

Due: Monday, September 20th (11:59 a.m. PT.)

References are to the course textbook (Ross, 12th edition), except as noted.

Reading

For Friday, September 10th, Sections 1.1 through 1.4.

For Monday, September 13th, Sections 1.5 and 1.6. Have a quick look at 1.7 as well.

For Wednesday, September 15th, Sections 2.1 through 2.3.

For Friday, September 17th, Sections 2.4 through 2.5.

For Monday, September 20th, Section 2.7.

This is fairly heavy reading, but you should have seen this material before in STAT 270. We will not cover Section 2.6 or 2.8. For Section 2.7, you should understand the statements of the theorems and how to apply them, the proofs are tangential to our goals.

Assignment exercises to hand in

This assignment is due on the day of the 2021 Canadian federal election. Elections are a good example of events where there is some uncertainty that we might model probabilistically. Please answer the following questions for the federal riding (electoral district) that you currently reside in, or, if you prefer, the riding containing your favorite SFU campus.

1. Describe the sample space for:
 - (a) The winning candidate in your riding?
 - (b) The number of votes obtained by the winning candidate in your riding?
 - (c) The vector representing the votes obtained by each candidate in your riding?
2. Estimate probabilities for each possible event in question 1(a). For this question, you can use any source of information that you would like, including personal opinion, but you should briefly explain your reasoning.
3. Due to differences in time zones and the speed of counting, in B.C. we may learn about the results in eastern ridings before any results are available in our own ridings. For instance, the prime minister represents a riding in Montreal. Explain how you would update the probabilities in the previous question if the first result from the election that you learned was that:
 - (a) The prime minister did much better than expected in his riding?
 - (b) The prime minister did much worse than expected in his riding?
4. Explain how to compute the random variable X that represents the number of votes obtained by the winning candidate based on the outcome vector of question 1(c). Bonus: estimate this number for the riding you are considering.
5. Chapter 1, Exercise 3.
6. Chapter 1, Exercise 13.
7. Chapter 1, Exercise 18.

8. Chapter 1, Exercise 23.
9. Chapter 1, Exercise 26.
10. Chapter 1, Exercise 35.
11. Chapter 2, Exercise 10.
12. Chapter 2, Exercise 21.
13. Chapter 2, Exercise 34.
14. Chapter 2, Exercise 43.
15. Chapter 2, Exercise 50.

Some other exercises you should try

This textbook has many worthwhile exercises, you are encouraged to try as many as you can. Note that the starred exercises have solutions in the back of the text book. These would be a good place to start.