

Unit 10.2 worksheet Matrix Translations

Date _____ Period _____

Write a rule to describe each transformation.

1)
$$\begin{bmatrix} -4 & -3 & -1 & -4 \\ 3 & 5 & 3 & 2 \end{bmatrix}$$

to

$$\begin{bmatrix} 1 & 2 & 4 & 1 \\ 0 & 2 & 0 & -1 \end{bmatrix}$$

translation: 5 units right and 3 units down

2)
$$\begin{bmatrix} -1 & -2 & -1 & 4 \\ -5 & -2 & -2 & -4 \end{bmatrix}$$

to

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

translation: 3 units left and 5 units up

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

to

$$\begin{bmatrix} 2 & 4 & 5 \\ 3 & 5 & 3 \end{bmatrix}$$

translation: 7 units right and 6 units up

4)
$$\begin{bmatrix} -3 & -4 & 0 \\ -4 & -1 & -3 \end{bmatrix}$$

to

$$\begin{bmatrix} -4 & -5 & -1 \\ -2 & 1 & -1 \end{bmatrix}$$

translation: 1 unit left and 2 units up

5)
$$\begin{bmatrix} -4 & -3 & -2 \\ 1 & 4 & 1 \end{bmatrix}$$

to

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

translation: 4 units right and 2 units down

6)
$$\begin{bmatrix} -4 & -2 & -1 \\ 3 & 4 & 2 \end{bmatrix}$$

to

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

translation: 2 units right and 3 units down

Find the coordinates of the vertices of each figure after the given transformation.

7) translation: 3 units left

$$\begin{bmatrix} 1 & 2 & 4 & 1 \\ 3 & 4 & 3 & 2 \end{bmatrix}$$

$$\begin{bmatrix} -2 & -1 & 1 & -2 \\ 3 & 4 & 3 & 2 \end{bmatrix}$$

8) translation: 5 units right and 4 units up

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

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

9) translation: 8 units right and 6 units down

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

$$\begin{bmatrix} 3 & 4 & 5 & 5 \\ -4 & -2 & -2 & -5 \end{bmatrix}$$

10) translation: 1 unit right and 1 unit down

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

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

11) translation: 2 units right and 1 unit up

$$\begin{bmatrix} -5 & -5 & -4 & -4 \\ -3 & 0 & 0 & -4 \end{bmatrix}$$

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

12) translation: 7 units left and 4 units up

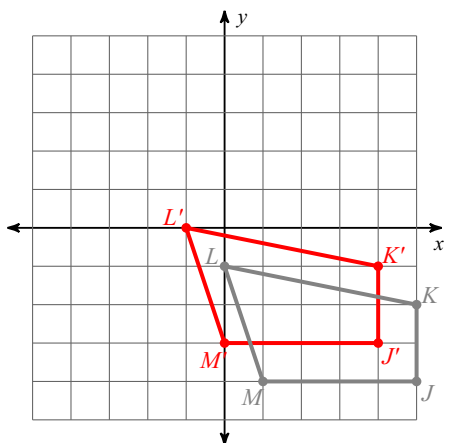
$$\begin{bmatrix} 3 & 5 & 3 \\ -1 & 0 & -5 \end{bmatrix}$$

$$\begin{bmatrix} -4 & -2 & -4 \\ 3 & 4 & -1 \end{bmatrix}$$

Graph the image of the figure using the transformation given.

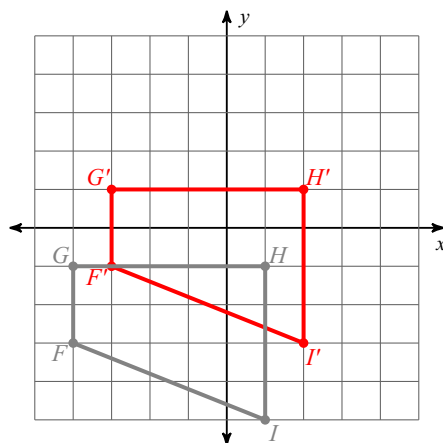
13) translation: 1 unit left and 1 unit up

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



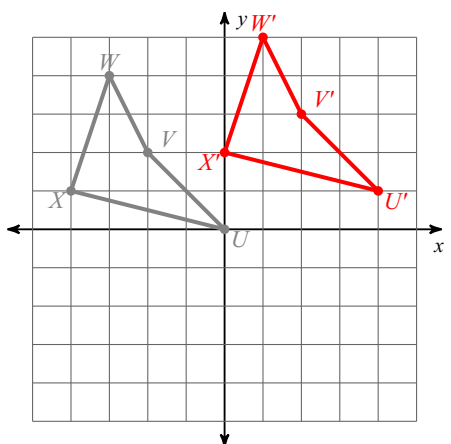
14) translation: 1 unit right and 2 units up

$$\begin{bmatrix} -4 & -4 & 1 & 1 \\ -3 & -1 & -1 & -5 \end{bmatrix}$$



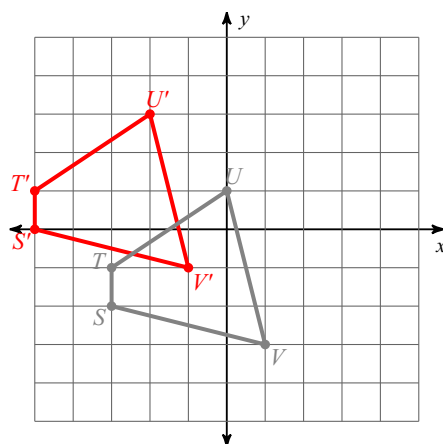
15) translation: 4 units right and 1 unit up

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



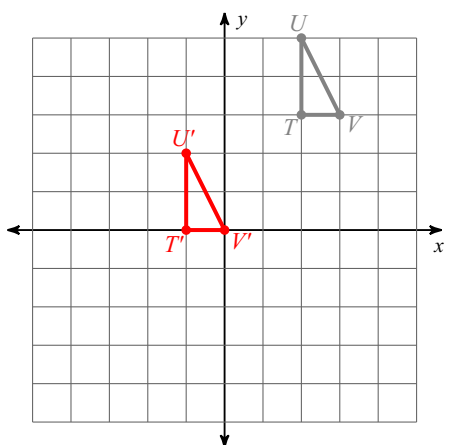
16) translation: 2 units left and 2 units up

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



17) translation: 3 units left and 3 units down

$$\begin{bmatrix} 2 & 2 & 3 \\ 3 & 5 & 3 \end{bmatrix}$$



18) translation: 1 unit down

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

