CLASS X : CHAPTER - 15
PROBABILITY

NCERT NICHOOD

PROBABILITY

Experimental or empirical probability P(E) of an event E is

$$P(E) = \frac{\text{Number of trials in which the event happened}}{\text{Total number of trials}}$$

The theoretical probability (also called classical probability) of an event A, written as P(A), is defined as

$$P(A) = \frac{\text{Number of outcomes favourable to A}}{\text{Number of all possible outcomes of the experiment}}$$

Two or more events of an experiment, where occurrence of an event prevents occurrences of all other events, are called **Mutually Exclusive Events.**

COMPLIMENTARY EVENTS AND PROBABILITY

We denote the event 'not E' by $\bar{E}$. This is called the **complement** event of event E.

So, P(E) + P(not E) = 1

i.e., P(E) + P($\bar{E}$) = 1, which gives us P($\bar{E}$) = 1 – P(E).

In general, it is true that for an event E, P($\bar{E}$) = 1 – P(E)

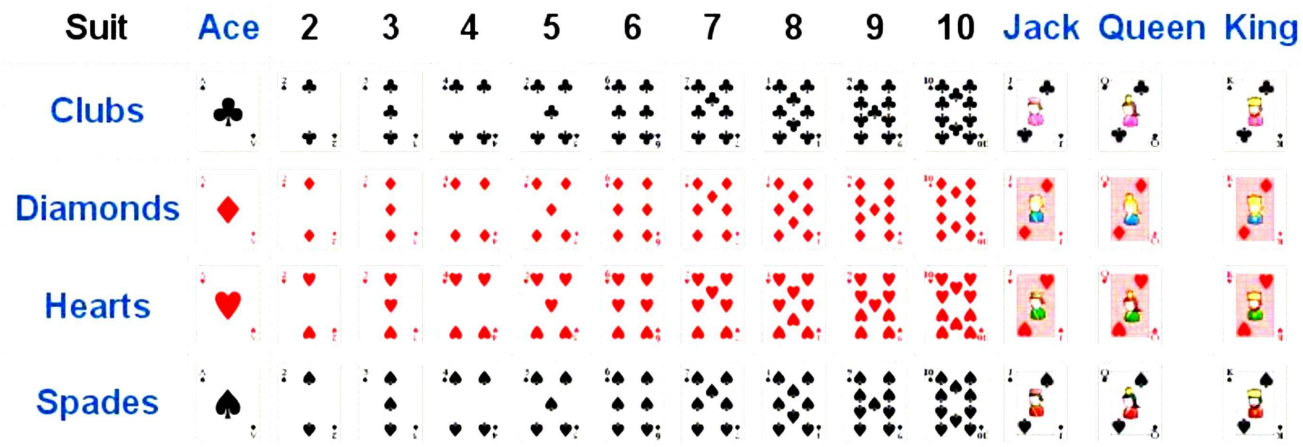
- The probability of an event which is impossible to occur is 0. Such an event is called an **impossible event.**
- The probability of an event which is sure (or certain) to occur is 1. Such an event is called a **sure event** or a **certain event.**
- The probability of an event E is a number P(E) such that $0 \leq P(E) \leq 1$
- An event having only one outcome is called an elementary event. The sum of the probabilities of all the elementary events of an experiment is 1.

DECK OF CARDS AND PROBABILITY

A deck of playing cards consists of 52 cards which are divided into 4 suits of 13 cards each. They are black spades (♠) red hearts (♥), red diamonds (♦) and black clubs (♣).

The cards in each suit are Ace, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3 and 2. Kings, Queens and Jacks are called face cards.

Example set of 52 poker playing cards



Equally likely events : Two or more events are said to be equally likely if each one of them has an equal chance of occurrence.

Mutually Exclusive events : Two or more events are mutually exclusive if the occurrence of each event prevents the every other event.

Complementary events : Consider an event has few outcomes. Event of all other outcomes in the sample survey which are not in the favourable event is called Complementary event.

Exhaustive events : All the events are exhaustive events if their union is the sample space.

Sure events : The sample space of a random experiment is called sure or certain event as any one of its elements will surely occur in any trail of the experiment.

Impossible event : An event which will occur on any account is called an impossible event.