**Geometry Local Lomac 2015-2016** **Date** 3/7 **due** 3/9 | **Congruent Triangles SAS 10.3L**

**Name** _____ **Per**_____

**LO:** I can determine whether or not SAS is a shortcut that is sufficient to prove that two triangles are congruent and can describe a sequence of transformations that maps a triangle to another triangle.

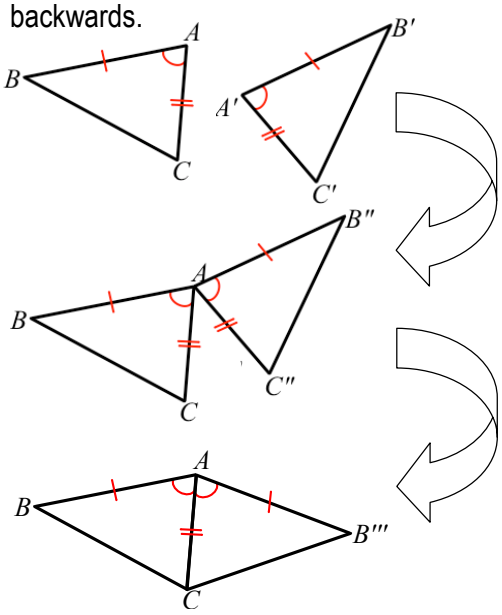
☐ **DO NOW** On the back of this packet

☐ (1) **Rigid Transformations, which are** _____, _____, **and** _____ **preserve** _____ **and** _____ _____.

☐ (2) **Congruence: A sequence of transformations (remix)**

transparencies, dry erase markers, eraser, compass, straightedge

☐ To verify that a sequence (composition) of rigid transformations will map △ABC to △A'B'C' , we will work backwards.




☐ Map point _____ to _____ by _____ triangle A'B'C' _____ _____ _____ so that _____ coincides with _____. Your transformation should result in a diagram that looks like the one below.

☐ Next, map point _____ to _____ by _____ triangle A"B"C" _____ _____ _____ so that _____ coincides with _____. We know that both points will coincide because $\overline{AC}$ ≅ _____ . Your transformation should result in a diagram that looks like the one below.

☐ Finally, map _____ to _____ by _____ triangle A'"B'"C'" _____ _____ so that _____ coincides with _____. We know that both points will coincide because (1) angle _____ maps to angle _____ under reflection which means that ray _____ will lie on ray _____, (2) points ____ and ____ lie on the same ray and are the same distance from point A so point _____ maps to point _____.

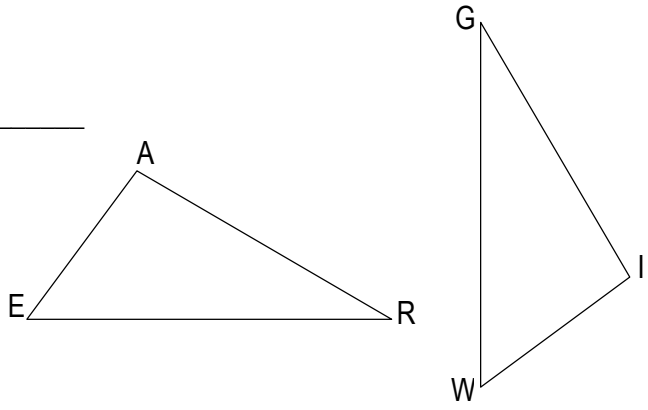
☐ So, what does this mean for us? Well, if we need to show that 2 triangles are congruent, do we have to show that all three pairs of corresponding sides AND all three pairs of corresponding angles are congruent?_____ In fact, this process shows us that all we need is _____ pairs of _____ and ____ pair of _____ The pair of _____ must be between the pairs of congruent _____. To abbreviate this method of proving triangles are congruent, we write **SAS≅** which is short for saying **S**_____ **A**_____ **S**_____ ≅_____.

## Is SAS enough to prove/guarantee 2 triangles are congruent? _____

☐ (3) ☐ (a) Given: $\angle A \cong \angle I$, $\overline{EA} \cong \overline{WI}$, $\overline{AR} \cong \overline{IG}$

Do △EAR and △WIG meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.



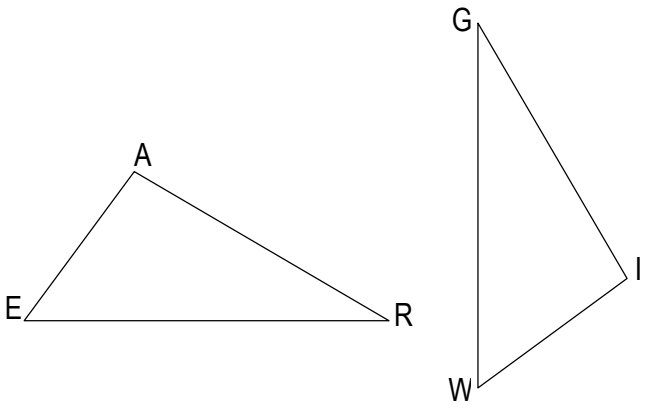

S_____ because_____

A_____ because_____

S_____ because_____

The angle is/is not (circle one) between the sides.

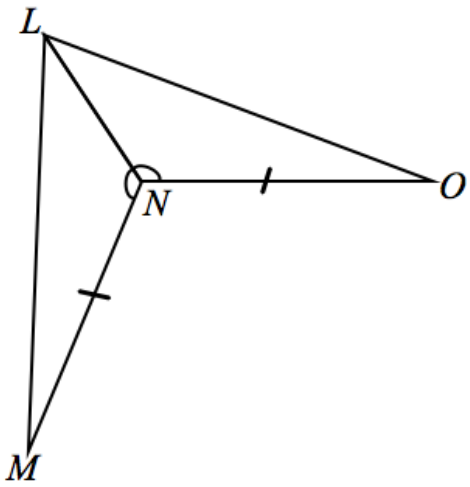
☐ (b) Describe a sequence of transformations that map △EAR to △WIG and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation.



☐ (4) ☐ Given: ∠LMN ≅ ∠LNO, $\overline{MN} \cong \overline{OM}$

Do △LMN and △LON meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.



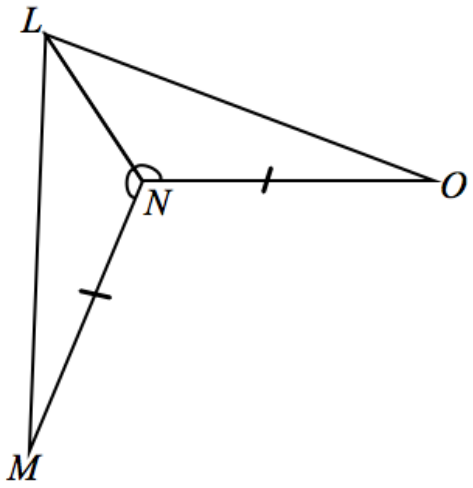

S_____ because_____

A_____ because_____

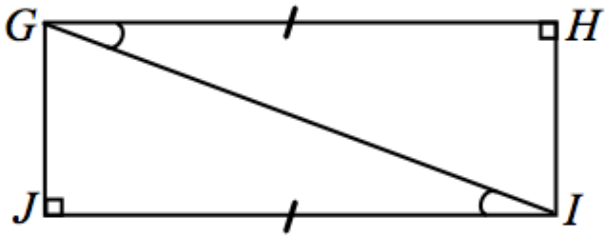
S_____ because_____

The angle is/is not (circle one) between the sides.

Describe a sequence of transformations that map △LMN to △LON and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation.



☐ (5) ☐ Given: ∠HGI ≅ ∠JIG, $\overline{HG} \cong \overline{JI}$




Do △HGI and △JIG meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.

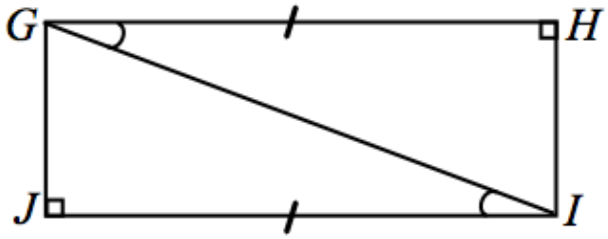
S_____ because_____

A_____ because_____

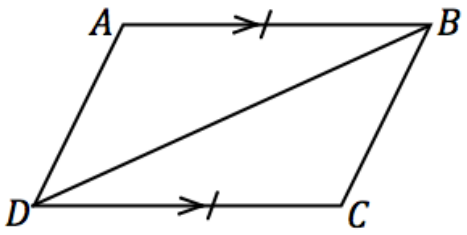
S_____ because_____

The angle is/is not (circle one) between the sides. (If not, choose a different A)

Describe a sequence of transformations that map △HGI to △JIG and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation.



☐ (6) ☐ Given: $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \cong \overline{CD}$




(Hint: Parallel lines give us pairs of congruent angles. Are there any here?)

Do △ABD and △CDB meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.

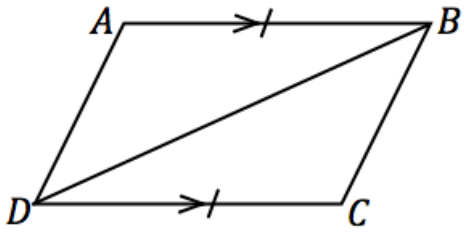
S_____ because_____

A_____ because_____

S_____ because_____

The angle is/is not (circle one) between the sides.

Describe a sequence of transformations that map △ABD to △CDB and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation.



☐ (7) **Exit Ticket**

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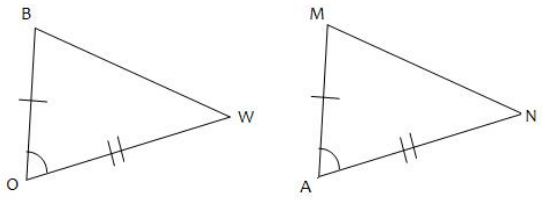
☐ (8) **Homework**

☐ (1) Given: The diagram at right




Do △BOW and △MAN meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.

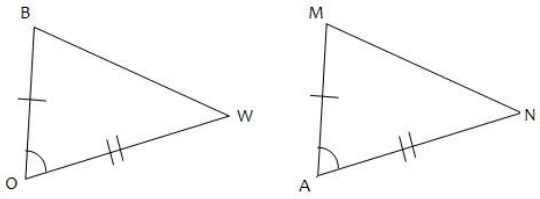
S_____ because_____

A_____ because_____

S_____ because_____

The angle is/is not (circle one) between the sides.

Describe a sequence of transformations that map △BOW to △MAN and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation.

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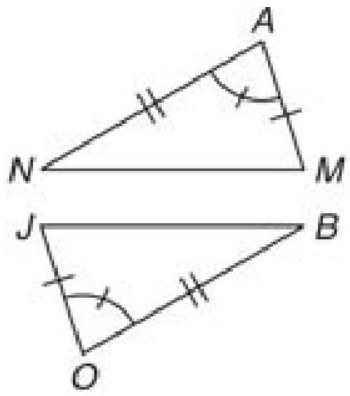
☐ (8) cont. **Homework**

☐ (2) Given: The diagram at right

Do △MAN and △JOB meet the SAS≅ criteria? _____

Mark the diagram and provide evidence below.



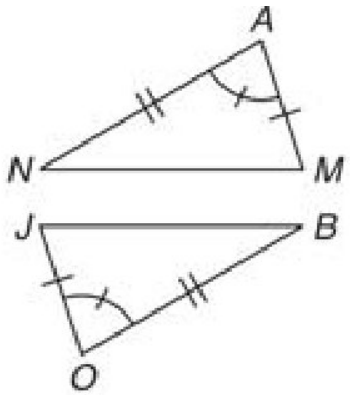

S_____ because_____

A_____ because_____

S_____ because_____

The angle is/is not (circle one) between the sides.

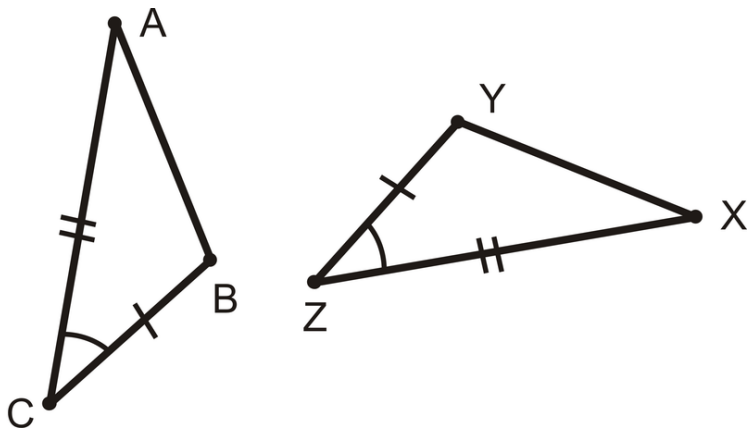
Describe a sequence of transformations that map △MAN to △JOB and sketch each step of the transformation. Identify necessary points, lines, vectors, angles to complete the transformation. Write the sequence in function notation. Write a justification in sentences.



**Exit Ticket** **Name**_____ **Date** _____ _____ **Per**_ _____ **10.3L**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

Describe a sequence of transformations that will map △ABC to △XYZ. Sketch each single transformation in the sequence. You may want to use tracing paper to help you visualize the transformations.



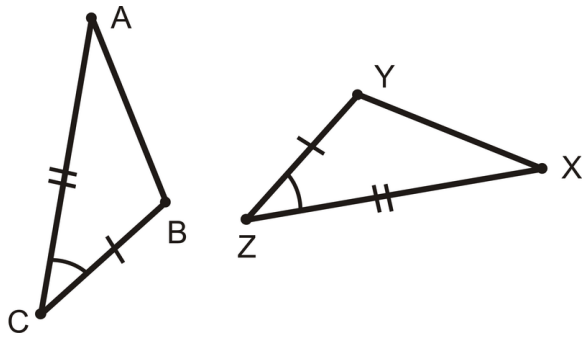
**DO NOW** **Name**_____ **Date** _____ **Per**_____ **10.3L**

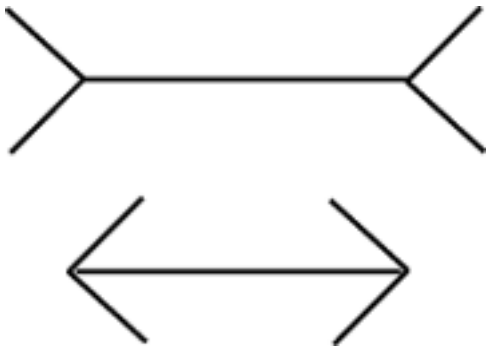
(1) If △ABC maps to △XYZ, then

angle C would coincide with ____

segment CA would coincide with ____

and segment CB would coincide with _____.




(2) Which horizontal segment is longer, the one in the top figure, or the one in the bottom figure? How do you know?