# **Section 8 Assignment (72 points) – Advanced Counting**

To receive credit, you must either show your work on the worksheet or explain how you got the answer.

35/72

1. (6 points) If 27 people are assembled in a room, show that at least two of them must have last names that start with the same letter.

There are only 26 letters and there are 27 people, so even if there are 26 people with names of each letter of the alphabet that leaves 1 that would have to be the same letter as one of the others.

I didn’t use the formula but I did get the correct answer. So ill count it, but if you feel I shouldn’t get the points you can change it and I wont complain.

1. (6 points) 14 people volunteer for a four-person committee. Every possible committee of four that can be formed from these 14 names are written on a slip of paper, one slip for each possible committee, and the slips are put in 100 hats. Show that at least one hat contains 11 or more slips.

14!/(4!(14-4)!) = 1001

1001/10 = 10 r 1

with a remainder of 1 exactly one of the hats would end up with 11 if distributed evenly

I didn’t use the correct formula but I did get the correct answer. So ill count it, but if you feel I shouldn’t get the points you can change it and I wont complain.

1. (6 points) Describe the sample space: Three numbers are selected at random from the numbers 2, 4, 6, 8. The numbers are chosen at random and repeating elements are allowed.

{2,4,6,8}

I really just didnt understand what this question and the one below were asking for.

1. (6 points) Describe the sample space: A box contains 14 items, five of which are defective. An item is chosen at random and not replaced. This is continued until all five defective items have been selected. The total number of items selected is recorded.

{good^9, defective^5}

see above.

1. (18 points) A card is chosen from a standard deck of 52 cards. Given the following events:

E1: the card drawn is a number card (i.e. card with a number on it)

E2: the card drawn is a spade

E3: the card drawn has an odd number on it

E4: the card drawn is a black card

Compute each of the following

1. (5 pts) )

1/2

1. (6 pts)

1/13

I think I may have confused which of the E I was using. I may have use E4 instead of E3.

1. (7 pts)

16/52 + 13/52 = 29/52

I dont know what I did wrong here

1. (24 points) When a certain defective die is tossed, the numbers from 1-6 will be on the top face with the following probabilities:

, , , , , ,

Find the probability that

1. (6 pts) An even number is on top

10/20 = 1/2

1. (6 pts) A non-prime number is on top

10/20 = 1/2

1. (6 pts) A number less than 4 is on top

12/20 = 3/5

1. (6 pts) A number greater than 2 is on top.

9/20

I didnt add correctly is all

1. (6 points) A fair coin is tossed seven times. What is the probability of obtaining three heads and four tails?

1/128

I used in a sequential order equation and not the in any order equation.