Assignment 5 - Presentation

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Outline

Abstract

- This document contains the solution to Question 4 of Miscellaneous Exercise of Chapter 16 - Probability in Class 11 NCERT Book.

Question

In a certain lottery 10,000 tickets are sold and ten equal prizes are awarded. What is the probability of not getting a prize if you buy

- 1 ticket?
- 2 tickets?
- 10 tickets?

Introduction

- Given data:
  - Total number of lottery tickets sold = 10,000
  - Number of equal prizes that are awarded = 10
  - The number of tickets that are not awarded any prize = 9990

Corollary

- *The favourable outcomes of not getting a prize if you buy x tickets is the number of ways of selecting x tickets from 9990 tickets i.e.,* ${}^{9990}C_x$.
- *And, the total number of outcomes is* ${}^{10000}C_x$.

$$\therefore \Pr(\textit{not getting a prize when bought x tickets}) = \frac{{}^{9990}C_x}{{}^{10000}C_x} \tag{1}$$

Solution

So, If we buy

a) 1 ticket

$$\Pr(\text{not getting a prize}) = \frac{^{9990}C_1}{^{10000}C_1} = \frac{999}{1000} \tag{2}$$

b) 2 tickets

$$\Pr(\text{not getting a prize}) = \frac{^{9990}C_2}{^{10000}C_2} \tag{3}$$

c) 10 tickets

$$\Pr(\text{not getting a prize}) = \frac{^{9990}C_{10}}{^{10000}C_{10}} \tag{4}$$

THANK YOU