# Maths Class 10 Notes for Probability

**PROBABILITYASAMEASUREOFUNCERTAIINITY**

**EXPERIMENT:** An operation which can produce some well defined outcomes, is known as an experiment.

**TRIAL :** Performing of an experiment is called Trial.
For example : Tossing a coin, throwing a dice.

**EVENT :** The outcomes of an experiment are called events. For example Getting a head or tail tossing a coin is an Event.

**EQUALLY LIKELY EVENT :** Outcomes of trial are said to be equally likely if taking into consideration all the relevant evidences, there is no reason to expect one in preference to the others. For example,

(a) In throwing an unbiased die, all the six faces are equally likely to come.

**ELEMENTARY EVENT :** An event having only one outcome is called an elementary event.

**REMARK:** The sum of the probabilities of all the elementary events of an experiment is 1.

**SAMPLE SPACE :** The set of all possible outcomes in a trial is called sample space.

For instance :

(i) If a fair coin is tossed, there are two possible outcomes, namely head (H) & Tail (T). Sample space S = { H, T}

(ii) In unbaised die is thrown; S = { 1, 2,-3, 4, 5,6)

(iii) When two coins are tossed ; S = HH, HT, TH,TT}

**FAVOURABLE CASES :** If we toss a coin, the number of favourable cases for a head is 1 i.e., (H) and total number of equally likely cases =2 i.e., (T, H)

**PROBABILITY:** Mathematically, Probability of an event E, is defined as,

$P(E) = n(E) / n(S) = $ ) No.of outcomes of favourable cases to E / Total No. of possible outcomes

The probability of an event E is a number between 0 and 1 inclusive i.e., $0 \leq P(E) \leq 1$

(i) If P(E) = 0, then the event cannot possibly occur. An event that cannot occur has 0 probability; Such an event is called impossible event.

(ii) If P(E) = 1, then the event is certain to occur. An event that is certain to occur has probability equal to one and is called a sure event.

## PROCEDURE FOR FINDING SIMPLE PROBABILITY OF AN EVENT

(i) Count the total number of outcomes in the sample space i.e., n(S);

(ii) Then count all possible outcomes of the event E + e — n(E).

(iii) Substitute these values in the below given formula for probability of event E.
P(E) = n(E) / n(S)

## COMPLEMENTARYEVENT

Let E denote the event 'E does not occur'. Then

P(E) = n(E) / n (S)

= n(S) – n(E) / n(S) = 1 – n(E) / n(S)

P(E) = 1— P(E) P(E) + P(E) = 1

i.e. P(E) + P(not E) = 1

Thus P (not E) = 1— P (E), this event is said to be a complementary event.