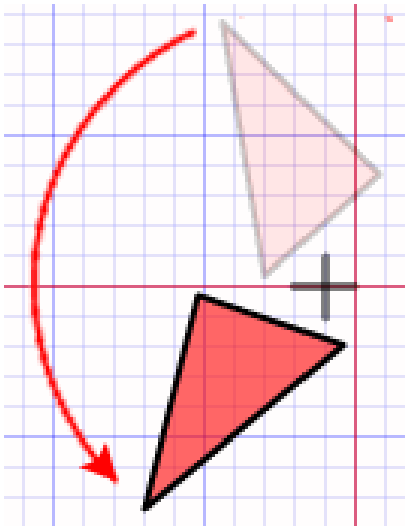
Rotations

What is a rotation?

Where have you experienced a rotation?

A rotation

- A transformation that **TURNS** all points of a figure around a fixed point called the Center of rotation



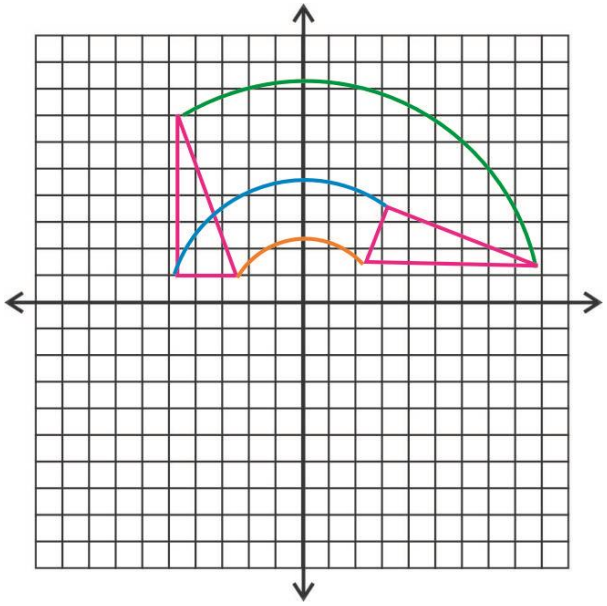
Angle of Rotation

- The **angle of rotation** tells us the number of degrees through which points rotate around the center of rotation
- A positive angle of rotation turns the figure counterclockwise, and a negative angle of rotation turns the figure in a clockwise direction.

Properties of rotations

A rotation is a transformation about a point *P* such that

- every point and its image are the same distance from *P* (lie on a circle)and
- all angles with vertex *P* formed by a point and its image have the same measure



http://www.mathsisfun.com/geometry/rotation.html

Notation

- The notation $R_{P,\theta}(A) = A'$ says that the image of point A after a rotation of θ degrees about point P is A'.

  θ is the Greek symbol THETA and is used to for angle measures.
  If the point is not specified, it is the origin.
  Note that reflections are written with a capital R.

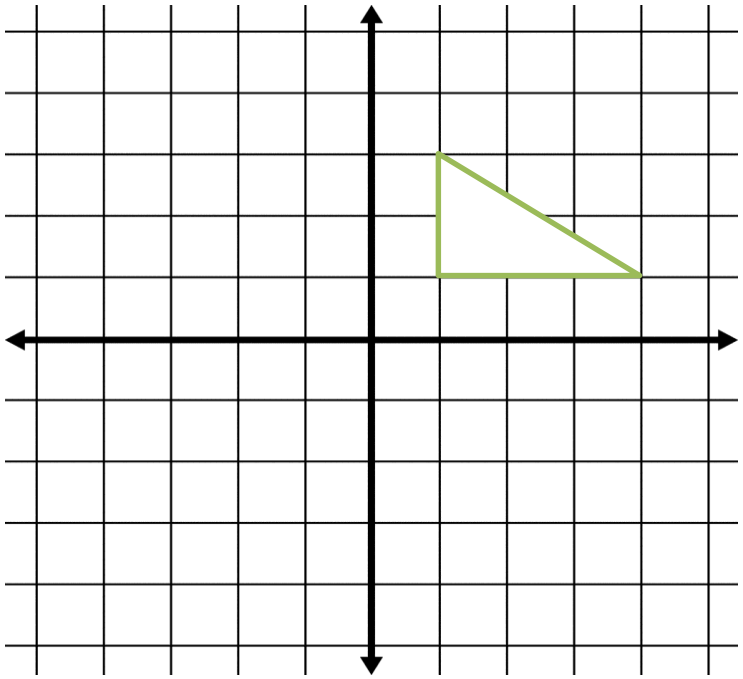
$$R_{P,\theta}(\Delta ABC) = \Delta A'B'C'$$

Rules for rotations in a coordinate plane around the origin

Rotation of **90°**: $R_{90°}(x,y) \rightarrow (-y,x)$ OYX

Rotation of **180°**: $R_{180°}(x,y) \rightarrow (-x,-y)$ OXOY

Rotation of **270°**: $R_{270°}(x,y) \rightarrow (y,-x)$ YOX



http://www.regentsprep.org/Regents/math/geometry/GT4/PracRot.htm

Try it yourself!

- http://www.shodor.org/interactivate/activities/Transmographer/