binomial distribution

- In statistics and probability theory, the **binomial distribution** is the probability distribution that is discrete and applicable to events having only two possible results in an experiment, either success or failure. (The prefix “bi” means two, or twice). A few circumstances where we have binomial experiments are tossing a coin: head or tail, the result of a test: pass or fail, selected in an interview: yes/ no, or nature of the product: defective/non-defective. Such a distribution of a binomial random variable is called a binomial probability distribution.
- Binomial Distribution is a commonly used discrete distribution in statistics. The normal distribution as opposed to a binomial distribution is a continuous distribution. Let us learn the formula to calculate the Binomial distribution considering many experiments and a few solved examples for a better understanding.

$$P(x) = \binom{n}{x} p^x q^{n-x} = \frac{n!}{(n-x)!x!} p^x q^{n-x}$$

where
n = the number of trials (or the number being sampled)
x = the number of successes desired
p = probability of getting a success in one trial
q = 1 - p = the probability of getting a failure in one trial