Assignment Probability

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1 Problems

1. Q:11,16.4,4
   (a) one ticket
   (b) two tickets
   (c) 10 tickets

1.1 Problem

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:

Variable	Value	Description
N	10000	Total number of tickets sold
k	10	Total number of prizes awarded
n		Number of tickets purchased
P		probability of not wining a prize
q	N-k	number of tickets with no prize

Table 2: variable description

total number of possible outcomes $= {}^{N}C_n$
total number of favourable outcomes $= {}^{q}C_n$
probability = P $= \frac{{}^{q}C_n}{{}^{N}C_n}$

1.1.1 a : one ticket

$$probability = P = \frac{{}^{9990}C_1}{{}^{10000}C_1} = 0.9990 \tag{1}$$

1.1.2 b : two ticket

$$probability = P = \frac{{}^{9990}C_2}{{}^{10000}C_2} = 0.9980 \tag{2}$$

1.1.3 c : 10 ticket

$$probability = P = \frac{^{9990}C_1}{^{10000}C_1} = 0.9901 \tag{3}$$