

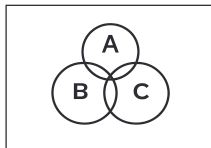
K

Geometric Random Variable

K

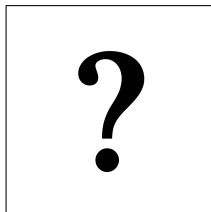


$$p = 0.25$$
$$X = \{1, 2, 3, \dots\}$$
$$PMF = ?$$
$$E[X] = ?$$



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

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

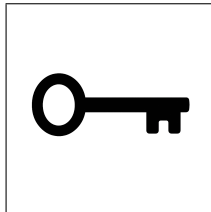


$$p = 0.75$$
$$X = \{1, 2, 3, \dots\}$$
$$P(X \leq 3) = ?$$

K

Geometric Random Variable

K



$$p = 0.75$$
$$X = \{1, 2, 3, \dots\}$$
$$P(X \leq 3) = ?$$

$$P(X \leq 3) = 1 - P(X > 3)$$
$$P(X \leq 3) = 1 - (1 - p)^3$$
$$P(X \leq 3) = 1 - (0.25)^3$$
$$P(X \leq 3) = 1 - 0.015625$$
$$P(X \leq 3) = \boxed{0.984375}$$