**COMBINATORICS AND GRAPH THEORY**

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Task No.3

*Instruction:* Find the answer to each item showing complete solution. Give at least five (5) examples for each.

1. How many 4 digit number can we make using the digits 3, 6, 7 and 8 without repetitions?

* 3678, 3687, 6783, 6738, 7863

1. How many 3 digit number can we make using the digits 2, 3, 4, 5, and 6 without repetitions?

* 234, 345, 456, 256, 425

1. How many 6 letter words can we make using the letters in the word LIBERTY without repetitions?

* Trilby, Trebly, Tilery, Riblet, Reblit

1. In how many ways can you arrange 5 different books on a shelf?

* B1, B2, B3, B4, B5

B2, B3, B4, B5, B1

B3, B4, B5, B1, B2

B4, B5, B1, B2, B3

B5, B4, B3, B4, B1

1. In how many ways you can select a committee of 3 students out of 10 students?

* S1, S2, S3

S4, S5, S4

S7, S8, S9

S10, S1, S4

S9, S6, S3

1. How many triangles can you make using 6 non collinear points on a plane?

* P1, P2, P3

P2, P3, P1

P3, P1, P2

P2, P1, P3

P3, P2, P1

1. A committee including 3 boys and 4 girls is to be formed from a group of 10 boys and 12 girls  
   how many different committees can be formed from the group?

* B1, B2, B3, G1, G2, G3, G4

B4, B5, B6, G5, G6, G7, G8

B7, B8, B9, G9, G10, G11, G12

B3, B4, B5, G4, G8, G9, G12

1. In a certain country, the car number plate is formed by 4 digits from the digits 1, 2, 3, 4, 5, 6, 7, 8, and 9 followed by 3 letters from the alphabet. How many numbers of plates can be formed if neither the digits nor the letters are repeated?

* 1234aBc

3456FGy

7895Yuo

9812TRy