

Assignment 2

(Deadline: 09/18/2009)

1. (EX1.48) An urn contains three red and two white balls. A ball is drawn, and then it and another ball of the same color are placed back in the urn. Finally, a second ball is drawn.
 - (a) What is the probability that the second ball drawn is white?
 - (b) If the second ball drawn is white, what is the probability that the first ball drawn was red?
2. (Ex1.52) Suppose that 5 cards are dealt from a 52-card deck and the first one is a king. What is the probability of at least one more king?
3. (EX 1.59) A box has three coins. One has two heads, one has two tails, and the other is a fair coin with one head and one tail. A coin is chosen at random, is flipped, and comes up heads.
 - (a) What is the probability that the coin chosen is the two-headed coin?
 - (b) What is the probability that if it is thrown another time it will come up heads?
 - (c) Answer part (a) again, supposing that the coin is thrown a second time and comes up heads again.
4. (EX1.71) Show that if A , B , and C are mutually independent, then $A \cap B$ and C are independent and $A \cup B$ and C are independent.
5. (EX1.73) A system has n independent units, each of which fails with probability p . The system fails only if k or more of the units fail. What is the probability that the system fails?