**Organizing Permutations, Combinations Questions**

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| **Description** | **Question Example** | **Solution** |
| Fundamental Counting Principle | A restaurant offers \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_sandwiches; orange juice, milk, or coke to drink; and either a chocolate chip or coconut cookie for dessert. Determine the number of different ways you can order one sandwich, one drink, and one dessert item. |  |
| Ordering objects  (permutation) | A committee consists of \_\_\_\_\_\_\_\_\_\_\_\_\_elected members. From this committee, a President, Treasurer, and Secretary have to be chosen. In how many ways can this be done? |  |
| Ordering parts of objects | Rajinder and \_\_\_\_\_\_\_ of his friends are in a line-up to buy tickets for a movie. Determine the number of ways they can line up if Rajinder is the first in line. |  |
| Pathways | Moving only down or right, the number of pathways from A to B is |  |
| Ordering with repetition | How many 6-letter arrangements of all of the letters in the word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are possible? |  |
| Ordering objects when some objects have to be together | How many arrangements of all of the letters of the word \_\_\_\_\_\_\_\_\_\_\_\_ are possible if the vowels must be together? |  |
| Ordering objects when some objects cannot be together | An \_\_\_ person committee is seated in a row for a photograph. How many arrangements are possible if the president and vice-president cannot sit next to each other? |  |
| Creating committees | A committee of \_\_\_ students is to be selected from 5 boys and 6 girls. How many different committees are possible if there must be an equal number of boys and girls on the committee? |  |
| Combinations with the at least restriction | A team of 6 volleyball players is to be chosen from 6 boys and 7 girls. How many different teams could be formed with at least \_\_\_ girls? |  |
| Combinations with the at most restriction | From \_\_\_\_ men and 5 women, the number of 4-person committees that can be formed with at most one man is |  |
| Handshake problem  or  Two teams playing each other  problem | The schedule in a soccer league consists of each team playing every other team \_\_\_\_\_\_\_\_\_. If there are six teams in the league determine the total number of games on the schedule. |  |