Pre-class preparation

Please read the following textbook sections from Blitzstein and Hwang's *Introduction to Probability* (second edition):

- Textbook: Sections 3.4 and 3.6. Note: no need to take notes on the proof of Theorem 3.6.3 (unless you want to!) Just reading the proof for an overall idea is sufficient!

Objectives

By the end of the day's class, students should be able to do the following:

- Provide clear descriptions of Hypergeometric distributed random variables.
- Define the cumulative distribution function, and describe in common words what it represents.
- Identify the properties of a CDF, both mathematically and descriptively.
- Understand the relationship between the PMF and CDF; obtain the CDF from a PMF and vice versa.
- Define the joint PMF of two discrete random variables and use it to obtain probabilities.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 9:00AM:

1. A standard deck of 52 cards has four suits (hearts, diamonds, clubs, spades) of 13 cards each. After thoroughly shuffling the deck, five cards are dealt to you. Let X denote the number of Hearts drawn. What is the name (as well as specific parameter values) for the distribution of X? How would your answer change if instead the dealer showed you one card at a time and each time shuffled the card back into the deck after showing it to you?
2. Suppose F is the CDF for a discrete random variable with finite support. Is it ever possible for F to be a continuous function? Briefly explain.
3. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like would you like some more clarification on?