

Exercise Sheet 11

Exercise 11.1

Consider the following experiment: An urn contains five red, three green, and two blue balls. Two balls are drawn at random (more precisely, first one is drawn, then a second one without the first having been returned).

- (a) What is the sample space S ?

Let X be the random variable that maps an outcome from the experiment to the number of green balls drawn.

- (b) What are the possible outcomes of X ?
- (c) What is the probability associated with each outcome?
- (d) Compute expected value, variance, and standard deviation of X .

Exercise 11.2

Consider the binomial random variable based on 10 throws of a fair coin. What is the probability of getting 7 or more “Heads” in the outcome? (You can look up the values of $\binom{10}{i}$ in Item 105 of the handouts.)

Exercise 11.3

Assume that the fire brigade (of some small town) receives on average 2 emergency calls per day, and assume that the number of calls behaves like a Poisson random variable.

- (a) What is the probability of receiving no calls?
- (b) What is the probability of receiving 4 calls?
- (c) What is the probability of receiving more than 4 calls?

(Use 0.135 for e^{-2} .)