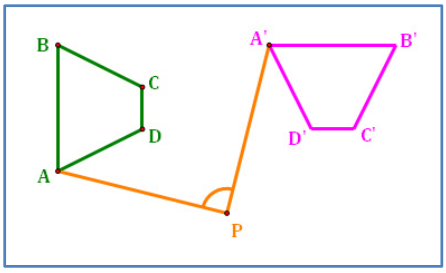
Pre-Algebra
Rotation

Definitions

Rotation is turning a figure by an angle about a fixed point.

The **Center of Rotation** is the point about which the figure is rotated. Point ***P***, at right, is the center of rotation.

The **Angle of Rotation** determines the extent of the rotation. The angle is formed by the rays that connect the center of rotation to the pre-image and the image of the rotation. Angle ***P***, at right, is the angle of rotation. Though shown only for Point *A*, the angle is the same for any of the figure's 4 vertices.



Note: In performing rotations, it is important to indicate the direction of the rotation – clockwise or counterclockwise.

Rotation about the Origin

Rotation of the point (a, b) about the origin (0, 0) gives the following results:

Pre-Image Point	Clockwise Rotation	Counterclockwise Rotation	Image Point
(a, b)	90^0	270^0	(b, -a)
(a, b)	180^0	180^0	(-a, -b)
(a, b)	270^0	90^0	(-b, a)
(a, b)	360^0	360^0	(a, b)

If you forget the above table, start with the point $(3, 2)$ on a set of coordinate axes. Rotate the point by the selected angle and see which set of "a, b" coordinates works.

Rotational Symmetry

A figure in a plane has **Rotational Symmetry** if it can be mapped onto itself by a rotation of 180^o or less. Any regular polygon has rotational symmetry, as does a circle. Here are some examples of figures with rotational symmetry: