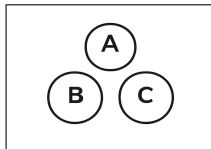


15 Discrete Distribution Expected Value Variable

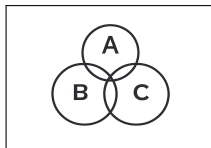
K



$$X = \{1, 2, 3, 4, 5, 6\}$$

$$P(1) = P(2) = P(3) = P(4) = P(5) = P(6) = \frac{1}{6}$$

$$E[X] = ?$$



$$E[X] = \sum xP(X = x)$$

$$E[X] = \frac{1}{6}(1 + 2 + 3 + 4 + 5 + 6)$$

$$E[X] = \frac{1}{6}(21)$$

$$E[X] = \frac{21}{6}$$

$$E[X] = 3.5$$



$$P(X = -1) = 2c$$

$$P(X = 1) = 3c$$

$$P(X = 2) = 4c$$

$$E(X) = ?$$

15 Discrete Distribution Expected Value Variable

K



$$P(X = -1) = 2c$$

$$P(X = 1) = 3c$$

$$P(X = 2) = 4c$$

$$E(X) = ?$$

$$2c + 3c + 4c = 9c = 1$$

$$c = 1/9$$

$$P(X = -1) = 2/9$$

$$P(X = 1) = 3/9 = 1/3$$

$$P(X = 2) = 4/9$$

$$E(X) = \sum xp(x) = (-1) \times \frac{2}{9} + 1 \times \frac{1}{3} + 2 \times \frac{4}{9}$$

$$E(X) = -\frac{2}{9} + \frac{3}{9} + \frac{8}{9} = \frac{9}{9} = 1$$