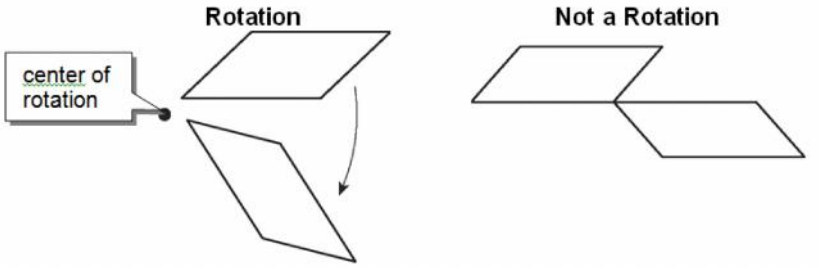
Name: _____ Period: _____ Date:_____

12.3 Rotations Classwork

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

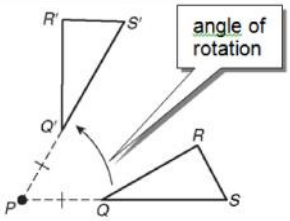


A rotation is a transformation about a point *P* such that each point and its image are the same distance from *P*.

$PQ = PQ'$

$PR = PR'$

$PS = PS'$



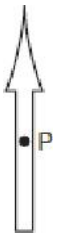
1 If the letter **P** is rotated 180 degrees, which is the resulting figure?

1) **d**
2) **P**
3) **Q**
4) **b**

2 Tell whether the transformation appears to be a rotation. Explain.

1) No; the figure appears to be flipped.
2) Yes; the figure appears to be turned around a point.

3 The accompanying diagram shows the starting position of the spinner on a board game.

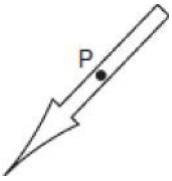


How does this spinner appear after a 270° counterclockwise rotation about point *P*?

1)

2)

3)

4)


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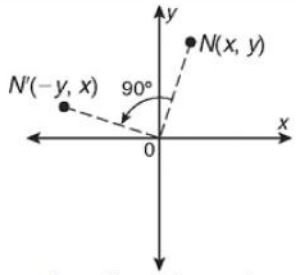
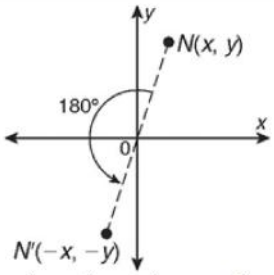
Rotations in the Coordinate Plane	
By 90° About the Origin	By 180° About the Origin
 $(x, y) \rightarrow (-y, x)$	 $(x, y) \rightarrow (-x, -y)$

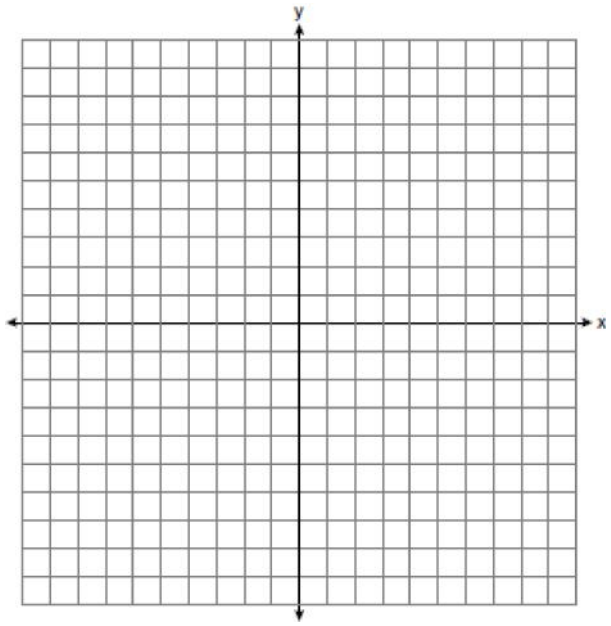
4 What are the coordinates of A', the image of $A(-3,4)$, after a rotation of 180° about the origin?

1) $(4,-3)$
2) $(-4,-3)$
3) $(3,4)$
4) $(3,-4)$

5 If point $(5,2)$ is rotated counterclockwise 90° about the origin, its image will be point

1) $(2,5)$
2) $(2,-5)$
3) $(-2,5)$
4) $(-5,-2)$

6 The point $(-3,4)$ is rotated 180° about the origin in a counterclockwise direction. What are the coordinates of its image?

Answer: _____

7 The coordinates of the vertices of $\triangle RST$ are $R(-2,3)$, $S(4,4)$, and $T(2,-2)$. Triangle $R'S'T'$ is the image of $\triangle RST$ after a rotation of 90° about the origin. State the coordinates of the vertices of $\triangle R'S'T'$. [The use of the set of axes below is optional.]