Homework due Sep 22 Mon in class. Problems with $*$ are recommended but not required.

- Reading: Textbook ${ }^{1}$ Chapter 3.1.
- Hand-in Problems: You may give your final results in terms of factorials.

1. Textbook Chapter 3.1, Exercises 12, 14 (in part (b) assume every button must be used once).
2. 3 boys and 4 girls are asked to stand in a line.
(a) How many possible orders are there in total?
(b) If in addition girls are asked to stand in front of boys, how many possible orders are there in total?
(c) If every boy must stand next to girls, and every girl must stand next to boys, how many possible orders are there in total?
3. 3 boys and 4 girls are asked to stand in a circle, and two standings are considered different only if the relative orders are different.
(a) How many possible orders are there in total?
(b) Suppose one of the girls, Emma, is standing next to two other boys. How many possible orders are there in total?
4. A deck of ordinary cards is shuffled and 13 cards are dealt.
(a) What is the probability that the first card dealt is an ace and the last card dealt is a king?
(b) What is the probability that the first and last cards dealt are both aces?

- Not hand-in Problems:

1. Textbook Chapter 3.1, Exercises 2, 3, 5, 6, 7, 8, 10, 13. We will work some of these problems out during the lectures.
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[^0]:    ${ }^{1}$ Introduction to Probability, Second Revised Edition, Grinstead and Snell. See textbook website for solutions of odd-number exercises.

