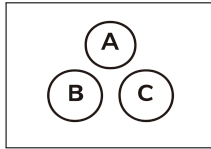


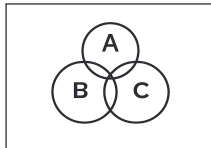
8

Discrete Distribution
Probability

O



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



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

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

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

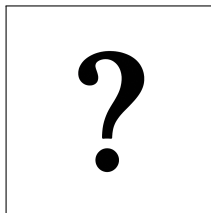
$$\mathbb{P}(S, RR) = \mathbb{P}(S, R) \times \mathbb{P}(S, R) = 0.60 \times 0.50 = 0.30$$

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

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

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

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



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

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

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

$$P(\mathbb{P}(T, MM) \times \mathbb{P}(U, FF)) = ?$$

8

Discrete Distribution
Probability

O



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

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

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

$$\mathbb{P}(S, 4) = \binom{22}{4} = \frac{22!}{4!18!} = \frac{22 \times 21 \times 20 \times 19}{4 \times 3 \times 2 \times 1} = \frac{175,560}{24} = 7,315$$

$$\mathbb{P}(T, MM) = \binom{10}{2} = 45$$

$$\mathbb{P}(U, FF) = \binom{12}{2} = 66$$

$$P(\mathbb{P}(T, MM) \times \mathbb{P}(U, FF)) = (\mathbb{P}(T, MM) \times$$

$$\mathbb{P}(U, FF)) / \mathbb{P}(S, 4) = 45 \times 66 / 7,315 \approx 0.41$$