Lab for Sections 13.1 and 13.2

Use good notation and show appropriate work. Name _____
State your solutions to problems in complete sentences.

1. Suppose we consider families having 3 children. Draw a tree diagram which reveals all possible birth sequences for the children. (Example: one sequence is GGB, which means the oldest child is a girl, the middle child is a girl and the youngest is a boy.) In how many of the above sequences

   (a) does the family have more boys than girls?

   (b) is the youngest child a girl?

   (c) does the family have exactly one boy?

   (d) does the family have no girls?

   (e) does the family have all children the same gender?

2. Suppose we wish to form three digit ***even*** numbers using only the digits from {3, 4, 5}. In each of the following first construct a ***tree-diagram***. How many ways can these numbers be formed if

   (a) repetition of digits is not allowed? (b) repetition of digits is allowed?

3. A security system has five switches, each of which can be open or closed. The state of the system is described by indicating for each switch whether it is open or closed. How many different states of the system are possible?

4. In how many ways can 4 boys and 5 girls be seated in a row of nine seats if boys and girls are to occupy alternate seats?

5. How many different sums of money can be formed from a penny, a nickel, a dime, a quarter, and a half-dollar?

6. The Northern Sun Intercollegiate Conference has ten teams. How many basketball games will be played if each college plays twice against each other college?

7. In the American league playoffs, the Minnesota Twins and the Oakland A's are going to play a best of five series. How many different outcomes are possible?