

NCERT Assignment

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Three letters are dictated to three persons and an envelope is addressed to each of them, the letters are inserted into the envelopes at random so that each envelope contains exactly one letter. Find the probability that at least one letter in its proper envelope.

Solution:

Parameter	Values	Description
X_i	0,1,2,3	Correct letters in 'i' envelopes

TABLE 0

DEFINITION OF X AND PARAMETERS.

$$p_X(k) = \begin{cases} \frac{2}{6} & k = 0 \\ \frac{3}{6} & k = 1 \\ 0 & k = 2 \\ \frac{1}{6} & k = 3 \end{cases} \quad (1)$$

$$p_X(k \geq 1) = 1 - p_X(0) \quad (2)$$

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

$$= \frac{2}{3} \quad (4)$$