

TODAY'S AGENDA: November 30th+

- Work on Khan Academy Mission:
- Complete Mission Foundation Skills
- Today's Objective: Whole-Group Lessons:
- Transformations - Rotations
- Standards:
- CCSS.MATH.CONTENT.HSG.CO.4:
- Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
- Continue With Your Mission Assignments

Types of Transformations

Rigid Transformations

1. Translation - move

2. Rotation - Spin

+ : counter-clockwise

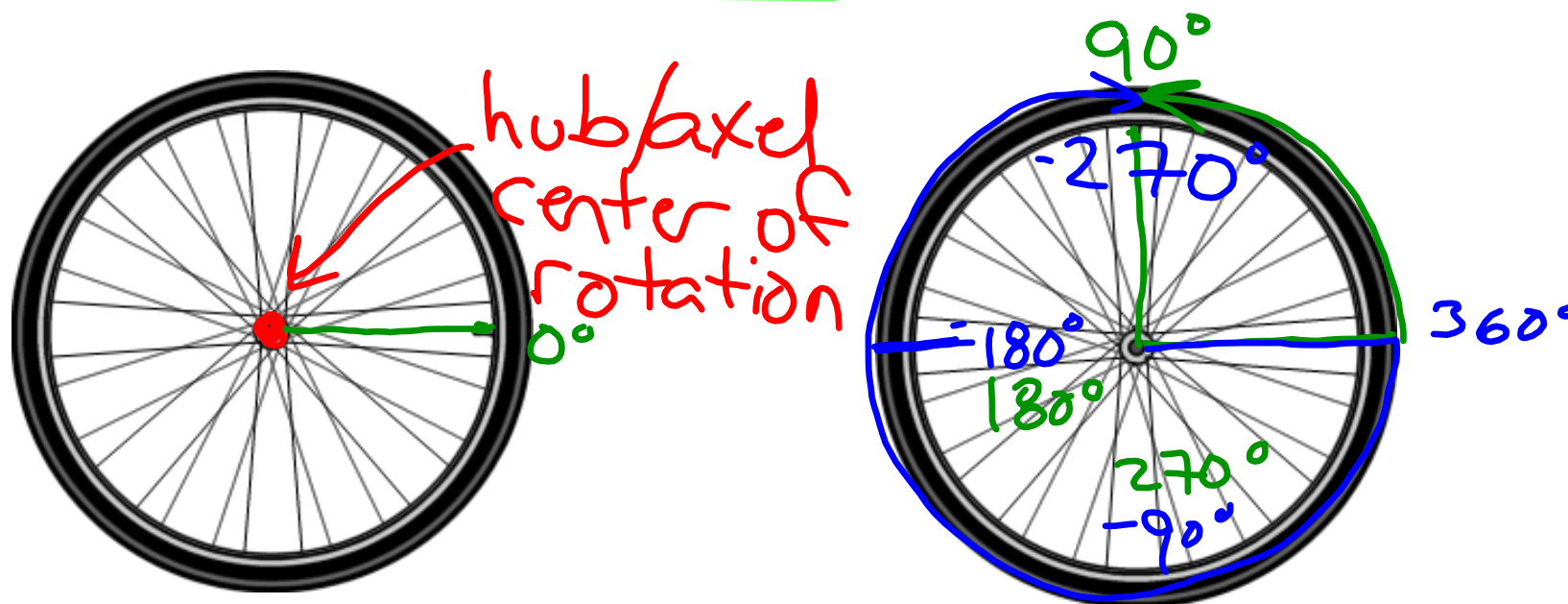
- : clockwise

3. Reflection - flip (mirror image, butterfly wing)

4. Dilation - Resize (bigger, smaller)
↳ Not Rigid

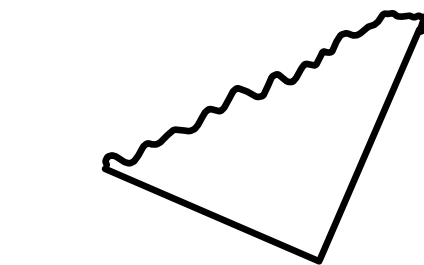
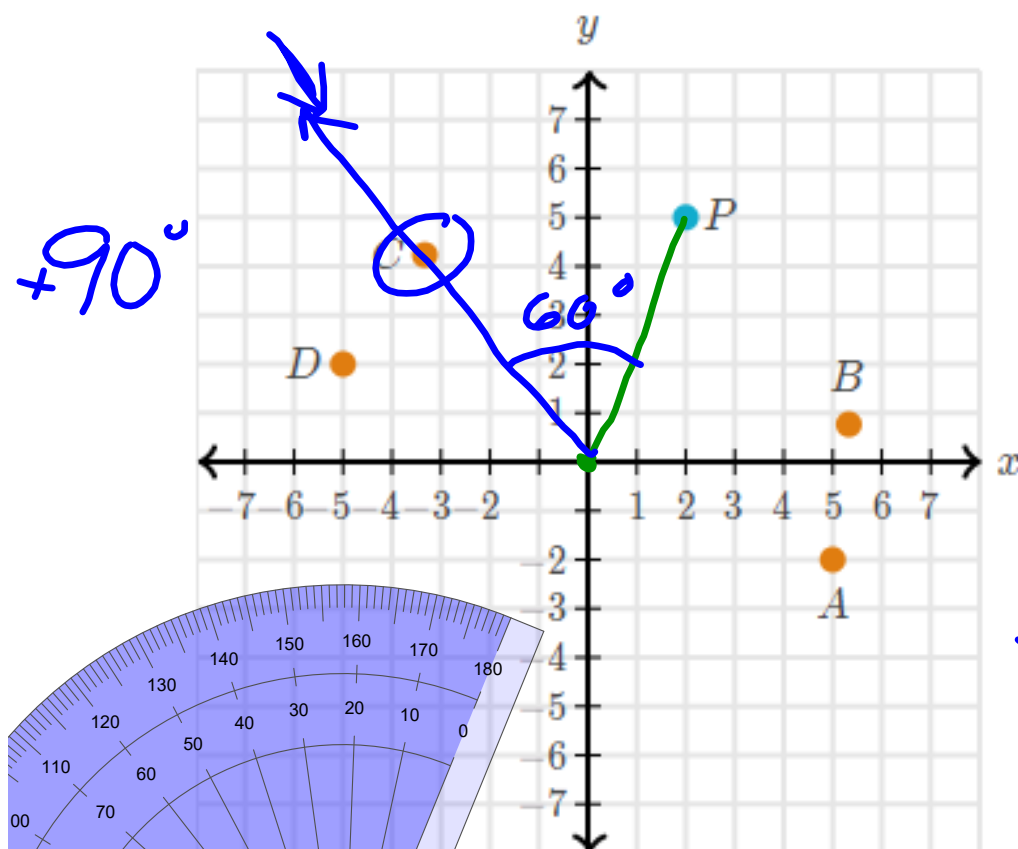
Rotations - Spinning

- Positive rotations are Counter-Clockwise
- Negative rotations are Clockwise
- Rotate *about* a point or *center of rotation*



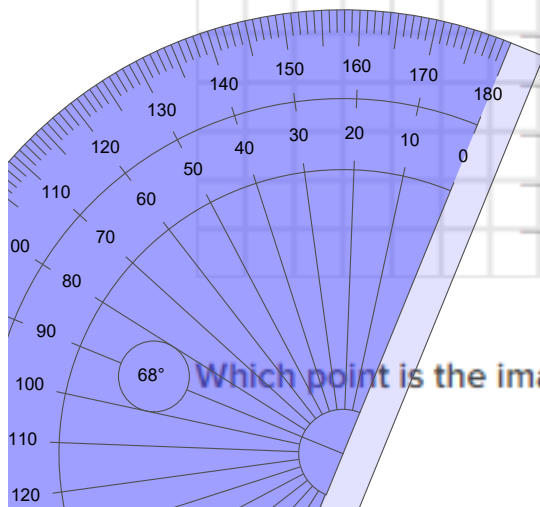
Rotate Points

Point P was rotated about the origin $(0,0)$ by 60° .



-60°

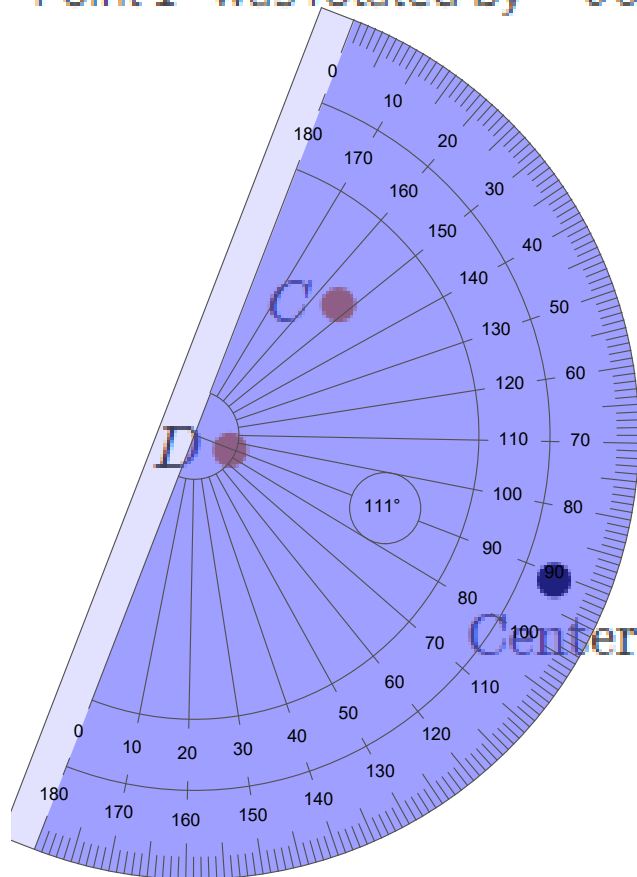
-90°



Which point is the image of P ?

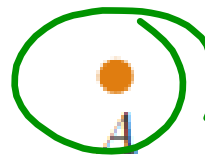
C

Point P was rotated by -90° (the center of rotation is indicated).



P

B



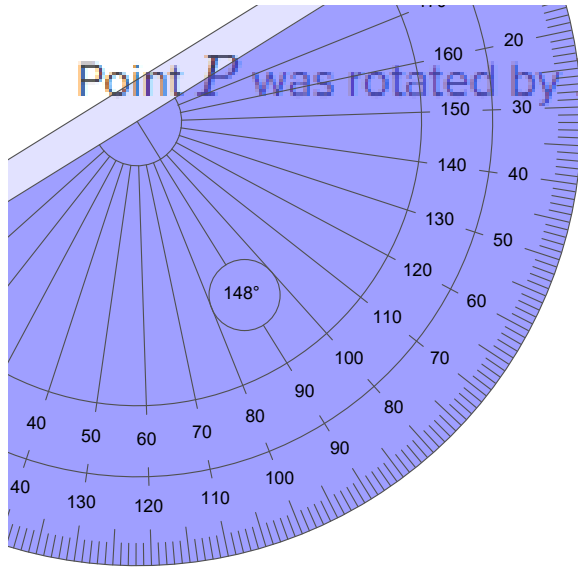
A

negative

-90°

Which point is the image of P ?

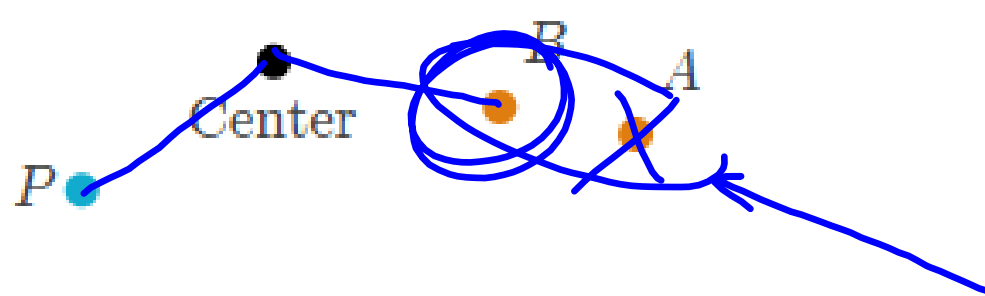
A



Point P was rotated by 135° (the center of rotation is indicated).

● D

● C

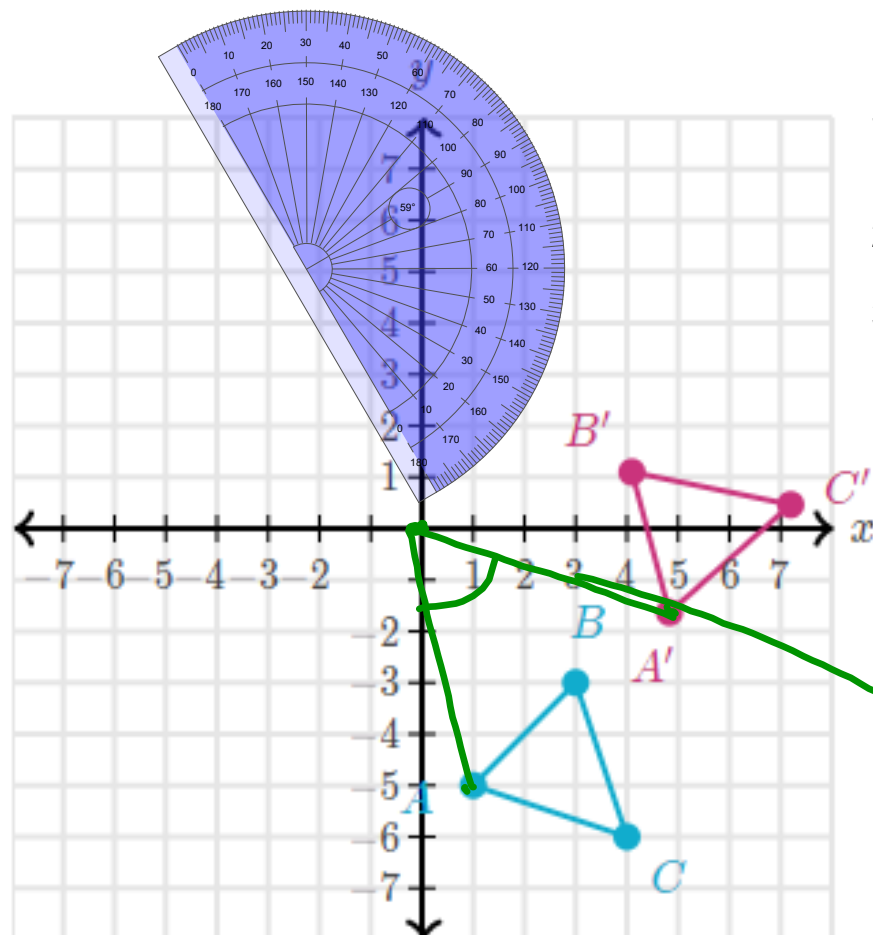


Which point is the image of P ?

B

Determine Rotations

Triangle $\triangle A'B'C'$ is the image of $\triangle ABC$ under a rotation about the origin, $(0, 0)$.

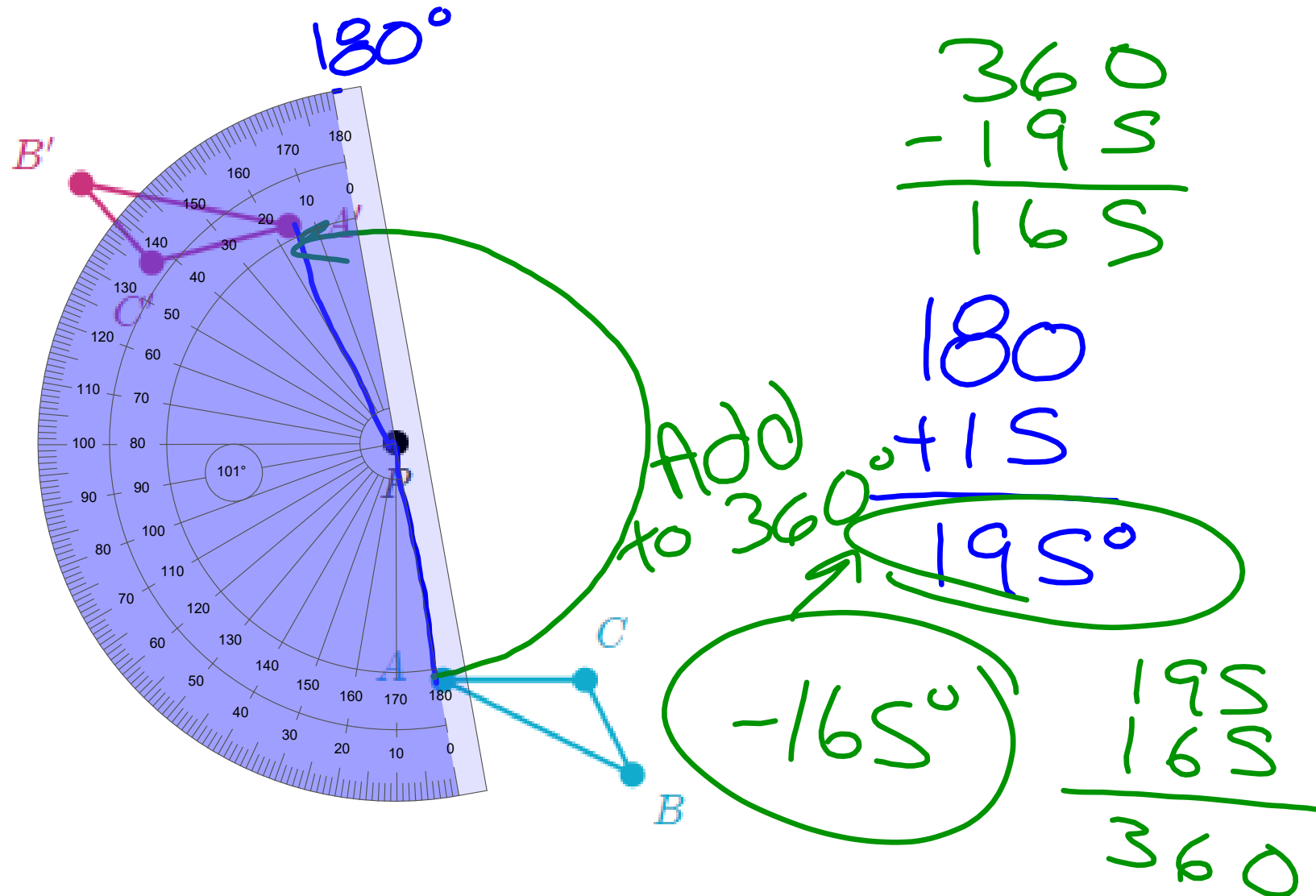


Steps:

1. Pick corresponding points from each shape.
(Ex. A and A')
2. Draw a line from those points to the "center of rotation"
3. Measure the angle you just made in step 2 with a protractor.

Determine the angle of rotation.

Triangle $\triangle A'B'C'$ is the image of $\triangle ABC$ under a rotation about point P .



Determine the angle of rotation.

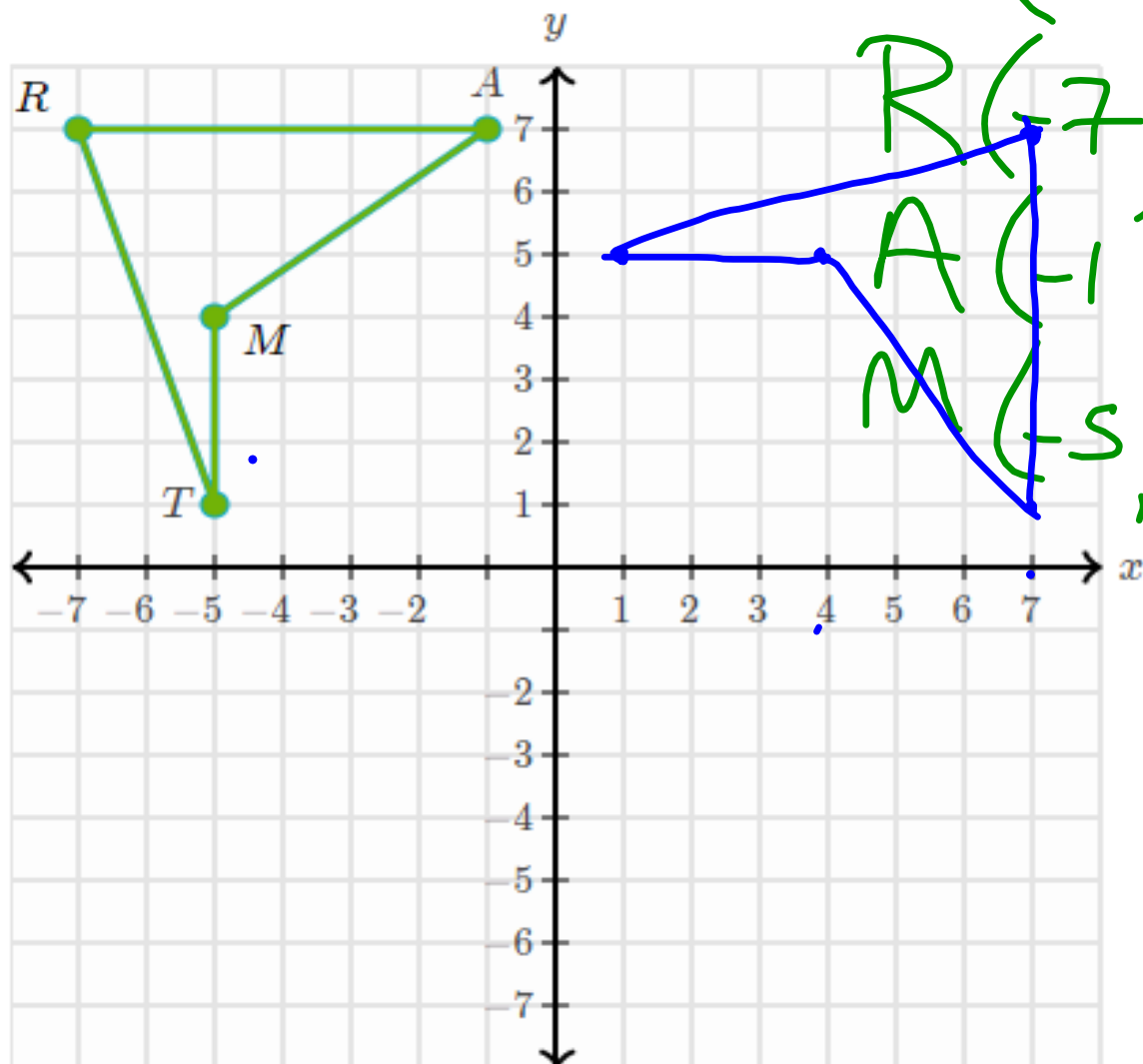
Rotate Shapes and Coordinates

Rotations Rules for Coordinates

- $R_{90} (x,y) = (-y,x)$
- $R_{180} (x,y) = (-x,-y)$
- $R_{270} (x,y) = (y,-x)$ **same as -90**

Quadrilateral $TRAM$ is rotated -90° about the origin.

Draw the image of this rotation.



$T(-5, 1) \rightarrow (1, 5)$
 $R(-7, 7) \rightarrow (7, 7)$
 $A(-1, 7) \rightarrow (7, 1)$
 $M(-5, 4) \rightarrow (4, 5)$

Skills You Should Be Working on:

1. Identify Transformations
2. Translate Points
3. Determine Translations
4. Translate Shapes
5. Rotate Points
6. Determine Rotations
7. Rotate Shapes