Problems for midterm

Chapter 1.

1. (Birthday)

Chapter 2.

1. (Poisson + Conditioning) In your pocket there is a random number N of coins, where N has the Poisson distribution with parameter λ. You toss each coin once, with heads showing with probability p each time. Show that the total number of heads has the Poisson distribution with parameter λp.

Chapter 3.

1. (Birthday)

2. (Expectation and variance of matchings) Let S_n denotes the number of matchings of a random permutation of n cards. Compute $\mathbb{E}(S_n)$ and $Var(S_n)$.

3.