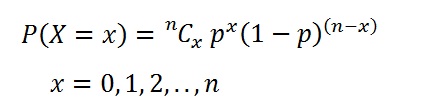
**Assignment4.4**

**Problem Statement**:

A test is conducted which is consisting of 20 MCQs (multiple choices questions) with every MCQ having its four options out of which only one is correct. Determine the probability that a person undertaking that test has answered exactly 5 questions wrong

**Answer:**

Binomial distribution



Here, n = 20, x = 5, n-x= 20 - 5 = 15

The probability of success = 1/4

The probability of failure = 1-1/4=3/4

When we substitute these values in the formula for Binomial distribution we get,

P(X=5)=20C5(1/4)15(3/4)5

= 16\*17\*18\*19\*20

1\*2\*3\*4\*5 \* (1/4)15(3/4)5

= **0.0000034**

Thus the required probability is **0.0000034** approximately.

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

The probability of success = probability of getting a “D”= s = 1/5

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

Two balls are drawn at random in succession without replacement from an urn containing 4 red balls and 6 black balls. Find the probabilities of all the possible outcomes.

Blood glucose levels for obese patients have a mean of 100 with a standard deviation of 15. A researcher thinks that a diet high in raw cornstarch will have a positive effect on blood glucose levels. A sample of 36 patients who have tried the raw cornstarch diet have a mean glucose level of 108. Test the hypothesis that the raw cornstarch had an effect or no

In one state, 52% of the voters are Republicans, and 48% are Democrats. In a second

state, 47% of the voters are Republicans, and 53% are Democrats. Suppose a simple

random sample of 100 voters are surveyed from each state.

What is the probability that the survey will show a greater percentage of Republican

voters in the second state than in the first state?

You take the SAT and score 1100. The mean score for the SAT is 1026 and the standard deviation is 209. How well did you score on the test compared to the average test taker?