

Homework 3

Due: Friday, September 23th, 11:59 pm.

Instructions: Please scan or typeset your solutions and upload them as a single pdf file to Canvas. All handwritten parts must be legible. Both, textbook and out-of-textbook problems are mandatory.

Readings: (If you have not yet done so) Sections 4.3 and 4.4

Textbook problems:

Section 4.5: 1 (c,d,e), 2, 3, 10, 11, 15

Out-of-textbook problems (OTP):

OTP. Say the employees of a company can access to internet from their computers, which are monitored, and they accept or reject privacy cookies when browsing. There are two types of employees: careful and careless, which are believed to be random and independent. 80% of employees are careful and they accept cookies in 70% of the time, and reject cookies in 30% of the time. 20% of employees are careless and they always accept cookies in 100% of the time.

1. Suppose there are 100 random employees each interacting with 1 cookie popup window independently. What is the expected number of accepted cookies?
2. Suppose 1 random employee is interacting with 100 cookies. What is the expected number of accepted cookies?
3. Suppose a cookie was rejected. What is the probability that the employee who did it was careless?
4. Suppose a cookie was accepted. What is the probability that the employee who did it was careful?

Problems by learning objectives (plus rubric):

Question	Points	Goal: to reinforce...
4.5.1	3 pt	expectation, variance, standard deviation
4.5.2	5 pt	pmf, cdf, expectation, variance, standard deviation
4.5.3	5 pt	pmf, cdf, expectation, variance, standard deviation
4.5.10	3 pt	binomial application
4.5.11	3 pt	binomial application
4.5.15	3 pt	binomial application
OTP	4 pt	discrete distribution application, marginalization
26 pts.		