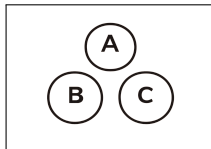


16 Discrete Distribution Expected Value Function

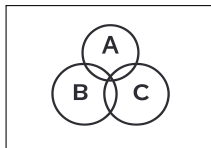
C



$$Y = 20 - 2X$$

$$E(X) = 6$$

$$E(Y) = ?$$

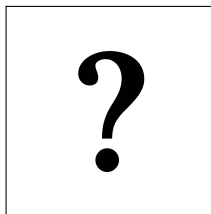


$$E(Y) = E(20 - 2X)$$

$$E(20 - 2X) = E(20) - 2E(X)$$

$$E(20) = 20$$

$$E(Y) = 20 - 2(6) = 20 - 12 = 8$$



$$P(X = -3) = 0.1$$

$$P(X = 2) = 0.2$$

$$P(X = 3) = 0.1$$

$$P(X = 4) = 0.3$$

$$E(F(X)) = ?$$

16 Discrete Distribution Expected Value Function

C



$$P(X = -3) = 0.1$$

$$P(X = 2) = 0.2$$

$$P(X = 3) = 0.1$$

$$P(X = 4) = 0.3$$

$$E(F(X)) = ?$$

$$F(-3) = P(X \leq -3) = 0.1$$

$$F(2) = P(X \leq 2) = 0.1 + 0.2 = 0.3$$

$$F(3) = P(X \leq 3) = 0.1 + 0.2 + 0.1 = 0.4$$

$$F(4) = P(X \leq 4) = 0.1 + 0.2 + 0.1 + 0.3 = 0.7$$

$$E(F(X)) = \sum_x F(x) \cdot p(x)$$

$$E(F(X)) = F(-3) \cdot p(-3) + F(2) \cdot p(2) + F(3) \cdot p(3) + F(4) \cdot p(4)$$

$$E(F(X)) = (0.1)(0.1) + (0.3)(0.2) + (0.4)(0.1) + (0.7)(0.3)$$

$$E(F(X)) = 0.01 + 0.06 + 0.04 + 0.21 = \boxed{0.32}$$