# The Eight Basic Rotations About the Origin in the Plane

The eight basic rotations about the Origin in the coordinate plane are shown below. The preimage is the original figure, polygon ABCD. The image, polygon A'B'C'D', is the result of the rotation. A standard convention when dealing with rotations or any type of transformation of figures in the plane is for the verticies on the image to have prime markers while the verticies on the preimage do not.
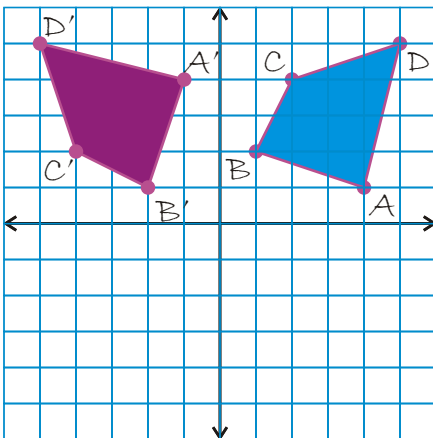
Rotation 90⁰ clockwise is the same as 270⁰ counter clockwise
(x and y switch, x changes sign.)
$(x', y') = (y, -x)$
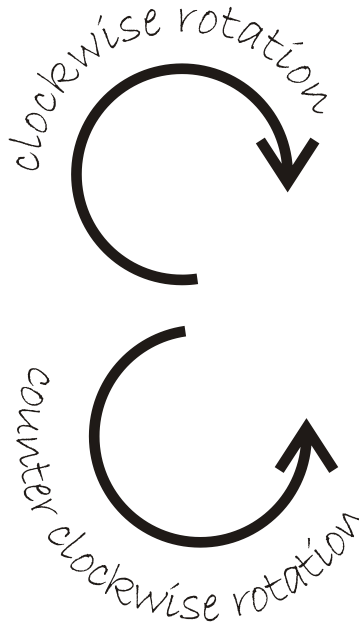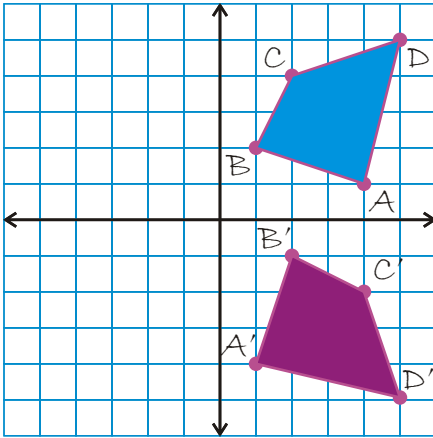
Rotation 180⁰ clockwise or 180⁰ counter clockwise
(x and y change signs.)
$(x', y') = (-x, -y)$

clockwise rotation

counter clockwise rotation
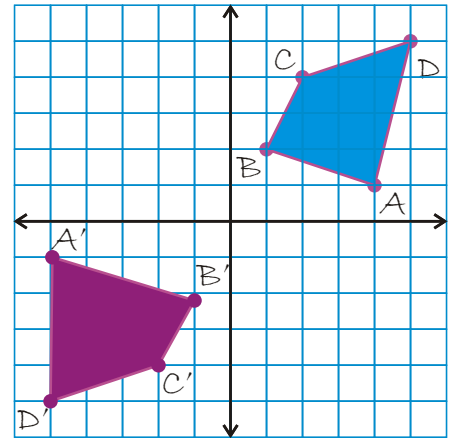
Rotation 90⁰ counter clockwise is the same as 270⁰ clockwise
(x and y switch, y changes sign.)
$(x', y') = (-y, x)$

A very simple way to find the coordinates of the image (the result of rotating the preimage) is to draw the preimage on a coordinate grid and just rotate the coordinate grid about the Origin the number of degrees and direction for the rotation. You can now read the coordinates of the image from the grid. You can use this trick to discover the patterns for the different rotations about the Origin.

Rotation 360⁰ clockwise or 360⁰ counter clockwise
(x and y stay the same, nothing changes.)
$(x', y') = (x, y)$