Introduction to Probability

Probability is a measure of the likelihood of an event occurring.

The sample space is the set of all possible outcomes in a probability experiment.

Independent events are those whose outcomes do not affect each other.

Dependent events are those where the outcome of one affects the outcome of another.

Conditional probability is the probability of one event occurring given that another has already occurred.

The three axioms of probability are: non-negativity, normalization, and additivity.

Mutually exclusive events cannot occur at the same time.

A probability tree is a diagram that helps calculate the probabilities of combined events.

Bayes' Theorem describes the probability of an event based on prior knowledge of conditions related to the event.

Example 2: If a coin is tossed twice, what is the probability of getting at least one head?

Solution: Sample space = {HH, HT, TH, TT}. Favorable outcomes = {HH, HT, TH}. Probability = 3/4 = 0.75.

Theoretical probability is based on reasoning or calculations, while experimental probability is based on actual experiments.