Discrete Structure

Homework4

Fall 2015

Name:

Section 7.1 an introduction to discrete Probability

3. What is the probability that a randomly selected integer chosen from the first 100 positive integers is odd?

5. What is the probability that the sum of the numbers on two dice is even when they are rolled?

7. What is the probability that when a coin is flipped six times in a row, it lands heads up every time?

21. What is the probability that a fair die never comes up an even number when it is rolled six times?

23. What is the probability that a positive integer not exceeding 100 selected at random is divisible by 5 or 7?

33. What is the probability that Abby, Barry, and Sylvia win the first, second, and third prizes, respectively, in a drawing if 200 people enter a contest and
      a) No one can win more than one prize.
      b) Winning more than one prize is allowed.

37. Which is more likely: rolling a total of 9 when two dice are rolled or rolling a total of 9 when three dice are rolled?

Section 7.2 Probability Theory

1. What probability should be assigned to the outcome of heads when a biased coin is tossed, if heads is three times as likely to come up as tails? What probability should be assigned to the outcome of tails?

5. A pair of dice is loaded. The probability that a 4 appears on the first die is $2/7$, and the probability that a 3 appears on the second die is $2/7$. Other outcomes for each die appear with probability $1/7$. What is the probability of 7 appearing as the sum of the numbers when the two dice are rolled?

7. What is the probability of these events when we randomly select a permutation of $\{1, 2, 3, 4\}$?
   a) 1 precedes 4.
   b) 4 precedes 1.
   c) 4 precedes 1 and 4 precedes 2.
   d) 4 precedes 1, 4 precedes 2, and 4 precedes 3.
   e) 4 precedes 3 and 2 precedes 1.

25. What is the conditional probability that a randomly generated bit string of length four contains at least two consecutive 0s, given that the first bit is a 1? (Assume the probabilities of a 0 and a 1 are the same.)