**Lab for Section 12.8** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

1. What percent of 62 is 19? 2. 

3. Suppose we wish to form three digit 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?

4. 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?

5. 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?

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

7. Evaluate each of the following.

 (a) 6! = (b) *P*(9, 3) =

 (c)  (d) 9*P*4 =

7. How many different ordered arrangements can be formed on a shelf with space for three books if there are six different books available?

8. A station wagon has eight seats (plus the driver’s seat). In how many ways can five passengers be seated in the eight seats?

9. A person with last name Aaransan has used the letters of her name for an eight letter password. If each letter is used exactly once and it is not case sensitive, how many different passwords can be formed?