

# 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.

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

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

$$n(S) = 180$$

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

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

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

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

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

- (b)  $B$  be an event in which the selected coin will be ₹5 coin.

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

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

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

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

$$Pr(\bar{B}) = 1 - Pr(B) = 1 - \frac{1}{18} \quad (9)$$

$$Pr(\bar{B}) = \frac{17}{18} \quad (10)$$