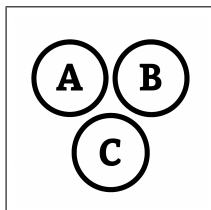
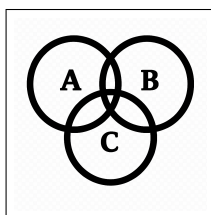


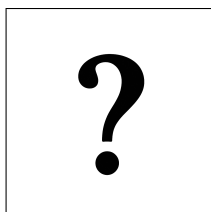
A Discrete Random Variables A



$$\begin{aligned}
 X(HHH) &= 3 \\
 X(HHT) &= 2 \\
 X(HTH) &= 2 \\
 X(THH) &= 2 \\
 X(HTT) &= 1 \\
 X(THT) &= 1 \\
 X(TTH) &= 1 \\
 X(TTT) &= 0
 \end{aligned}$$

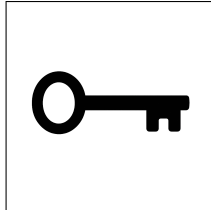


$$\begin{aligned}
 X : \Omega &\rightarrow 0, 1, 2, 3 \\
 P(X = 0) &= \frac{1}{8} \\
 P(X = 1) &= \frac{3}{8} \\
 P(X = 2) &= \frac{3}{8} \\
 P(X = 3) &= \frac{1}{8}
 \end{aligned}$$



$$\begin{aligned}
 X &= \{G, G, G, G, G, R, R, R\} \\
 Y &= \{G, G, G, G, G\} \\
 Z &= \{R, R, R\} \\
 S &= \{(G, G), (G, R), (R, G), (R, R)\} \\
 \mathbb{P}(X, 2) &= ? \\
 P(G, G) &= ? \\
 P(G, R) &= ? \\
 P(R, G) &= ? \\
 P(R, R) &= ?
 \end{aligned}$$

A Discrete Random Variables A



$$X = \{G, G, G, G, G, R, R, R\}$$

$$Y = \{G, G, G, G, G\}$$

$$Z = \{R, R, R\}$$

$$S = \{(G, G), (G, R), (R, G), (R, R)\}$$

$$\#(X, 2) = 8 \times 7 = 56$$

$$P(G, G) = \#(Y, 2) = \frac{5}{8} \times \frac{4}{7} = \frac{20}{56} \approx 0.36$$

$$P(G, R) = \#(Y, 1) + \#(Z, 1) = \frac{5}{8} \times \frac{3}{7} = \frac{15}{56} \approx 0.27$$

$$P(R, G) = \#(Z, 1) + \#(Y, 1) = \frac{3}{8} \times \frac{5}{7} = \frac{15}{56} \approx 0.27$$

$$P(R, R) = \#(Z, 2) = \frac{3}{8} \times \frac{2}{7} = \frac{6}{56} \approx 0.11$$