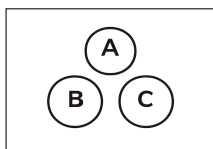


19

Discrete Distribution Bernoulli Trials

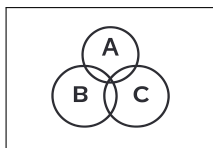
E



$$n = 2$$

$$p = 0.50$$

$$k = 1$$

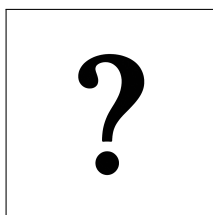


$$P(X = k) = \binom{n}{k} (p)^k (1 - p)^{n-k}$$

$$P(X = 1) = \binom{2}{1} (0.50)^1 (0.50)^1$$

$$P(X = 1) = 2 \times 0.50 \times 0.50$$

$$P(X = 1) = \boxed{0.50}$$



$$p = 0.05$$

$$N = 20$$

$$P(X < 3) = ?$$

19

Discrete Distribution
Bernoulli Trials

E



$$\begin{aligned}p &= 0.05 \\N &= 20 \\P(X < 3) &= ?\end{aligned}$$

$$P(X < 3) = P(X \leq 2) = \sum_{k=0}^2 \binom{20}{k} (0.05)^k (0.95)^{20-k}$$

$$P(X = 0) = \binom{20}{0} (0.05)^0 (0.95)^{20} = 0.95^{20} \approx 0.3583$$

$$P(X = 1) = \binom{20}{1} (0.05)^1 (0.95)^{19} = 20 \cdot 0.05 \cdot 0.95^{19} \approx 0.3772$$

$$P(X = 2) = \binom{20}{2} (0.05)^2 (0.95)^{18} = 190 \cdot 0.0025 \cdot 0.95^{18} \approx 0.1887$$

$$P(X < 3) \approx 0.3583 + 0.3772 + 0.1887 = 0.9242$$