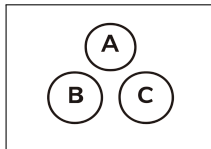


14

Discrete Distribution PMF

A



$$P_0 = P_1 = P_2 = 1/4$$

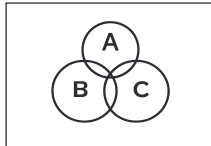
$$X : \Omega \rightarrow \mathbb{R}$$

$$X(1, 1) = 1 + 1 = 2 = \Omega_2$$

$$X(1, 0) = 1 + 0 = 1 = \Omega_1$$

$$X(0, 1) = 0 + 1 = 1 = \Omega_1$$

$$X(0, 0) = 0 + 0 = 0 = \Omega_0$$



PMF

$$P(X = 0) = |\Omega_0| \times P_0 = 1 \times 1/4 = 1/4$$

$$P(X = 1) = |\Omega_1| \times P_1 = 2 \times 1/4 = 1/2$$

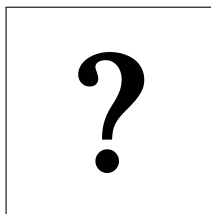
$$P(X = 2) = |\Omega_2| \times P_2 = 1 \times 1/4 = 1/4$$

CDF

$$F(X = 0) = P(X = 0) = 1/4$$

$$F(X = 1) = P(X = 0) + P(X = 1) = 3/4$$

$$F(X = 2) = P(X = 0) + P(X = 1) + P(X = 2) = 1$$



$$P_0 = P_1 = P_2 = P_3 = 1/8$$

$$X : \Omega \rightarrow \mathbb{R}$$

$$X(1, 1, 1) = 1 + 1 + 1 = 3 = \Omega_3$$

$$X(1, 1, 0) = 1 + 1 + 0 = 2 = \Omega_2$$

$$X(1, 0, 1) = 1 + 0 + 1 = 2 = \Omega_2$$

$$X(1, 0, 0) = 1 + 0 + 0 = 1 = \Omega_1$$

$$X(0, 1, 1) = 0 + 1 + 1 = 2 = \Omega_2$$

$$X(0, 1, 0) = 0 + 1 + 0 = 1 = \Omega_1$$

$$X(0, 0, 1) = 0 + 0 + 1 = 1 = \Omega_1$$

$$X(0, 0, 0) = 0 + 0 + 0 = 0 = \Omega_0$$

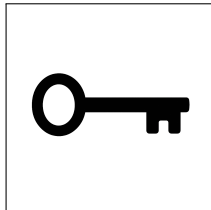
PMF = ?

CDF = ?

14

Discrete Distribution
PMF

A



$$P_0 = 1/8$$

$$P_1 = 1/8$$

$$P_2 = 1/8$$

$$P_3 = 1/8$$

$$X : \Omega \rightarrow \mathbb{R}$$

$$X(1, 1, 1) = 1 + 1 + 1 = 3 = \Omega_3$$

$$X(1, 1, 0) = 1 + 1 + 0 = 2 = \Omega_2$$

$$X(1, 0, 1) = 1 + 0 + 1 = 2 = \Omega_2$$

$$X(1, 0, 0) = 1 + 0 + 0 = 1 = \Omega_1$$

$$X(0, 1, 1) = 0 + 1 + 1 = 2 = \Omega_2$$

$$X(0, 1, 0) = 0 + 1 + 0 = 1 = \Omega_1$$

$$X(0, 0, 1) = 0 + 0 + 1 = 1 = \Omega_1$$

$$X(0, 0, 0) = 0 + 0 + 0 = 0 = \Omega_0$$

$$PMF = ?$$

$$CDF = ?$$

PMF

$$P(X = 0) = |\Omega_0| \times P_0 = 1 \times 1/8 = 1/8$$

$$P(X = 1) = |\Omega_1| \times P_1 = 3 \times 1/8 = 3/8$$

$$P(X = 2) = |\Omega_2| \times P_2 = 3 \times 1/8 = 3/8$$

$$P(X = 3) = |\Omega_3| \times P_3 = 1 \times 1/8 = 1/8$$

CDF

$$F(X = 0) = P(X = 0) = 1/8$$

$$F(X = 1) = P(X = 0) + P(X = 1) = 1/4$$

$$F(X = 2) = P(X = 0) + P(X = 1) + P(X = 2) = 7/8$$

$$F(X = 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3) =$$

$$1$$