Assignment 3 CBSE class 11

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QUESTION 11

In a lottery,a person chooses six different natural numbers at random from 1 to 20, and if these six numbers match with the already fixed by the lottery committee, he wins the prize. What is the probability of winning the prize in the game?[**Hint** order of numbers is not important]

1 SOLUTION:

Number of different ways in which person can choose 6 numbers between 1 to 20= ${}^{20}C_6$
Let X be a random variable $\in \{0, 1\}$ such that

TABLE 0
RANDOM VARIABLES

X=1	If chosen 6 numbers are the same as the fixed numbers
X=0	If chosen 6 numbers are not the same as the fixed numbers

Probability of chosen 6 numbers to match with fixed numbers by lottery committee(P)=

$$\frac{n(X=1)}{\sum_{i=0}^{1} n(X=i)} \tag{1.1}$$

$$\implies P = \frac{1}{{}^{20}C_6} \tag{1.2}$$