Math 163 Discrete Math Spring 2014 Prof. Janeba Group Worksheet 1

Group members: _____
Review and discussion of combinatorial problems

Instructions: Working with your group, craft a verbal explanation of your answer to each of the following counting problems. Give both your answer and the explanation. (No sentence required for the "(a)" probability/chance problems.)

1. How many ways can we choose (deal) 5 cards from an ordinary deck of playing cards and get TWO PAIR? (e.g. a pair of aces, a pair of kings, and some other non-matching card)

   (a) So what is the chance of drawing TWO PAIR in five cards?

2. Continuing, how many ways can we get, instead, a FULL HOUSE? (three of one rank, two of a different rank)

   (a) So what is the chance of drawing a FULL HOUSE in five cards?

3. How many ways can we get a FLUSH? (all five cards the same suit)

   (a) So what is the chance of drawing a FLUSH in five cards?

(Please continue on the back)

4. How many ways can we get a STRAIGHT? (five cards in ascending rank, e.g. 3,4,5,6,7 or 10,J,Q,K,A, suits not important)

   (a) So what is the chance of drawing a STRAIGHT in five cards?

5. Based on your answers in (3) and (4), *should* a FLUSH beat a STRAIGHT or the other way around? Explain in one sentence.

   (The following problems are extra in case you finish early)

6. To major in oenology at Napa State University, one must take eight classes in the Oenology dept, including OEN101, OEN102, and at least one of (OEN210, OEN220, OEN225). The Oenology dept. offers a total of 15 classes. How many ways can one complete an oenology major at NSU?

7. Your graduation party will be catered by Kwiki Katering. The catering option you have chosen (the one you could afford) allows for 6 entrees on the buffet, chosen from 4 vegan and 6 non-vegan entrees that Kwiki makes.

   (a) How many ways can you choose the entrees for your party, if you have no additional preferences?

   (b) What if, instead, you want <u>at most 2</u> non-vegan entrees? Hint: Start by deciding exactly what that underlined part is saying.