

Homework 3 (due Friday, October 3)

Problem 1. There are 15 tennis balls in a box, of which 9 have not been used previously. One of the balls are randomly chosen, played with, and then returned to the box. Next day, another ball is randomly chosen from the box. Find the probability that this ball has never been used before.

Problem 2. An urn contains b black balls and r red balls. One of the balls is drawn at random. Then it is put back in the urn, together with c additional balls of the *same* color. Suppose that we draw another ball. Compute the probability that the first ball was black, given that the second ball drawn was red.

Problem 3. Fifty-two percent of the students at a certain college are females. Five percent of the students in this college are majoring in computer science. Two percent of the students are women majoring in computer science. If a student is selected at random, find the probability that

- (a) this student is female, given that the student is majoring in computer science;
- (b) this student is majoring in computer science, given that the student is female.

Problem 4. Each of 2 cabinets identical in appearance has 2 draws. Cabinet A contains a silver coin in each draw. Cabinet B contains a silver coin in one of its draws and a gold coin in the other draw. A cabinet is chosen at random, one of its draws is opened, and a silver coin is found. What is the probability that there is silver coin in the other draw?

Problem 5. Urn A contains 2 white balls and 1 black ball. Urn B contains 1 white ball and 5 black balls. A ball is drawn at random from urn A and placed in urn B. A ball is then drawn from B. It happens to be white. What is the probability that the ball transferred was white?