

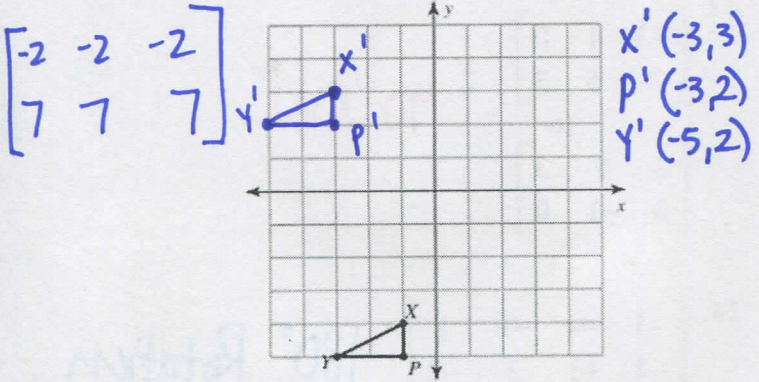
CYU 1.5.3 Transforming Matrices

Use when you get it right all by yourself
S Use when you did it all by yourself, but made a silly mistake
H Use when you could do it alone with a little help from teacher or peer
G Use when you completed the problem in a group
X Use when a question was attempted but wrong (get help)
N Use when a question was not even attempted

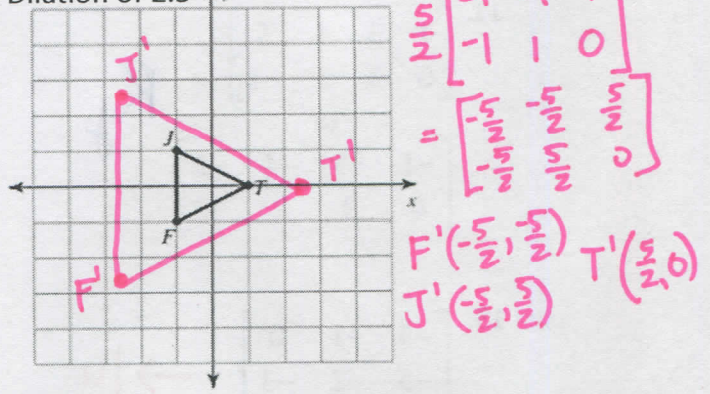
CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Translations	1	6	9 - 14
Reflections		4, 8	9 - 14
Rotations		3, 5	9 - 14
Dilations	2	7	9 - 14

Graph the new image given the transformations. Use correct notation to write your answer matrix to the side. Box your final answer.

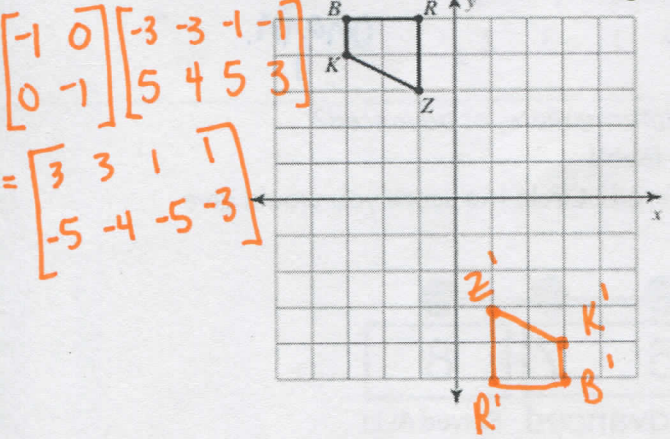
1. 2 units left and 7 units up.



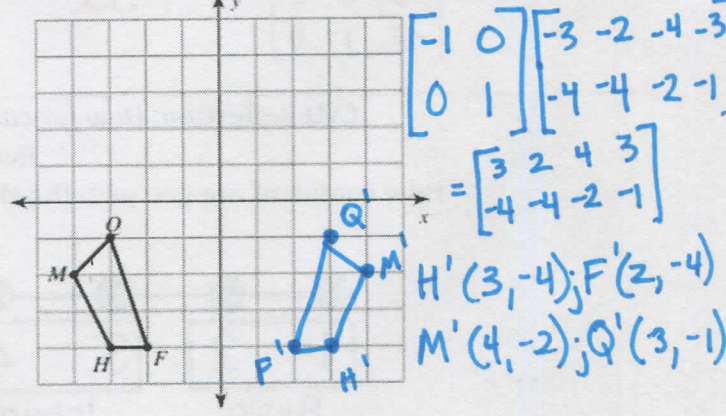
2. Dilation of 2.5



3. 180° rotation about the origin



4. Reflection across the y-axis



Find the new image's vertices after the given transformation. Show all work for full credit.

Box your final answer. Be sure to use correct notation.

5. Rotate 90° CCW

6. 5 units right and 5 units down

$$\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix} \cdot \begin{bmatrix} -4 & 1 & -2 \\ -4 & -3 & -5 \end{bmatrix} = \begin{bmatrix} 4 & 3 & 5 \\ -4 & 1 & -2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 0 & 1 & 4 \\ -3 & 0 & 0 & -2 \end{bmatrix} + \begin{bmatrix} 5 & 5 & 5 & 5 \\ -5 & -5 & -5 & -5 \end{bmatrix} = \begin{bmatrix} 7 & 5 & 6 & 9 \\ -8 & -5 & -5 & -7 \end{bmatrix}$$

7. Dilation of $\frac{1}{4}$

$$\frac{1}{4} \begin{bmatrix} -1 & 2 & -1 \\ 1 & 2 & -1 \end{bmatrix} = \begin{bmatrix} -\frac{1}{4} & \frac{1}{2} & -\frac{1}{4} \\ \frac{1}{4} & \frac{1}{2} & -\frac{1}{4} \end{bmatrix}$$

8. Reflection across the x-axis

$$\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} -5 & -2 & -1 \\ -2 & 0 & -3 \end{bmatrix} = \begin{bmatrix} -2 & 0 & -3 \\ 5 & 2 & 1 \end{bmatrix}$$

Describe the transformations that occurred in detail to get from the original matrix to the new image.

9. $\begin{bmatrix} 1 & 1 & 4 & 5 \\ 2 & 3 & 2 & 1 \end{bmatrix}$ to $\begin{bmatrix} 0.5 & 0.5 & 2 & 2.5 \\ 1 & 1.5 & 1 & 0.5 \end{bmatrix}$ Dilation by $\frac{1}{2}$

10. $\begin{bmatrix} -4 & -3 & -1 \\ -3 & 1 & 0 \end{bmatrix}$ to $\begin{bmatrix} -1 & 0 & 2 \\ -3 & 1 & 0 \end{bmatrix}$ $\rightarrow 3u$

11. $\begin{bmatrix} 1 & 3 & 4 & 5 \\ 0 & 3 & 2 & -3 \end{bmatrix}$ to $\begin{bmatrix} -1 & -3 & -4 & -5 \\ 0 & 3 & 2 & -3 \end{bmatrix}$ R_y

12. $\begin{bmatrix} -3 & 1 & 0 \\ 2 & 5 & 3 \end{bmatrix}$ to $\begin{bmatrix} 2 & 5 & 3 \\ 3 & -1 & 0 \end{bmatrix}$ 90° CW

13. $\begin{bmatrix} -3 & -1 & 0 \\ -5 & -2 & -3 \end{bmatrix}$ to $\begin{bmatrix} -2 & 0 & 1 \\ -2 & 1 & 0 \end{bmatrix}$ $\rightarrow 1u$ $\uparrow 3u$

14. $\begin{bmatrix} -3 & -4 & -1 & 1 \\ -4 & -1 & 3 & -2 \end{bmatrix}$ to $\begin{bmatrix} 3 & 4 & 1 & -1 \\ 4 & 1 & -3 & 2 \end{bmatrix}$ 180° Rotation around the origin.

CYU Reflection: How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

