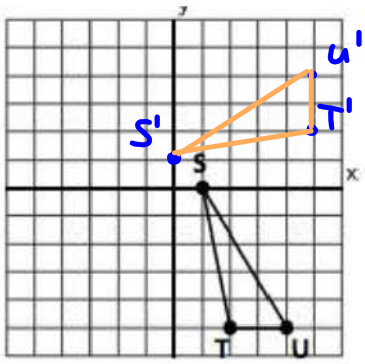
Geometry CC – Mr. Valentino Name: _____
Unit 4 Lesson 6: Center of Rotation Date: _____ Period: _____

It's time to construct the...CENTER OF ROTATION!

Do Now:

1. Rotate the below figure 90 degrees, counterclockwise, about the origin. Be sure to write down the vertices of the transformed figure on the lines:



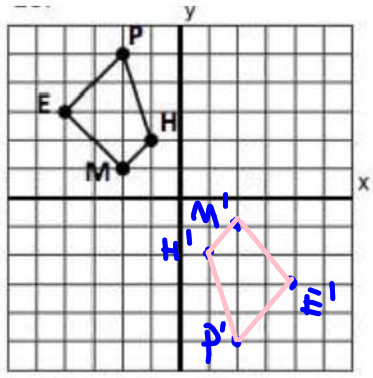
$(x, y) \rightarrow (-y, x)$

S(1,0) → S'(0,1)

T(2,−5) → T'(5,2)

U(4,−5) → U'(5,4)

2. Rotate the below figure 180 degrees, counterclockwise, about the origin. Be sure to write down the vertices of the transformed figure on the lines:



$(x, y) \rightarrow (-x, -y)$

P(−2,5) → P'(2,−5)

E(−4,3) → E'(4,−3)

M(−2,1) → M'(2,−1)

H(−1,2) → H'(1,−2)

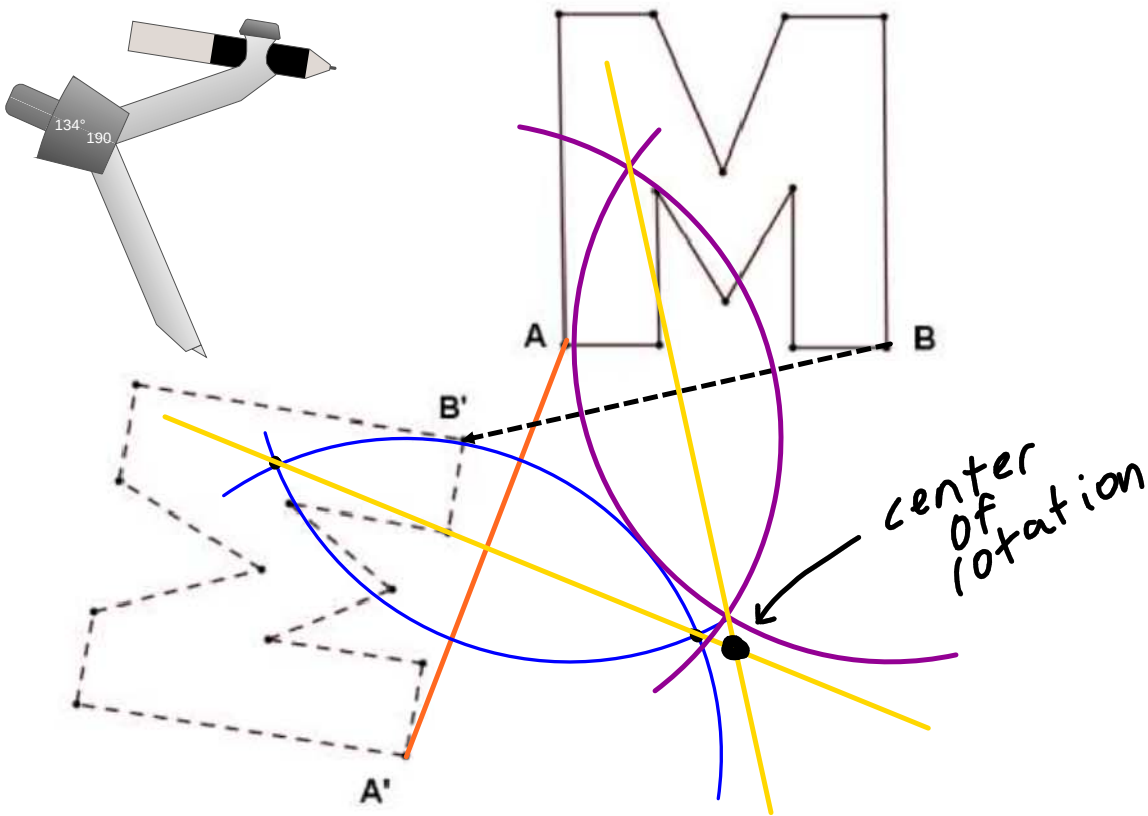
REMEMBER! When we...

Rotate a Point 90° Counterclockwise about the Origin: $(x, y) \rightarrow$ $(-y, x)$

Rotate a Point 180° Counterclockwise about the Origin: $(x, y) \rightarrow$ $(-x, -y)$

270° $(x, y) \rightarrow (y, -x)$

Here are the steps that outline how to find the **center of rotation** using your compass and straightedge. We will practice together:



a. Draw a segment connecting points A and A'.

b. Using a compass and straightedge, find the perpendicular bisector of this segment.

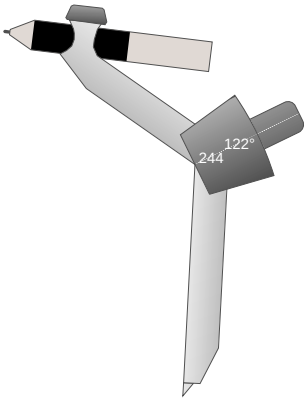
c. Draw a segment connecting points B and B'.

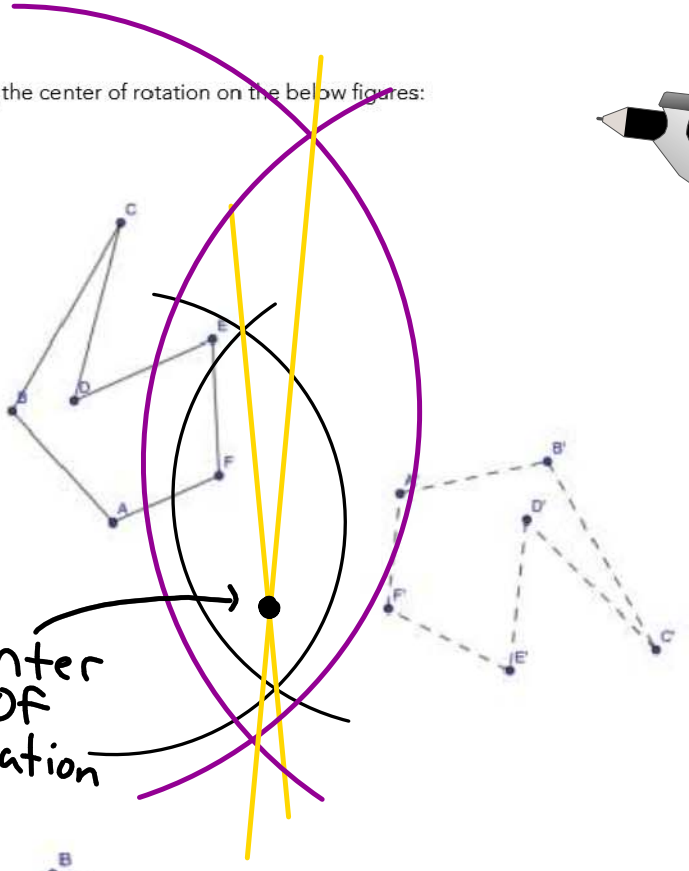
d. Find the perpendicular bisector of this segment.

e. The point of intersection of the two perpendicular bisectors is the center of rotation. Label this point P.

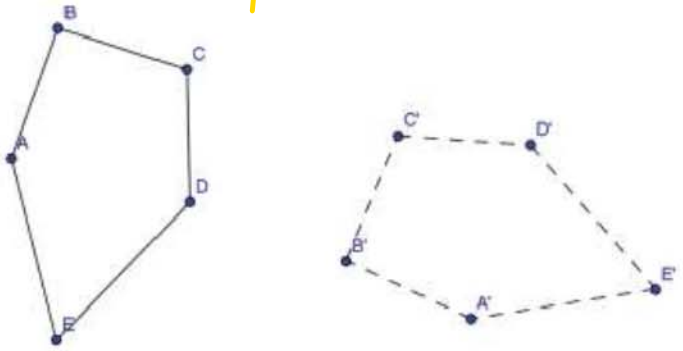
Practice constructing the center of rotation on the below figures:

1.

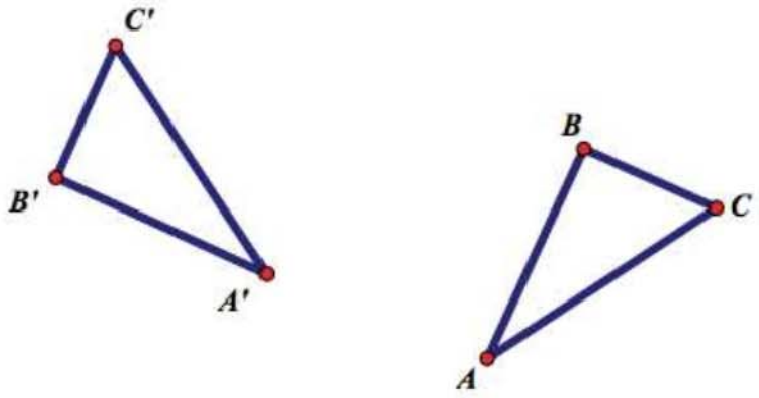




2.



3.



Extra Practice!

4. A translation maps (x, y) to $(x - 5, y + 3)$. In which quadrant does the point (-3,-2) lie under the same translation?

○ [1] I ○ [2] II ○ [3] III ○ [4] IV

5.

If the letter **P** is rotated 180 degrees, which is the resulting figure?

1) **d**
2) **d**
3) **d**
4) **b**

What is the image of the point $(2, -3)$ under a clockwise rotation of 90° $(R_{-90°})$ about the origin?

The point $(-2, 1)$ is rotated 180° about the origin in a clockwise direction. What are the coordinates of its image?

What is the image of $R_{90°}(1, 2)$?