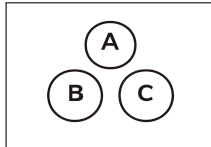


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Discrete Distribution Independant Events

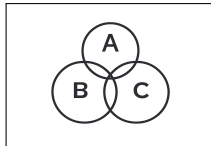


$$S = HH, HT, TH, TT \rightarrow |S| = 4$$

$$A = HH, HT$$

$$B = HH, TH$$

$$C = HH, TT$$



$$A \cap B \cap C = HH \rightarrow P(A \cap B \cap C) = \frac{1}{4}$$

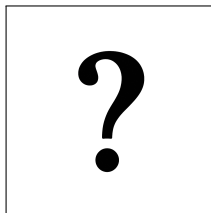
$$P(A) = \frac{2}{4} = \frac{1}{2}$$

$$P(B) = \frac{2}{4} = \frac{1}{2}$$

$$P(C) = \frac{2}{4} = \frac{1}{2}$$

$$P(A)P(B)P(C) = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$$

$$P(A \cap B \cap C) \neq P(A)P(B)P(C) \rightarrow \square(A, B, C) = \text{✗}$$



$$S = (i, j) : i, j \subset 1, 2, 3, 4, 5, 6 \rightarrow |S| = 36$$

$$A = (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1) \rightarrow |A| = 6$$

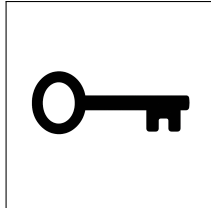
$$B = (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6) \rightarrow |B| = 6$$

$$C = (1, 4), (2, 4), (3, 4), (4, 4), (5, 4), (6, 4) \rightarrow |C| = 6$$

$$\square(A, B, C) = ?$$

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Discrete Distribution Independant Events



$$S = (i, j) : i, j \in 1, 2, 3, 4, 5, 6 \rightarrow |S| = 36$$

$$A = (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1) \rightarrow |A| = 6$$

$$B = (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6) \rightarrow |B| = 6$$

$$C = (1, 4), (2, 4), (3, 4), (4, 4), (5, 4), (6, 4) \rightarrow |C| = 6$$

$$\bigoplus (A, B, C) = ?$$

$$P(A \cap B \cap C) = (3, 4) \rightarrow P(A \cap B \cap C) = \frac{1}{36}$$

$$P(A) \times P(B) \times P(C) = \frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{216}$$

$$\frac{1}{36} \neq \frac{1}{216} \rightarrow \bigoplus (A, B, C) = \text{False}$$