Name:_____ Math 130 Day 7 Lecture Worksheet
Date: More Difficult Probability Problems / Section 5.5: Counting Techniques

More Difficult Probability Problems

Ex 22 (book hw sec. 5.4 #27): **Playing a CD on the Random Setting**
Suppose that a compact disc (CD) you purchased has 13 tracks. After listening to the CD, you decide that you like 5 songs. With the random feature on your CD player, each of the 13 songs is played once in random order. Find the probability that among the first 2 songs played
a) You like both of them
b) You like neither of them
c) You like exactly one of them

Ex 23:

Suppose you draw 2 cards from a standard poker deck. Find the probability that the total of the 2 cards is 20 if

a) The cards are drawn without replacement

Section 5.5: Counting Techniques - The Multiplication Rule For Counting Problems

For examples 1-7, list a few outcomes of the experiment and count the total number of outcomes of the experiment

Ex 1:
Experiment
Flip a single coin four times

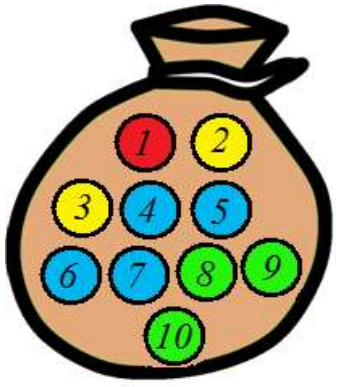
Ex 2:
Experiment
Flip a single coin once then roll a single die once

Ex 3:
Experiment
Roll a single die twice (or roll a pair of dice once)

Ex 4:
Experiment
Draw 3 cards from a deck one by one with replacement

Ex 5:
Experiment
Draw 3 cards from a deck one by one without replacement

Ex 6:
Experiment
Draw 2 balls from the bag on the right one by one with replacement



Ex 7:
Experiment
Draw 2 balls from the bag on the right one by one without replacement

Ex 8: At Greg's sandwich shop you build sandwiches by choosing a bread, a deli meat, and a type of cheese. (you must choose one of each and ONLY one of each). Here are the available choices for each selection.

Breads: White, Sourdough
Deli Meats: Chicken, Turkey, Roast Beef
Cheeses: American, Cheddar, Provolone, Swiss

a) List a few sandwiches that can be made at Greg's shop.
b) How many different sandwiches can be made at Greg's shop?
c) How many different sandwiches can be made at Greg's shop that have chicken in them?
d) If a sandwich is selected from Greg's shop at random, what is the probability that it has chicken in it?

Ex 9: License Plates

a) How many 7 character license plates can be made where the 2^{nd}, 3^{rd}, and 4^{th} characters are letters and the rest are numbers?
b) How many 7 character license plates can be made where the 2^{nd}, 3^{rd}, and 4^{th} characters are letters, the rest are numbers, and no repetition is allowed?
c) How many 7 character license plates can be made where the 2^{nd}, 3^{rd}, and 4^{th} characters are letters, the rest are numbers, and the letters can repeat but the numbers cannot?
d) What is the probability that a randomly selected 7 character license plate where the 2^{nd}, 3^{rd}, and 4^{th} characters are letters and the rest are numbers has no repetition in its characters?
e) What is the probability that a randomly selected 7 character license plate where the 2^{nd}, 3^{rd}, and 4^{th} characters are letters and the rest are numbers has no repetition in its numbers?