

PROBABILITY- BASIC CONCEPTS

I doubt she will pass the test.

It may rain today.

The words may, doubt represents uncertainty.

The measure of uncertainty is known as probability.

The theory of probability developed as a result of studies of game of chance or gambling.

Italian mathematician J. cardan (1501-1516) wrote the first of the subject "book on games of chance".

Some terms related to probability: -

Experiment: - an action which results in some (well defined) outcomes is Called an experiment.

1.Random experiment: - an experiment is called random if it has more than one possible outcomes and it is not possible to predict the outcome in advance.

2.Sample space: - the collection of all possible outcomes of a random experiment is called sample space.

3.Event: - a subject of the sample space associated with a random experiment is called an event.

Example: - a die is thrown, we can get any number 1,2,3,4,5,6. So the sample space $S(1,2,3,4,5,6)$

A few event of this experiment could be

Getting a no = (6)

Getting an even number = (2,4,6)

Getting a prime number = (2,3,5)

4.Occurrence of an event: - when the outcome of an experiment satisfies the condition mentioned in the event then we say that event has occurred.

5.Occurrence of an event: - example.

In the experiment of tossing a coin an event E may be getting a head. If the coin comes up with head then we say that event E has occurred, otherwise, if the coin comes up with tail we say that event E has not occurred.

6.Favourable outcomes: - the outcomes which ensure the occurrence of an event are called favourable outcomes to that event.

7. Equally likely outcomes: - if there is no reason for any outcomes to occur in preference to any other outcomes we can say that the outcomes are equally likely.

For example: -

- i) In tossing a coin, it is equally likely that the coin lands either head up or tail up.
- ii) In throwing a die, each of the six numbered 1,2,3,4,5,6 is equally likely to show up.

Note: - we will assume that all the outcomes are equally likely.