

# EE23010 NCERT Exemplar

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## Question 10.13.35

Box A contains 25 slips of which 19 are marked Rs 1 and others are marked Re 5 each. Box B contains 50 slips of which 45 are marked Rs 1 and others are marked Rs 13 each. Slips of both boxes are poured into a third box and reshuffled. A slip is drawn at random. What is the probability that it is marked other than Rs 1?

### Solution:

Random variable	Value	Definition
$X_1$	1	Slips of Rs 1
$X_1$	0	Slips of Rs 5
$X_2$	1	Slips of Rs 1
$X_2$	0	Slips of Rs 13
$X_3$	1	Slips of Rs 1
$X_3$	0	Slips which are not Rs 1

TABLE I  
DISTRIBUTION

In this case, the event is drawing a slip from the combined box that is marked other than Rs 1.

The probability of this event is

$$\Pr(X_3 = 0) = \frac{11}{75} \quad (1)$$

which is a number between 0 and 1.

The certain event is drawing a slip from the combined box, which has a probability of 1.

The sum of the probabilities of all possible events is

$$\Pr(X_3 = 0) + \Pr(X_3 = 1) = \frac{75}{75} = 1 \quad (2)$$

satisfying the third axiom.

Therefore, the probability that the slip drawn from the combined box is marked other than Rs 1 is  $\frac{11}{75}$ .