

1. Use the translation $(x, y) \rightarrow (x + 1, y - 7)$ for questions a - d.

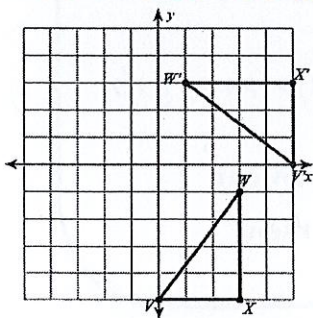
- a. What is the translation vector? $\langle 1, -7 \rangle$
- b. What is the image of A (10, -4)? $A' (11, -11)$
- c. What is the image of A' from part b (which would be called A'')? $A'' (12, -18)$
- d. What is the pre-image of C' (-9, 12)? $C (-10, 19)$

2. Answer the following questions.

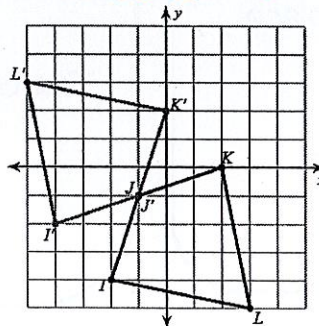
- a. After a reflection over the line $y = x$, $(-2, 16)$ is the image of point C. What is the original location of point C? $C (16, -2)$
- b. After a reflection over the x-axis, $(8, 0)$ is the image of point M. What is the original location of point M? $M (8, 0)$
- c. Given triangle FUN with coordinates F(-4, 1), U(11, -12) and N(-7, -9), find the image of point N after a rotation of 90 degrees counterclockwise. $N' (9, -7)$

3. Write the transformation rule for the following graphs.

a. rotation 90° ccw



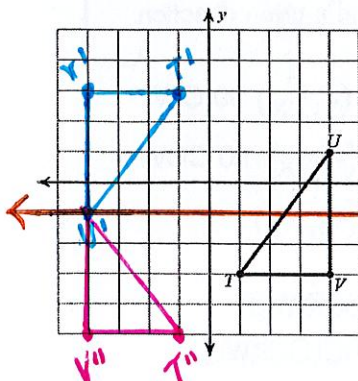
b. reflection over $y = x$



Composition of Transformations

(Label the first transformation with $\Delta A'B'C'$. After the second transformation, label it with $\Delta A''B''C''$.)

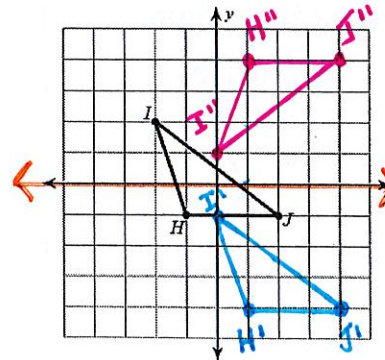
- 3. a. rotation 180 degrees
- b. reflection over $y = -1$



- $T (1, 3)$
- $U (4, 1)$
- $V (4, -3)$
- $T' (-1, 3)$
- $U' (-4, 1)$
- $V' (-4, -3)$

- $T'' (-1, -5)$
- $U'' (-4, -1)$
- $V'' (-4, -5)$

- 4. a. $\langle 2, -3 \rangle$
- b. reflection over the x-axis



- $H (-1, -1)$
- $I (-2, 2)$
- $J (2, -1)$
- $H' (1, -4)$
- $I' (0, -1)$
- $J' (4, -4)$

- $H'' (1, 4)$
- $I'' (0, 1)$
- $J'' (4, 4)$