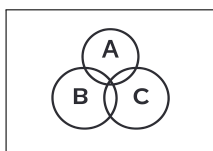
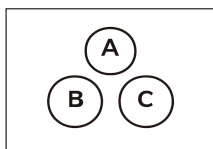


18

Discrete Distribution Uniform Variable

K

$$X = \{2, 4, 6, 8\}$$



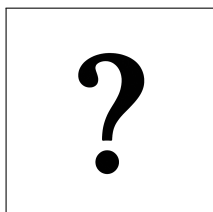
$$P(X = x) = \frac{1}{4}$$

$$E(X) = \sum_x xP(X = x) = \frac{1}{4}(2 + 4 + 6 + 8) = \frac{20}{4} = 5$$

$$E(X^2) = \sum_x x^2P(X = x) = \frac{1}{4}(2^2 + 4^2 + 6^2 + 8^2) = \frac{1}{4}(4 + 16 + 36 + 64) = \frac{120}{4} = 30$$

$$\text{Var}(X) = E(X^2) - [E(X)]^2 = 30 - 25 = 5$$

$$E(3X - 1) = 3E(X) - 1 = 3(5) - 1 = 14$$



$$X = \{-3, -1, 1, 3\}$$

$$P(X = x) = 1/4$$

$$E(X^2) = ?$$

18

Discrete Distribution
Uniform Variable

K



$$X = \{-3, -1, 1, 3\}$$

$$P(X = x) = 1/4$$

$$E(X^2) = ?$$

$$E(X^2) = \sum_{x \in \{-3, -1, 1, 3\}} x^2 P(X = x)$$

$$E(X^2) = \frac{(-3)^2 + (-1)^2 + 1^2 + 3^2}{4}$$

$$E(X^2) = \frac{9+1+1+9}{4}$$

$$E(X^2) = \frac{20}{4}$$

$$E(X^2) = 5$$