PROBABILITY

Probability: The extent to which something is likely to happen

Example

1. Tossing a coin
2. Team winning a match.(cricket/football)
3. Stock price of a particular company going up or down

$$\text{Formulae} = \frac{\text{Total possible outcomes}}{\text{Total outcomes}}$$

Always expect value of probability assessment in between $0<P<1$

Mutually exclusive events

1. Two events that cannot occur at same time.

2. $P(A \cup B) = P(A) + P(B)$.

Mutually inclusive events

1. Two events that are dependent in some way , they are mutually inclusive

2. P(AUB) = P(A) + P(B) - P(A AND B)

   P(A AND B) > 0

Dependent and independent events

1. If outcome of one event affects other event outcome then they are dependent events

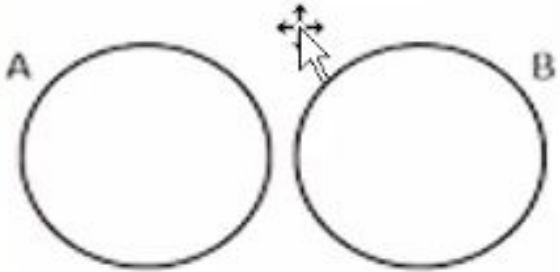
   Example : A jar with 3 colour balls , probability of getting one colour ball

2 . If outcome of one event does not affects the outcome of the other event they are independent events

   Example : Tossing two coins

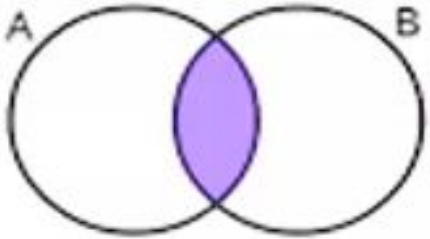
Additive Rule

Mutually Exclusive Events



P(A or B) = P(A) + P(B)

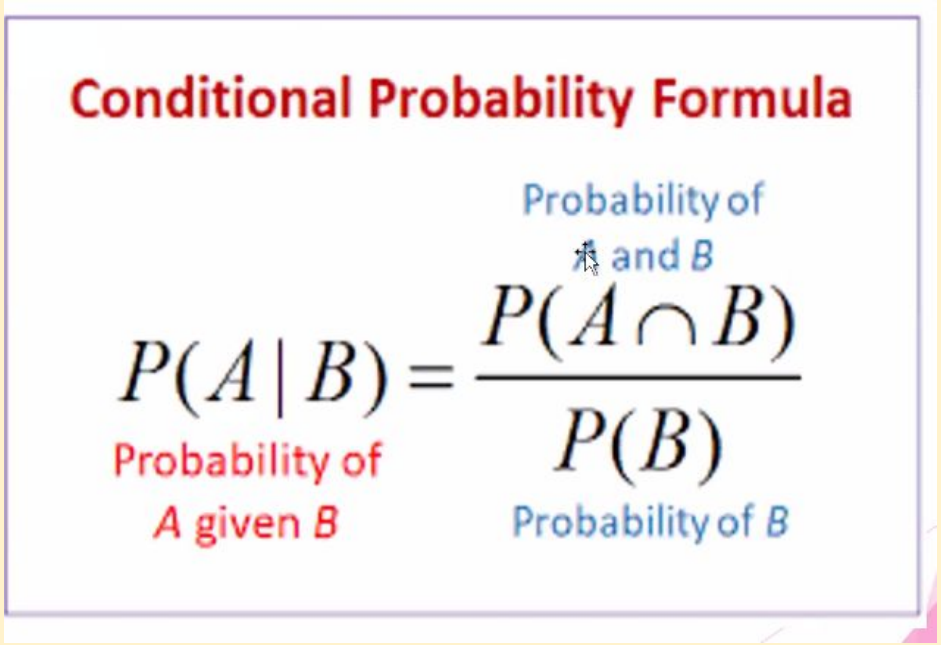
Non-Mutually Exclusive Events



P(A or B) = P(A) + P(B) − P(A and B)

Conditional probability

Probability of two dependent events occurring one after other



Bayes theorem

To calculate conditional probability when P(A AND B) is not known:

Formula

$$P(A \mid B) = \frac{P(B \mid A) \cdot P(A)}{P(B)}$$

A, B	= events
$P(A\|B)$	= probability of A given B is true
$P(B\|A)$	= probability of B given A is true
$P(A), P(B)$	= the independent probabilities of A and B