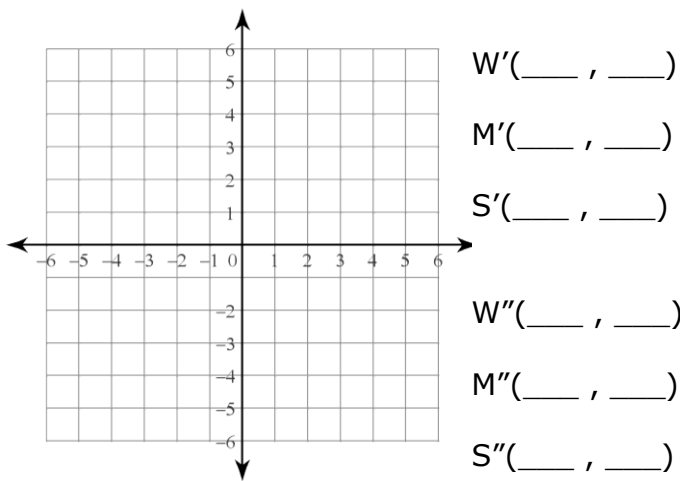


## Multiple Transformations

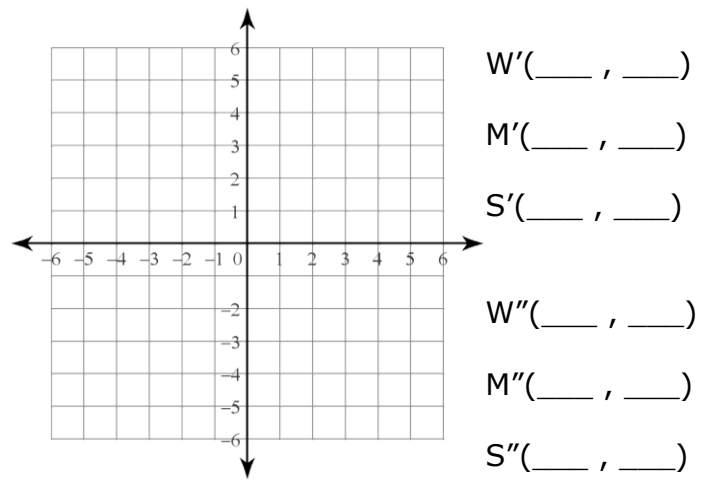
When reflecting over a line, draw the line of reflection on your graph. Use a different colored pencil for each new transformation. It makes visualizing the transformations easier.

### Does the order in which we do a sequence of transformations matter?

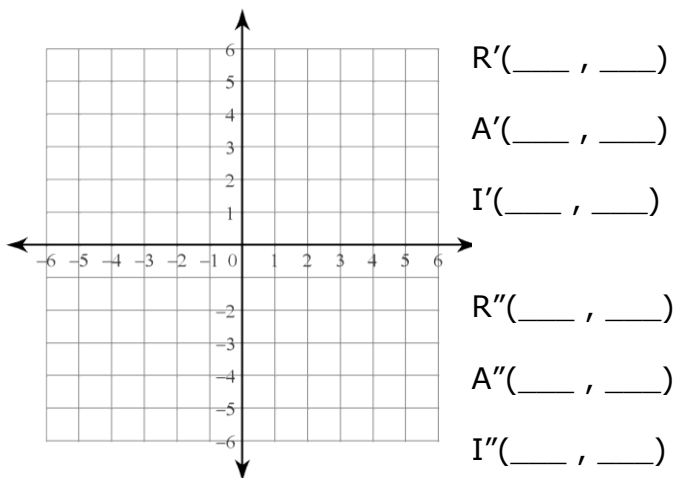
Translate  $\triangle WMS$  if  $W(-5,-1)$ ,  $M(-3,-2)$ ,  $S(-3,2)$  by the rule  $(x,y) \rightarrow (x + 3, y + 2)$ , then reflect the image over the  $y$ -axis



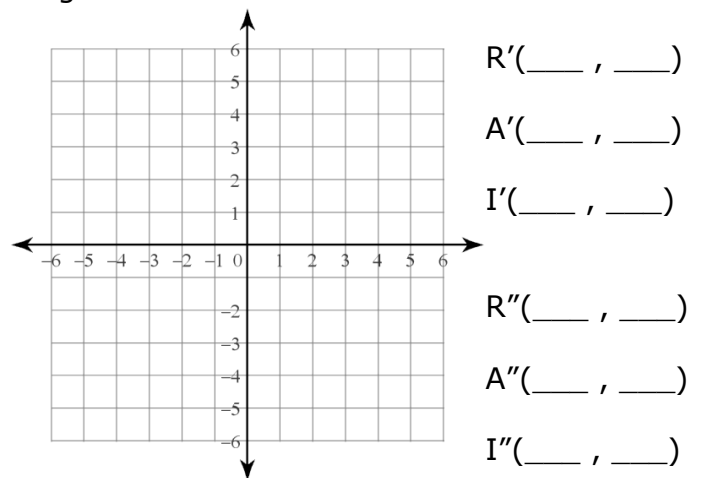
Reflect  $\triangle WMS$  if  $W(-5,-1)$ ,  $M(-3,-2)$ ,  $S(-3,2)$  over the  $y$ -axis, then translate the image by the rule  $(x,y) \rightarrow (x + 3, y + 2)$ ,



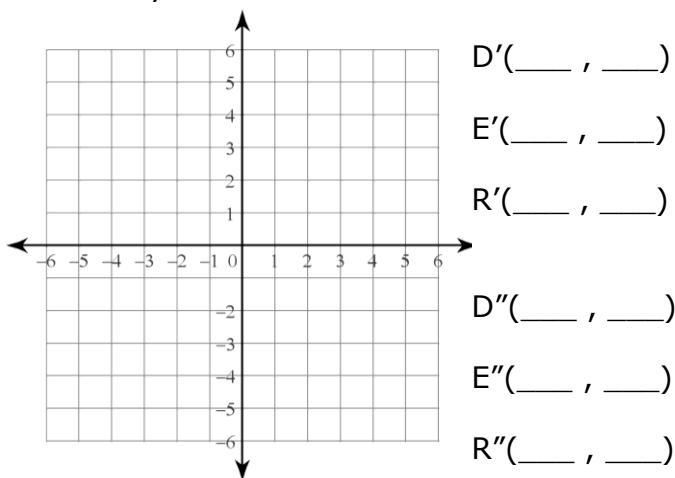
Rotate  $\triangle RAI$  if  $R(2,3)$ ,  $A(1,1)$ ,  $I(4,-3)$   $90^\circ$  clockwise about the origin, then reflect the image over the  $x$ -axis.



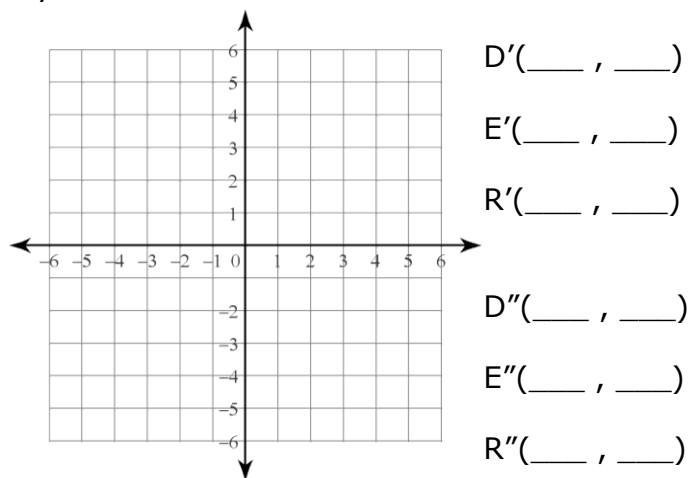
Reflect  $\triangle RAI$  if  $R(2,3)$ ,  $A(1,1)$ ,  $I(4,-3)$  over the  $x$ -axis, then rotate the image  $90^\circ$  clockwise about the origin.



Dilate  $\triangle DER$  if  $D(-3,1)$ ,  $E(-1,2)$ ,  $R(2,-2)$  by a factor of 2, then reflect the image over the  $y$ -axis.



Reflect  $\triangle DER$  if  $D(-3,1)$ ,  $E(-1,2)$ ,  $R(2,-2)$  over the  $y$ -axis. Then dilate the image by a factor of 2.



Does the order matter when performing translations and reflections? Rotations and reflections? Dilations and reflections?

Without graphing, and just by applying rules to a single point, determine if order matters when combining:

Dilations and translations:

Rotations and Translations:

Dilations and Rotations:

What series of transformations made the following images?

