

Recitation 5
September 18, 2008

1. Problem 2.22, page 123 in the text.

Two coins are simultaneously tossed until one of them comes up a head and the other a tail. The first coin comes up a head with probability p and the second with probability q . All tosses are assumed independent.

- (a) Find the PMF, the expected value, and the variance of the number of tosses.
- (b) What is the probability that the last toss of the first coin is a head?

2. Problem 2.7, page 120 in the text.

You just rented a large house and the realtor gave you 5 keys, one for each of the 5 doors of the house. Unfortunately, all keys look identical, so to open the front door, you try them at random.

- (a) Find the PMF of the number of trials you will need to open the door, under the following alternative assumptions: (1) after an unsuccessful trial, you mark the corresponding key, so that you never try it again, and (2) at each trial you are equally likely to choose any key.
- (b) Repeat part (a) for the case where the realtor gave you an extra duplicate key for each of the 5 doors.

3. Problem 2.20, page 123 in the text.

As an advertising campaign, a chocolate factory places golden tickets in some of its candy bars, with the promise that a golden ticket is worth a trip through the chocolate factory, and all the chocolate you can eat for life. If the probability of finding a golden ticket is p , find the mean and the variance of the number of candy bars you need to eat to find a ticket.