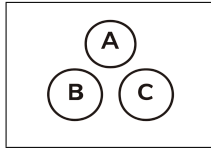
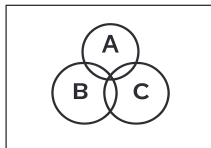


# Geometric Random Variable

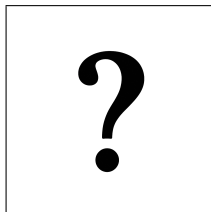


$$p = 0.25$$
$$X = \{1, 2, 3, \dots\}$$
$$PMF = ?$$
$$E[X] = ?$$



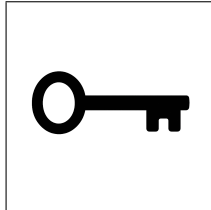
$$P(X = x) = (1 - p)^{x-1}p$$
$$P(X = 1) = 0.25$$
$$P(X = 2) = 0.75(0.25) = 0.1875$$
$$P(X = 3) = 0.75^2(0.25) = 0.1406$$

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



$$p = 0.4$$
$$X = \{1, 2, \dots\}$$
$$P(X \geq 6) = ?$$

# Geometric Random Variable



$$p = 0.4$$
$$X = \{1, 2, \dots\}$$
$$P(X \geq 6) = ?$$

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$$P(X \geq 6) = (1 - p)^5 = (0.6)^5 \approx \boxed{0.07776}$$