Geometry Regents Lomac 2015-2016   Date <u>10/8</u>   due <u>10/9</u>   **Constructing Rotations** │ **2.6R**
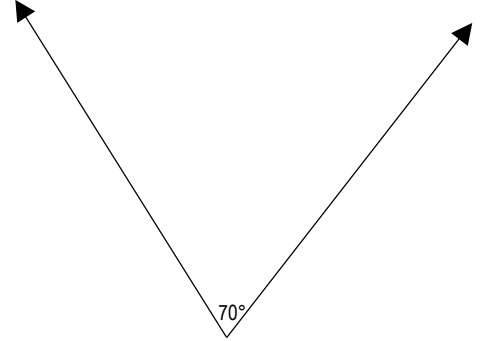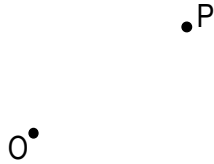
☐ **DO NOW –** On the back of this packet

Name _____

LO: I can use function notation to describe **rotations** in the plane and can construct rotations with a compass and straightedge.

___

☐ (1)   **Rotations** Construct $R_{O,\ 70°}(P)$
compass

•P

O•

70°

From the notation, you must rotate point _____ around point _____ a measure of _____ in a
_____ direction.

If you rotate a point and trace its path, what shape do you get?_____

How can you use the 70° angle to help with your construction? _____

___

☐ (2)   **Rotations** Construct $R_{Q,\angle M}(\ \overline{AB}\ )$ List your steps.
compass

Use a different color highlighter to show the rotation of each point.

(Number your steps)

B
•
A•———•

•Q

M
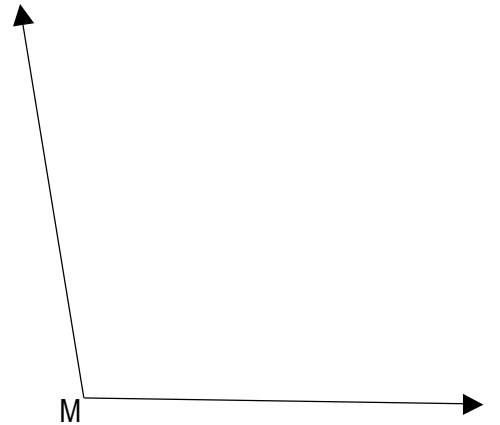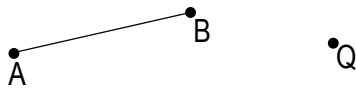
Step 1: _____
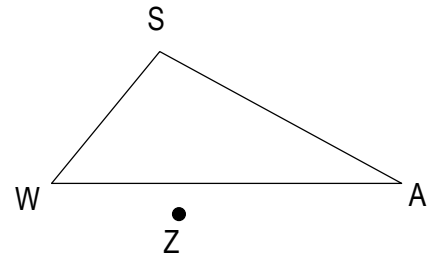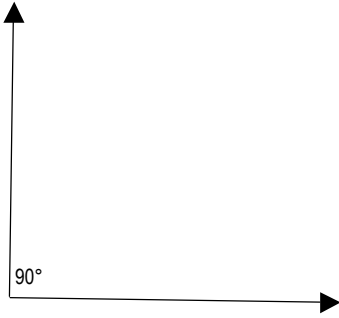
_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

$\overline{AB} \cong \overline{A'B'}$ because _____

☐ (3) **Rotations Practice** Perform each rotation.
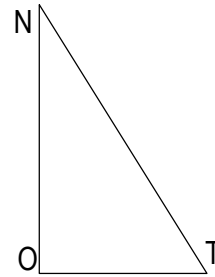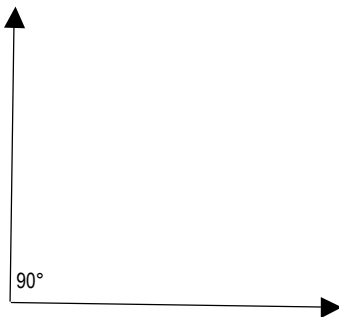compass

☐ (a) $R_{Z,\,90°}(\triangle WAS)$

S

W   A

Z

△WAS≅△W'A'S' because

_____

☐ (4) **Rotations Practice** Perform each rotation.
compass

☐ (b) $R_{O,90°}\,(\triangle NOT)$

90°

N

O   T

90°

△NOT≅△N'O'T' because _____

☐ (5)
cont
compass
BIG IDEA: To construct a rotation, I need to construct copies of the

_____ ____ _____, one for each point of the

figure. The vertex of all angles must be on the _____ ___

_____. The names of the copied angle are as follows: image,

center of rotation, preimage.

☐ (6) **Exit Ticket**

ON THE LAST PAGE

☐ (7) **Homework**

☐ (1) Construct the rotation. $R_{-90°,F}(\triangle ABC)$ (If you ever need to, you can use the corner of a piece of paper to measure 90°. See lesson 2.4 if you need to review what the notation means.)

90°
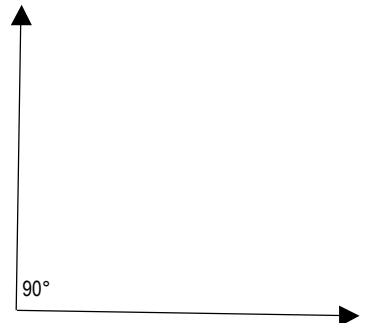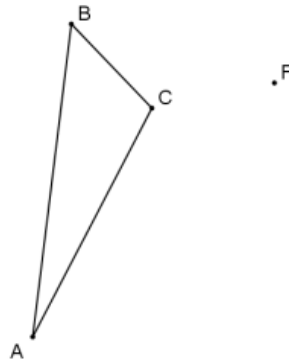
☐ (7)   **Homework**
cont,
compass   ☐ (2) Sketch each of the following: (SEE NOTES)
highligh-
ters   (a) $\overline{QR} \perp \overleftrightarrow{ST}$ (b) $\overrightarrow{VW}$ bisects $\overline{XY}$ (c) $\angle LMN \cong \angle OPQ$

☐ (3) Describe each function notation in words.

$R_{X, 30°}(Y)$ _____

_____

$R_{C, -120°}(\triangle LMN)$ _____

_____

$r_{\overleftrightarrow{PQ}}(\triangle ZOT)$ _____

_____

$R_{H, \angle C}(\overline{AT})$ _____

_____

☐ (4) Sketch each of the following: (SEE NOTES)

(a) Z is the midpoint of $\overline{AE}$ (b) $\overleftrightarrow{QR} \parallel \overleftrightarrow{ST}$ (c) $\angle SAL$ and $\angle LAD$ are a linear pair
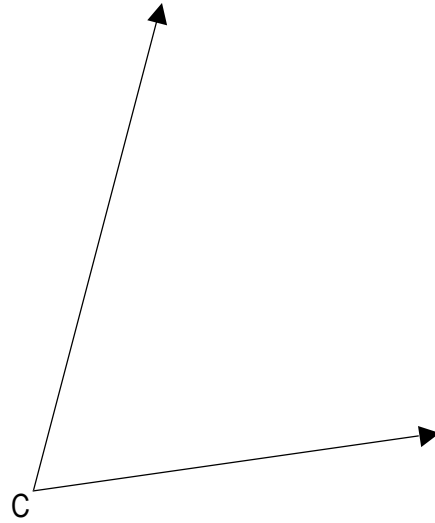
☐ (5) Construct equilateral triangle BOS. In triangle BOS, bisect angle B. How many degrees is angle B?

Exit Ticket   Name_____ **Date** _____ _____ **Per_** _____   **2.6R**

(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:

☐ (a) Construct the transformation function $R_{B, \angle C}(A)$
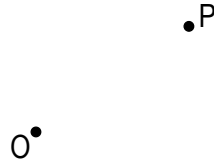
C

A

B

DO NOW   **Name**_____ **Date** _____ **Per**_____   **2.6R**

(1) To perform rotations, we need a CENTER, an ANGLE MEASURE, and a DIRECTION.
Lets look at each part of a rotation separately.
(Complete parts (a) and (b) on your own and do as much of part (c) as you can)

☐ (a) CENTER: Show all of the images that can be made by rotating point P around the center of rotation O.

•P

O •

☐ (b) When you are showing ALL of the possible images of point P, does the direction of the rotation matter?_____

Why/why not? _____

☐ (c) MEASURE (ANGLE): Let's be more specific. On the diagram in part (a), find point Q such that it is the image of
point P under a rotation of the angle measure below. (That is, COPY the angle.)

1st Construct circle O with radius OP

2nd Construct circle O again, but on the reference angle. Label the vertex of
the reference angle O_R and one intersection of an angle side and the arc P_R

3rd Label the intersection of the arc and the other side of the angle Q_R

4th Measure the distance $P_R Q_R$ and use it to construct circle P in the diagram
for part a

5th There is/are _____ point(s) we can construct because circle P

_____ circle O in _____locations.
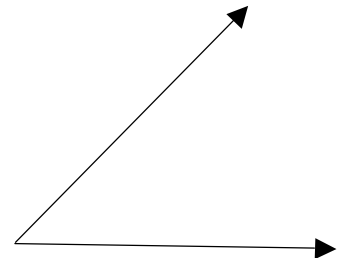
☐ (d) DIRECTION: Let's be even more specific. Label the points of intersection Q_1 and Q_2. Circle the words to make
each sentence correct.

Q_1 is a clockwise/counterclockwise rotation which means it is positive/negative.

Q_2 is a clockwise/counterclockwise rotation which means it is positive/negative.

(2) What is this guy doing? How does this relate to today's Learning Objective (LO)?