

~~HW: Multiple Transformations Worksheet/1-1~~

Translate using the rule  $(x,y) \rightarrow (x+3,y+6)$  then reflect over the line  $x = 2$ .

$$\underline{A(-7,-7)} \quad A'(-4,-1)$$

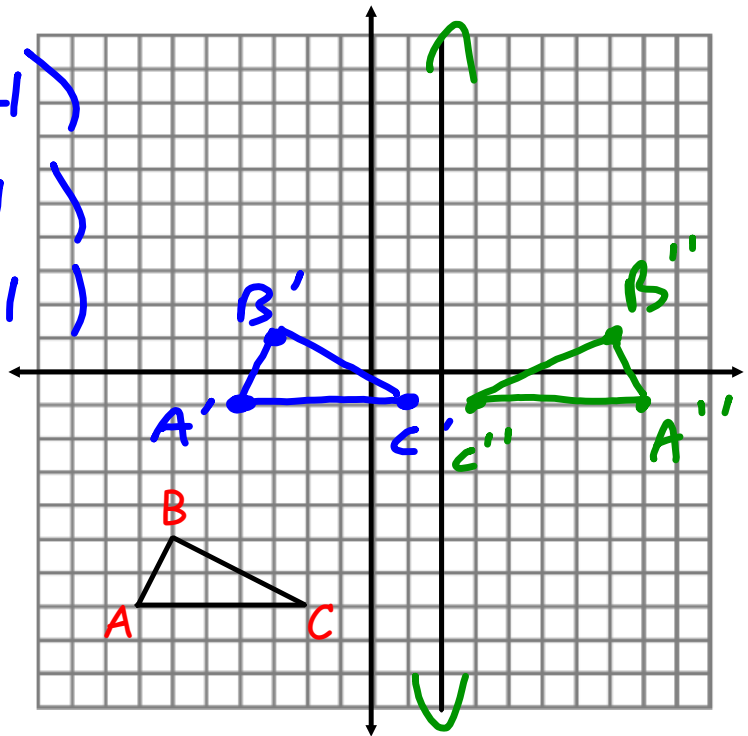
$$B(-6,-5) \quad B'(-3,1)$$

$$C(-2,-7) \quad C'(1,-1)$$

$$A''(8,-1)$$

$$B''(7,1)$$

$$C''(3,-1)$$



Rotate  $270^\circ$  about the origin, then dilate with  
scale factor 2.

$$(x, y) \rightarrow (y, -x)$$

$$M(-1, -1) \quad M'(-1, 1)$$

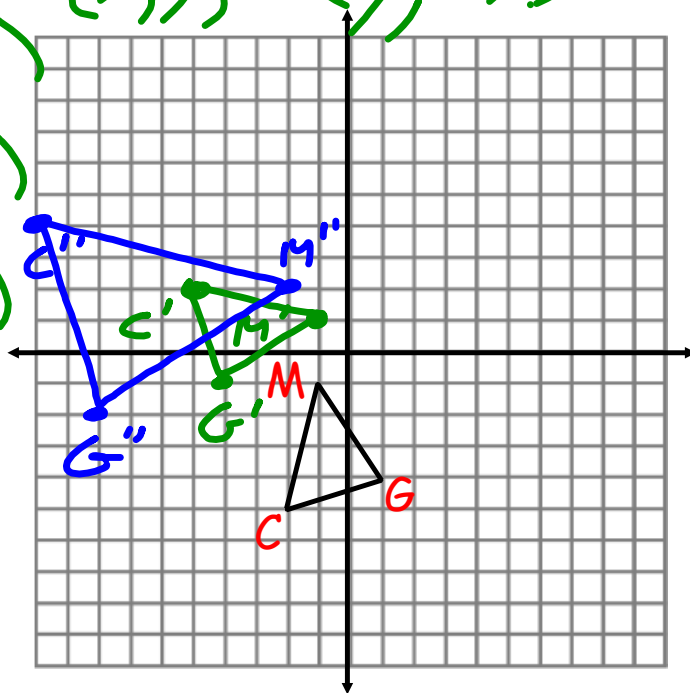
$$C(-2, -5) \quad C'(-5, 2)$$

$$G(1, -4) \quad G'(-4, -1)$$

$$M''(-2, 2)$$

$$C''(-10, 4)$$

$$G''(-8, -2)$$



# Rules

rotate

90°

$$(x, y) \rightarrow (-y, x)$$

180°

$$(x, y) \rightarrow (-x, -y)$$

270°

$$(x, y) \rightarrow (y, -x)$$

reflect

x-axis

$$(x, y) \rightarrow (x, -y)$$

y-axis

$$(x, y) \rightarrow (-x, y)$$

Graph quadrilateral MATH with vertices  $M(4,-1)$ ,  $A(6,3)$ ,  $T(-3,5)$ , and  $H(-1,-1)$ .

1) Reflect over the  $y$ -axis, then translate using the rule  $(x,y) \rightarrow (x+2, y-5)$ .

2) Rotate  $270^\circ$  about the origin, then reflect over the line  $x=-2$ .

3) Reflect over the line  $y=-2$ , then reflect over the  $y$ -axis.

4) Translate using the rule  $(x,y) \rightarrow (x-7, y-3)$ , then rotate  $90^\circ$  about the origin.

1) Reflect over the y-axis, then translate using the rule  $(x,y) \rightarrow (x+2, y-5)$ .

$$M'(-4, -1)$$

$$A'(-6, 3)$$

$$T'(3, 3)$$

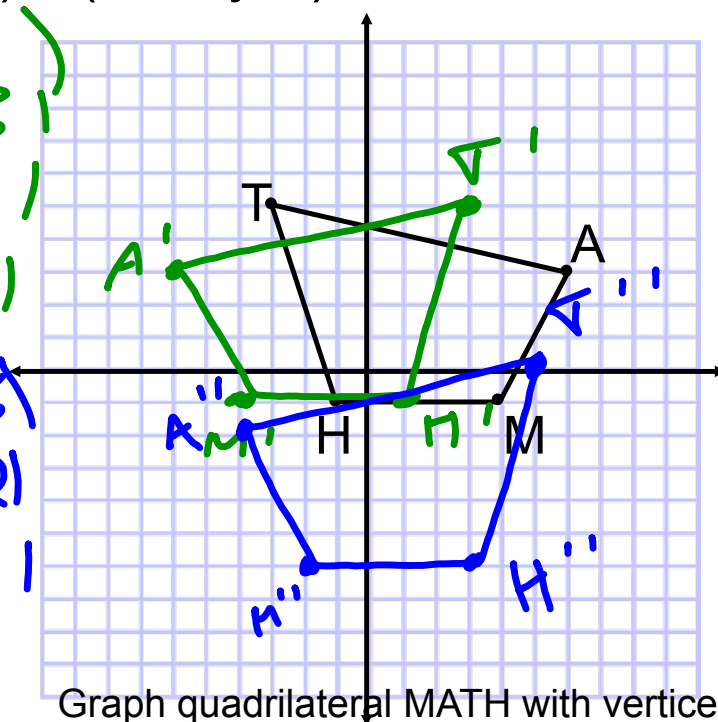
$$H'(1, -1)$$

$$M''(-2, 6)$$

$$A''(-4, 2)$$

$$T''(5, 0)$$

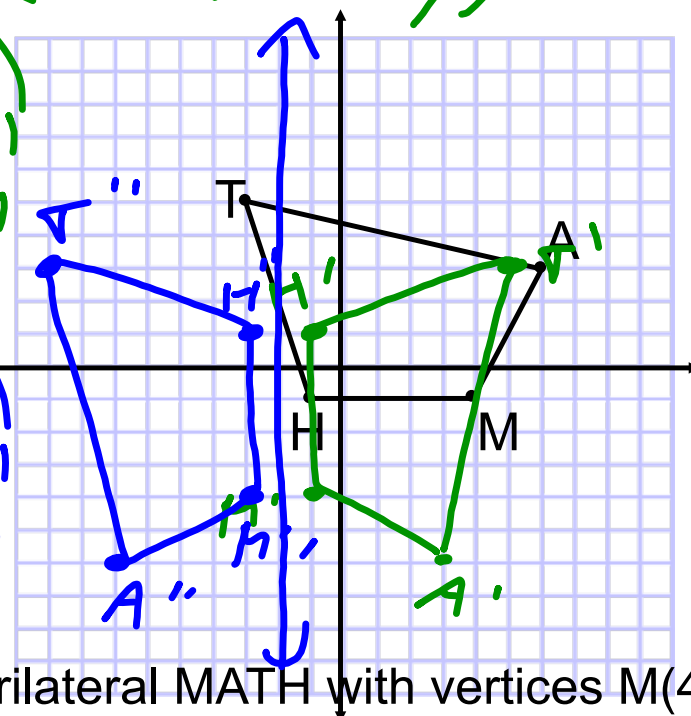
$$H''(3, 6)$$



Graph quadrilateral MATH with vertices  $M(4, -1)$ ,  $A(6, 3)$ ,  $T(-3, 5)$ , and  $H(-1, -1)$ .

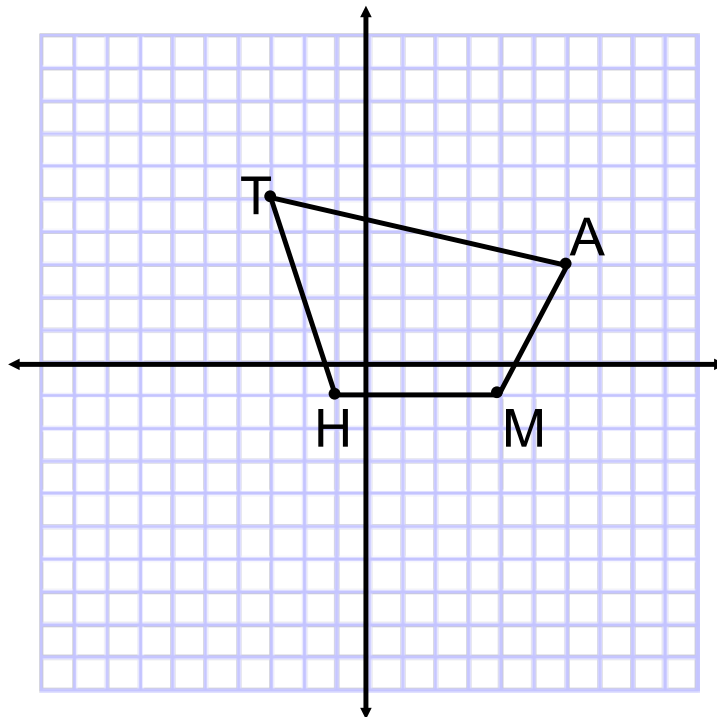
2) Rotate  $270^\circ$  about the origin, then reflect over the line  $x=-2$ .  $(x,y) \rightarrow (y,-x)$

$M'(-1, -4)$   
 $A'(3, -6)$   
 $T'(5, 3)$   
 $H'(-1, 1)$   
 $M''(-3, -4)$   
 $A''(-7, -6)$   
 $T''(-9, 3)$   
 $H''(-3, 1)$



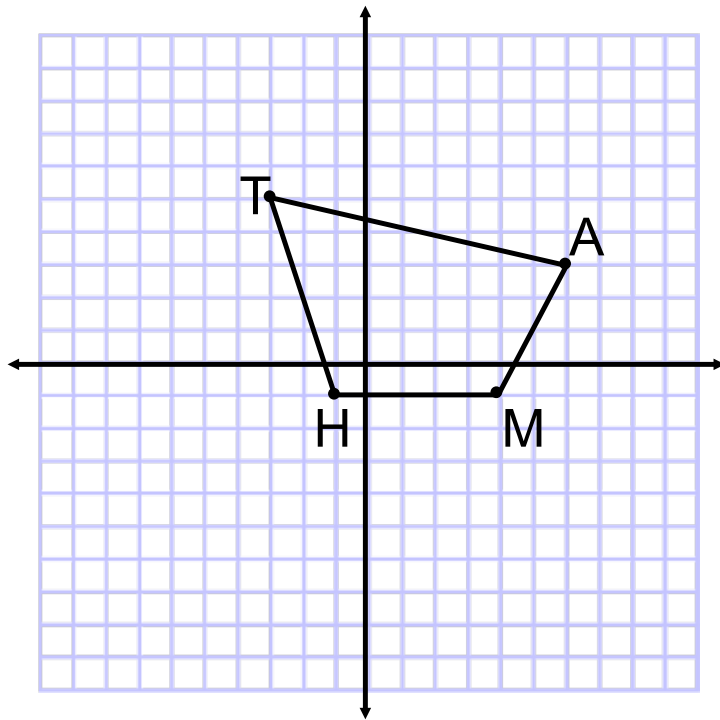
Graph quadrilateral MATH with vertices  $M(4, -1)$ ,  $A(6, 3)$ ,  $T(-3, 5)$ , and  $H(-1, -1)$ .

3) Reflect over the line  $y=-2$ , then reflect over the  $y$ -axis.





4) Translate using the rule  $(x,y) \rightarrow (x-7, y-3)$ , then rotate  $90^\circ$  about the origin.



February 23, 2022

