

# ASSIGNMENT-2

B PREMSAGAR - EE22BTECH11013

Question : 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:** Binomial pmf given by,

$$\Pr(X = k) = {}^nC_k p^k (1 - p)^{n-k}$$

TABLE 0  
PARAMETERS FOR PMF

parameter	value
$n$	2
$p$	$\frac{1}{6}$
$k$	2
$1 - p$	$\frac{5}{6}$

probability of getting a '1' on the first roll of the dice and a '4' on the second roll

$$\Pr(X = 2) = {}^2C_2 \left(\frac{1}{6}\right)^2 \left(1 - \frac{1}{6}\right)^{2-2} \quad (1)$$

$$= {}^2C_2 \left(\frac{1}{6}\right)^2 \left(\frac{5}{6}\right)^0 \quad (2)$$

$$= \frac{1 \times 1^2}{6^2} \quad (3)$$

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

$$= 0.027 \quad (5)$$

Hence, probability of getting a '1' on the first roll of the dice and a '4' on the second roll is 0.026