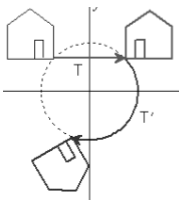
Geometry Regents Lomac 2015-2016 **Date** 10/16 **due** 10/19 | **Composition of Transformations 2.11R**

Name _____ **Per**_____

LO: I can perform a sequence/composition of transformations on a given figure using a straightedge and compass or tracing paper, explain how the sequence results in the final image, and use function notation for the transformation.



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

☐ (1) C6 **Notes: Constructing Parallel Lines** Construct line *p* parallel to line *n*.

☐ (a) Obtain C6 a diagrams page, scissors, and tape or glue

☐ (b) Cut, arrange, check, and then glue or tape down the descriptions

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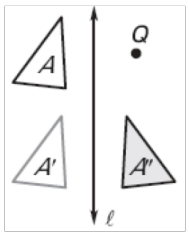
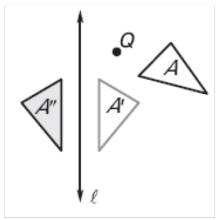
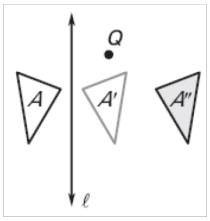
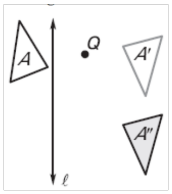
☐ (2) transparencies, dry erase markers, erasers **Composition of transformations** Construct line *p* parallel to line *n*.

☐ A sequence or composition of transformations is when a figure undergoes multiple transformations. Describe each composition of transformations below using the terms reflection, rotation, and translation. Include direction when direction matters. (You may want to use plastic sheets to trace and move the shapes.)

(a) ☐ 

(b) ☐ 

(c) ☐ 

(d) ☐ 

_____ _____ _____ _____

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_____ _____ _____ _____

☐ (3) pen/pencil **Reading and writing function notation for transformations – comparing to typical English sentences**

(a) ☐ The function notation $r_m(T_{\overline{AB}}(Q))$ is read:

"The reflection across line m of the translation along vector AB of point Q."

Which do you think happens first, the reflection, or the translation? _____ because

_____

(b) ☐ Read the statement:

"Anthony took a picture of the drawing of his family."

Which do you think happens first, the picture or the drawing? _____ because _____

_____

(c) ☐ Read the sentence from part (a) again.

"The reflection across line m of the translation along vector AB of point Q."

Which happens first, the reflection, or the translation? _____ Did your answer change? _____ Why/why not? _____

☐ (4) pen/pencil **Reading and writing function notation for transformations**

Compositions of transformations can be written

$$T_{\overrightarrow{HA}} \circ R_{C,45°}(\overline{YZ})$$

OR $T_{\overrightarrow{HA}}(R_{C,45°}(\overline{YZ}))$ which is read:

"*the transformation along vector HA of the rotation 45° around point C of segment YZ*"

Based on your work in problem #5, Which happens first, the translation or the rotation?

_____ because

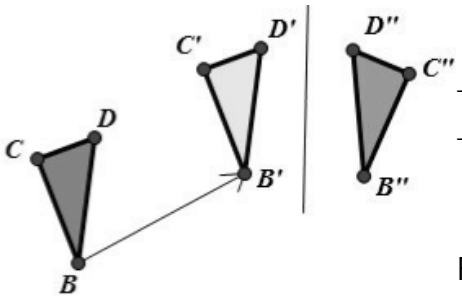
_____

_____

☐ (5) transparencies, dry erase markers, erasers **Writing function notation for transformations**

☐ Use the abbreviation examples from problem #3 and the order of compositions from #5 & #6 to describe each composition of transformations and then write the function notation for it.

(a) ☐



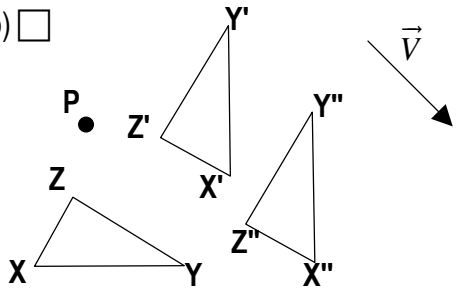
Description: _____

_____

_____

Function: _____

(b) ☐



Description: _____

_____

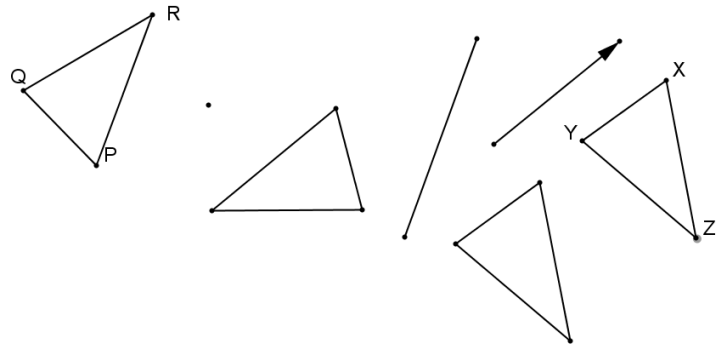
_____

Function: _____

☐ (6) **Describing compositions of functions**

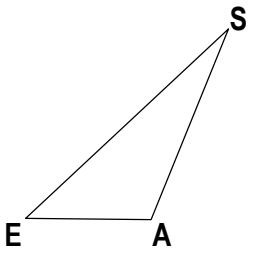
transparencies, dry erase markers, erasers

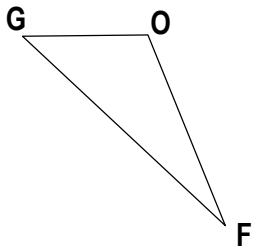
☐ Describe with as much detail as possible the composition of transformations that map △PQR to △XYZ. You may want to add letters to the in-between steps to make your explanation easier.



☐ (7) **Describing a composition**

☐ (a) Describe a composition of transformations that will map SEA to FOG, that means S has to map to F, E to O, and A to G. You may need to add lines for reflections, vectors for translations, or centers of rotation for rotations. Draw each intermediate step. Write the composition in function notation.



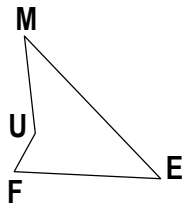


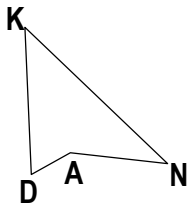
Function notation _____

☐ (7) **Performing compositions of transformations (continued)**

cont

☐ (b) Describe a composition of transformations that will map DANK to FUME, that means D has to map to ____. You may need to add lines for reflections, vectors for translations, or centers of rotation for rotations. Draw each intermediate step. Write the composition in function notation.





☐ (8) **Exit Ticket**

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☐ (9) **Homework**

compass

☐ (1) Describe each transformation. Circle the part of the transformation that happens first.

$r_{\overline{CD}} \circ r_{\overline{MT}}\left(\Delta XNJ\right)$ _____

_____

_____

_____

$T_{\overline{WB}} \circ R_{J,-42}\left(\overline{LU}\right)$ _____

_____

_____

_____

$R_{C,25°} \circ r_{l}\left(F\right)$ _____

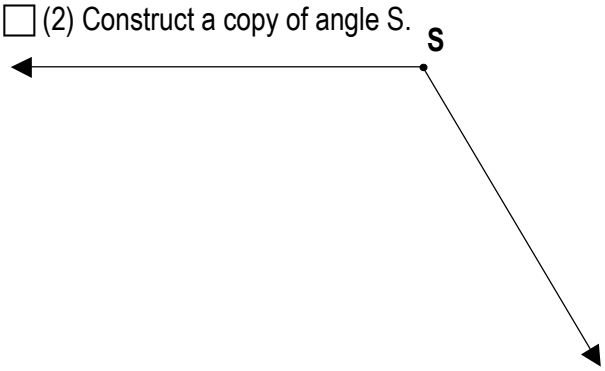
_____

_____

_____

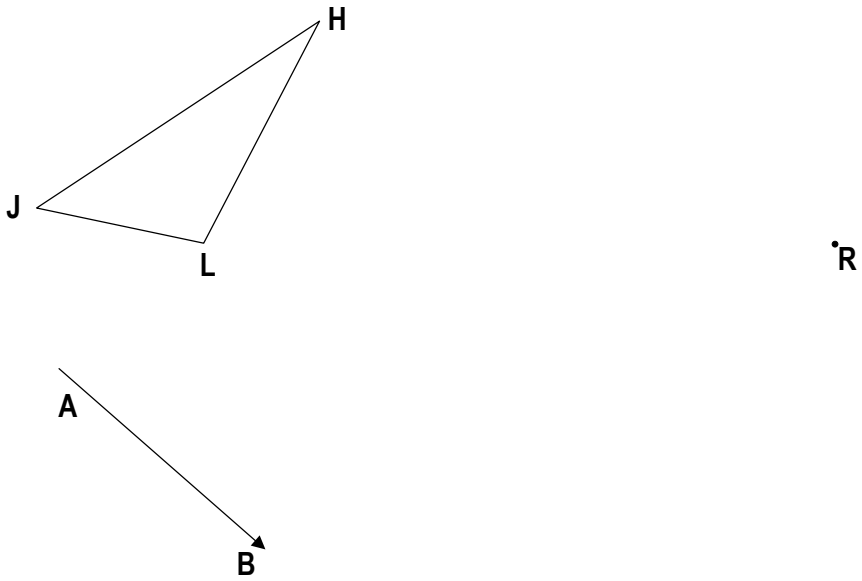
☐ (9) **Homework**
compass

☐ (2) Construct a copy of angle S.



☐ (3) Bisect angle S' in problem number 2.

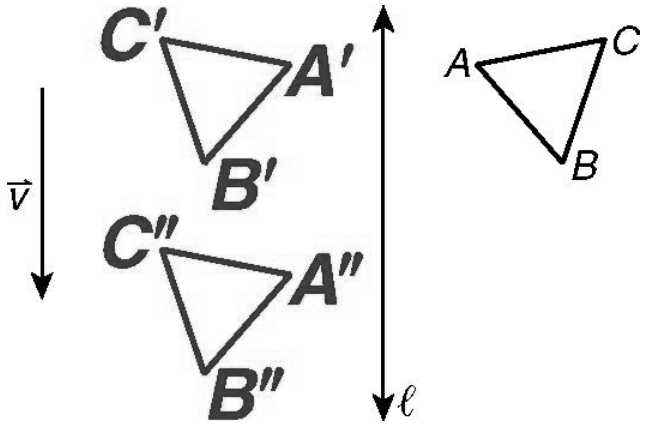
Construct **OR** use tracing paper to draw $R_{R,180°} \circ T_{\overrightarrow{AB}}(\Delta HJL)$



EXIT TICKET Name_____ Date _____ _____ Per_ _____ 2.11R

(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 the composition of transformations and write the transformation in function notation.



DO NOW **Name**_____ **Date** _____ **Per**_____ **2.11R**

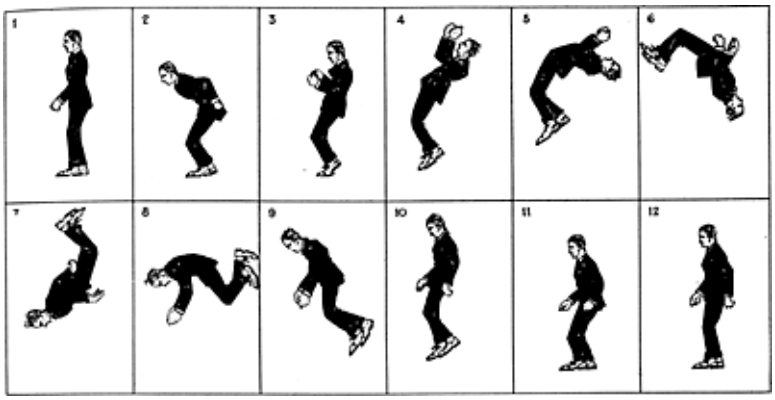
(1) Describe what each transformation function notation means:

(a) $T_{\overrightarrow{LM}}(\triangle HIJ)$

(b) $R_{A,-45°}(\overline{CD})$

(c) $r_{\overleftrightarrow{ZY}}(U)$

(2) This is a series of pictures for a flip book. Imagine you flip through the book. Describe what you would see -- where the person starts, what happens, and where the person ends.



To see a flipbook in action, go to https://www.youtube.com/watch?v=ud8dSDy5lB4