

$$\begin{aligned}
 P(X = k) &= P(\underbrace{\underline{B} \ \underline{B} \ \underline{B} \ \underline{B}}_k \ \underline{G}) \\
 &\qquad \qquad \qquad \uparrow \quad p \\
 &= q^k p \quad (\text{where } q = 1 - p)
 \end{aligned}$$