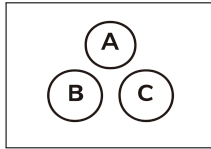


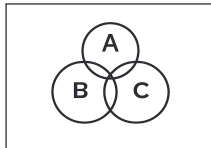
8

Discrete Distribution
Probability

H



$$S = \{B, B, R, R, R\}$$



$$\mathbb{P}(S, BB) = \mathbb{P}(S, B) \times \mathbb{P}(S, B) = 0.40 \times 0.25 = 0.10$$

$$\mathbb{P}(S, BR) = \mathbb{P}(S, B) \times \mathbb{P}(S, R) = 0.40 \times 0.75 = 0.30$$

$$\mathbb{P}(S, RB) = \mathbb{P}(S, R) \times \mathbb{P}(S, B) = 0.60 \times 0.50 = 0.30$$

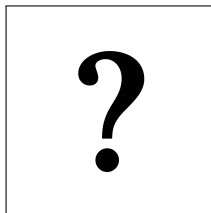
$$\mathbb{P}(S, RR) = \mathbb{P}(S, R) \times \mathbb{P}(S, R) = 0.60 \times 0.50 = 0.30$$

$$\mathbb{P}(S, BB) = \mathbb{P}(S, B) \times \mathbb{P}(S, B) = 0.40 \times 0.40 = 0.16$$

$$\mathbb{P}(S, BR) = \mathbb{P}(S, B) \times \mathbb{P}(S, R) = 0.40 \times 0.60 = 0.24$$

$$\mathbb{P}(S, RB) = \mathbb{P}(S, R) \times \mathbb{P}(S, B) = 0.60 \times 0.40 = 0.24$$

$$\mathbb{P}(S, RR) = \mathbb{P}(S, R) \times \mathbb{P}(S, R) = 0.60 \times 0.60 = 0.36$$



$$S = \{M, M, M, M, M, M, M, F, F, F, F, F, F, F\}$$

$$T = \{M, M, M, M, M, M, M, M\}$$

$$U = \{F, F, F, F, F, F, F\}$$

$$P(MMM) + P(MMF) + P(MFM) + P(FMM) = ?$$

8

Discrete Distribution
Probability

H



$$S = \{M, M, M, M, M, M, M, M, F, F, F, F, F, F, F\}$$

$$T = \{M, M, M, M, M, M, M, M\}$$

$$U = \{F, F, F, F, F, F, F\}$$

$$P(MMM) + P(MMF) + P(MFM) + P(FMM) = ?$$

$$\mathbb{P}(S, 3) = \binom{15}{3} = \frac{15!}{3!(15-3)!} = 455$$

$$\mathbb{P}(T, 3) = \binom{8}{3} = \frac{8!}{3!(8-3)!} = 56$$

$$\mathbb{P}(T, 2) = \binom{8}{2} = \frac{8!}{2!(8-2)!} = 28$$

$$\mathbb{P}(U, 1) = \binom{7}{1} = \frac{7!}{1!(7-1)!} = 7$$

$$P(MMM) + P(MMF) + P(MFM) + P(FMM) = (\mathbb{P}(T, 3) +$$

$$\mathbb{P}(T, 2) \times \mathbb{P}(U, 1)) / \mathbb{P}(S, 3) = 252/455 \approx 0.55$$