

Problems marked by * are required for graduate students, optional for undergraduates.

From DeGroot and Schervish: Sec. 4.4 (pp. 208-9): #2,5,8; Sec. 4.5 (pp. 213-4): #2,12; Sec. 4.6 (p.221): #3,8,9,14; Sec. 4.7 (pp. 228-9): #2,7,8,9,10*,11*.

(Note on prob. 12, Sec. 4.5: R function `pbinom` may be helpful.)

Additional problems:

1. Peter and Paula both want to cut out a rectangular piece of paper. Because they are both probabilists they determine the exact form of the rectangle by using realizations of a positive random variable, say U , as follows. Peter is lazy and generates just a single realization of this r.v.; he then cuts out a square that has length and width equal to this value. Paula likes diversity and generates two independent realizations of U . She then cuts out a rectangle with width equal to the first realization and length equal to the second realization. Will the areas cut out by Peter and Paula differ in expectation? If they do, is Peters or Paulas rectangle expected to be larger?
2. *A workers legal code specifies as a holiday any day during which at least one worker in a certain factory has a birthday. All other days are working days. How many workers (n) must the factory employ so that the expected number of worker-days is maximized during the year?

In-class problems (Wednesday):

3. (Taylor) Do problem 9 on p. 189 and verify the result by simulation in R. The R function `pmax` might be helpful.
4. (Rachel): Sec. 4.10, #12 (p. 244)
5. (Holly) Sec. 4.10, #17 (p. 244)