You MUST use good notation and show appropriate work.

Math 102 (Section 12.3B)

Name _____

12.3B Extra Counting Problems – Mixed Practice

- 1. Evaluate each of the following:
 - a) 6!0! b) ${}_{8}P_{5}$ c) ${}_{7}C_{4}$ d) ${}_{6}p_{6}$ e) ${}_{9}C_{9}$
- 2. In how many ways can 5 students be seated in a row of 5 seats?
- 3. How many different signals can be made from 5 different flags if each signal is to consist of 3 flags hung in a horizontal row?
- 4. How many different 2-digit numbers can be formed using the digits 0, 2, 4, 6, 8, if zero cannot be used as the first digit? (Note: the number 44 meets these requirements).

5. How many different 3-digit numbers can be formed using the digits 0, 2, 4, 6, 8, if zero cannot be used as the first digit?

- 6. In how many ways can we select a committee of 4 from a group of 10 people?
- 7. In how many ways can we select a set of three books from a set of 9 different books?
- 8. How many different sums of money, each composed of 3 coins, can be formed from a cent, nickel, a dime, and a quarter?

- 9. An ice cream parlor has 15 different flavors. George orders a 3-scoop sundae. How many different selections are possible if all 3 scoops are different flavors?
- 10. For the same 15 flavors, how many different selections are possible for a 2-scoop cone if people always want their favorite flavor on top and if one of their options is to get 2 scoops of the same flavor ?
- 11. A man has 8 pairs of pants, 12 shirts, 15 ties and 6 sport coats. How many different outfits can he wear?
- 12. In how many ways can a teacher distribute 6 identical prizes to her class of 30 students (no student gets two prizes).
- 13. In how many ways can a teacher distribute 6 different prizes to her class of 30 students (no student gets two prizes).
- 14. a. A poker hand consists of 5 cards taken at random from a standard deck of 52 cards. How many possible poker hands are there?
 - b. How many hands have exactly 3 spades?
- 15. There are 5 red and 10 blue balls in a box. Each one also has a capital letter on it. The letters are not repeated. Each red ball has one of these letters: A, B, C, D, E. Each blue ball has one of these letters: F, G, H, I, J, K, L, M, N, O. You reach in and select 6 balls at random, all at once, so order does not matter.

a. How many different <u>groups</u> of 6 balls can be selected. (A group that contains the Red-A is different from a group that has a red or reds, but not red-A.)

- b. How many of the groups have exactly 2 red balls?
- c. How many groups of 6 balls have at least 1 red ball?