

Reading and Problem Assignment #2
Math 501–1, Spring 2006
University of Utah

Read chapter 2 (axiomatic probability). Skip the starred sections. Continue reading chapter 1, as well.

The following are borrowed from your text.

Problems:

1. Consider n -digit numbers where each digit is one of the 10 integers $0, 1, \dots, 9$. How many such numbers are there for which:
 - (a) No two consecutive digits are equal?
 - (b) 0 appears as a digit a total of i times, $i = 0, \dots, n$?
2. A student is to answer 7 out of 10 questions in an examination. How many choices has she? How many if she must answer at least 3 of the first 5 questions?
3. If 8 new teachers are to be divided among 4 schools, then how many divisions are possible? What if each school must receive at least 2 new teachers?
4. If all $\binom{52}{5}$ possible poker hands are equally likely, then what is the probability of:
 - (a) a flush? [This is when all cards have the same suit; e.g., $A_{\clubsuit}, 2_{\clubsuit}, 5_{\clubsuit}, J_{\clubsuit}, K_{\clubsuit}$.]
 - (b) one pair? [This is when the cards have the denominations a, a, b, c, d , where a, b, c , and d are all distinct. E.g., $A_{\spadesuit}, A_{\clubsuit}, 2_{\spadesuit}, 3_{\clubsuit}, Q_{\heartsuit}$.]
 - (c) four of a kind? [This is when the cards have denominations a, a, a, a, b . E.g., $A_{\spadesuit}, A_{\clubsuit}, A_{\heartsuit}, A_{\diamondsuit}, 10_{\heartsuit}$.]