

**National Institute of Open Schooling**  
**Senior Secondary Course : Mathematics**  
**Lesson – 11: Permutations and Combinations**  
**Worksheet – 11**

1. By using single digits from 1 to 9, how many 3-digits and 4-digits numbers can be formed if no digit is repeated?
2. From a committee of 10 persons, in how many ways can you choose a secretary and a joint secretary assuming one person cannot hold more than one position?
3. Find out in how many ways the letters of the word EDUCATION be arranged if the
  - i. Word starts with E and ends with N
  - ii. Vowels are all together
4. In how many ways can 5 Science books and 4 Mathematics books be placed on a shelf, so that books on the same subject always remain together?
5. In how many ways can 5 girls and 6 boys be arranged in a row so that all the five girls are together in the row?
6. How many 5 letter words, with or without meaning can be formed out of the word EVALUATION, repetition of letter is not allowed?
7. How many triangles can be formed by joining the vertices of an octagon?
8. In an examination, a question paper consists of 15 questions divided into two parts i.e., Part-A and Part- B, containing 8 and 7 questions respectively. A student is required to attempt 10 questions in all, selecting at least 5 questions from each part. Find out in how many ways can a student select the questions?
9. In a box, there are 10 black pens, 7 white pens and 5 red pens. In how many ways can 6 black pens, 5 white pens and 3 red pens can be chosen?
10. A committee of 7 persons is to be formed from 10 men and 6 women. In how many ways can this be done if the following conditions are taken into account:
  - a. At least 2 women are included?
  - b. At most 2 women are included?