Tutorial Sheet 2: Sets and Probability

Course: CSEG 2036P | *School of Computing Sciences, UPES*

Faculty: Dr. Mrittunjoy Guha Majumdar

1. A and B throw alternatively a pair of dice. A will win if he throws 6 before B throws 7, while B wins if she throws 7 before A throws 6. If A begins, show that his chance of winning is 0.49.
2. Suppose 5 men out of 100 and 25 women out of 10,000 are colour-blind, then what is the probability that a randomly chosen colour-blind person is a male?
3. In a certain college, 25% of boys and 10% of girls are studying mathematics. The girls constitute 60% of the student body. What is the probability that a student randomly picked and found to be studying mathematics is a girl?
4. Show that if box A contains 5 red and 3 white marbles and box B contains 2 red and 6 white marbles, what is the probability that two marbles drawn one-from-each-box have the same colour?
5. If $B \subseteq A$, and A and B are two events such that $P(A) = 5P(B)$ and $A \cup B = S$, show that $P(B) = 0.2$.
6. An integer is chosen at random from the first 200 positive integers. What is the probability that the integer chosen is divisible by 7 or 9?
7. The probabilities that students A, B, C and Dsolve a problem are $\frac{1}{3}$, $\frac{2}{5}$, $\frac{1}{5}$ and $\frac{1}{4}$ respectively. If all of them try to solve the problem, what is the probability that the problem will be solved?
8. A businessman goes to hotels X, Y and Z 20%, 50% and 30% of the times respectively. It is known that 5%, 4% and 8% rooms in X, Y and Z hotels have faulty plumbing. What is the probability that if the businessman's room is found to have faulty plumbing, it is within hotel Z?
9. In a certain town, 40% of people have brown hair, 25% have brown eyes and 15% have both brown hair and brown eyes. If a person is selected at random and has brown eyes, what is the probability that he does not have brown hair?
10. Two fighter-planes bomb a target in succession. The probability of each correctly scoring a hit is 0.3 and 0.2 respectively. The second will bomb only if the first misses the target. Find the probability that the target is hit.