Solve the following.

1. How many 5 digit zip codes are possible if
2. Digits can be repeated?
3. There cannot be repetitions?
4. The 1st digit cannot be a zero and the digits cannot be repeated?
5. The digits 0, 1, 2, 3, and 4 are to be used in a four digit ID card. How many different cards are possible if
6. Repetitions are permitted?
7. There cannot be repetitions?
8. There are four blood types, A, B, AB, and O. Blood can also be Rh+ and Rh-. Finally, a blood donor can be classified as either male or female. How many different ways can a donor have his or her blood labeled?
9. A store manager wishes to display 6 different brands of shampoo in a row. How many ways can this be done?
10. How many ways can 5 boys and 4 girls sit in a row of 7 chairs if
11. The end seats are to be occupied by boys?
12. The boys will sit together and the girls will sit together?
13. The center chair will be occupied by a girl?

Permutation: (nPr)

1. Evaluate the fallowing.
2. 4!
3. 5!
4. 5P1
5. 8P5
6. 3P3
7. How many different ways can a researcher select 5 rats from 12 penguins and assign each to a different test?
8. How many different ID cards can be made if there are 7 digits on a card and no digits can be used more than once?
9. In a committee composed of 10 people, how many ways can 1 director, 1 secretary, and 1 treasurer be selected?
10. How many different ways can 6 Public Service announcements be run during one hour time?
11. How many different ways can a city building inspector visit 8 buildings in the city if she visits 5 buildings in 1 day?
12. An inspector must select 4 tests to perform in a certain order on a manufactured part. He has a choice of 9 tests. How many ways can he perform 4 different tests?

Combination: (nCr)

1. Evaluate the following.
2. 9C6

1. 12C8
2. 9C8

1. 10C4
2. 16C12

1. How many ways can 5 cards be selected from a deck of cards disregarding the order of selection?
2. How many ways are there to select 5 candies from a box of 12 candies disregarding the order of selection?
3. How many ways can 6 volleyball players and 5 soccer players be selected from 10 volleyball players and 9 soccer players?
4. How many ways can a committee of 5 people be selected from a group of 9 people?
5. If a person can select 4 presents from 8 presents under a Christmas tree, how many different combinations are there?
6. How many different tests can be made from a test bank of 25 questions if the test contains 20 questions?
7. The general manager of a fast-food restaurant chain must select 5 restaurants from 8 for a promotional program. How many different possible ways can this selection be done?
8. How many ways can 4 cars and 6 trucks be selected from 8 cars and 11 trucks to be tested for a safety inspection?
9. In an auto sale there are 8 Toyota cars, 12 Honda cars, and 10 Ford cars. How many ways can a person select 2 of each brand of car? (In this case order is not important.)
10. There are 16 women and 14 men in a community meeting.
    1. How many ways can a committee of 6 people be selected?
    2. How many ways can this committee be selected if there must be 3 men and 3 women on the committee?