NCERT 12.13.3.27

Sai Kowshik Padala
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Question 12.13.3.27:A biased die is such that $\Pr(4) = \frac{1}{10}$ and other scores being equally likely. The die is tossed twice. If X is the 'number of fours seen', find the variance of the random variable X.

Solution: Since, X = number of fours seen on tossing a die twice, X={0, 1, 2}
Number of trials, $n = 2$
Probability of seeing 4, $p = \frac{1}{10}$

Parameter	Value	Description
X	$\{0, 1, 2\}$	Random Variable
n	2	Number of trials
p	$\frac{1}{10}$	Probability of success

TABLE 0: Random Variables

$$Var(X) = np(1-p) \tag{1}$$
$$= (2)\left(\frac{1}{10}\right)\left(1-\frac{1}{10}\right) \tag{2}$$
$$= (2)\frac{1}{10}\frac{9}{10} \tag{3}$$
$$= \frac{18}{100} \tag{4}$$

$\therefore Var(X) = 0.18$

*The author is with the Department of Electrical Engineering, Indian Institute of Technology, Hyderabad 502285 India e-mail: gadepall@iith.ac.in.