MAT 142 Test #2 Review

I. Sets

1. \( A = \{a,b,c,d,g,h,k\}; \ B = \{b,d,g,k\}; \ U = \{a,b,c,d,e,f,g,h,i,j,k\} \)
   
   a) What is \( A \cup B \)  
   b) What is \( n(A \cup B) \)  
   c) What is \( A' \cap B \)  
   d) What is \( (A \cup B)' \) 

2. At the beach people were asked about their activities during the day.
   - 18 people had picnics
   - 30 people went swimming
   - 25 people sunbathed
   - 5 people did none of those
   - 12 did all 3
   - 15 went swimming or had a picnic
   - 18 swam or sunbathed
   - 14 had a picnic or sunbathed
   
   a) How many people only had a picnic?  
   b) How many sunbathed and swam but didn't have a picnic?

3. Suppose \( n(A)=24 \), \( n(B)=18 \) and \( n(A \cap B)=12 \). What is \( n(A \cup B)' \)?

II. Counting Techniques

1. There are 10 people in a room. If they leave one at a time, in how many orders could this be done?  
2. At the pizza store, there are 3 types of crusts to choose from, 4 sizes to choose from, 2 sauces to choose from, and 14 toppings – you're going to pick 4 of them. How many different pizzas could be made like this?  
3. You and four roommates live together in an apartment. Unfortunately, there are only 2 assigned parking spots and all 5 of you have cars. How many different combinations of cars could end up in those two spots?  
4. In a class of 20 students, everyone has to give a presentation, but only 6 will be able to go during today's class. If we pay attention to what order the presentations are being given in, in how many different ways can the 6 presenters for the day be determined?

III. Probability & Odds

1. You will select one card at random from a deck of 52.
   - What is the probability that it is red and a 4?  
   - What is the probability that it is red or a 4?  
   - What is the probability that it is not red or not a 4?  
2. 120 students at ASU are asked whether or not they're taking a math class and a humanities class this semester. 40 are taking a math class. 50 are taking a humanities course. 40 aren't taking either of those two types of classes. If this is a well-conducted survey and we select an ASU student at random...  
   - What is the probability that the student is taking math but not humanities?  
   - What is the probability that the student is taking both?  
   - What are the odds that the student is taking humanities or math?  
   - What are the odds that the student is not taking math or is taking humanities?