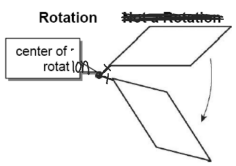
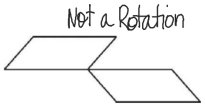
Geometry Notes Section 9-3 May 15

Rotations

A rotation is a transformation that turns a figure around a fixed point, called the center of rotation.

Rotation ~~**Not a Rotation**~~





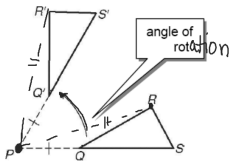
A rotation is a transformation about a point *P* such that each point and its image are the same distance from *P*.

$PQ = PQ'$

$PR = PR'$

$PS = PS'$

Counterclockwise



O **is the center of regular pentagon *ABCDE*.**

What is the measure of each central angle? 72° $\frac{360^\circ}{5}$

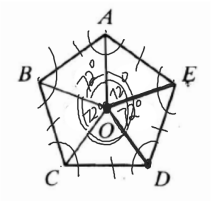
A rotation of 72° about point *O* maps *D*→ E .

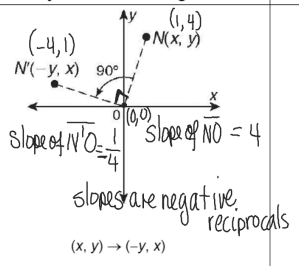
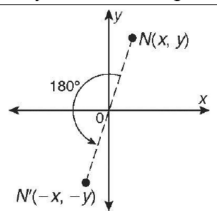
A rotation of 216° about point *O* maps *E*→ C .

÷72 = 3

What angle of rotation maps *B*→*D*? 144°

72° · 2



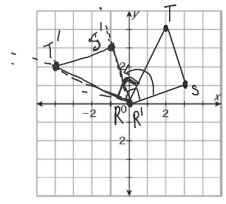
Rotations in the Coordinate Plane	
By 90° About the Origin	**By 180° About the Origin**
	
$(x, y) \rightarrow (-y, x)$	$(x, y) \rightarrow (-x, -y)$

Slope of $\overline{N'O} = \frac{1}{-4}$ Slope of $\overline{NO} = 4$

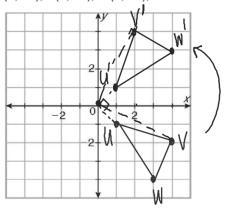
slopes are negative reciprocals

Rotate the figure with the given vertices about the origin using the given angle.

R(0, 0), *S*(3, 1), *T*(2, 4); 90°



U(1, −1), *V*(4, −2), *W*(3, −4); 90°



E(0, 3), *F*(3, 5), *G*(4, 0); 180°