

## A free lunch

10 young men decided to celebrate school graduation by ordering a festive lunch in a restaurant. When everyone gathered and the dishes were served, young men started discussing how they should sit at the table. Some people suggested sitting according to their height, others proposed sitting alphabetically by name, and still others by their learning achievements.

Neither of them had indisputable arguments. The argument continued and the food was getting cold on the table. Everyone was reconciled by the restaurant's waiter, who was addressing the gathering in the following speech.

“ Dear young guests, leave the argument and sit at the table in any order. ”  
Everyone sits and listens to the waiter’s speech.- “ Now you sit in any order. Please, note this order. Come tomorrow and sit in another order. And repeat this until you won’t have a change option. On a day when you sit again in the same order as today, you will get your lunch for free. And so on all the other days, you could eat your lunch for free. I promise.”

The young men liked the proposal and agreed to the conditions. It was decided to gather for lunch in this restaurant until the day will come when they will be able to dine for free .

We can upset those young men. They will not see this day. Why? Because there are so many different sittings of ten people at the table.

The task is to count how many sitting variants are for 10 people at the table. Start thinking like this: a first young man comes and chooses a place. He has 10 different possibilities. He takes one. Then the second comes and has 9 different possibilities to take place. Variants of two are  $10 \cdot 9 = 90$ . Then comes the third man and finds 8 free sittings –  $90 \cdot 8$  and so on. Count them!

If you counted correctly, you got more than 3 million variants. Now we will count how much time it will take. Remember that each possibility takes a day. And a year has 365 days.

What a surprise! It is almost 10000 years! The waiter was very clever!