

Independent events:-

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

Rules of addition:-

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

Multiplication Rules:-

$P(A \cap B) = 0$ if events are mutually exclusive.
dependent events:-

then $P(A \cap B) = P(A) \cdot P(B|A)$.

A, B, C \rightarrow random events of a experiment

$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(A \cap C) + P(A \cap B \cap C)$$

Bayes theorem:-

$$P(A_i|B) = \frac{P(A_i) \cdot P(B|A_i)}{\sum P(A_i) \cdot P(B|A_i)} \quad , i = 1, 2, 3, \dots, n$$

Binomial distribution:- for successive events
 $(p+q)^n = {}^nC_0 p^n + {}^nC_1 p^{n-1} q + \dots + {}^nC_n q^n$

for k success

$$P_k = {}^nC_k p^k q^{n-k}$$