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

times.

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

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.

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

So, P (exactly 5 out of 50 rolls) = C (50, 5) \* (1/5)^5 \* (4/5)^45

= (50\*49\*48\*47\*46)/(5∗4∗3∗2∗1) \* (1/5)^5 \* (4/5)^45

= 0.029 (approximately)

Thus the required probability is 0.029 approximately.