

Probability

Trial: action resulting in one or more outcomes
Event: collection of some outcomes of the experiment

Trial	Possible outcomes
Rolling of dice	1, 2, 3, 4, 5, 6
Tossing an unbiased coin :	Head, Tail

Empirical (or experimental) Probability $P(E)$ of an event E
$$P(E) = \frac{\text{Number of trials in which } E \text{ has happened}}{\text{Total number of trials}}$$

Properties of Empirical probability

- If events $E_1, E_2, \dots, E_n$ cover all the outcomes of a trial and $P(E)$ denotes the empirical probability of an event E , then:
$$0 \leq P(E_1), P(E_2), \dots, P(E_n) \leq 1$$
$$P(E_1) + P(E_2) + \dots + P(E_n) = 1$$
- Empirical probability depends upon
 - (a) number of trials undertaken
 - (b) number of times the expected outcomes show up in the trials