**4.2 (a) What is the probability of getting at least one “6” if three dice are rolled?**

**(b) What is the probability of getting at least one “6” in four rolls of a single die?**

**(c) What is the probability of getting at least one double-6 in 24 throws of a pair of dice?**

**4.5 Suppose that a rare disease affects 1 out of every 1,000 people in a population, i.e., the prior probability is 1/1,000. And suppose that there is a good, but not perfect, test for the disease. For a person who has the disease, the test comes back positive 99% of the time (sensitivity ¼ 0.99) and if for a person who does not have the disease the test is negative 98% of the time (specificity ¼ 0.98). You have just tested positive; what are your chances of having the disease? (Try by calculation, and then check using CondProb.xls).**

**4.6 Consider the situation discussed in Example 4.3 in the text. The woman in question tested positive and her posterior probability of having breast cancer was calculated to be 7.76%. If she decides to go for another test and she tests positive a second time, what is the probability of her having breast cancer? (And what if a third, fourth, fifth test was positive, what would the corresponding probabilities be? Of course, this is an unlikely scenario since each test exposes her to X-rays and a consequent risk of actually causing cancer.) (Try by calculation, and then check using CondProb.xls.)**