

## Week 1 Preparation Guide

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Please do the required reading before attempting problems. Not only does it contain the material you need for the week's work, and more examples than in the lectures, it will remind you of the details that you have to keep in mind when attempting problems. Homework will go faster if you read first.

### READING

**Required:** Textbook Chapters 1 and 2

**Highly recommended:** Pitman Sections 1.3, 1.4 (through page 39), 1.6 (pages 60-65)

**Recommended as a useful light read:** Theory Meets Data Chapter 4.

### PRACTICE PROBLEMS

Pitman x.y.z means Exercise z of Section x.y and x.rev.z means Exercise z of the Review Exercises at the end of Chapter x.

- Pitman 1.3.2, 1.3.10, 1.4.8, 1.6.5, 1.rev.8, 1.rev.16
- The multiplication rule says that  $P(A_1 A_2) = P(A_1)P(A_2|A_1)$ . Use induction to show that for events  $A_1, A_2, \dots, A_n$ ,

$$P(A_1 A_2 \dots A_n) = P(A_1)P(A_2|A_1)P(A_3|A_1 A_2) \cdots P(A_n|A_1 A_2 \dots A_{n-1})$$

- Recall from Data 8 that the *probability distribution* of a random quantity consists of the set of all possible values of the quantity along with the probabilities of all those values. We'll define "random quantity" more formally next week; for now, it's fine to rely on your understanding from Data 8. Find the probability distribution of the minimum of  $n$  numbers drawn at random with replacement from the set  $1, 2, 3, \dots, N$ .

### DISCUSSION SECTION

All sections will start with a warm-up and will continue with a selection of problems from the practice list, chosen partly to help with the week's lab and homework. This week's selection is the last three problems on the practice list.