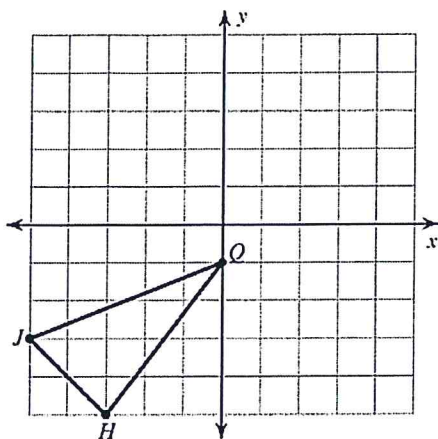


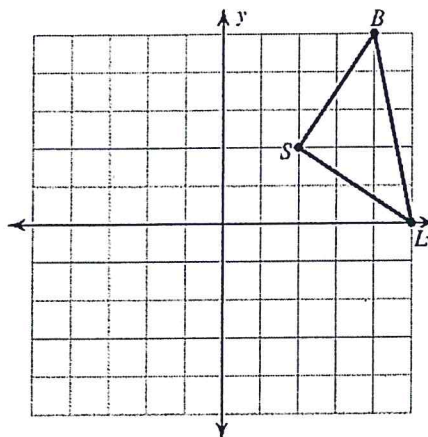
## Rotations of Shapes

Graph the image of the figure using the transformation given.

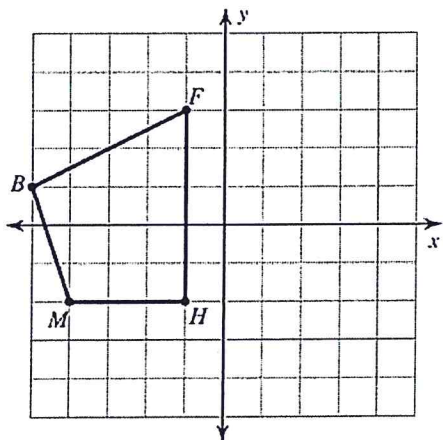
- 1) rotation  $180^\circ$  about the origin



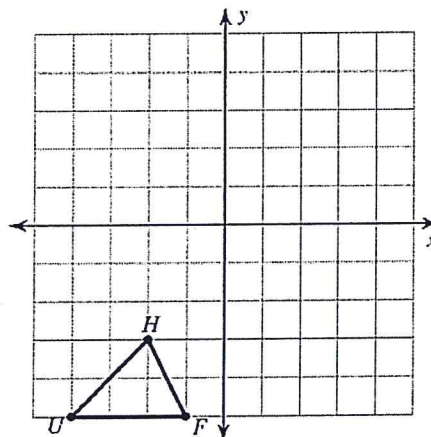
- 2) rotation  $90^\circ$  counterclockwise about the origin



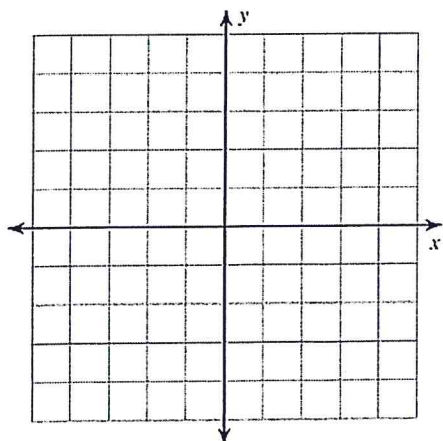
- 3) rotation  $90^\circ$  clockwise about the origin



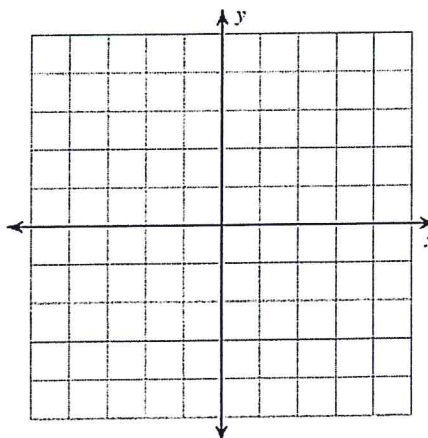
- 4) rotation  $180^\circ$  about the origin



- 5) rotation  $90^\circ$  clockwise about the origin  
 $U(1, -2)$ ,  $W(0, 2)$ ,  $K(3, 2)$ ,  $G(3, -3)$



- 6) rotation  $180^\circ$  about the origin  
 $V(2, 0)$ ,  $S(1, 3)$ ,  $G(5, 0)$



Find the coordinates of the vertices of each figure after the given transformation.

7) rotation  $180^\circ$  about the origin

$Z(-1, -5)$ ,  $K(-1, 0)$ ,  $C(1, 1)$ ,  $N(3, -2)$

8) rotation  $180^\circ$  about the origin

$L(1, 3)$ ,  $Z(5, 5)$ ,  $F(4, 2)$

9) rotation  $90^\circ$  clockwise about the origin

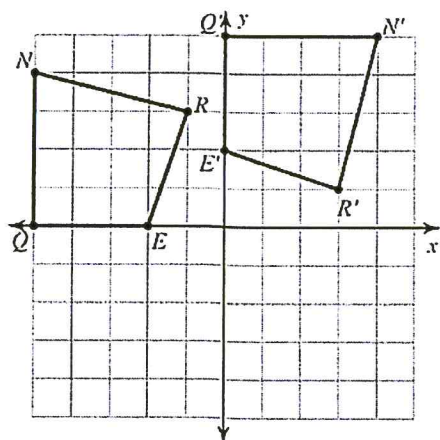
$S(1, -4)$ ,  $W(1, 0)$ ,  $J(3, -4)$

10) rotation  $180^\circ$  about the origin

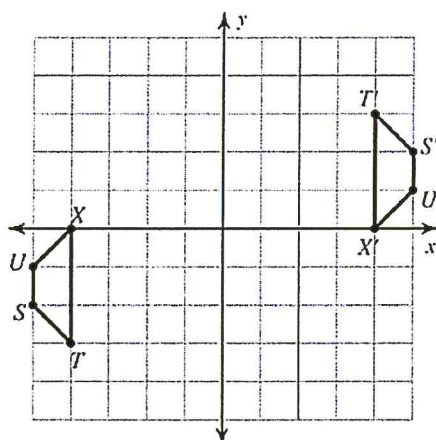
$V(-5, -3)$ ,  $A(-3, 1)$ ,  $G(0, -3)$

Write a rule to describe each transformation.

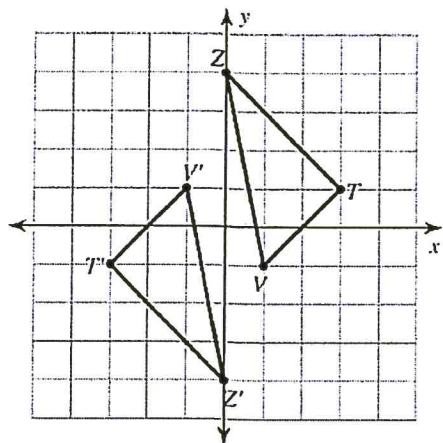
11)



12)



13)



14)

