# The Five Basic Reflections in the Plane

The five basic reflections 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 reflection. A standard convention when dealing with reflections 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.
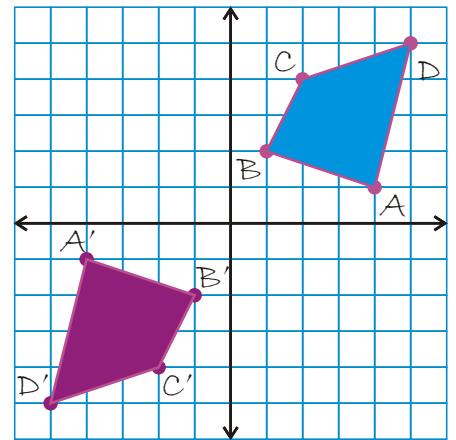
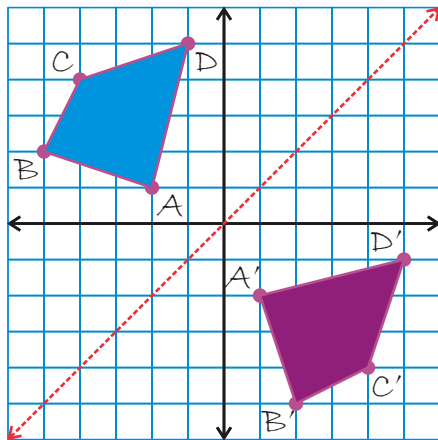**Reflection Across the X-axis**
(y changes sign.)
$(x', y') = (x, -y)$
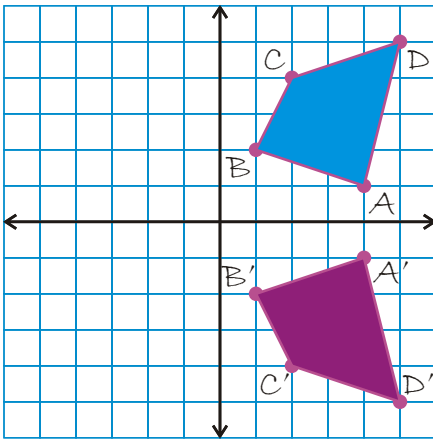
Reflection Across the Y-axis
(x changes sign.)
$(x', y') = (-x, y)$
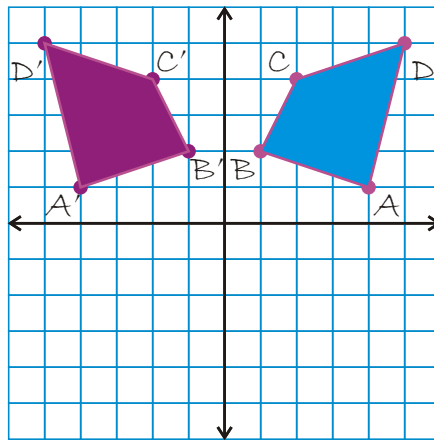
Reflection Across the Origin
(The signs on x and y change.)
$(x', y') = (-x, -y)$

Reflection Across y = x
(x and y switch positions.)
$(x', y') = (y, x)$

Reflection Across y = -x
(x and y switch positions <u>and</u> change signs.)
$(x', y') = (-y, -x)$