

Assignment 8: CBSE Probability Grade 12

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Question

Exercise 13.4.16

The mean of the numbers obtained on throwing a die having written 1 on three faces, 2 on two faces and 5 on one face is

Solution

Let the random variable X denote the number that appears on rolling the dice.

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

$$= \frac{1}{2} \quad (2)$$

$$\Pr(X = 2) = \frac{2}{6} \quad (3)$$

$$= \frac{1}{3} \quad (4)$$

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

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

Thus, the probability distribution of X is

X	1	2	5
$\Pr(X)$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{6}$

Table 1: Probability distribution

Mean of X

$$\text{Mean} = E(X) = \sum_{i=1}^{i=n} x_i \times \text{Pr}(x_i) \quad (7)$$

$$= 1 \times \frac{1}{2} + 2 \times \frac{1}{3} + 5 \times \frac{1}{6} \quad (8)$$

$$= \frac{1}{2} + \frac{2}{3} + \frac{5}{6} \quad (9)$$

$$= 2 \quad (10)$$

The mean of the numbers obtained on throwing a die having written 1 on three faces, 2 on two faces and 5 on one face is 2.