

# 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	0	Box A
	1	Box B
	2	Box C
Y	0	Slips of Rs 1
	1	Slips of Rs 5
	2	Slips of Rs 13

TABLE I  
DISTRIBUTION

$$p_{XY}(00) = \frac{19}{75} \quad (1)$$

$$p_{XY}(10) = \frac{45}{75} \quad (2)$$

Probability that the slip drawn from the combined box is Rs 1

$$p_{XY}(20) = p_{XY}(00) + p_{XY}(10) \quad (3)$$

$$p_{XY}(20) = \frac{64}{75} \quad (4)$$

Using the third axiom of probability

$$p_{XY}(20) + p_{XY}(21) + p_{XY}(22) = 1 \quad (5)$$

$$p_{XY}(21) + p_{XY}(22) = \frac{11}{75} \quad (6)$$

which is a number between 0 and 1.

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