Definition of Probability: -

The assumption that all the outcomes are equally likely leads to the following definition of probability.

The probability of an event E, written as P(E), is defined as

$$P(E) = \frac{number\ of\ outcomes\ favouravle\ to\ E}{total\ number\ of\ possible\ outcomes\ of\ the\ experiment}$$

Sure event: - an event which always happens is called a sure event or a certain event.

For example: - when we throw a die then the event "getting a number less than 7' is a sure event.

The probability of a sure event is 1.

Impossible event: - an event which never happen is called an impossible event.

For example, when we throw a die, then the event getting a number greater than 6 is an impossible event.

The probability of an impossible event is 0.

Elementary event: - an event which has one (favourable) outcome from the sample space is called an elementary event.

An event which has more than one favourable outcome from the sample space is called a compound event.

For example: - when we throw a die then the event getting number S is an elementary event where as the event getting an even number (2,4 or 6) is a compound event.

Complementary event: - if E is an event, then the event "not E" is complementary event of E.

For example: - when we throw a die, let E be the event getting a number less than or equal to 2, then the event "not E" i.e. getting a number greater than 2 is complementary event of E.

Complement of E is denoted by $\bar{E}$ or E^c

Let E be an event, then the number of outcome favourable to e is greater than or equal to zero and is less than or equal to total number of outcomes.

it follows that,

$0 \le P(E) \le 1$

let E be an event than we have,

i) $0 \leq P(E) \leq 1$

ii) $P(\bar{E}) = 1 - P(E)$

iii) $P(E) = 1 - P(\bar{E})$

iv) $P(E) + P(\bar{E}) = 1$

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