

14

Discrete Distribution PMF

G



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

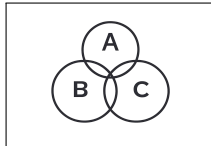
$$X : \Omega \rightarrow \mathbb{R}$$

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

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

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

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



PMF

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

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

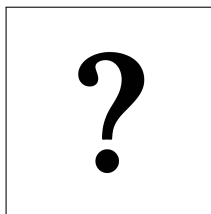
$$P(X = 2) = |\Omega_2| \times P_2 = 1 \times 1/4 = 1/4$$

CDF

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

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

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



$$F(x < -2) = 0$$

$$F(-2 \leq x < 0) = 0.25$$

$$F(0 \leq x < 2.2) = 0.60$$

$$F(2.2 \leq x < 3) = 0.60 + q$$

$$F(3 \leq x < 4) = 0.90$$

$$F(x \geq 4) = 1$$

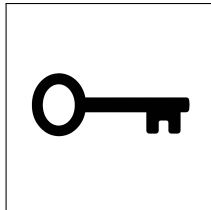
$$P(X > 3) = 0.1$$

$$q = ?$$

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$$F(0 \leq x < 2.2) = 0.60$$

$$F(2.2 \leq x < 3) = 0.60 + q$$

$$F(3 \leq x < 4) = 0.90$$

$$F(x \geq 4) = 1$$

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

$$q = ?$$

$$P(X > 3) = 1 - F(3) = 0.1$$

$$F(3) = 0.9$$

$$F(2.2) = 0.6 + q$$

$$0.6 + q = 0.9$$

$$q = 0.3$$