

These are exercises for self-study and exam preparation. All material is examinable unless otherwise mentioned.

Exercise 1. *Counting number of parameters*

Consider a pmf $p(a, z, q, h, e)$ that factorises as

$$p(a, z, q, h, e) = p(a)p(z)p(q|a, z)p(h|z)p(e|q)$$

We would like to count how many numbers we need to specify to represent $p(a, z, q, h, e)$ as a table when:

- (a) all variables are binary
- (b) variable a can take on 3 different values, variable h 5 different values, and all other variables are binary