MATHEMATICS

CLASS NOTES FOR CBSE

Chapter 30. Probability

If an experiment, when repeated under identical conditions, do not produce the same outcome every time but the outcome in a trial is one of the several possible outcomes, then it is known as a **Random or Probabilistic Experiment**. For example, in tossing, of a coin one is not sure if a head or a tall will be obtained, so it is a random experiment. Similarly, rolling an unbiased die and drawing a card from a well shuffled pack of card are examples of a random experiment.

Elementary Event : *An outcome of a random experiment is called an elementary event.*
For example: Consider the random experiment of tossing of a coin. The possible outcome of this experiment are head (H) or tail (T).
Thus, if we define

E_1 = Getting head (H) on the upper face of the coin,

and,

E_2 = Getting (T) on the upper face of the coin.

Then, E_1 and E_2 are elementary event associated with the experiments of tossing of a coin.

Compound Event : *An event associated to a random experiment is a compound event if it is obtained by combining two or more elementary event associated to the random experiment.*
For example: In a single throw of a die, the event "Getting an even number" is a compound event as it is obtained by combining three elementary events, namely, 2,4,6.

Occurrence of an Event : *An event A associated to a random experiment is said to occur if any one of the elementary events associated to the event A is an outcome.*
For example: Consider the random experiment of throwing an unbiased die. Let A denote the event "Getting an even number". Elementary events associated to this event are : 2,4,6. Now, suppose that in a trial the outcome is 4, then we say that the event A has occurred. In another trial, let the outcome be 3, then we say that the event A has occurred.

Favourable Elementary Events : *An elementary event is said to be favourable to a compound event A, if it satisfies the definition of the compound event* A.
In other words, an elementary event E is favourable to a compound event A, if we say that the event A occurs when E is an outcome of a trial.
For example: Consider the random experiment of throwing a pair of dice and the compound event A defined by "Getting 8 as the sum" We observe that the event A occurs if we get any one of the following elementary events as outcome:

(2,6), (6.2), (3,5), (5,3), (4,4)