On paper write a Turing Machine with building blocks for multiplying two unary numbers. You may work with 1 or two others for this classwork.

Problem: Multiply two unary numbers, \( f(x \times y) = x \times y \), \( x \) and \( y \) unary numbers. Assume \( x, y > 0 \).

\[
\begin{align*}
\text{start with:} & \quad 1111 \times 11 \\
& \quad \uparrow \\
\text{end with:} & \quad 11111111 \\
& \quad \uparrow
\end{align*}
\]

Turn it in a sheet of paper with both names on it.

Give the running time, big-Oh, assuming the \( |x| = n, \ |y| = m \).