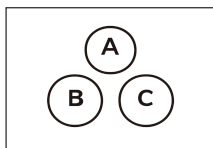


# 22

## Discrete Distribution Geometric Variable

# C

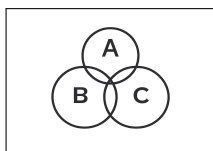


$$p = 0.25$$

$$X = \{1, 2, 3, \dots\}$$

$$PMF = ?$$

$$E[X] = ?$$



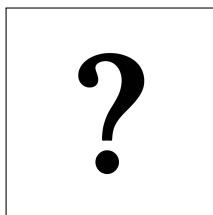
$$P(X = x) = (1 - p)^{x-1}p$$

$$P(X = 1) = 0.25$$

$$P(X = 2) = 0.75(0.25) = 0.1875$$

$$P(X = 3) = 0.75^2(0.25) = 0.1406$$

$$E[X] = 1/p = 1/0.25 = \boxed{4}$$



$$X = \{0, 1, 2, \dots\}$$

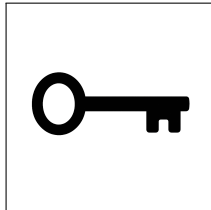
$$p = \frac{2}{92}$$

$$q = 1 - p = \frac{90}{92}$$

## 22

Discrete Distribution  
Geometric Variable

## C



$$X = \{0, 1, 2, \dots\}$$

$$p = \frac{2}{92}$$

$$q = 1 - p = \frac{90}{92}$$

$$P(X \geq 4) = P(X = 4) = q^4 = \left(\frac{90}{92}\right)^4 = \left(\frac{45}{46}\right)^4 \approx \boxed{0.9159}$$