

①

x	$P(X=x)$
0	0.10
1	0.25
2	0.25
3	0.25
4	0.10
5	0.05

(a) Expected Number $\Rightarrow E(x) = \sum_x (x \cdot P(x))$

$$\begin{aligned} &= 0 \cdot P(X=0) + 1 \cdot P(X=1) + 2 \cdot P(X=2) \\ &\quad + 3 \cdot P(X=3) + 4 \cdot P(X=4) + 5 \cdot P(X=5) \end{aligned}$$

$\underbrace{0.10}_{0.25} \quad \underbrace{0.25}_{0.10} \quad \underbrace{0.25}_{0.05}$

$$\begin{aligned} &= 0 + 0.25 + 0.5 + 0.75 + 1 + 0.25 \\ &= \boxed{2.15} \end{aligned}$$

(B) median = 2

(C) Since $E(x) > \text{median}(x)$, the distribution of X is a little Right-skewed.

2. (a) B: Barcelona wins a Home Game

M: Messi scores zero more goals, in a home game

$$P(B) = 0.65$$

$$P(B \cap M) = 0.35$$

$$P(M) = 0.45$$

$$P(B|M) = \frac{P(B \cap M)}{P(M)} = \frac{0.35}{0.45} = \frac{1}{9}$$

(B)

$$P(M|B) = \frac{P(B \cap M)}{P(B)} = \frac{0.35}{0.65} = \frac{1}{3}$$

$$P(A \cap B) = P(B \cap A)$$

