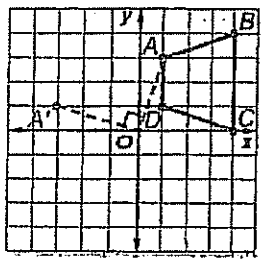
NAME _____ DATE _____ PERIOD ____

6-9 Study Guide and Intervention

Rotations #1

When a figure is rotated about a point, every point on the original figure has a corresponding point on the rotated image. A point and its corresponding point are the same distance from the center of rotation. The angles formed by connecting each point and its corresponding point to the center of rotation are all congruent. The rotated figure is congruent to the original figure and has the same orientation.

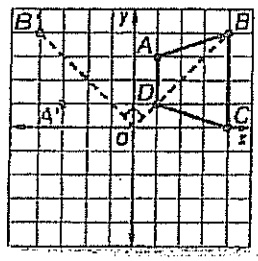
EXAMPLE 1 **Graph trapezoid $ABCD$ with vertices $A(1, 3)$, $B(4, 4)$, $C(4, 0)$, and $D(1, 1)$. Then graph the image of trapezoid $ABCD$ after a rotation 90° counterclockwise about the origin and write the coordinates of its vertices.**



Step 1 Graph trapezoid $ABCD$.

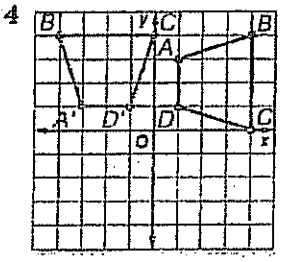
Step 2 To find the corresponding point for vertex A, draw a line segment between A and the origin. Then draw a second line segment starting at the origin that is the same length as the first segment and forms a 90° angle with the first segment. Draw a point at the end of the second segment and label it A'.

Step 3



Repeat for vertex B.

Step 4

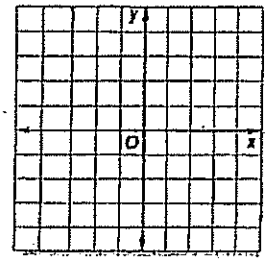


Repeat for vertices C and D. Then connect the new vertices to form trapezoid $A'B'C'D'$.

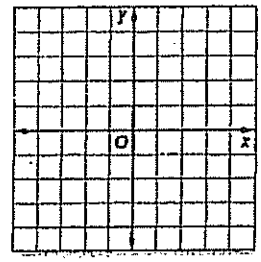
EXERCISES

Graph the figure with the given vertices. Then graph the image of the figure after the indicated rotation about the origin and write the coordinates of its vertices.

1. triangle GHI with vertices $G(1, 0)$, $H(3, 1)$, and $I(2, 5)$; 90° counterclockwise



2. polygon $TUVW$ with vertices $T(2, -4)$, $U(3, -1)$, $V(-1, 0)$, and $W(-2, -3)$; 180°



Lesson 6-9

Rotations #1

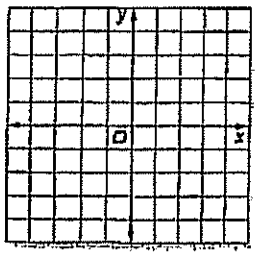
NAME _____ DATE _____ PERIOD _____

6-9 Practice: Skills

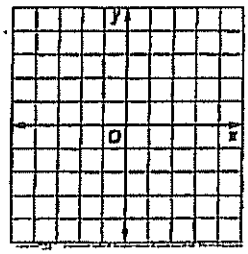
Rotations

Graph the figure with the given vertices. Then graph the image of the figure after the indicated rotation about the origin and write the coordinates of its vertices.

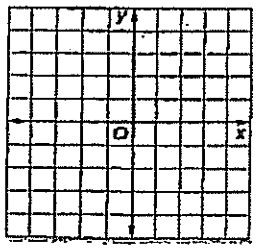
1. triangle ABC with vertices $A(1, 5)$, $B(3, 4)$, and $C(4, 0)$; 90° clockwise



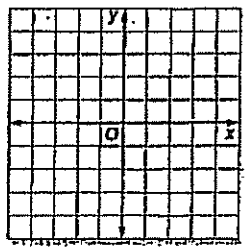
2. triangle FGH with vertices $F(4, 2)$, $G(1, 1)$, and $H(1, 5)$; 180°



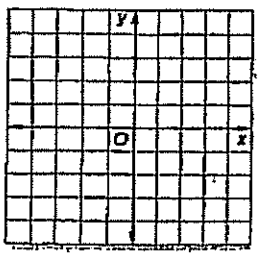
3. triangle XYZ with vertices $X(4, -4)$, $Y(0, -5)$, and $Z(1, 2)$; 180°



4. triangle LMN with vertices $L(-1, -4)$, $M(-4, -3)$, and $N(-2, -1)$; 90° counterclockwise



5. square $DEFG$ with vertices $D(-4, 5)$, $E(-1, 5)$, $F(-1, 2)$, and $G(-4, 2)$; 90° clockwise



6. quadrilateral $TUVW$ with vertices $T(-2, 1)$, $U(-1, 4)$, $V(-4, 4)$, and $W(-5, 0)$; 180°