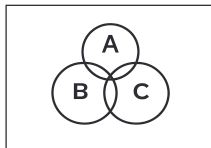




Geometric Random Variable

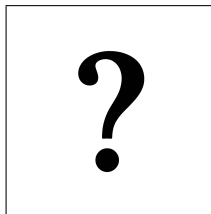


$$p = 0.25$$
$$X = \{1, 2, 3, \dots\}$$
$$PMF = ?$$
$$E[X] = ?$$



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

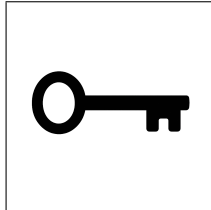
$$E[X] = 1/p = 1/0.25 = \boxed{4}$$



$$Y = \{0, 1, 2, \dots\}$$
$$p = 0.2$$
$$P(Y = k) = (1 - p)^k p = (0.8)^k(0.2)$$
$$E[Y] = ?$$



Geometric Random Variable



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

$$p = 0.2$$

$$P(Y = k) = (1 - p)^k p = (0.8)^k (0.2)$$

$$E[Y] = ?$$

$$E[Y] = \frac{1-p}{p} = \frac{0.8}{0.2} = 4$$