The formula that we commonly used for determining the distribution of binomial types is more generally known also as the formula for “Bernoulli trials” (when n = 1).

Let us assume that in an experiment done, ‘n’ is representing the number of trials attempted, and that ‘k’ is the count of successes that is to be attained in those ‘n’ trials. This implies that number of failures clearly will be ‘n - k’.

Assuming, ‘s’ to be the probability of succeeding in a trial, we get that the probability of failure is ‘1 - s’.

Then the formula for calculating the achievement of ‘k’ successes in ‘n’ trials is given below:

P (‘k’ successes in ‘n’ trials) = C(n,k)s raised to k\*(1−s)(n−k)

Hence, C (n, k) is evaluated as below:

C (n, k) = n! (k!(n−k)!)

With n! = n \* (n - 1) \* … \* 2 \* 1

If k > n/2 then the following is applicable,

f (k, n, s) = f (n - k, n, 1 - s)

This holds true for every k > n/2.

Problem Statement:

A die marked A to E is rolled 50 times. Find the probability of getting a “D” exactly 5 times.

Solution:

Here, n = 50, k = 5, n - k = 45.

The probability of success = probability of getting a “D”= s = 15

Hence, the probability of failure = probability of not getting a “D” = 1 - s = 4/5=0.8

Probablity=0.8