

Assignment 2

AI1110 Probability and Random Variables

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Question 10.15.1.10: A piggy bank contains hundred 50p coins, fifty ₹1 coins, twenty ₹2 coins and ten ₹5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin

- (a) will be a 50 p coin ?
- (b) will not be a ₹5 coin?

Solution:

Let S be the sample space.

Total no of coins = $100+50+20+10 = 180$

Table 2
NUMBER OF DIFFERENT TYPES OF COINS.

Coins	No of coins
50p	100
₹1	50
₹2	20
₹5	10

$n(S)=180$.

- (a) A be an event in which the selected coin will be a 50p coin.

$$n(A) = 100 \quad (1)$$

$$\Pr(A) = \frac{n(A)}{n(S)} \quad (2)$$

$$= \frac{100}{180} \quad (3)$$

$$= \frac{5}{9} \quad (4)$$

- (b) B be an event in which the selected coin

will be ₹5 coin.

$$n(B) = 10 \quad (5)$$

$$\Pr(B) = \frac{n(B)}{n(S)} \quad (6)$$

$$= \frac{10}{180} \quad (7)$$

$$= \frac{1}{18} \quad (8)$$

$$\Pr(B') = 1 - \Pr(B) \quad (9)$$

$$= 1 - \frac{1}{18} \quad (10)$$

$$= \frac{17}{18} \quad (11)$$