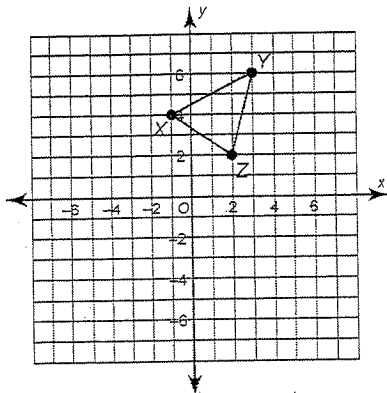


# Geometric Relationships

## Practice B: Transformations

Graph each translation.

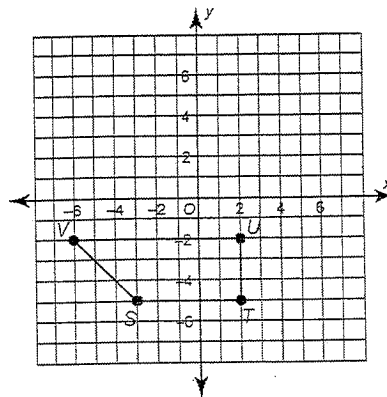
1. 3 units left and 9 units down



Give the rule.

$(x,y) \rightarrow (\underline{\quad}, \underline{\quad})$

2. 3 units right and 6 units up

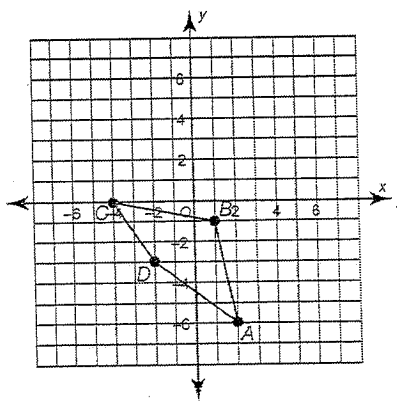


Give the rule.

$(x,y) \rightarrow (\underline{\quad}, \underline{\quad})$

Graph each reflection.

3. across the x-axis



Give the coordinates.

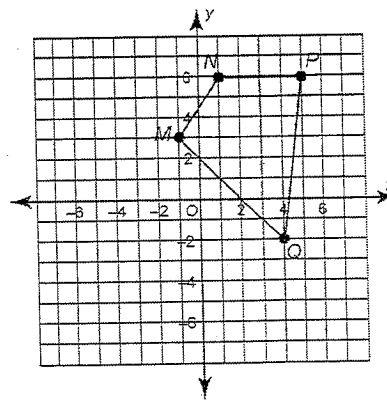
A(\_\_\_\_) B(\_\_\_\_)

C(\_\_\_\_) D(\_\_\_\_)

A'(\_\_\_\_) B'(\_\_\_\_)

C'(\_\_\_\_) D'(\_\_\_\_)

4. across the y-axis



Give the coordinates.

N(\_\_\_\_) P(\_\_\_\_)

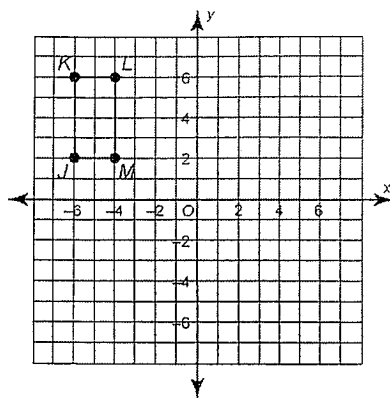
M(\_\_\_\_) Q(\_\_\_\_)

N'(\_\_\_\_) P'(\_\_\_\_)

M'(\_\_\_\_) Q'(\_\_\_\_)

Graph each rotation around the origin.

5.  $90^\circ$  clockwise



Give the coordinates.

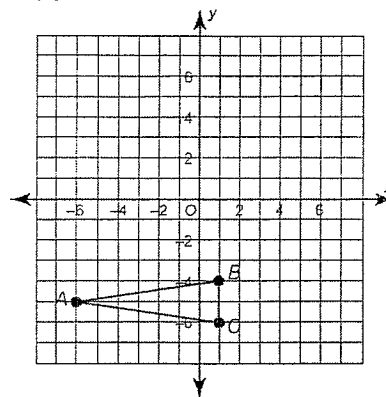
J(\_\_\_\_,\_\_\_\_) K(\_\_\_\_,\_\_\_\_)

L(\_\_\_\_,\_\_\_\_) M(\_\_\_\_,\_\_\_\_)

J'(\_\_\_\_,\_\_\_\_) K'(\_\_\_\_,\_\_\_\_)

L'(\_\_\_\_,\_\_\_\_) M'(\_\_\_\_,\_\_\_\_)

6.  $180^\circ$



Give the coordinates.

A(\_\_\_\_,\_\_\_\_) B(\_\_\_\_,\_\_\_\_)

C(\_\_\_\_,\_\_\_\_)

A'(\_\_\_\_,\_\_\_\_) B'(\_\_\_\_,\_\_\_\_)

C'(\_\_\_\_,\_\_\_\_)

7. A parallelogram has vertices  $A(-1, 3)$ ,  $B(4, 3)$ ,  $C(6, -1)$ , and  $D(1, -1)$ . After a transformation, the coordinates of the image are  $A'(1, 3)$ ,  $B'(-4, 3)$ ,  $C'(-6, -1)$ , and  $D'(-1, -1)$ . Describe the transformation. \_\_\_\_\_