Permutations and Combinations Quiz

1.) Evaluate the following statements

    a. $_4P_3$ c. $_5C_5$

    b. $\binom{7}{3}$

2.) How many distinguishable permutations are possible using the letters of the following words:

    a. Arkansas   b. Mississippi

3.) How many ways can a television director arrange three different commercials into six positions if each commercial is to be shown twice?

4.) Identify the following situation as a combination or permutation. Then, find the number of arrangements.

    a. Seven of a sample of 150 motors will be inspected and tested as part of our quality control protocol. How many ways are there to make this selection?

        Permutation or Combination: _____

        Number of Arrangements: _____

    b. BMG Music offers new members 5 free albums from a list of 60 when they join. How many ways could a new customer select their free albums?

        Permutation or Combination: _____

        Number of Arrangements: _____

c. How many different combinations can be made from a combination lock ranging from 0-30? Remember, you must have three values in your combination

Permutation or Combination: _____

Number of Arrangements: _____

5.) A college football team plays 10 games during the season. In how many ways can the team wind up with 8 wins, 2 losses and 0 tie?

6.) Suppose a True-False test has 40 questions.

   a. In how many ways may a student mark the test, if each question is answered?

   b. In how many ways may a student mark the test, if 14 questions are marked correctly and 26 incorrectly?

   c. In how many ways may a student mark the test, if 32 questions are marked correctly and 8 are marked incorrectly?

7.) A baseball fan has a pair of tickets to 8 different Detroit Tigers home games. If the fan has four friends who like baseball, how many ways may they take one friend along to each of the home games?

8.) A club elects a president, vice-president and secretary. How many sets of officers are possible if there are 15 members of the club, and nobody can be elected to more than one position?

9.) All major league baseball teams have an active roster of 25 players. How many possible arrangements are there for the 9 starting positions of a pro baseball team?

10.) Write the 6th Row of Pascal's Triangle

11.) Expand the following binomial statements:

(x + 3)^4 =

_____ x^4 + _____ x^3 + _____x^2 + _____ x + _____

(x + 1)^9 =

_____ x^9 + _____ x^8 + _____x^7 + _____ x^6 + _____ x^5 + _____ x^4 + _____x^3 + _____ x^2 + _____ x + _____

Extra Credit: How many unique arrangements are there of the letters in the word:

Antidisestablishmentarianism