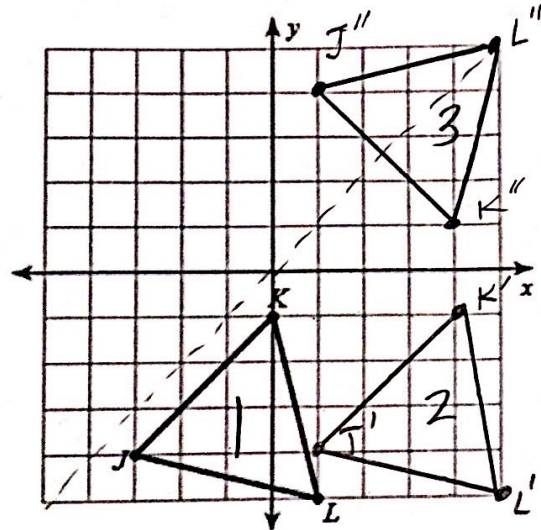


Graph the following compound transformations.

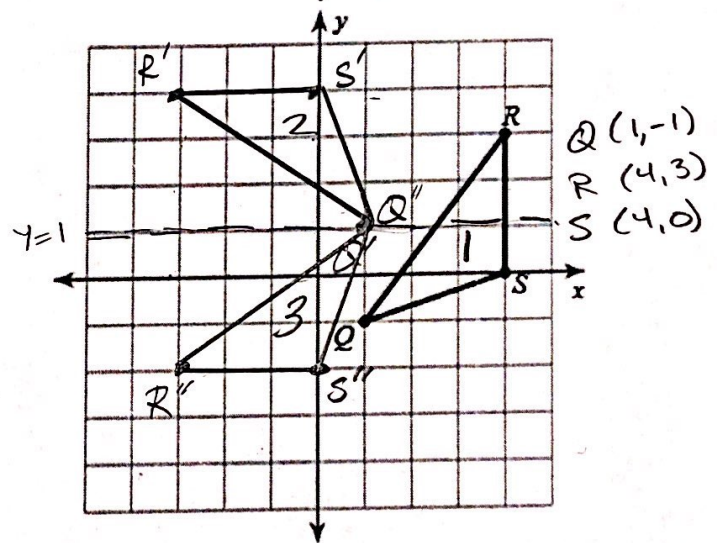
1. a. Translation  $\langle 4, 0 \rangle$   
 $K'(4, -1)$   $L'(5, 5)$   $J'(1, 4)$

- b. Reflection over the x-axis  
 $K''(4, 1)$   $L''(5, 5)$   $J''(1, 4)$



2. a. Rotate 90 degrees CCW  $(-y, x)$   
 $Q'(1, 1)$   $R'(-3, 4)$   $S'(0, 4)$

- b. Reflection over the line  $y = 1$   
 $Q''(1, 1)$   $R''(\quad, \quad)$   $S''(0, -2)$



Using the pre-image point  $(5, -8)$ , follow the transformations below. Start back at the pre-image for each number. Use your rules!!!

3. Reflection over the x-axis:  $(5, 8)$   
 $(x, y) \rightarrow (x, -y)$

4. Translation vector  $\langle -4, -12 \rangle$ :  $(1, -20)$   
 Same as  $(x-4, y-12)$   
 $5-4=1$   $-8-12=-20$

5. Dilation with a scale factor of  $\frac{1}{2}$ :  $(\frac{5}{2}, -4)$   
 $(\frac{1}{2}(5), \frac{1}{2}(-8))$

6. Rotation of 90 degrees CCW:  $(8, 5)$   
 $(x, y) \rightarrow (-y, x)$

7. Translation of  $\langle 3, -1 \rangle \rightarrow$  then Reflection over the y-axis:  $(-8, -9)$   
 $(x, y) \rightarrow (-x, y)$   
 $5+3=8$   
 $-8-1=-9$  }  $(8, -9)$

8. Rotation of 180 degrees  $\rightarrow$  then Dilation of 3:  $(-15, 24)$   
 $(x, y) \rightarrow (-x, -y)$   $(3(-5), 3(8))$   
 $(5, -8) \rightarrow (-5, 8)$