Geometry Regents Lomac 2015-2016 **Date** 11/13 **due** 11/14 | **Congruent Triangles SAS** **4.2R**

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.

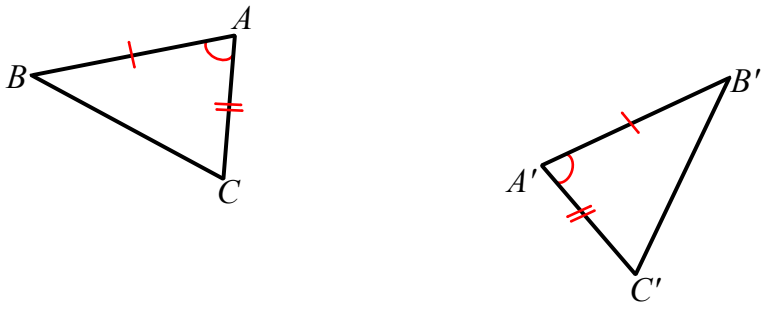
☐ **DO NOW** On the back of this packet

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

☐ (2) transparencies, dry erase markers, eraser, compass, straightedge

Congruence: A sequence of transformations

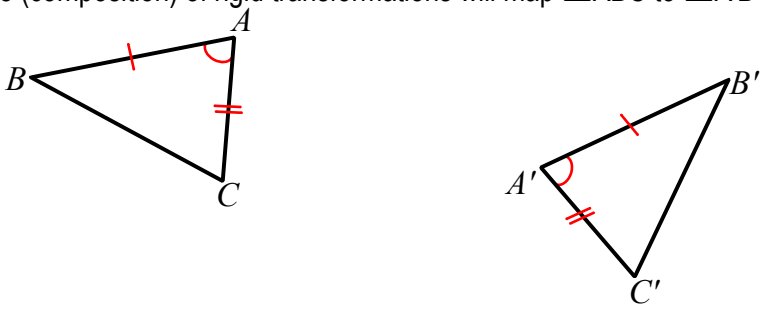
Two shapes are congruent if there is a sequence of transformations of the plane (1 or more) that map one shape to the other. Determine a sequence of transformations that maps △A'B'C' back to △ABC. Sketch and write a description and justification for each step in the sequence of transformations.



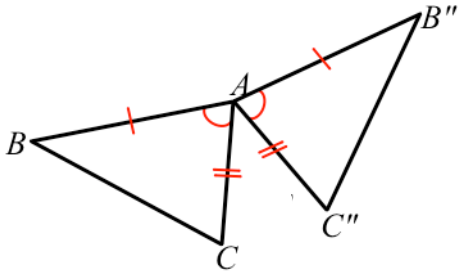
Is SAS enough to prove/guarantee 2 triangles are congruent? _____

☐ (3) cont. **Congruence: A sequence of transformations (remix)**

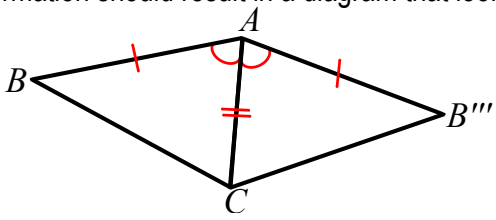
☐ To verify that a sequence (composition) of rigid transformations will map △ABC to △A'B'C' by we will work backwards.



☐ 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 $\overline{AC} \cong$ _____ . Your transformation should result in a diagram that looks like the one below.



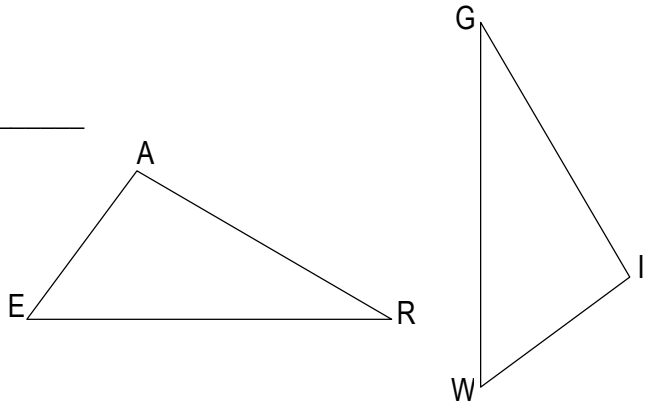
☐ Finally, map _____ to _____ by _____ triangle A'"B'"C'" _____ _____ so that _____ coincides with _____. We know that both points will coincide because (1) angle _____ maps to angle _____ under reflection which means that ray _____ will lie on ray _____, (2) points ____ and ____ lie on the same ray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

☐ (4) ☐ (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.



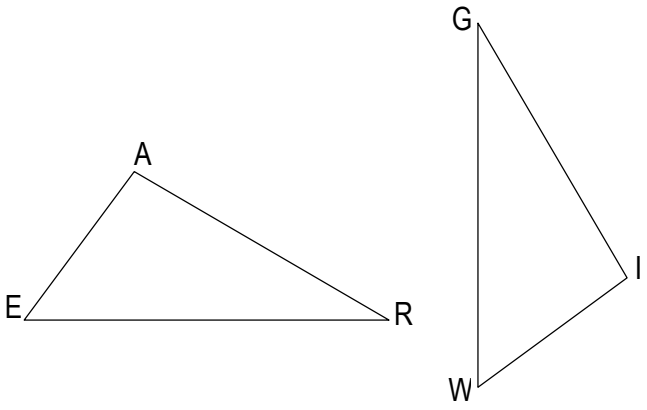
S_____ because_____

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. Write the sequence in function notation. (You may write a description in sentences OR just write the function notation.)

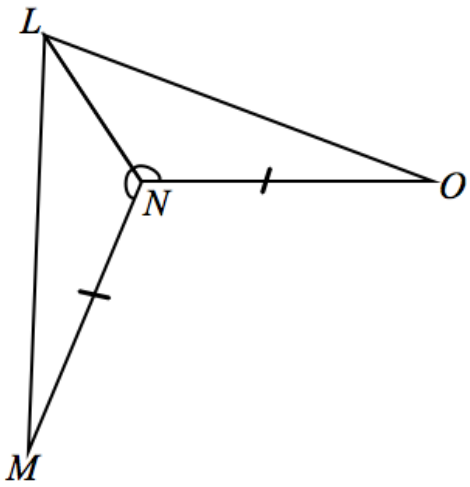


Function Notation _____

☐ (5) ☐ Given: $\angle LMN \cong \angle LNO$, $\overline{MN} \cong \overline{OM}$

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

Mark the diagram and provide evidence below.



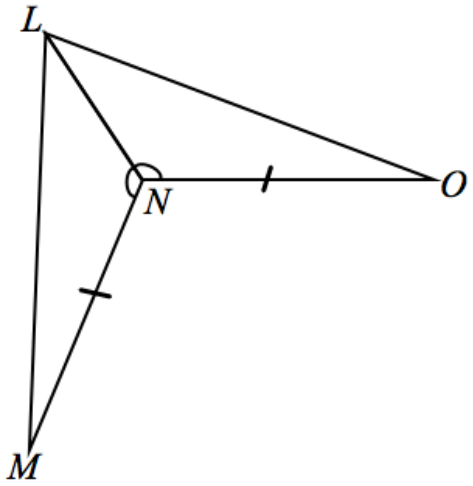
S_____ because_____

A_____ because_____

S_____ because_____

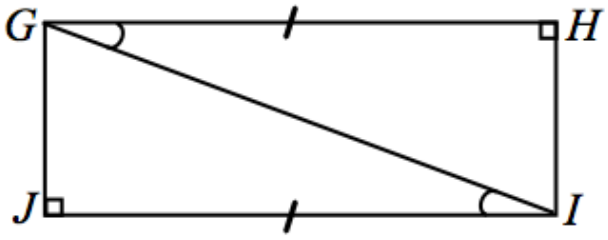
The angle is/is not (circle one) between the sides.

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. Write the sequence in function notation. Write a justification in sentences.



Function Notation _____

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



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

Mark the diagram and provide evidence below.

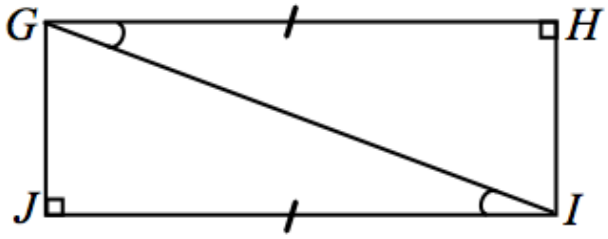
S_____ because_____

A_____ because_____

S_____ because_____

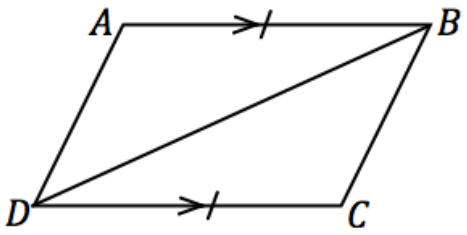
The angle is/is not (circle one) between the sides. (If not, choose a different A)

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. Write the sequence in function notation. Write a justification in sentences.



Function Notation _____

☐ (7) ☐ 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.

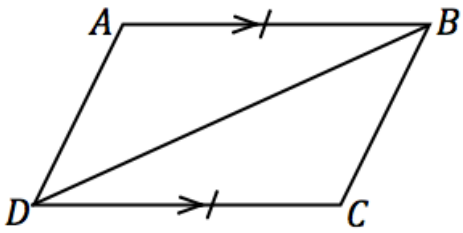
S_____ because_____

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. Write the sequence in function notation. Write a justification in sentences.



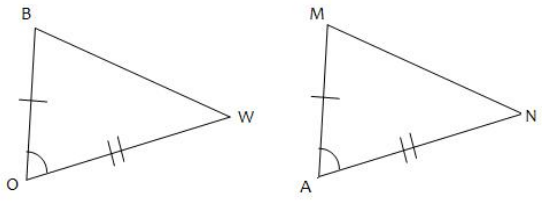
Function Notation _____

☐ (8) **Exit Ticket**

ON THE LAST PAGE

☐ (9) **Homework**

☐ (1) Given: The diagram at right



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

Mark the diagram and provide evidence below.

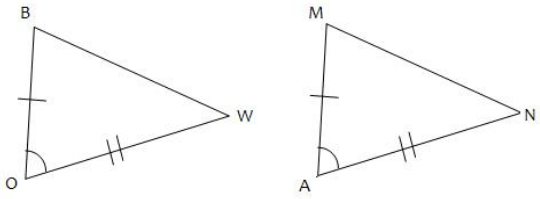
S_____ because_____

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. Write the sequence in function notation. Write a justification in sentences.



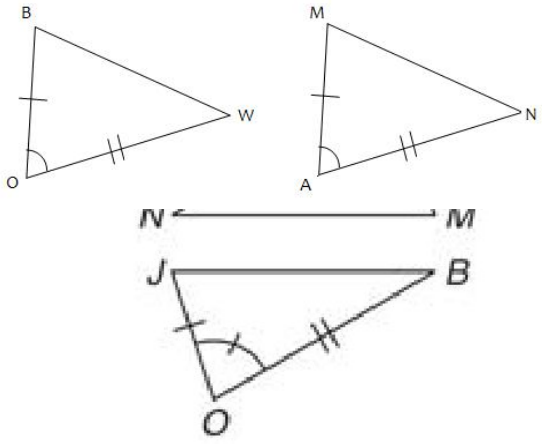
Function Notation _____

☐ (9) cont. **Homework**

☐ (2) Given: The diagram at right

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

Mark the diagram and provide evidence below.



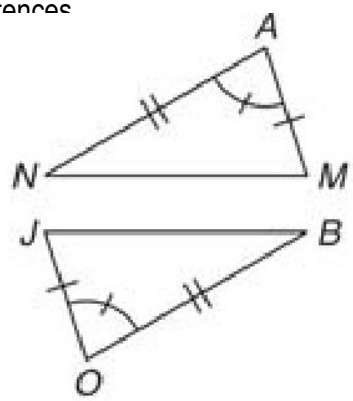
S_____ because_____

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.

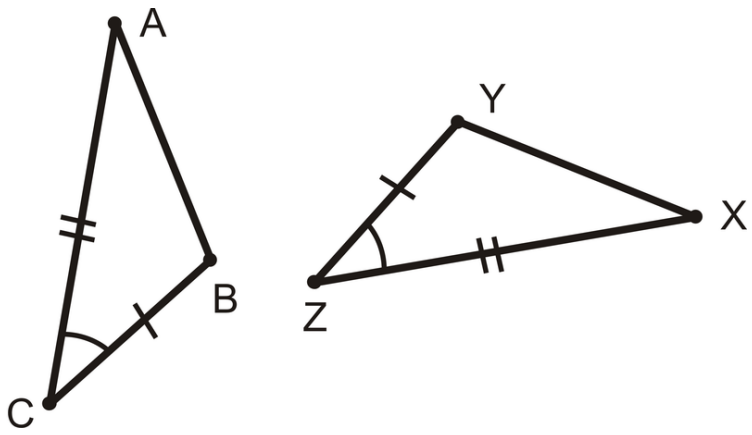


Function Notation _____

Exit Ticket **Name**_____ **Date** _____ _____ **Per**_ _____ **4.2R**

(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.



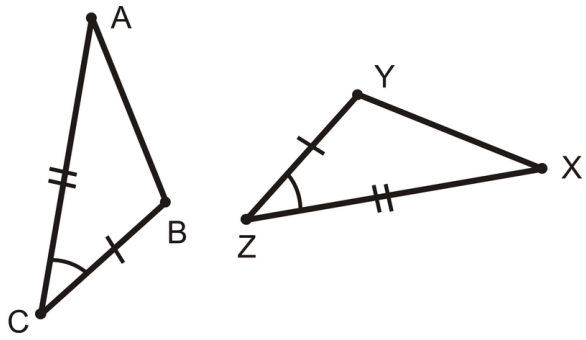
DO NOW **Name**_____ **Date** _____ **Per**_____ **4.2R**

(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?