

Unit – 1 Introduction to Probability

1. A bag contains 8 red, 6 white and 4 black balls. A ball is drawn at random from the bag. Find the probability that the drawn ball is (i) red or white (ii) not black (iii) neither white nor black.
2. In a single throw of two dice explain the probability of getting
 - i) A total of 8
 - ii) Same number on both dice
 - iii) A total as an odd number
3. Given a group of four persons, find the probability that
 - 1) No two of them have their birthday on the same day of the year
 - 2) All of them have the same birthday of a year
4. If A and B are two independent event of sample space S with $P(A) = 3/4$ and $P(B) = 2/3$ then find $P(A \cup B)$.
5. Three machines A, B and C are producing the products independently as in the rate of $1/5$, $1/7$ and $1/8$. Find the probability of the product that will be produced by A or B or C.
6. A problem in statistics is given to three students A, B and C whose chances of solving it are $1/2$, $3/4$ and $1/4$ respectively. What is the probability that the problem will be solved if all of them try independently?
7. Let A means the screw is too slim and B means the screw is too short. Let $P(A) = 0.1$ and the conditional probability of screw is too short given screw is too slim (i.e., $P(B|A)$) is 0.2. What is the probability that we pick any screws randomly from the lot and it will be both too slim and too short?
8. A survey was conducted to find the supplies of the consumer durables for the market. It was found that three major companies A, B and C have market share of 35%, 25% and 40% respectively out of which 2%, 1% and 3% are not up to the satisfaction. A consumer buys a product and is dissatisfied with it. Calculate the probability that it is from the company C.
9. A person has undertaken a mining job. The probabilities of completion of job on time with and without rain are 0.42 and 0.90 respectively. If the probability that it will rain is 0.45, then determine the probability that the mining job will be completed on time.
10. A man is known to speak truth 3 out of 4 times. He says at a throw of a random die 'It is a 6'. What is the probability that it is actually a six on die?