

App: 17.2

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

Sol:

$$\text{Probability of getting D} = \frac{1}{5}$$

$$\text{Probability of not getting D} = \frac{4}{5}$$

Probability of getting D exactly 5 times

$$\begin{aligned} &= \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \frac{1}{5} \times \left(\frac{4}{5}\right)^{45} \\ &= \frac{(4)^{45}}{(5)^{50}} \end{aligned}$$