

# Probability

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## Empirical Probability

It is a probability of event which is calculated based on experiments

$$\text{Empirical Probability} = \frac{\text{No of trails which expected outcome came}}{\text{Total Number of trials}}$$

*Example:*

A coin is tossed 1000 times; we get 499 times head and 501 times tail,

So empirical or experimental probability of getting head is calculated as

$$p = \frac{499}{1000} = .499$$

***Empirical probability depends on experiment and different will get different values based on the experiment***

(a) If the event A, B, C covers the entire possible outcome in the experiment. Then,

$$P(A) + P(B) + P(C) = 1$$

(b) The probability of an event (U) which is impossible to occur is 0. Such an event is called an **impossible event**

$$P(U) = 0$$

(c) The probability of an event (X) which is sure (or certain) to occur is 1. Such an event is called a **sure event or a certain event**

$$P(X) = 1$$

(d) Probability of any event can be as

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