Practice Problem:

a) apply the transformation given by \[
\begin{bmatrix}
2 & 0 \\
0 & 3
\end{bmatrix}
\] to the square above, and plot the result. (The space below is for your computations.)

*Hint: here is how to find out where the upper right corner of the transformed figure will be:*

\[
\begin{bmatrix}
2 & 0 \\
0 & 3
\end{bmatrix}
\begin{bmatrix}
3 \\
2
\end{bmatrix} = \begin{bmatrix} 6 \\
6
\end{bmatrix}
\]

(since this transformation does not involve translation we don’t need to use homogenous coordinates, but if you want you can convince yourself that:

\[
\begin{bmatrix}
2 & 0 & 0 \\
0 & 3 & 0 \\
0 & 0 & 1
\end{bmatrix}
\begin{bmatrix}
3 \\
2 \\
1
\end{bmatrix} = \begin{bmatrix} 6 \\
6 \\
1
\end{bmatrix}
\]

b) how many times is the transformed shape larger than the original one?

*Hint: you don’t need to calculate the size of the original shape or the resulting shape to figure this out!*