NAME:_____

1. Rewrite the vertex matrix after a translation 4 units left and 5 units down.

$$\begin{bmatrix} -8 & -3 \\ -9 & 0 \end{bmatrix}$$

[A] $\begin{bmatrix} -13 & -8 \\ -13 & -4 \end{bmatrix}$ [B] $\begin{bmatrix} -3 & 2 \\ -5 & 4 \end{bmatrix}$

[C] $\begin{bmatrix} -12 & -7 \\ -14 & -5 \end{bmatrix}$ [D] $\begin{bmatrix} -4 & 1 \\ -4 & 5 \end{bmatrix}$

2. Rewrite the vertex matrix after a translation 9 units left and 3 units down.

$$\begin{bmatrix} 2 & 8 \\ -4 & -5 \end{bmatrix}$$

[A] $\begin{bmatrix} 5 & 11 \\ 5 & 4 \end{bmatrix}$ [B] $\begin{bmatrix} 11 & 17 \\ -1 & -2 \end{bmatrix}$

[C] $\begin{bmatrix} -1 & 5 \\ -13 & -14 \end{bmatrix}$ [D] $\begin{bmatrix} -7 & -1 \\ -7 & -8 \end{bmatrix}$

3. Rewrite the vertex matrix after a translation 7 units right and 2 units up.

$$\begin{bmatrix} -6 & 7 & 6 \\ -7 & 1 & 4 \end{bmatrix}$$

4. Rewrite the vertex matrix after a translation 3 units left and 6 units down.

$$\begin{bmatrix} 0 & -8 & -5 \\ 9 & -2 & 3 \end{bmatrix}$$

5. Rewrite the vertex matrix after a translation 5 units left and 8 units up.

$$\begin{bmatrix} -4 & -3 & 5 \\ -1 & -9 & 2 \end{bmatrix}$$

6. Which scalar could be used to dilate a figure whose vertices are represented by $\begin{bmatrix} -1 & -5 \\ 6 & 9 \\ \dfrac{2}{3} & 0 \end{bmatrix}$

to a figure whose vertices are represented by $\begin{bmatrix} -2 & \dfrac{-20}{3} \\ 8 & 0 \end{bmatrix}$?
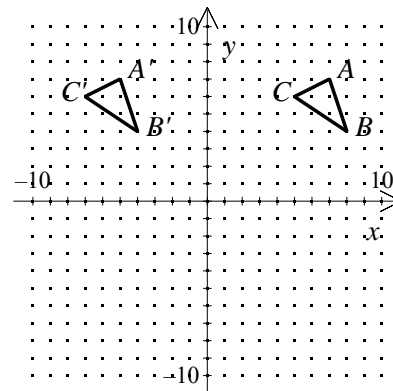
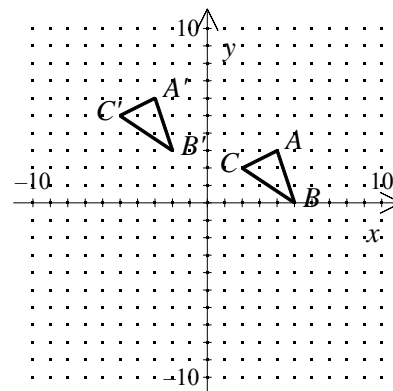[A] 8   [B] $\dfrac{1}{12}$ [C] $\dfrac{1}{8}$

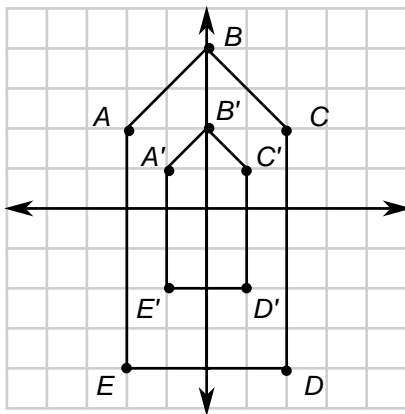[D] 12   [E] $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

7. Express the translation of triangle ABC as the sum of the vertex matrix and a translation matrix.
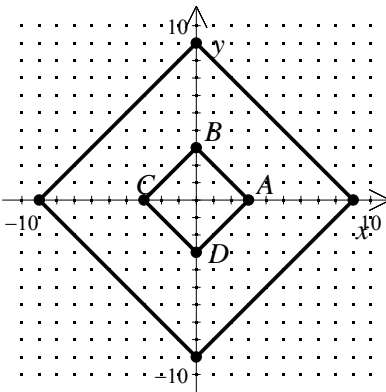

8. Express the translation of triangle ABC as the sum of the vertex matrix and a translation matrix.

9. Use a graphing calculator and matrix multiplication to find what transformation of pentagon *ABCDE* results in pentagon *A'B'C'D'E'*.

10. Express the dilation of quadrilateral *ABCD* as the product of a scalar and a vertex matrix.

[A] $3\begin{bmatrix} 0 & 3 & 0 & -3 \\ 3 & 0 & -3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 9 & 0 & -9 \\ 9 & 0 & -9 & 0 \end{bmatrix}$

[B] $3\begin{bmatrix} 3 & 0 & -3 & 0 \\ 0 & 3 & 0 & -3 \end{bmatrix} = \begin{bmatrix} 9 & 0 & -9 & 0 \\ 0 & 9 & 0 & -9 \end{bmatrix}$

[C] $2.5\begin{bmatrix} 3 & 0 & -3 & 0 \\ 0 & 3 & 0 & -3 \end{bmatrix} = \begin{bmatrix} 7.5 & 0 & -7.5 & 0 \\ 0 & 7.5 & 0 & -7.5 \end{bmatrix}$

[D] $2.5\begin{bmatrix} 0 & 3 & 0 & -3 \\ 3 & 0 & -3 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 7.5 & 0 & -7.5 \\ 7.5 & 0 & -7.5 & 0 \end{bmatrix}$

[1] <u>C</u>

[2] <u>D</u>

[3] $\begin{bmatrix} 1 & 14 & 13 \\ -5 & 3 & 6 \end{bmatrix}$

[4] $\begin{bmatrix} -3 & -11 & -8 \\ 3 & -8 & -3 \end{bmatrix}$

[5] $\begin{bmatrix} -9 & -8 & 0 \\ 7 & -1 & 10 \end{bmatrix}$

[6] <u>D</u>

[7] $\begin{bmatrix} 7 & 8 & 5 \\ 7 & 4 & 6 \end{bmatrix} + \begin{bmatrix} -12 & -12 & -12 \\ 0 & 0 & 0 \end{bmatrix} =$
$\begin{bmatrix} -5 & -4 & -7 \\ 7 & 4 & 6 \end{bmatrix}$

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

[9] a dilation of $\dfrac{1}{2}$

[10] <u>B</u>