\_\_\_.







1. Can you make any conclusions? Write your thoughts down about the relationships between the triangles and the given information.
2. Discuss your ideas with a classmate and try to formalize your ideas into a theorem that can be communicated with the rest of the class.
3. If \_\_\_\_\_ angles from one triangle are equal to \_\_\_\_\_ angles from another triangle, then their third angles are \_\_\_\_\_\_.

7. Using this new theorem formed in question 6, how can we prove congruence between the following triangles?

Prove:

Given: ,





{HINT: Use the theorem on the previous page to help you obtain the information necessary for a previously proven method of congruence}

You have now proved the AAS Congruence Theorem: It two angles and a non-included \_\_\_\_\_ of one triangle are congruent to two \_\_\_\_\_\_ and the corresponding non-included \_\_\_\_\_\_of a second triangle, then the two triangles are congruent.

**Proving Congruency using SAS, ASA, SSS, and AAS**

1. Can the following congruence statement be proved using the given information and the diagram? If so, prove the congruence statement. If not, state why not.

Prove:

Given: and *C* is the midpoint of segment

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Prove:

Given: and

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Prove:

Given:  *C* is the midpoint of segment and

1. Can the following congruence statement be proved using the given information and the diagram? If so, prove the congruence statement. If not, state why not

Prove:

Given: m and angles *HEG* and *FAB* are right angles.



1. Can the following congruence statement be proved using the given information and the diagram? If so, prove the congruence statement. If not, state why not.

Prove:

Given: Segment bisects and

Segment bisects

1. Can the following congruence statement be proved using the given information and the diagram? If so, prove the congruence statement. If not, state why not.



Prove:

Given: and

1. Can the following congruence statement be proved using the given information and the diagram? If so, prove the congruence statement. If not, state why not.



Given: is an equilateral triangle and *E* is the midpoint of segment

Prove: bisects

15. In question 14 above prove that .