COMBINATORICS-2

1. There are n light bulbs in a row. Each can be m colors. How many combinations are possible? (order matters)

2. A license plate consists of three digits (0-9). How many possible license plates are there?

3. A license plate consists of a letter ("A","B", or "C") followed by two digits (0-9). How many possible license plates are there?

4. 3 people meet. Every person shakes every other persons hand once and only once. How many handshakes were there?
   a. What if 4 people meet?
   b. 5 people?
   c. n people?

5. You have one green coin, one yellow coin, one red coin, and one blue coin. You have 3 slots, each can contain 1 coin. In how mane ways one can place three coins in the slots? (order matters)

6. You have to choose 3 people for a team. You have 5 people who want to join. The order does not matter. How many combinations are possible?

7. You have to choose 7 people for a team. You have 11 people who want to join. The order does not matter. How many combinations are possible? Don't compute the number. Simply explain how you can get the answer.

8. There are 11 people including Pete who want to join a team. How many ways are there to choose 7 players for the next game
   a) including Pete
   b) not including Pete ?

9. You have to choose n people for a team. You have m people who want to join. The order does not matter. How many combinations are possible?

10. To win a race lottery one has to mark on a card four horses that will come first (totally twelve horses take part in the race). Peter knows two horses that definitely won't come among four first. How many cards he must fill in order to be sure to win?

11. How many are there 10-digit numbers containing three 3's and seven 7's?