Unit 3 Discussion Example - Applications of Counting Techniques

Post 1: Initial Response

1) I would like to form a focus group to help me improve my new computer software. I sent out a survey and 20 people responded. I would like to select 3 people from this survey group of 20 to form my focus group.

   The total number of people in my survey group is 20. n = 20.

   I want to select 3 people to form my focus group. r = 3.

2) How many different 3-person focus groups can be formed from the 20 people who originally took the survey?

3) Since I don't really care which person is chosen first, second or third in my focus group – eventually they are all in my focus group – order doesn't matter. The counting problem is a combination problem.

   I will the combination formula of $C(n,r) = \frac{n!}{r!(n-r)!}$

$$C(20,3) = \frac{20!}{3!\,(20-3)!} = \frac{20!}{3!\,(17!)}$$

   I like to use Google as my calculator and I typed the following (note the use of parenthesis in the deoninator):

   20!/(3!*17!) = 1140

4) There are 1140 different combinations of 3-people from the 20 person survey group. I can form 1140 different 3-person focus groups to help me improve my computer software!