Consider a special fully discrete 3-year term insurance on \((x)\) with \(b_{h+1} = 1000 + 100h\) and 
\[\pi_h = 100 \cdot 2^{h+1}, \quad h = 0, 1, 2.\]
Using an interest rate of 10\%, the terminal reserves are given by:
\[\begin{align*}
1V &= 170, \\
2V &= 200, \\
3V &= 0
\end{align*}\]

1. (5 pts.) Calculate the mortality rates \(q_x, q_{x+1}, \) and \( q_{x+2}.\)

2. (5 pts.) Calculate the variance of the loss at the end of the second year, i.e. 
\(\text{Var}[2L|K(x) \geq 2].\)