

Expectation

Just one exercise for the last lecture. A sample solution will be posted on Sunday.

Exercise 1. You randomly draw one card at a time from a deck of 52 Poker cards:

$$\{A, 2-10, J, Q, K\} \times \{\clubsuit, \spadesuit, \heartsuit, \diamondsuit\}$$

The cards are *not* put back into the deck after each drawing.

- (a) Is the event of drawing a specific card independent of the previous draw?
- (b) Calculate the expected number of drawing attempts until a card *other than* an ace is drawn.
- (c) Calculate the expected number of drawing attempts until the sum of the cards drawn is ≥ 5 .
(2-10 are counted as their numeric value; J, Q, K are counted as 10; A is counted as 11).
- (d) Answer questions (a)–(c) for the case when the cards *are* put back after each drawing.
- (e) Calculate the variance for the two random variables considered in question (b).

Congratulations on reaching the end of this course!
