Name . . . . ,

row. .... col....

1. - 2.	3.	4.	5.	Σ.

1a) 1b) 1c)

1d) 1e) 1f)

1g) 2)

1. They play 6 different movies in a cinema one after another. There is 20 students, each of them goes for one movie. In how many ways they can do it if:
a) students are different,
b) students are identical,
c) students are identical, on every movie there is at least one student,
d) students are identical, on every movie there is at least three students,
e) students are different, on every movie there is at least three students,
f) students are different and the order they enter the room is important,
g) students are different, on every movie there is at least one student.

2. In how many ways n boys and m girls can form a queue if boys are identical and girls are different?

3. How many integer solutions are there of the equation $x_1 + ... + x_5 = 30$ if $0 \leqslant x_i \leqslant 9$, $i \in \{1, ..., 5\}$

4. Prove that the number of partitions of positive integer n into k even compounds is equal to the number of partitions of $n - k$ into k odd compounds.

5. Prove by combinatorial argument: $\binom{n}{k}(n-k) = n\binom{n-1}{k}$.

Name . . . . ,

row. .... col....

1. - 2.	3.	4.	5.	Σ.

1a) 1b) 1c)

1d) 1e) 1f)

1g) 2)

1. There are 7 different lectures one after another. There is 23 students, each of them goes for one lecture. In how many ways they can do it if:
a) students are identical,
b) students are different,
c) students are identical, on every movie there is at least three students,
d) students are different, on every movie there is at least three students,
e) students are identical, on every movie there is at least one student,
f) students are different and the order they enter the room is important,
g) students are different, on every movie there is at least one student.

2. In how many ways n boys and m girls can form a queue if boys are different and girls are identical?

3. How many integer solutions are there of the equation $x_1 + ... + x_5 = 31$ if $0 \leqslant x_i \leqslant 8$, $i \in \{1, ..., 5\}$

4. Prove that the number of partitions of positive integer n into k odd compounds is equal to the number of partitions of $n - k$ into any number of even compounds.

5. Prove by combinatorial argument: $n2^{n-1} = \sum_{i=0}^{n} \binom{n}{i}(n-1)$.