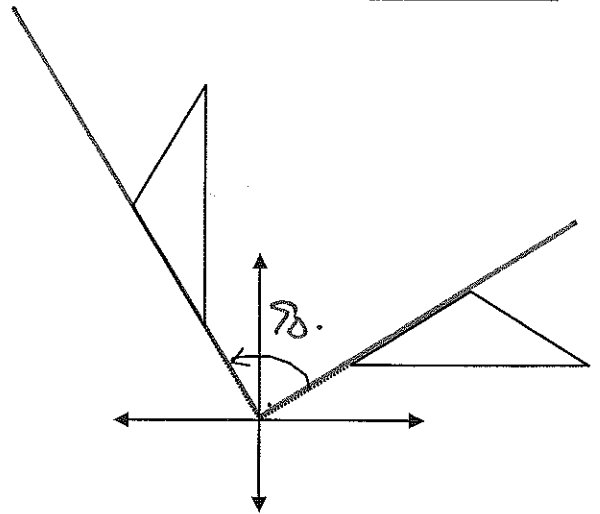


Name: _____

ROTATIONS

A rotation is the spinning of a figure or point around one central point. Rotations are described by the amount of degrees the figure is spun. To figure that amount, measure the angle created by an original point, the center of the rotation, and the image point. The measure of that angle is the degree of the rotation.

use a protractor



In the coordinate plane we will only consider rotations of 90 degrees, 180 degrees, and 270 degrees. These will take our original figure from quadrant I into quadrants II, III and IV, respectively. We will assume that our rotations spin counterclockwise, always using the origin as the central point. This point never changes location.

	Functional notation	Equations
A <u>90° rotation</u> is described by:	$f(x,y) = (-y,x)$ or $f(x,y) = (-y,x)$	$x' = -y$ $y' = x$
A <u>180° rotation</u> is described by:	$f(x,y) = (-x,-y)$ or	$x' = -x$ $y' = -y$
A <u>270° rotation</u> is described by:	$F(x,y) = (y,-x)$ or	$x' = y$ $y' = -x$

What would happen if you rotated a triangle in quadrant I 360°? 0°?

Are there any fixed points under a 90° rotation? A 180° rotation? A 270° rotation?

Is a rotation a rigid transformation?

Under a rotation:

1. Every line is mapped into a line.
2. Every segment is mapped into a segment congruent to the original segment.
3. Every angle is mapped into an angle congruent to the original angle.

Class Exercises

A transformation is described by $f(x,y) = (-y,x)$.

1. Is this a rotation of 90°, 180, or 270 degrees?
2. Under this rotation, the image of (5,2) is (-2,5)
3. The image of (-4,3) is (-3,4)
4. The preimage of (6,-2) is (-2,-4)
5. If $A(3,-6) \rightarrow A'(-6,-3)$, what is the degree of rotation? 270°
6. If $B(-1,-4)$ is rotated 180°, then what are the coordinates of the image B'? (1,4)