Akshaj Kammari - CS 206 - COWEN

Problem 1 : Bagel Burdens

1) 121 floors

2) The outcome space is the set of 1 to N. The number of elements in the outcome space can be represented by $(\frac{1}{n})^7$. The probability of a floor being picked is $\frac{1}{n}$ & the probability of a certain 7 floors being picked is $(\frac{1}{n})^7$. The outcome space is n^7 because there are n^7 possibilities of 7 floor combinations. We assume that there is an equally likely chance of each floor getting picked and all floor numbers are consecutive.

3) $(\frac{1}{n})^7$

3.b) Using a large number of people on each floor helps simplify the analysis of probability for the floor numbers. Essentially, the probability any one person selecting a bagel from one floor is closer in similarity of another person from another floor. It gives a more uniform distribution and a more equal chance of a given floor being selected

4) $N = 121$

5) NO. The specific sequence of customer floors can still be attained with a higher number of floors, but the higher the number of floors there are, the lower the probability of getting that sequence.

6) $P(N=n|data) = P(data|N=n) * p(N=n)/p(data)$