Combinatorics

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Personnel selection

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Wilhem Leibniz in his Dissertatio de Arte Combinatoria introduced the term "combinatorics" (as we know it now) and J. Bernouilli with his work Ars Conjectandi (the art of conjecture) established the basic concepts of probability.

Both works established combinatorics as a branch of mathematics. This branch is responsible for counting without directly listing all cases. Accordingly, it is necessary to know the techniques of sorting, placing, selecting, etc., of objects.

Permutations, variations and combinations are effective counting instruments.

A company wants to open a new branch. It needs people to fill some of the most important positions. In the selection process candidates have to solve four tasks from fifteen different proposals.

How many ways can a candidate choose the four tasks?

**1**

If the candidate does not know how to solve three of the tasks, are the possibilities of choice greatly reduced?

**2**

The company has decided that the most innovative people in terms of solving the tasks will occupy the 3 most important positions (manager, sub-manager and supervisor).

**3**

How many ways can these 3 positions be filled if 7 people are selected?

If the manager’s position is already assigned to one of them, how many ways can the other two positions be filled?

**4**

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