

# 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  $X_1$  and  $X_2$  be an bernoulli rv's defined as,

TABLE 0  
DECLARATION OF RV'S

Parameter	value	Description
$X_1$	1	getting 1 in 1st throw
	0	not getting 1 in 1st throw
$X_2$	1	getting 4 in 2nd throw
	0	not getting 4 in 2nd throw

The probabbility follows:

$$Px_1(k) = \begin{cases} \frac{1}{6}, & k=1 \\ \frac{5}{6}, & k=0 \end{cases} \quad (1)$$

$$Px_2(k) = \begin{cases} \frac{1}{6}, & k=1 \\ \frac{5}{6}, & k=0 \end{cases} \quad (2)$$

Now,

$$Pr(X_1 = 1, X_2 = 1) = Pr(X_1 = 1)Pr(X_2 = 1) \quad (3)$$

$$= Px_1(1)Px_2(1) \quad (4)$$

$$= \frac{1}{6} \cdot \frac{1}{6} \quad (5)$$

$$= \frac{1}{36} \quad (6)$$

$$= 0.028 \quad (7)$$

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