# PROBABILITY

## PROBLEM STATEMENT

## INTRODUCTION

## HISTORICAL BACKGROUD

The modern mathematical theory of [probability](https://en.wikipedia.org/wiki/Probability) has its roots in attempts to analyze [games of chance](https://en.wikipedia.org/wiki/Game_of_chance) by [Gerolamo Cardano](https://en.wikipedia.org/wiki/Gerolamo_Cardano) in the sixteenth century, and by [Pierre de Fermat](https://en.wikipedia.org/wiki/Pierre_de_Fermat) and [Blaise Pascal](https://en.wikipedia.org/wiki/Blaise_Pascal) in the seventeenth century (for example the "[problem of points](https://en.wikipedia.org/wiki/Problem_of_points)").[Christiaan Huygens](https://en.wikipedia.org/wiki/Christiaan_Huygens" \o "Christiaan Huygens) published a book on the subject in 1657 and in the 19th century, [Pierre Laplace](https://en.wikipedia.org/wiki/Pierre-Simon_Laplace) completed what is today considered the classic interpretation.

Initially, probability theory mainly considered discreteevents, and its methods were mainly [combinatorial](https://en.wikipedia.org/wiki/Combinatorics). Eventually, [analytical](https://en.wikipedia.org/wiki/Mathematical_analysis) considerations compelled the incorporation of continuousvariables into the theory.

This culminated in modern probability theory, on foundations laid by [Andrey Nikolaevich Kolmogorov](https://en.wikipedia.org/wiki/Andrey_Nikolaevich_Kolmogorov). Kolmogorov combined the notion of [sample space](https://en.wikipedia.org/wiki/Sample_space), introduced by [Richard von Mises](https://en.wikipedia.org/wiki/Richard_von_Mises), and [measure theory](https://en.wikipedia.org/wiki/Measure_theory) and presented his [axiom system](https://en.wikipedia.org/wiki/Kolmogorov_axioms) for probability theory in 1933. This became the mostly undisputed [axiomatic basis](https://en.wikipedia.org/wiki/Axiom_system) for modern probability theory; but, alternatives exist, such as the adoption of finite rather than countable additivity by [Bruno de Finetti](https://en.wikipedia.org/wiki/Bruno_de_Finetti).

## OBJECTIVE

## KEY FEATURE

* The value of probability is a pure positive number which is always less or equal to one.

## NUMERICAL COMPUTATION

## GRAPHICAL REPRESENTAION

## APPLICATION

* Probability helps in analyzing the best plan of insurance which suits you and your family the most. For example, you are an active smoker, and chances of getting lungs disease are higher in you. So, instead of choosing an insurance scheme for your vehicle or house, you may go for your health insurance first, because the chance of your getting sick are higher.
* Probability is used for predicting the weather forecasting of a specific place at specific time.
* Many politics analysts use the tactics of probability to predict the outcome of the election’s results. For example, they may predict a certain political party to come into power; based on the results of exit polls.
* Winning or losing a lottery is one of the most interesting examples of probability.
* Rates of car accidents have increased rapidly in the past decades. For example, if a city has a population of one lakh, and the death rate in car accidents is 500. So, the chance of being killed in a crash is 500/1 lakh is 0.05%. Thus, a person has a 0.05% chance to die in a car accident.
* Batting average in Cricket represents how many runs a batsman would score before getting out. For example, if a batsman had scored 40 runs out of 100 from boundaries in the previous match. Then, there is a chance that he would score 40% of his runs in the next match from boundaries.
* Flipping a coin is one of the most important events before the start of the match. There is no surety, either head will come or not. Both head and tail have 1 out of 2, i.e., 50% chances to occur. Hence, the probability of getting the desired outcome is 0.5.