Homework 2

Due: Friday, September 16th, 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: Section 3.5 (of Chapter 3); Chapter 4; Appendices R.1 and R.2.

Textbook problems:

Section 2.5: 9 (a)
Section 3.7: 14
Section 4.5: 1 (a) (b)

Out-of-textbook problems (OTP):

OTP 1. In certain arcade game there is a maze where *ghostbusters* chase and "eat" *ghosts*. The game has 10 ghostbuster characters and 10 ghost characters available. If the game has to be initialized with 3 ghostbusters and 5 ghosts chosen at random, in how many ways can the game be initialized?

OTP 2. In a multiple-choice exam, there are 20 questions and each question has 3 choices. Say someone is totally unprepared and randomly chooses answers. Let Y be the number of questions he/she guesses correctly.

(a) What is the distribution of Y? (its name and parameters are expected)
(b) Find $P(Y = 6)$.
(c) Find $P(Y \leq 6)$.
(d) Find $P(Y > 6)$.

(For questions (b), (c), (d), please write down the formulae for computation, and R commands; first. Then, provide the numerical answers from your R or RStudio outputs).

Problems by learning objectives (plus rubric):

Question	Points	Goal: to reinforce...
2.5.9 (a)	1 pt	binomial coefficient
OTP 1	3 pt	binomial coefficient
3.7.14	5 pt	random variables, cdf, and computing event probabilities
4.5.1 (a,b)	2 pt	pmf, cdf
OTP 2	4 pt	discrete distribution
	15 pts.	