Sample space S: the set of all possible outcomes.

event e: an outcome, event is a subset of the sample space.

probability model: a mathmatical description of a random phenomena

Probability rules:

1. $P \in [0, 1]$.
2. $P_A + P_B + \cdots + P_N = 1$
3. $P(A \cup B) = P_A + P_B$.
4. $P(A^c) = 1 - P(A)$.

Finite probility model: a probability model with a finite sample space, and it is also called discrete probability.

Continuous probability model: assigns probability as an era under the density curve

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

$P(B|A) = \frac{P(A \cdot B)}{P(A)}$.

A, B are independent $\Leftrightarrow P(B|A) = P(B)$