

Assignment

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AI21MTECH02003

I. GATE EC 8

Problem: Consider a dice with the property that the probability of a face with n dots showing up is proportional to n . The probability of the face with three dots showing up is ?

Solution: Given that the dice with the property that the probability of a face with n dots showing up is proportional to n , let the proportionality constant be ' c ', then tabulating :

X	1	2	3	4	5	6
Pr(X)	c	2c	3c	4c	5c	6c

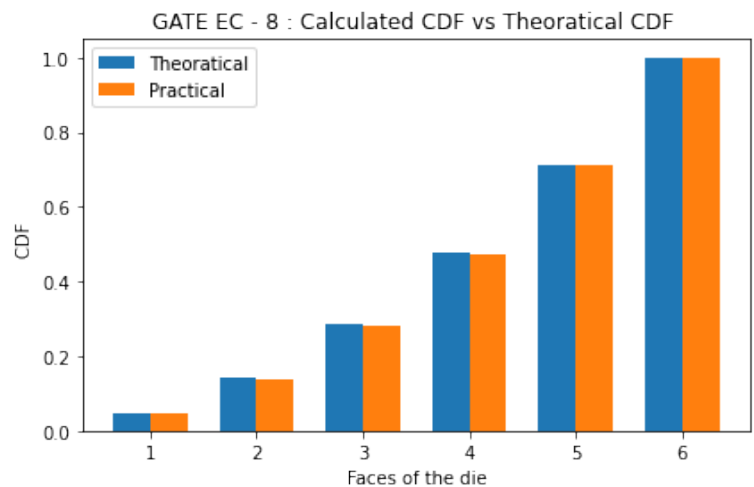
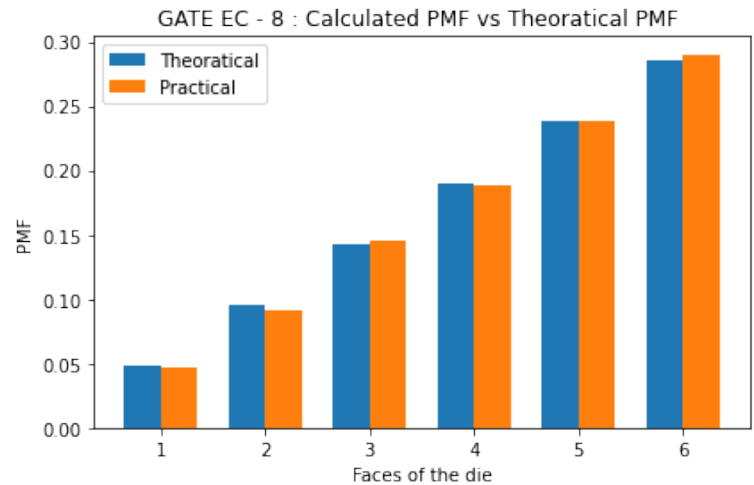
As the sum of all probability is equal to 1

$$\begin{aligned}
 \Sigma Pr(X) &= 1 \\
 c + 2c + 3c + 4c + 5c + 6c &= 1 \\
 21c &= 1 \\
 c &= \frac{1}{21}
 \end{aligned}$$

The probability of three dots showing up is $3c$

Giving the probability to be:

$$\begin{aligned}
 &= 3 * \frac{1}{21} \\
 &= \frac{3}{21} \\
 &= \frac{1}{7} \\
 &= 0.1428
 \end{aligned}$$



Code source: https://github.com/harshal9876/AI5002/blob/main/Assignment_9/Codes/Assignment_9.py
 LaTeX code : https://github.com/harshal9876/AI5002/blob/main/Assignment_9/Assignment_9.tex