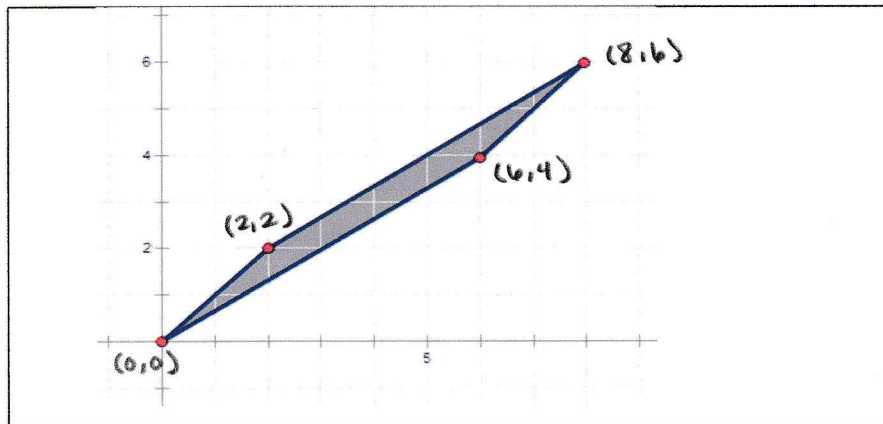


- D. Analyze the linear transformation, $L(x)=Dx$, that transforms the unit square into the figure below by doing the following:



1. Determine the entries of the 2×2 matrix D .

$$D = \begin{bmatrix} 2 & 6 \\ 2 & 4 \end{bmatrix}$$

2. Describe how you determined the entries of D .

Since one of the vertices of the parallelogram is at $(0,0)$, the columns of D can be determined by using any two of the other vertices of the parallelogram. So I chose vertices $(2,2)$ and $(6,4)$ to come up with matrix D .

3. Compare the values of the determinant of D and the area of the figure, showing all work.

$$|\det D| = 2(4) - 6(2)$$

Therefore, the area of the parallelogram is 4 square units.

$$|\det D| = 8 - 12$$

$$|\det D| = |-4|$$

$$\det D = 4$$