



Indian Institute of Information Technology, Vadodara (IIITV)
IIITV- International Campus Diu
Probability and Statistics (MA201)



TUTORIAL 1

1. Write the sample space for the following experiment.
 - (a) Select a ball from an urn containing balls numbered 1 to N .
 - (b) Select a ball from an urn numbered 1 to 4. Suppose the balls 1 and 2 are black and 3 and 4 are white.
 - (c) Toss the coin 3 times and note the number of heads and tails.
 - (d) Pick a number at random between 0 and 1.
2. A box contains n numbers 1, 2, 3, ..., n . The numbers are taken out at random one by one. Find the probability that they come out in sequence 1, 2, 3, ..., n .
3. The same box in Q.2. The numbers are taken out one by one noted and put back. Find the new probability of taking out 1, 2, 3, ..., n .
4. The percentage of students who passed courses A, B and C are : A : 50%, B : 40%, C : 30% and A and B : 35%, B and C : 20% , C and A : 25% and all courses 15%. What is the percentage of students who passed at least one of the courses?
5. Items coming out of a production line are marked defective (D) or non-defective (N). Items are observed and their condition is listed. This is continued until two consecutive defective are produced or four items have been checked whichever occur first. Write the sample space for this experiment.
6. In a certain group of computer personal 80% know hardware, 85% know software and 15% know neither hardware nor software. Compute the percentage of people who know both hardware and software.
7. A computer program consists of two blocks written independently by two different programmers. The first block has an error with probability 0.2. The second block has an error with probability 0.3. If the program returns an error, what is the probability that there is an error in both blocks?
8. In a class of 35 children, 22 like bananas, 18 like cherries and 13 like strawberries. 7 of them like bananas and cherries. 8 of them like bananas and strawberries. 5 of them like cherries and strawberries. They all like at least one of the fruits. What is the probability that a child chosen at random from the class likes cherries only?
9. Is it possible for A and B to be independent events yet satisfy $A=B$?
10. A card is chosen at random from a deck of 52 cards. It is then replaced and a second card is chosen. What is the probability of choosing a jack and then an eight?
11. For independent events A and B , prove that
 - (a) A and B^c are independent.
 - (b) A^c and B are independent.
 - (c) A^c and B^c are independent.

Best wishes