

Homework due **Sep 29 Mon** in class. Problems with * are recommended but not required.

- Reading: Textbook¹ Chapter 3.2.
- Hand-in Problems: You may give your final results in terms of factorials and combinatorial numbers.
 1. Textbook Chapter 3.2, Exercises 10, 20, 24, 34 (a), 36.
 2. 4 boys and 4 girls go canoeing together. Each canoe takes two people. They need to decide how to team up among them for 4 canoes. In this case, 4 canoes are indistinguishable.
 - (a) How many different ways to team up among them?
 - (b) If each boy is teamed up with a girl, how many different ways to team up?
 - (c) If at least two girls are in the same canoe, how many different ways to team up?
 3. A deck of ordinary cards (52 in total) is shuffled and Emma and Tommy each take 5 cards from the deck. Suppose Emma takes the first 5 cards from the deck, and Tommy the next 5.
 - (a) What is the probability that both have a four of a kind?
 - (b) What is the probability that Emma has a four of a kind, and Tommy has a full house?
 - (c) What is the probability that one has a four of a kind, and the other a full house?
 - (d) (*) Convince yourself that for the answers above, it does not matter how Emma and Tommy draw the cards from the deck. For example, consider a different scenario that the two draw cards in turn: Emma draws her first card, then Tommy his first, then Emma her second, then Tommy his second, and so on. No need to hand in your argument.
- Not hand-in Problems:
 1. Textbook Chapter 3.2, Exercises 1, 3, 9, 15, 19, 31. We will work some of these problems out during the lectures.

¹*Introduction to Probability, Second Revised Edition*, Grinstead and Snell. See textbook website for solutions of odd-number exercises.