PROBABILITY

Random experiment

It leader to circumstance that do not leader to same outcome. It can also be named as tail.

Bhai head aaya to tail nhi means same outcome nhi ana chaiye

Jese Pack of card se caed draw karna tha king ab aapne last Rate ko pahle hi king kar diya tha to ye random nhi h.

Sample Share

It is defined as set of all possible outcomes in coin 2^n
means 2 coins loss kiya to $2^2 = 4$
3 coins loss kiya to $2^3 = 8$
For dice 6^n | $6^1 = 6 \mid 6^2 = 6 \mid 6^3 = 216$
2 – Green ball, 5 – Red & 5 white = so small share = 12 balls.

Event

Any sub-set of an sample share is knowns as events man to 1 dice throw kiya af samll share os {1, 2, 3, ,4, 5, 6} ab agar bola 4 se bada hona chaiye {5,6} ye even he 2 se chota {1,} y event and aisi har cheez.

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More in set Relation function

Exhaustive Event

If all possible outcomes are convert is a set of event then this set of event is knowns as Exhaustive Event.
For Example => Matlab agar kisi event me share ke share outcomes cover ho jaye matlab agar pura sample share cover ho jaye to EE.

Example =>

1. One coin tossed total possible outcomes
   H or T
   Event 1 ➔ Head
   Event 2 ➔ Tail
   Event 1 + Event 2 = E E
1. One dice is thrown total possible outcomes = {1, 2, 3, 4, 5, 6}
   Event 1 ➔ {1, 3, 5}
   Event 2 ➔ {5, 6,}
   Event 3 ➔ {2,4,6}
   Event 4 ➔ { 2,5,6}

Now Event 1 + Event 3 = EE
EE means group event which cover whole sample share.

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Mutually Exclusive

2 Event are said to be ME event if occure of 1 event rules oyt the occurance of and the event in other words koi ek event ho skta dono sath e nhi ho sakte he ya fir

For Example => ya head aayega ya tail aayega
For Example => If you tossed a coin then the proof of head & if you thrown a dice then the proof of even no coin simultaneous or not

Event 1 ➔ Head
Event 2 ➔ {2,4,6}

Event 1 & Event 2 sath me ho sakte hee matlab not mutually exclusive kyoki ism eek hua to dusra nhi hona chiaye but yha to dono hi shi he

Independent Event

If occure of one event does not effect the occure of another event then it is an Independent Event.
Ek event ke hone ya na hone se dusree event ko koi fark ni padta .

Equally Likely

When both the event have equal chance of occure it is said equally likely.

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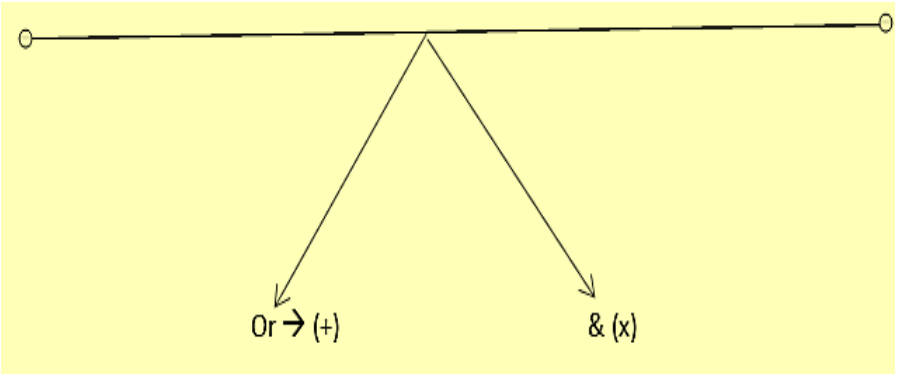
For Example=> If you thrown a dice that the proof of total possible outcomes which is { 1, 2, 3,4,5, 6} is equal which is 1/6

Favorable Event

Whenever you are call proof then the outcomes you desire is known as Favorable Event.



CONDITIONAL PROBABILITY AND COMPOUND THEOREM OF PROBABILITY

RANDOM VARIABLE - PROBABILITY DISTRIBUTION

A random variable or stochastic variable is a function defined on a sample space associated with a random experiment assuming any value from R and assigning a real number to each and every sample point of the random experiment.

S = {HHH, HHT, HTH, HTT, THH, THT, TTH, TTT}

and we find that X = 0 if the sample point is TTT

X = 1 if the sample point is HTT, THT or TTH

X = 2 if the sample point is HHT, HTH or THH

and X = 3 if the sample point is HHH.

EXPECTED VALUE OF A RANDOM VARIABLE

Expected value or Mathematical Expectation or Expectation of a random variable may be defined as the

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sum of products of the different values taken by the random variable and the corresponding probabilities.

When x is a discrete random variable with probability mass function f(x), then its expected value is given by

$$\mu = \sum_x xf(x)$$

and its variance is

$$\sigma^2 = E(x^2) - \mu^2$$

Where $E(x^2) = \sum_x x^2 f(x)$

For a continuous random variable x defined in [–$#$], its expected value (i.e. mean) and variance are given by

$$E(x) = \int_{-\infty}^{\infty} x\, f(x)dx$$

and $\sigma^2 = E(x^2) - \mu^2$

where $E(x^2) = \int_{-\infty}^{\infty} x^2 f(x)dx$

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Properties of Expected Values

- Expectation of a constant k is k.
- Expectation of sum of two random variables is the sum of their expectations.
- Expectation of the product of a constant and a random variable is the product of the constant and the expectation of the random variable.
- Expectation of the product of two random variables is the product of the expectation of the two random variables, provided the two variables are independent.