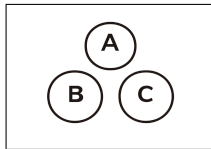
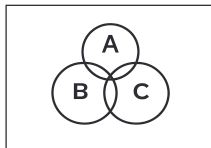


C

Geometric Random Variable

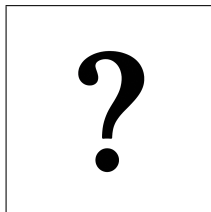
C

$$p = 0.25$$
$$X = \{1, 2, 3, \dots\}$$
$$PMF = ?$$
$$E[X] = ?$$



$$P(X = x) = (1 - p)^{x-1}p$$
$$P(X = 1) = 0.25$$
$$P(X = 2) = 0.75(0.25) = 0.1875$$
$$P(X = 3) = 0.75^2(0.25) = 0.1406$$

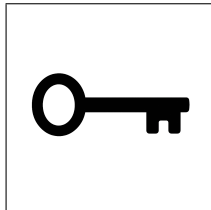
$$E[X] = 1/p = 1/0.25 = \boxed{4}$$



$$X = \{0, 1, 2, \dots\}$$
$$p = \frac{2}{92}$$
$$q = 1 - p = \frac{90}{92}$$

C

Geometric Random Variable

C

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

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

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

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