

ASSIGNMENT-2

B PREMSAGAR - EE22BTECH11013

Question XH-3.2023: Given a fair six-faced dice where the faces are labelled '1','2','3','4','5', and '6'. what is the probability of getting a '1' on the first roll of the dice and a '4' on the second roll ?

Solution: Let X be an bernoulli rv defined as,

TABLE 0
DECLARATION OF X

Parameter	value	Description
X	0	not getting desired outcome
	1	getting desired outcome
X_1	1/6	Pr(X) at K=1
X_2	1/6	Pr(X) at K=1

The probabbility follows:

$$Pr(X = k) = \begin{cases} \frac{1}{6}, & k=1 \\ \frac{5}{6}, & k=0 \end{cases} \quad (1)$$

Now representing Y as binomial distribution,

$$Y = Pr(X_1 = 1 \text{ and } X_2 = 1) \quad (2)$$

$$= \frac{1}{6} \cdot \frac{1}{6} \quad (3)$$

$$= \frac{1}{36} \quad (4)$$

$$= 0.028 \quad (5)$$

Hence, probability of getting a '1' on the first roll of the dice and a '4' on the second roll is 0.028