

1. The letters A, B, C, and D are used to form four-letter passwords for entering a computer file. How many passwords are if letters can be repeated any number of times? Not repeated?

2. A restaurant serves 5 main dishes, 3 salads, and 4 desserts. How many different meals could be ordered if each has a main dish, a salad, and a dessert?

3. How many 5-digit numbers can be formed using the digits 4, 6, 7, 2, 8 if digits can be repeated any number of times?

4. How many ways can four different ways can 4 different books be arranged on a shelf?

5. How many 4-digit positive even integers are there?

6. How many license plate numbers consisting of three letters followed by three numbers are possible when repetition is allowed? No repetition is allowed?

7. A briefcase has three rotating cylinders each containing 10 digits. How many numerical codes are possible?

8. There are five difficult routes that a student can take from her home to school. In how many ways can she make a round trip if she uses a different route coming than going?

9. A golf club manufacturer makes irons with seven different shaft lengths, 3 different grips, 5 different lies, and 2 different club head materials. How many different combinations are possible?

10. In how many different ways can the 4 call letters of a radio station be arrangements if the first letter must be W or K and no letters be repeated?

11. How many 7-digit phone numbers can be formed if the first digit cannot be 0 or 1?

Use the Fundamental Counting Principle to answer the following problems.

3. The math club is electing new officers. There are 3 candidates for president, 4 candidates for vice-president, 4 candidates for secretary, and 2 candidates for treasurer. How many different combinations of officers are possible?
  
4. You go to the cafeteria for lunch and have a choice of 4 entrees, 5 sides, 5 drinks, and 4 desserts. Assuming you have one of each category, how many different lunches could be made?
  
5. You go to the home electronics store to buy a new television. You have the following choices: rear projection, lcd, dlp, crt, or plasma; full screen or wide screen; 13", 19" 27", 32", 36", 41", 51", or 63". How many different televisions does the store have to offer?
  
6. You toss a penny 4 times. How many different outcomes are there?
  
7. You wake up in the morning and go to the pantry to look for breakfast. You have a choice of Pop-Tarts, muffins, granola bars, or cereal. To drink you have a choice of whole milk, 2% milk, skim milk, orange juice, apple juice, and water. Your mother insists that you take a multi-vitamin with your breakfast. You can choose from Flintstones vitamins, One-a-Day vitamins, or Chock's Vitamins. How many different breakfasts made up of an entrée, drink, and vitamin could you make?
  
8. You go to Wal-mart to buy batteries. You can choose from EverReady, Duracell, or Ray-O-Vac. Once you decide on the brand you then have to decide whether to get alkaline or non-alkaline batteries. Finally you must decide between AAA, AA, C, or D batteries. How many different kinds of batteries are available for you to buy?