Assignment Probability

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FWC22088 IITH Future Wireless Communication (FWC) probability

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1 Problems

1. Q:11,16.4,4

1.1 Problem1

Q1: 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 (a) one ticket (b) two tickets (c) 10 tickets ?
solution:
Given,

Total no of tickets sold = S = 10000
Number of prizes awarded = 10
Number of tickects not awarded = 9990
let X = {1,2,10} and Y = {0,1}

(a) one ticket

$$\text{P(getting prize)} = \text{P(11)} = \frac{10}{10000} = \frac{1}{1000}$$
$$\text{P(not getting a prize)= P(10)} = 1 - \text{P(1)}$$
$$\text{P(0)} = \frac{999}{1000}$$

(b) two tickets

$$\text{P(not getting a prize)} = \text{P(20)} = \frac{^{9990}C_2}{^{10000}C_2}$$

(c) 10 tickets

$$\text{P(not getting a prize)} = \text{P(100)} = \frac{^{9990}C_{10}}{^{10000}C_{10}}$$