Name: _____

Due: Wednesday, 2/20/13 in 1st half of class

Lab #3 – M200 Sp13

Instructions: *Use notation P(event) = formula =work (in fractions) = fraction = decimal, to answer each of the questions involving probability. Fractions need to be in lowest terms and decimals need to be rounded to 3 digits if they were in scientific notation.*

1. Based on the following 2 way table, answer the questions. The data represents the results from a survey of 171 students at Foothill College who expressed their comfort level in the desks on the college campuses. The results are from a survey conducted by Professor Butterworth's students during the Fall 2012 term. The data has been grouped for those whose ages are termed as One, Two and Three – just ways of classifying into 3 groups and not disclosing what age groups the classifications refer.

	Ages			
Comfort Level	One	Two	Three	Total
Comfortable	50		5	93
Not Comfortable	35	37		
Total	85			171

a) Complete the table. Show your work here for finding the box for Age Group Two ∩ Comfortable

b) What is the probability that a randomly chosen respondent is from Age Group One?

c) What is the probability that a randomly chosen respondent is from Age Group Two and Not Comfortable in the desks?

d) Of those that are in Age Group Two, what is the probability that a randomly chosen respondent is Not Comfortable?

e) What is the probability that a randomly chosen respondent is Comfortable or in Age Group One?

f) For sampling without replacement, what is the probability that 3 randomly chosen respondents are in Age Group Three?

g) For sampling with replacement, what is the probability that 3 randomly chosen respondents are in Age Group Three?

h) If we were to choose 3 respondents to ask, how would sampling actually be done – with or without replacement?

i) As a follow-up to part h), how should the sampling be done to be truly random?

j) Are the probabilities in parts f) & g) different? Why?

2. Our combination door lock is a three-digit code, where the first digit is a letter from the first 7 letters of the alphabet, and the second one of the 10 digits and the third is one of the last 5 letters of the alphabet. What is the probability that you open our lock with a single randomly chosen three-digit code? Show your work.

3. An auditor for a company randomly chooses 7 months' account records from the last two years to audit, how many ways are there to choose the 7 months to audit? Show your work. Hint: Does order matter? Does Jan12, June12 and Aug11 result in the same audit as Aug11, Jan12 & June12.

4. If you toss a coin 1 time and a die twice, how many different XXX sequences will result where there are 1 head, a 4 and a 5 on the die? Hint: This can be done by drawing a tree.

5. I wish to give the coats in the coat check back to the correct people. If there are 7 coats, how many ways are there for me to get the wrong coat back to at least one person if I just randomly give them back? *Hint: How many ways can I give the coats back and how many ways are correct? The complement of the number of correct ways the number of incorrect ways to give the coats back.*