

PRP Assignment 3

1. There are n urns of which r th contain $r-1$ red balls and $n-r$ green balls. You pick an urn at random and remove two balls at random without replacement. Find the probability that
 - the second ball is green
 - the second ball is green given the first is green
2. Two fair dice are rolled. Show that the event that their sum is 7 is independent of the score shown by the first die.
3. There are two roads from A to B and two roads from B to C. Each of the four roads is blocked with snow with the probability p , independent of the others. Find the probability that there is an open road from A to B given there is no route from A to C. If in addition there is a direct road from A to C, this road being blocked with probability p independently of the others, find the required conditional probability
4. A book of n pages contains on an average λ misprints per page. Estimate the probability that at least one page will contain more than k misprint.
5. Colorblindness appears in 1 percent of the people in a certain population. How large must a random sample (with replacement) be if the probability of its containing a colorblind person is to be 0.95 or more?
6. An airline knows that 5 percent of the people making reservations on a certain flight will not show up. Consequently, their policy is to sell 52 tickets for a flight that can hold only 50 passengers. What is the probability that there will be a seat available for every passenger who shows up?
7. Two people toss a true coin n times each. Find the probability that they will score the same number of heads.