HW: ASSIGNMENT 1

Due: Tuesday, October 6th

Warm Up: You should also do the five Problems in Section 2 of the notes.

1) Ten people park their bikes outside the bar. Suppose everyone drinks too much and takes a bike home at random. (1) How many ways can the bikes be distributed? (2) What is the probability that everyone takes home their own bike?

2) Six friends, three Finns and three Danes, sit in a row at random. (1) What is the probability all Danes are in adjacent seats and all Finns are in adjacent seats. (2) What is the probability that all the Finns are in adjacent seats. (3) What is the probability that no two citizens of the same nation sit next to each other.

3) Ten people park their bikes outside the bar. Suppose now only five random people drink too much and leave early, taking home a random bike. (1) How many ways can the bikes be distributed among the five people that leave early? (2) What is the probability that a particular individual drinks too much and takes home his own bike?

4) You are walking on points in the plane with integer coordinates. Each time you can move either one unit up or one unit right; for example, from (2, 4) you can move either to (3, 4) or (2, 5). You start at the origin (0, 0) and want to reach (4, 3). (a) How many possible routes do you have? (b) You choose one of the routes at random. What is the probability that you visit (2, 2) on your route?

5) Twelve people are divided at random into three committees: A (3 people) B (4 people) and C (5 people). What is the probability that A consists of the 3 youngest people and C of the 5 oldest people?