The Counting Principle

1. Two boxes are sitting side by side. The first box will contain one M&M. The second box will contain one coin. How many different ways can this be done if you have a red and a yellow M&M and a nickel and a dime?

2. What is the answer to problem 1 if you have three different colored M&M's and two different coins?

GENERAL PRINCIPLE?

The number of ways to place a objects in one box and b objects in the second box equals $a \times b$.

3. License plates for Tennessee have three numbers followed by three letters. How many different license plates can Tennessee make? How many begin with 666?

4. How many different ways can six children line up at the water fountain? What about ten children?

5. A teacher whose class has 18 children chooses two milk monitors every day. The first child pulls the wagon; the second child carries the straws. How many different ways can the teacher choose milk monitors?

   (a) Is it possible for everyone to pull the wagon?
   (b) Is it possible that every time someone is milk monitor, they have a different partner?

6. Three adults and four children get into a seven passenger van to take a trip. How many different ways can they be seated?

7. How many different ways can six people be seated at a round table with six chairs?

8. How many two-person committees can be formed from a group of ten people? How many three person committees can be formed from a group of ten people?