

AI1110 Assignment 2 in L^AT_EX

Chakka Surya Saketh*

10.15.1.9: Question A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i) red ? (ii) white ? (iii) not green?

Solution:

Given :

Number of red marbles = $R = 5$

Number of white marbles = $W = 8$

Number of green marbles = $G = 4$

Total number of marbles = $T = 5 + 8 + 4 = 17$

(i)

$$\Pr(\text{marble taken out is red}) = \frac{R}{T} \quad (1)$$

$$= \frac{5}{17} \quad (2)$$

(ii)

$$\Pr(\text{marble taken out is white}) = \frac{W}{T} \quad (3)$$

$$= \frac{8}{17} \quad (4)$$

(iii)

$$\Pr(\text{marble taken out is not green}) = \Pr(\text{marble taken out is green})' \quad (5)$$

$$= 1 - \Pr(\text{marble taken out is green}) \quad (6)$$

$$= 1 - \frac{G}{T} \quad (7)$$

$$= 1 - \frac{4}{17} \quad (8)$$

$$= \frac{13}{17} \quad (9)$$

*The student is with the Department of Artificial Intelligence, Indian Institute of Technology, Hyderabad 502285 India e-mail: ai22btech11005@iith.ac.in.