COMBINATORICS

1. There are 2 light bulbs in a row. Each can be turned on or off. How many combinations are possible? (order matters)
   a. What if there are 3 light bulbs?
   b. 5 light bulbs?
   c. n light bulbs?

2. There are 2 light bulbs in a row. Each can be green, red, and blue. How many combinations are possible? (order matters)
   a. 3 light bulbs?
   b. 5 light bulbs?
   c. n light bulbs?

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

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. How many combinations are possible? (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?