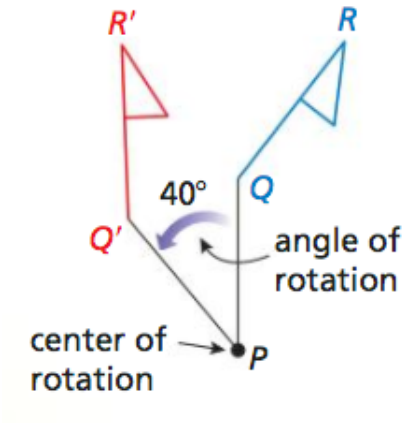
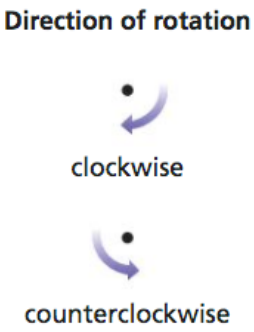
4.3 Rotations

What is a rotation?

A **Rotation** is a transformation in which a figure is turned about a Fixed point called the **center of rotation**. Rays drown from the center Of rotation to a point and its image form the **angle of rotation**.





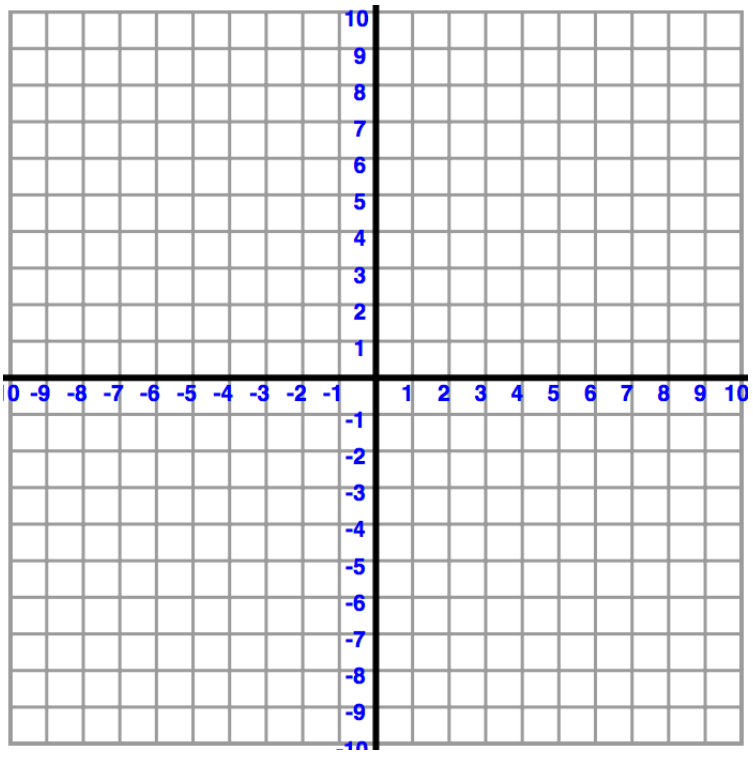
!!!ALL TEXTBOOK ROTATIONS ARE COUNTERCLOCKWISE UNLESS STATED!!!

Example 1:

Graph the point P(5, 0).

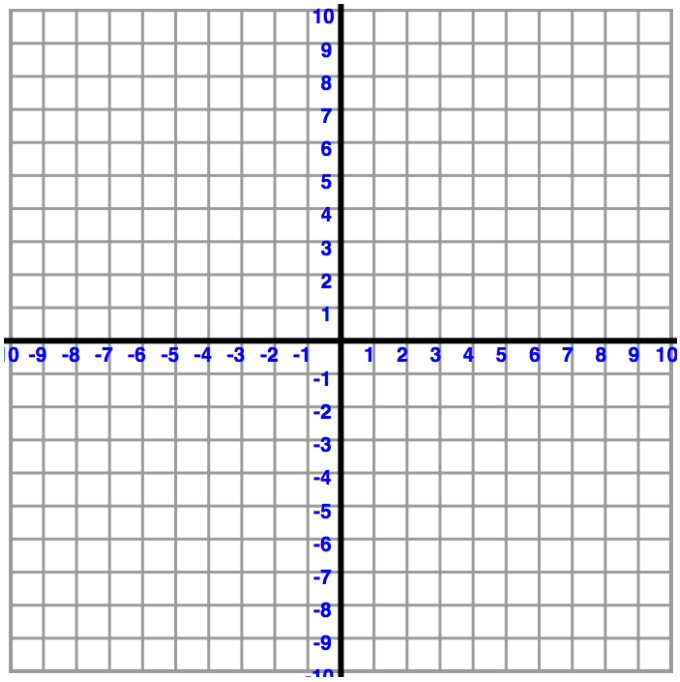
a) Rotate P 90° about the origin.
b) Rotate P 180° about the origin.
c) Rotate P 270° about the origin.

Analyze the points and make a conclusion.



Example 2: Rotating a figure in the coordinate plane

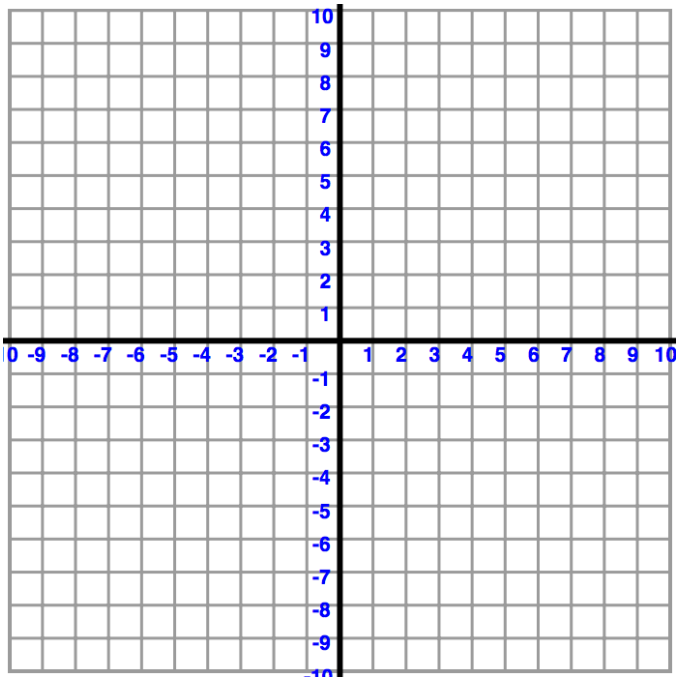
Graph quadrilateral RSTU with the vertices $R(3\ ,1)$, $S(5\ ,1)$, $T(5\ ,-3)$, and $U(2\ ,-1)$ and its image after 270^{o} counterclockwise rotation about the origin.



Example 3: Preforming a composition

Graph ΔRST with the vertices $R(1\ ,-3)$, $S(2\ ,-6)$, and $T(4\ ,-4)$.

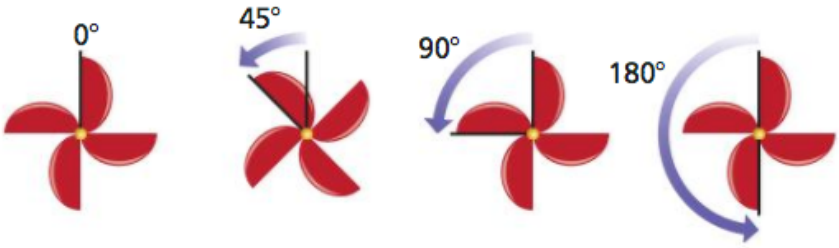
Reflection over the y-axis
Rotation 90^{o} counterclockwise about the origin



Rotational Symmetry

A figure in a plane has ***rotational symmetry*** when the figure can be mapped onto itself by a rotation of 180° or less about the center of the figure. This point is the ***center of symmetry***.

i.e.

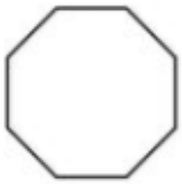


Example 4: Identifying rotational symmetry.

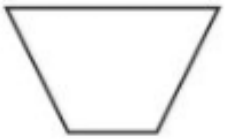
Does the figure have rotational symmetry? If so, describe any rotations that map the figure onto itself.

a. parallelogram

b. regular octagon



c. trapezoid



Classwork / Homework
7, 9, 13, 15, 16, 17, 18, 21, 30